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Faculty of Economics and Social Development

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International Scientific Conference

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Circular Economy: Climate Change, Environmental Aspect,
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Efficiency of Production Process and Competitive of Companies

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Conference: 11-14 May 2021

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The international scientific conference „Economic Science for Rural Development“ is organized annually by the Faculty of Economics and Social Development of Latvia University of Life Sciences and Technologies.

The proceedings of the conference are published since 2000.

The scientific papers presented in the conference held on 11–14 May 2021 are published in one thematic volume:

No 55 Sustainable Bioeconomy

Integrated and Sustainable Regional Development

Rural Development and Entrepreneurship

Circular Economy: Climate Change, Environmental Aspect, Cooperation, Supply Chains

Efficiency of Production Process and Competitive of Companies

New Dimensions in the Development of Society

The proceedings contain scientific papers representing not only the science of economics in the diversity of its sub-branches, but also other social sciences (sociology, political science), thus confirming inter-disciplinary development of the contemporary social science.

This year for the first time the conference includes the section on a new emerging kind of economy—bioeconomy. The aim of bioeconomy is to use renewable biological resources in a more sustainable manner. Bioeconomy can also sustain a wide range of public goods, including biodiversity. It can increase competitiveness, enhance Europe's self-reliance and provide jobs and business opportunities.

The Conference Committee and Editorial Board are open to comments and recommendations concerning the preparation of future conference proceedings and organisation of the conference.

Acknowledgements

The Conference Committee and editorial Board are open to comments and recommendations for the development of future conference proceedings and organisation of international scientific conferences.

We would like to thank all the authors, reviewers, members of the Programme Committee and the Editorial Board as well as supporting staff for their contribution organising the conference.

On behalf of the conference organisers

Anita Auzina

Professor of Faculty of Economics and Social Development

Latvia University of Life Sciences and Technologies

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SUSTAINABLE BIOECONOMY

ENVIRONMENTAL INVESTMENT GOVERNANCE IN LATVIA: PLANNING PROCESS AND DECISION-MAKING FRAMEWORK DEVELOPMENT

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Abstract. Applying governance process cycle steps model (5P model), the study focuses on the national environmental investment governance process by structuring and characterizing, particularly, investment planning process, including the integrative in-depth analysis of investment thematic content and framework (inextricably linked to the sectorial needs). Investment allocation is the governance instrument to be especially emphasized as being also necessary for the eventual implementation of all other governance instruments (such as infrastructure or communication ones), which all need financial support for their development, implementation or innovation. The study includes the investment instrument selection analysis at the policy planning stage for the most efficient investment and all sectorial policies implementation in order to reach the defined environmental governance goals. The study is practice-based research with elements of the participatory action research. Study is currently also topical since national investment planning process and final document is in the development process, detecting the main fields of investment in Latvia for the next 8 years. The structure and specifics of the planning stages of environmental investment governance process were identified along with related deficiencies and improvement needs, and, there were developed structured decision-making frame recommendation, based on the three main factors and subsequent set of complementary aspects identified as necessary required assistance to decide on the investment allocations.

Key words: EU investments, governance process, environmental governance, instruments.

JEL code: Q56, Q28, Q01

1. Introduction

In 2021, Latvia will celebrate 20 years since the first contracted European Union (hereinafter – EU) project has been signed. First investments became available in 2000, when Latvia benefited from EU pre-accession support (ISPA structural fund) for environment and transport sectors, but since 2004, when Latvia joined EU, Latvia has received funding from Cohesion fund, European Regional development fund, European Social fund (renamed as ESF+ fund), as well as Agricultural and Fishery funds. That means that Latvia has successfully finished 3 investment planning-management cycles and is currently under way with the implementation of 2014 – 2020 EU funding period. Also, the newest 2021 – 2027 period has just started, however, the planning of it continues at both – EU and national level. Therefore, we assume that Latvian institutions that are working with the EU funds have gained long term experience on how to govern EU investments and use lessons learnt and best practices from their own experience, however, there seems to be space for further developments also taking into account, that EU investment governance has improved through new and strategic requirements, such as focused attention on intervention logic, climate, environmental tagging, fulfilment of enabling conditions (a.k.a. ex-ante conditionality) before the investments etc.

Currently the planning of new investments and the well-thought-out, sustainably done, integration of environmental and climate aspects into the planning of EU funds policy at the national level, is more important than ever, that is related to several aspects. First, new EU level planning documents have entered into force in recent years to address current issues and set the pathway to EU level and global climate, environmental and sustainability goals. For example, the EU Green Course has been adopted (which is, inter alia, in line with the Paris Agreement), with the aim of moving towards a climate-neutral, fair, and prosperous society with a modern, resource-efficient, and competitive economy. EU has also adopted sectoral documents such as the Biodiversity Strategy for 2030, the EU Circular Economy Action Plan, the

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long-term low greenhouse gas emission development strategy, Renovation wave strategy etc., that draw the attention of Member States not only to existing but also emerging problems, which had not previously received adequate attention or were not properly identified or proven. Secondly, the Member States are currently planning financial resources for the 2021-2027 programming period, but, in response to the consequences of the COVID-19 crisis, EU offers additional resources for Member States to tackle social and economic challenges, while also respecting EU policy objectives, especially the EU-climate commitments (for instance, Recovery and Resilience facility, Just Transition fund and REACT-EU funding). This means not only the increase of available funding, which must be properly planned (considering the purpose, conditions, different timeframes of each mechanism and financial source), but also need for the complex and integrative policy (that also includes demarcation aspects), and balance between environmental protection and productive investments, and observation of the "do-not-significantly-harm" principle. The last, but not least, the implementation phase of the 2014-2020 planning period projects is currently still undergoing, therefore from 2021 to 2026, but especially from 2021 to 2023, there will be an overlap of several investments and programs.

In Latvia, the EU investments have helped to develop the main environmental infrastructure, such as water and wastewater networks and treatment plants, close old dumpsites and construct new environmentally safe landfills, create flood protection and NATURE 2000 infrastructure, recultivate historically polluted sites to protect nature and ensure favourable living environment in its holistic aspects. Also, investments in promotion and implementation of energy efficiency and renewable energy sources were supported to reduce greenhouse gas emissions. Nevertheless, each planning period has had its own indicators, that does not allow to provide correct summary of total results. Despite the multi milliard investments in the environmental sector, there are still unreached environmental acquis requirements or targets set in sectoral directives (such as those in waste sector - directives 1999/31/EC, 2018/850, 2008/98/EC, 2018/851 etc.), that might result with pilot cases or infringement procedures.

Due to the topicality of the issue, emphasising the importance of strategic and efficient planning of environmental investments, an analytic overview and analysis on how the environmental investment governance is currently ensured at the national level is needed, especially paying particular attention to the planning requirements and approaches at all governance process stages and instruments used. Therefore, the aim of the study was to explore, structure governance process and to frame the decision-making process as how the environmental investments are and are to be governed at the national level in Latvia (as EU member state). To reach the aim, several study tasks were selected: (1) through the appliance of environmental governance cycle model approach, to analyse how the environmental investments governance process is structured and succeeded; (2) to explore how the use of governance instruments are planned and could be complementary developed; (3) to characterize deficiencies and strengths of Latvian EU investment governance process from problem analysis to planning stages and to propose framed decision-making improvements.

2. Problem orientation: from theoretical aspects to practice in Latvia

Cohesion policy (as a set of EU-level investment programs) is designed to help to reduce disparities between the levels of the development of the EU Member States and ensure the harmonious economic development and balanced growth of the EU. To reach this, EU funds tackle underdevelopment and enhance the growth both at EU and local level, especially by the tailor-made investment programs that fit to the needs of the region, also taking into account a different set of available resources (including tools/instruments) and external environment. It also requires wide networks and capable institutions to

ensure long-term strategic development. These parameters are of utmost importance in the context of cohesion policy governance (Baltina and Muravska, 2014; Farole, et al. 2009). The Cohesion policy is a complex policy by its nature, design, and practical functioning in the contextual conditions (Basle, 2006). Cohesion Policy has a unified regulatory framework, but it must address different national and regional circumstances and institutional systems. It is comprised of a wide set of interventions and measures such as physical infrastructure and technology, innovation, business and digital developments, social inclusion and education, environmental improvement etc. that are allocated through different types of financial instruments, aid intensities, support measures and given to wide range of financial beneficiaries. (Basle, 2006)

Cohesion policy governance and planning (as an integral part of it) involves the goal setting that must be reached at the end of the seven-year planning period, as well as allocates necessary resources and sets activities that are needed to achieve the aim (Kooiman, 2008; Farole, et al. 2009). Cohesion policy over the years have become more target oriented and requires a strong intervention logic (i.e., characterization of thorough, efficient, and well-thought-out comprehension on how proposed investments will lead to desired outcome), that are based on regional needs, analysis of disparities and underdevelopment, and goals that are set at regional, national and EU level. As the current programming phase demonstrates, the European Commission (hereinafter – EC) is demanding that objectives are specified with reference to results, realistic targets are set, enabling conditions (i.e., strategic sectoral documents as investment pre-conditions) are in place and the performance of the programs is properly monitored (Gorzalak, 2017) (European Parliament and Council, 2019 a, b).

To ensure efficient policy governance (especially for problem analysis and the development of the strategic framework), data and information must be gathered and analysed to gain sufficient evidence that can be used for decision-making and for ensuring planning capacity. The study of Baltina and Muravska (2017) shows that there is a strong need for high-quality and timely statistical data at all levels that represent correct data on actual situation. Information on previous investment is typically available only after the next planning period is started (due to overlapping of the planning periods), that hinders efficient decision making regarding new investments and future-oriented decisions, however, availability of data and knowledge is of utmost importance and requires a strong diagnostic element for the development of EU investment planning documents. Also, other authors (Crescenzi and Giua, 2017) agree that policymakers are obliged to decide on investment commitments, policy adjustments or reforms before they possess a long-term evaluation of the status quo and before the previous investment period is concluded, thus limiting the opportunities for practice learning.

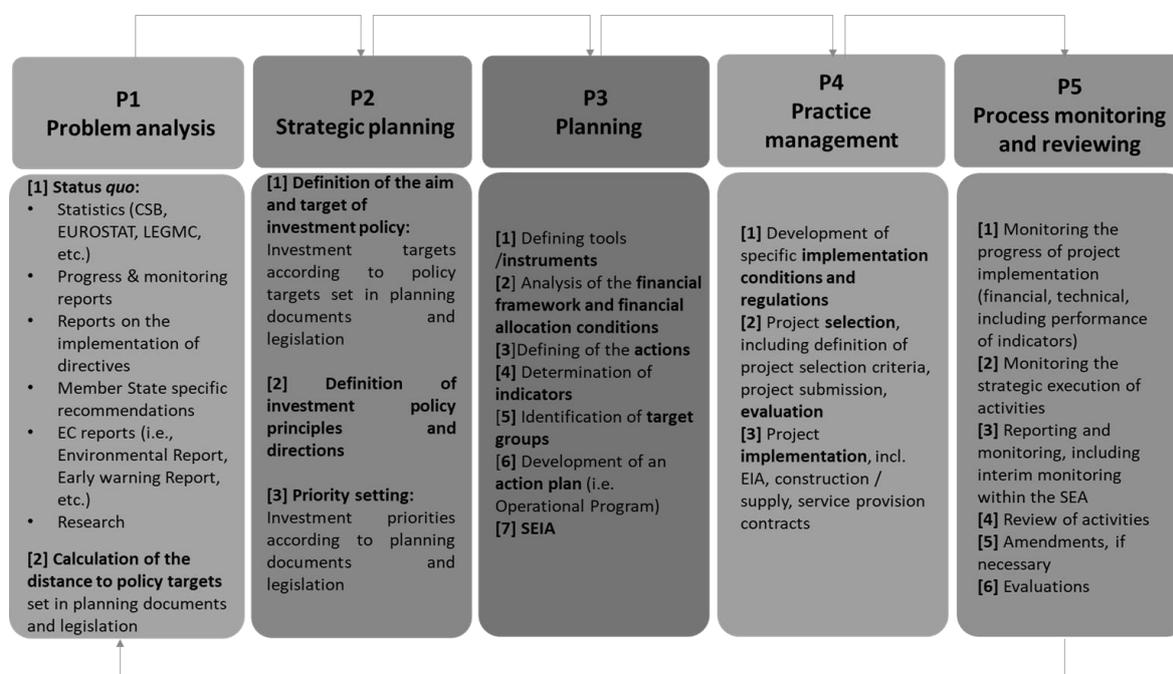
Planning capacity and efficiency is also closely linked to setting up an appropriate institutional framework and cooperation between different sectors (Baltina and Muravska, 2017). This relates to the importance of stakeholder involvement from all five stakeholder groups (state institutions, residents, municipalities, enterprises, as well as mediators) to ensure adaptive environmental governance (Karpouzoglou et al., 2016; Ernsteins et al., 2017). This includes the organizational aspects of the interactions and participatory principles according to criteria of efficiency and effectiveness. When analysing environmental measures, some authors believe that the investments in this sector had various success. Some investments showed great effectiveness, such as for restoration and rehabilitation of polluted sites and water bodies. However, clean technologies projects were rather unsuccessful due to the lack of the capacity to promote these technologies effectively. Most regions had expertise in the restoration of derelict and polluted sites (Gorzalak, 2017). There was also a need for integrative and cooperation approaches for the mainstreaming

of environmental and climate aspects within various sectors and with the involvement of stakeholders (Wamsler, 2017).

Baltina and Muravska (2017), analysing the situation in Latvia, consider that planning and prediction system in Latvia is not fully efficient yet. Bodies responsible for planning and implementation of EU funds in Latvia must better show the linkage between EU investments received and achieved Cohesion policy targets. There is also a need to search for better or new tools for data and evidence gathering to assess the efficiency and effects of the implemented policies on the development. The lack of proper interchange of data and information is detected both - at local and regional governance levels. There is also insufficient governance capacity along with uncertainties about the competencies of sectoral ministries. This may lead to the insufficiently coordinated actions and lack of compliance with the principle of transparency, that must be avoided.

3. Research approach and methods

Investments of the EU funds and structural funds, namely, investments of the Cohesion Fund and the European Regional and Development Fund in 2014-2020 and 2021-2027 programming periods in Latvia are analysed in this article. The environmental investment governance process is analysed applying management (policy/planning) process cycle model, particularly, using "5P stages" environmental governance process cycle model (Ernsteins, et al., 2017), tested for long in previous environmental, coastal, climate change, communication etc. governance studies. "5P stages" model includes all main consecutive cycle steps for any governance/planning process and, subsequently, stages are to be seen as inter-connected processes. "P1 stage" - problem analysis, "P2 stage" - policy design and formulation (strategic planning), "P3 stage" - planning, "P4 stage" - practice management (implementation), and "P5 stage" - process monitoring and reviewing of the results (Figure 1).



Source: author's illustration based on Ernsteins, 2017

Fig. 1. Investment governance process stages in 5P model framework

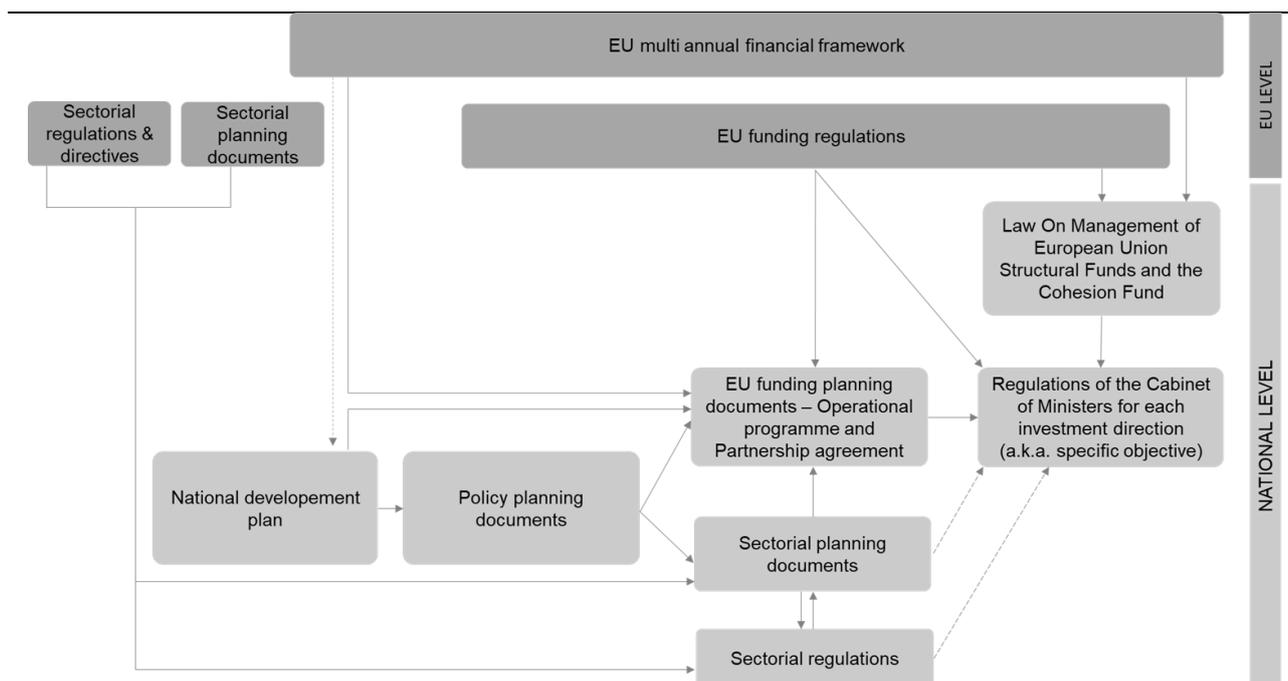
The investment governance process has been studied through a set of integrative and interlinked methods and/or their elements in the field of environmental governance. The study is practice led research that aims at analysis and development of new understandings and knowledge about investment governance

practice (i.e., on means, processes, and results of the practice) of both - operational and scientific significance. As a crucial and integral part of the research is the practical knowledge on the topic, the authors employ their long-term knowledge and experience about strategical governance (practical planning and supervising of the implementation of these investments) and project level management in different environmental fields (i.e., water management, waste management and the circular economy, pollution management, adaptation to climate change, and biodiversity protection), that allows describing and analysing environmental investment planning activities and related processes in Latvia. The study employs research-and-development (R&D) frame elements because the R&D method allows producing a certain product (in this case – strategical investment documents) that inter alia allows describing the practice and test its effectiveness though the integrative appliance and analysis of investment governance cycle approach in this context.

The study process also includes the participatory action research elements realised within the Ministry of Environmental Protection and Regional Development of the Republic of Latvia (hereinafter – Ministry), in particular - Investment policy department. It was ensured though the collaboration with employees of the Ministry, who are fulfilling policy planning tasks and have their observations and reflections that are to be further used in decision making on investment governance. The participation was ensured thought the fulfilling the strategical investment programming and planning tasks for the preparation of the National planning documents (National development plan 2027 (hereinafter – NDP), National waste management plan 2028, Environmental policy guidelines 2027 etc.), EU investment planning documents, i.e., Operational Program 2027 and Partnership agreement 2027, as well as other background data documentation and their justifications. The engagement was ensured thought the sharing of the expertise and experience, that allowed to provide analysis and ensure sound decisions, taking into account also the experience and developed knowledge from previous 2004 – 2006, 2007 – 2013, 2014 – 2020 planning periods (regarding both - planning and factual implementation issues and best practices).

4. Environmental investment governance frame: from EU level to the national level

Environmental investment planning is ensured at 2 levels – EU and national level. The start of investment planning is marked with the first budgetary proposal of multiannual framework and draft regulations on EU funding (Common provision regulation and fund-specific regulations). The multiannual financial framework identifies available EU budgetary resources, including for structural and investments funds. Based on available financial resources and employing Cohesion policy funding allocation methodology (a.k.a. "Berlin methodology"), that considers various economic factors, such as gross domestic product, and additional premium payments of socio-economic and environmental criteria on top of the basic allocation, the available funding for each region/country is identified. EU regulations set main requirements for EU funding allocation. They define main investment directions (specific objectives), defines centralized indicators, require the fulfilment of the enabling conditions (national level horizontal and sectorial planning documents), set budgetary and time frames, including expenditure and reporting periods, requirements for sound administrative system, principles to be observed etc. (European Parliament and Council, 2019 a, b). They also define eligible and non-eligible costs (i.e., costs that can or cannot be funded using this financial support) that are in line with EU policy flagships, for instance, landfilling or fossil-fuel reduction policies etc. Figure 2 illustrates the block-scheme of EU investment framework at EU and national levels.



Source: authors' compilation based on R&D study and participatory research study at the Ministry

Fig. 2. Block-scheme of EU investment framework: EU and national levels

Investment planning of EU funds at national level in Latvia begins with the development of the National Development Plan (NDP), which determines Latvia's development priorities for the coming seven years. Since the NDP is the main inter-sectoral development planning document in Latvia, it is the basis for future investment distribution. The NDP determines the directions of development and contains the main nationally important development tasks, as well as includes the distribution of planning investments for each task. The NDP is developed by the Cross-sectoral Coordination Centre at the Cabinet of Ministers, ensuring that line ministries identify, justify, and quantify the needs of the sectors under their responsibility. At the same time, it is acknowledged that the NDP is based on assumptions about the actual possibilities and potential investment portfolio of EU funds available to Latvia. Pursuant to the NDP, the investment proposal is expanded (i.e., gap analysis, investment proposals, territorial context and indicators, and other information is added) and included in the EU funds and structural funds main planning documents - Operational Program and Partnership Agreement, which are developed in accordance with the form and requirements of the EU Funds common rules (European Parliament and Council, 2019 a, b). At the same time, the development of a list of issues for each area, specific investment support, target group, funding, indicators, relevant and climate objectives etc. must be proposed and justified. This is contextually and consecutively described and analysed in the next chapter on governance processes and stages.

5. Environmental investment governance process in Latvia: analysis and planning stages

EU environmental investments are planned for seven-year period, starting with the assessment of status quo (about one and a half to one year before the start of the programming period), definition of main policy directions and targets to be reached, and the implementation instruments, identification of the actions and the preparation of the action plan, as well as ensuring the involvement of social partners. EU investment governance process stages to be described below are seen in the 5P governance process model framework as illustrated in the Figure 1.

5.1. Investment governance process: problem analysis stage (P1)

To prepare both - the NDP and the Operational program - the environmental investment planning process begins with data analysis, identifying the status quo in each investment area or sector to be analysed, for instance, showing data on the actual situation in different sectors - waste management, circular economy, climate change mitigation and adaptation to it, biodiversity, various forms of pollution, water management etc. For this purpose, statistical data (for example, from EUROSTAT, Central Statistical Bureau, Latvian Environment and Meteorology Centre database), progress and monitoring reports of various sectors, implementation of EU directives (for example, national level reports on the status of the Urban Wastewater Directive) are used. This allows identification not only of a snapshot of the existing situation, but also of current trends.

However, the quality of the analysis is much impacted by the availability and quality of data (for instance, data reported by sectoral enterprises). Data is also limited by the current report forms or are not available without specific studies (for instance, precise data on household heat combustion solutions), so some crucial data may not be collected at all. In that case, where possible and feasible, some special questionnaires are also made and distributed or evidence from scientific research is used.

Data and information from environmental assessment monitoring reports, progress and monitoring reports prepared by the EC (such as annual National policy implementation reports and fact sheets, early warning reports, country specific recommendations etc.), and the latest planning documents (for example, Waste management plan 2028, River basin management plan 2028, Air pollution abatement action plan etc.), as well as various surveys and studies are used for gathering and analysing the information on the sector and integrated problems and development needs is identified from the above-mentioned documents and data. For investment planning it is of utmost importance that these documents contain future trend analysis of the sector development. Good example in this respect is Waste management plan 2028 that includes several scenarios and projections of waste flows, that allows identification of future needs that is needed for sound and efficient planning of the sector and the implementation instruments. However, in many cases limited forecast data is available that impacts the identification of the investment gap.

The preparation of major sectoral planning documents often goes hand in hand with the investment planning period, that allows to use the most topical data available about the sector. Nevertheless, as the period of sectoral planning document preparation and investment planning is often overlapping, the investment programming is often started without full picture (because the planning document preparation has not been started or is in early stage). That means that the up-to-date data and prognosis may give new knowledge that could lead to new conclusions and to the re-assessment of the data and even the whole investment strategy or priorities.

These data are then analysed and compared with the data on the national, EU level and global goals and requirements of respective sector, especially those with set targets and deadlines. These data are gathered from extensive content analysis of the normative requirements (set in EU sectoral directives, regulations, national regulatory enactments, and international agreements) in the field of environment, as well as the set short-term and long-term goals (for example, landfill waste reduction to 10% by 2035 or achieving climate neutrality by 2050) in close cooperation with the Ministry's responsible line departments. The emphasis in the investment planning is put on the fulfilment of the EC requirements since EU funding is one of the instruments from EC to support Member States in the fulfilment of EU obligations. Data then are illustrated and analysed and put together in concise, but thoughtful illustration of the situation and its prognosis, that allows concluding on the main issues and gaps to the desired situation or goal, as well as

to propose solutions to diminish problems and reach goal. This represents the main development gaps, that need to be solved, employing a set of governance instruments, that include also economic and financial instruments. To clearly communicate with society and EC and justify investment needs and intervention logic, illustrative materials that show the existing and potential distance to the targets are prepared.

The problem analysis done at the "P1 stage" will then be used for the decision taking on main gaps and will help to form the intentions, aims, principles, perspectives, and priorities at the "P2 stage". This analysis of "P1 stage" shows that the main bottlenecks are related to the availability of timely and qualitative status quo and future forecast data that limit development and investment gap analysis from today's and future perspective. To improve the data, the structural changes in data collection system, including well-thought-through data reporting forms, preferably employing integrated solutions and ICT tools, is required along with the increased capacity of data quality controlling bodies. This allows to conclude that the authors agree with the analysis provided by Baltina and Muravska (2017) and other authors that there is an urgent need for data and evidence gathering and the improving of the governance capacity to improve efficiency of the analysis of existing policies and for the planning of new interventions. Meanwhile, the strengths are related to representation of the materials for the communication with stakeholder groups.

5.2. Investment governance process: policy design and formulation stage (P2)

In "P2 stage" policy orientation and definition takes place. This includes the setting of goals, particular targets main principles, as well as main priorities. Regarding environmental investment governance, "P2 stage" is closely linked with the goals set in the major sectorial policy planning documents (EU level and national level), and normative enactments in the integrative manner. As described, the identification of the targets set in these documents are scrutinized within the gap analysis provided in "P1 stage", and, since EU funding is a tool for the support of the fulfilment of EU requirements, the targets set in EU level documents, are binding also as EU investment aims. Meantime, considering that investment is only one of the instruments and the funding available is almost always insufficient to finance all factual sectorial needs, specific targets investment should be set. Usually targets to be reached are influenced by the EU pre-defined common investment outcome and result indicators, that impact the investment intervention logic. Targets are typically set considering the funding potentially available versus funding needed for the fulfilment of the target. This is done through the calculation of the costs of needed infrastructure (where possible, using calculation data from policy planning documents), and considering potential risks that might affect investment cost-efficiency or the fulfilment of the targets, such as inflation, previous investment up-take, historical data on market failures due to increased demand, negative demographic trends etc.

The environmental investment goals are also closely related also to the policy priorities, as investments should follow the sectorial development directions, supporting their implementation. However, if the planning document lack detailed description of priorities or principles of their identification or the up-to-date planning document is under preparation, the investment might require preparation of separate sectorial evaluations that would set particular investment priorities. For instance, in 2020 separate water and wastewater investment evaluation was prepared that allowed setting priorities to detect the investment directions and targets in the sector. Meantime, through the involvement of social partners in the preparation of the planning documents or evaluations is critical, because investment activities, costs and priorities will greatly impact the investment plan (i.e., Operational program), because the plan has to be prepared in line with the sectorial planning documents to address their main needs, as well as it would help to lessen objections from social partners in EU funds monitoring committees and during the preparation of the legislation.

The actions performed at the "P2 stage", i.e., set aims and targets, priorities, perspectives, and principles, in combination with the conclusions from "P1 stage" will then be used for the identification of main actions, development of the financial framework and setting of the indicators at the "P3 stage", and their inclusion in the planning document.

The strength of the existing practice is the strong investment linkage to the sectorial planning documents and targets. The main bottlenecks of "P2 stage" are interlinked the bottlenecks identified in "P1 stage", i.e., available data and redness of documents and overlapping of the preparation processes. The authors, therefore, also agree to the deficiencies described in the literature (Crescenzi and Giua, 2017) that policymakers base their investment decision before the previous investment period is finished, limiting the opportunities to prepare sound goal reaching and its risk analysis, that takes into account the factual fulfilment data of existing investment programs. Also, there is a risk, that the involvement of the social partner in the preparation of planning documents were insufficient or unsuccessful that would further impact the development of environmental investment plan.

5.3. Investment governance process: planning stage (P3)

After policy design and formulation stage, a specific investment implementation plan is developed. It is elaborated based on problem analysis, detected development gaps and needs (including the ones identified in the sectorial planning documents), and the priorities set. This also requires assessing the need for the use of whole set of environmental governance instruments, i.e., policy and legislative, planning, economic and financial, institutional, and administrative, infrastructure as well as communication (Ernsteins, et al., 2014; Ernsteins, et al., 2017) to guide the development of the field into desired direction. Once the appropriate instruments have been identified, specific proposals for supported actions are prepared, also evaluating which of potential support actions that will have the greatest impact of the identified sectorial and investment objectives and goals. Then the actions are assessed against the requirements of EU funds regulation and the development principles of the respective sector, and ineligible activities and costs are excluded (for instance, investments in waste disposal infrastructure, which is the lowest level at the waste hierarchy) (European Parliament and Council, 2019b). This sometimes requires re-designing of the activities for them to fit in the set investment framework. Then potential actions are brought to a practical level in main investment categories (such as construction, equipment, and service needs) and macro level cost breakdown is prepared. Also, the most appropriate output and result indicators are selected in line with the EU-level indicators already defined in the Fund specific regulations (European Parliament and Council, 2019b), which allow the determination and analysis of total investment intervention at EU and regional levels, summing data from all Member States. For the indicators baseline and target values are calculated or extrapolated from the available data (from data bases, policy documents etc.).

One of the issues in this planning stage is the fact, that investment needs in almost every sector is higher than available resources. Investment allocation per se is one of the main economic and financial instruments. At the same time, it is also a tool for the implementation of other instruments such as infrastructure or communication instruments, that need financial support. However, it is also often mistakenly believed that investment should be the main instrument for solving every sectoral issue. Therefore, it is crucial to determine, when investment as policy implementation tool must be used and is the best alternative. It is the state of the art on how to choose the right instrument, also taking into account that the decision taking must not be biased or lobbied.

To help decision takers, based on the research carried out, the Authors propose decision making framework for the investment allocation at the planning stage. It is described and summarized in the

Table 1, the authors have identified three main factors and their 12 significant aspects that should be evaluated before choosing the investment as the most appropriate instrument. However, it should be also noted that there can be also other case specific factors. This framework is now used by the Ministry's experts to prepare proposals for investment to be included in the Operational program.

Table 1

Decision making framework development for the investment allocation

Factors	Regulative/exclusion factor	State aid and Business-related factor	Factor of societal and environmental interests
Aspects	Additional / stimulation support (carrot) should be, especially if there is new regulations (stick)	There is no overstimulation of business	They are detected in other policy planning documents
	There is a national, EU-level or global goal and commitments that must be reached, but the costs of reaching it are high	Investment comply with the state aid rules	Investment needs do not significantly harm the environment (including the future perspective)
	They are allowed in the Common provision and fund specific regulations	Market obstacles do not allow to grant bank support	It is needed for public interests support
	There are demarcation, synergy with or continuation of other support programs	Support is not needed for the operational costs	Polluter pays principle is observed

Source: author's, based on R&D study and participatory research study at the Ministry

After all the above-mentioned work, the Operational program and related documents are drafted, including information on particular activities and their justification, financial allocations and indicators, and it is published for the public consultation with social partners. After public hearings of draft plan (that are to be held in accordance with the procedure for drafting planning documents), and multiple informal consultations with the EC on these documents, they will be submitted to the government, European fund's monitoring committee and EC for the approval.

In the next stages - practice management (P4) and process monitoring and reviewing of the results (P5) - investment legislation is prepared, projects are evaluated, approved and progress evaluated (i.e., regarding physical and financial indicators and policy results), and this is done in accordance to the works performed in the previous stages (i.e. set indicators, actions, instruments, costs etc.). If necessary, due to underperformance or unpredicted changes, the projects and/or investment plans can be reassessed and reviewed, starting this process again from the problem analysis (P1) (Figure 1). These two latest stages are highly impacted by the decisions taken in the previous stages, especially regarding on which activities, why and in which perspective they are chosen.

Conclusions

Employing analytic overview of the practices in place as well as structuration and principal characterization of the main stages of environmental investment governance process in Latvia, there are highlighted the main strengths and challenges of the first three process cycle stages (P1-P3) and, relatedly, proposed decision making frame for investment allocation.

- 1) There is not possible to provide strategic and structured outcomes summary of environmental investment governance process in Latvia due to the EU level investment governance practices improving over time by better tailor-made and focused requirements on intervention logics, new tools and unified indicators for all member states that helps to measure impact of the allocated funding.

2) During the studies of problem analysis stage (P1) of the environmental investment governance process, there are several challenges recognized that relate to the availability of timely and qualitative status quo information and future forecast data that limits development and investment gap analysis from current and future perspective. To improve the data, the structural changes in data collection system are required, including increased capacity of data quality controlling bodies along with well-thought-through data reporting forms, preferably employing integrated solutions and ICT tools.

3) The main challenges recognized at the policy formulation stage (P2) were interlinked with those from previous stage, i.e., available data and readiness of documents and overlapping of the preparation processes. Also, policymakers shall make their investment decisions already before the previous investment period is finished, so limiting the opportunities to prepare sound and goal reaching policy formulation that considers the factual fulfilment data of existing investment programs. There is also to be mentioned eventual risk, that social partner involvement in the preparation of planning documents could be insufficient, impacting next stages.

4) In almost every environmental sector investment needs are higher than available financial resources and, consequently for the planning stage (P3), it is necessary not only to have sectorial and cross-sectorial knowledge, but also supporting algorithms to determine, when investment as policy implementation tool must be used and is the best alternative. Therefore, there is developed proposal for the decision making framework for the investment allocation that consists of three main factors to be considered – regulative/exclusion factor, state aid and business-related factor, as well as societal and environmental interests' factor, all covering altogether 12 aspects. After detection of investment actions, macro level cost breakdown, most appropriate output and result indicators, the Operational program and related documents are drafted, including information on particular activities and their justification, financial allocations and indicators, that is to be followed by public consultations with social partners that helps to finalize the final investment plan.

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FACTORS AFFECTING THE DEVELOPMENT OF THE BIOECONOMY IN LATVIA

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Abstract. In the European Union, including Latvia, the development of the bioeconomy by exploiting the potential of research, innovation and knowledge transfer is considered to be the basis for economic growth. The research aims to assess the drivers of and barriers to bioeconomic development in Latvia and define actions facilitating the development of the national bioeconomy. The present research employed mostly SWOT analysis in combination with expert judgement. The research concluded that the overall trend in the following strengths of the bioeconomy: *Research infrastructure and modern technical equipment for the development of the bioeconomic knowledge base (3S)* and *Vast regional coverage of and cooperation among leading research institutions in the field of bioeconomics (1S)* was negative, as the total impact of the threats exceeded the total impact of the opportunities. However, the overall trend in the strength *Extensive initial activities and the knowledge base for bioeconomic research (2S)* was positive, as the total impact of the opportunities exceeded the total impact of the threats. The total impact of exogenous factors on the weaknesses in the development of the bioeconomy was positive; therefore, the total impact of exogenous factors tended to weaken the weaknesses. Since the largest positive impacts on endogenous factors were made by the following opportunities: *Effective support for independent innovation projects implemented by large companies (3O)* and *Stimulation of innovation in the small and medium enterprise sector in active synergy with national research priorities and available funding (2IO)*, it is necessary to increase government and private sector funding for R&D in order to contribute to the development of the bioeconomy in Latvia. The availability of funding should be balanced and predictable in the long term to reduce the impact of the threat *Public policies and insufficient and unpredictable funding for research and development hinder the development of bioeconomy industries and steady growth opportunities (2T)*. To encourage the business sector to invest in R&D, including in the bioeconomy industries, public support and various incentives for entrepreneurs are needed.

Keywords: bioeconomy, factors, SWOT analysis, impact assessment, Latvia.

JEL code: Q01, Q16.

Introduction

The Council of the European Union (2020), recognizing that a sustainable bioeconomy has the potential to: (-) raise competitiveness, revitalize European industries, modernize European primary production systems, protect the environment and enhance biodiversity, (-) promote employment, social inclusion and local development in rural areas, (-) generate economic value and increase prosperity, (-) support the creation of new value chains throughout Europe, has emphasized that a sustainable and circular European bioeconomy should be one of the key elements in implementing the European Green Deal.

In Latvia, too, the bioeconomy gives opportunities for the development of the national economy based on its strongest industries – agriculture and forestry. Wood and other organic products have potential to increase added value, replace fossil fuels in energy production, develop future organic products and reduce greenhouse gas emissions (Latvian Bioeconomy Strategy 2030, 2017; Ministry of Agriculture, [s.a.]). The Ministry of Agriculture ([s.a.]) has pointed out that the bioeconomy industries have large potential for innovation, as they make extensive use of scientific advances (in life sciences, agronomy, ecology, food sciences and social sciences), basic and industrial technologies (biotechnology, nanotechnology, information and communication technology, engineering) and national expertise. The Ministry of Education and Science (2020), however, has indicated that activities aimed at ensuring sustainable growth in the bioeconomy by using research, innovation and knowledge transfer potential are especially important for

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Latvia, thereby contributing to industrial competitiveness, growth and renewal, the modernization of primary production systems, environmental protection and the conservation of biodiversity. Since 2013, the knowledge-intensive bioeconomy has been one of the fields of smart specialization in Latvia. **The object of the research** is the development of the bioeconomy by using the potential of research, innovation and knowledge transfer (hereinafter the development of the bioeconomy). **The subject of the research** is factors affecting the development of the bioeconomy.

To effectively manage a process, it is necessary to identify all potential exogenous and endogenous factors that affect its development as well as the interaction of the factors and their impacts on the development of the process; therefore, the research put forward a **hypothesis**: the impact of exogenous factors affecting the development of the bioeconomy on endogenous factors is positive, thereby contributing to the endogenous factors.

The research aims to assess the drivers of and barriers to bioeconomic development in Latvia and define actions facilitating the development of the national bioeconomy.

Two specific research tasks were set to achieve the aim: (1) to perform a SWOT analysis, which reveals the strengths, weaknesses, opportunities and threats relevant for the bioeconomy in Latvia by doing a qualitative analysis of secondary sources, (2) to assess the quantitative impact of exogenous factors affecting the development of the bioeconomy on the endogenous factors affecting it.

The present research employed mostly SWOT analysis. J. Lee has stated that "SWOT analysis is a type of contextual analysis used to present strategies based on an evaluation of internal capabilities (i.e., strategies, strengths, and weaknesses) together with exogenous factors (i.e., opportunities and threats). This type of analysis has been used to set directions and make strategic decisions in many industries. SWOT analysis has been used to present strategies for some time and continues to be used today" (Lee J. et al., 2021). SWOT analysis as a research method is employed in research in various fields, e.g. in the automotive industry (Halili Z., 2020), the space and satellite industry (Lee J. et al., 2021), the pulp and paper industry (Brunnhofer M. et al., 2020), sustainable ecotourism (Mallick S. K. et al., 2020), sustainable tourism (Chandra P., Kumar J., 2021), the sustainable forest-based bioeconomy (Falcone P. M. et al., 2020) etc.

In research, SWOT analysis is combined with other quantitative research methods, e.g. the Analytic Hierarchy Process (AHP) (Halili Z., 2020; Lee J. et al., 2021; Brunnhofer M. et al., 2020),) and the Quantitative Strategic Planning Matrix (QSPM) method (Mallick S. K. et al., 2021). Ranking the importance of different factors within a SWOT category as well as ranking alternative strategy options is optional and can be done in a qualitative as well as a quantitative way. A simple way is by a judgement of the analyser(s) involved (Rauch P. et al., 2015). In the present research, SWOT analysis was combined with expert judgement.

The novelty of the research is an assessment of the impact of exogenous factors affecting the development of the bioeconomy on the endogenous factors affecting it in Latvia.

Research methodology

The research consists of **four** successive stages. At the first stage of the research (**Data Collection**), the factors affecting the development of the bioeconomy in Latvia were identified by performing a qualitative analysis of publicly available documents or secondary sources. This stage examined:

- long-term and medium-term national policy documents (Latvia 2030, NDP 2027),

- medium-term policy documents (Guidelines for the National Industrial Policy for 2021-2027, Guidelines for the Development of Science, Technology and Innovation for 2021-2027 (draft), Latvian Bioeconomy Strategy 2030),
- an analytical report on the Smart Specialization Strategy of Latvia (RIS3), specialization in the Research Ecosystem of the Knowledge Intensive Bioeconomy (2014-2018),
- CSB data.

The research identified 21 SWOT items: 5 strengths, 6 weaknesses, 6 opportunities and 4 threats.

At the second stage of the research (**Validation of the SWOT**), the endogenous and exogenous factors affecting the development of the bioeconomy identified by the authors were validated and supplemented by **twenty national experts**: policy makers, i.e. experts authorised by the Ministry of Agriculture as well as experienced scientists and entrepreneurs from various industries of the bioeconomy. The validation of the SWOT results yielded 29 SWOT items: 9 strengths, 5 weaknesses, 8 opportunities and 7 threats. Due to the limited scope of the research, not all the identified 29 SWOT items are presented in the paper.

At the third stage of the research (**Factor Ranking**), the factors included in each category of endogenous factors (SV) and exogenous factors (ID) were ranked in order of importance. The ranking of endogenous and exogenous factors was performed by national experts in the bioeconomic field according to the methodology suggested by Rauch P. et al. (2015). After presenting and discussing the SWOT analysis, each expert individually ranked the three most important factors per SWOT category by allocating points from 3 (rank #1) to 1 (rank #3). Then all factors per SWOT category were ranked according to their score (sum of points allocated by all experts). Additionally, the most important statements within the four matrix sectors were selected, and the less relevant ones were dropped according to their score. After finalising the SWOT, each statement was coded, for example, S1 is shorthand for the highest-ranked, internal strength (Rauch P. et al., 2015).

At the fourth stage of the research (**Impact Assessment**), the quantitative impact of each exogenous factor on each endogenous factor was determined, and each exogenous factor was assigned certain impact significance **Z** for each endogenous factor. The impact significance **Z** was expressed in a five-point system according to the methodology proposed by Silinevica I. (2002): 4 points – very significant; 3 points – significant; 2 points – moderately significant; 1 point – insignificant; 0 – no impact.

The results obtained were arranged in an L-shape diagram as follows: in rows – exogenous factors, in columns – endogenous factors, taking into account their impact significance. Matrix coefficients were obtained by multiplying the significance **W** of exogenous factors by the significance **Z** of the impact of each exogenous factor on each endogenous factor.

The first three coefficient rows of the matrix describe the positive impacts of exogenous factors on endogenous factors, indicating opportunities for development. The last three coefficient rows of the matrix describe the negative impacts of exogenous factors on endogenous factors, indicating a threat to development.

Opportunities for and threats to development could be calculated in quantitative and comparative terms for each endogenous factor by algebraically summing the coefficients in the columns. In addition, the impacts of opportunities on endogenous factors are marked with a plus sign, whereas the impacts of threats are marked with a minus sign (Silinevica I., 2002)

Research results and discussion

The endogenous and exogenous factors that affected the development of the bioeconomy in Latvia were selected and ranked by the experts as follows:

• STRENGTHS

Research infrastructure and modern technical equipment for the development of the bioeconomic knowledge base (**3S**).

Extensive initial activities and the knowledge base for bioeconomic research (**2S**).

Vast regional coverage of and cooperation among leading research institutions in the field of bioeconomics (compared with other fields of smart specialization) (**1S**).

• WEAKNESSES

1) Insufficient and unpredictable government and private sector funding for research and development (**3W**).

2) Dependence of R&D on the availability of foreign (mainly EU) funding (**2W**).

3) Weak cooperation with researchers from other fields (biometrics, engineering, economics) in interdisciplinary research (**1W**).

• OPPORTUNITIES

1) Effective support for independent innovation projects implemented by large companies (**3O**).

2) Stimulation of innovation in the small and medium enterprise sector in active synergy with national research priorities and available funding (**2O**).

3) Ensuring the stability and sustainability of the research system and developing long-term research and innovation capacity (**1O**).

• THREATS

1) Insufficient replacement of scientific personnel (**3T**).

2) Public policies and insufficient and unpredictable funding for research and development hinder the development of bioeconomy industries and steady growth opportunities (**2T**).

3) The slow and fragmented development of the technology transfer and innovation system hampers productivity growth and the production and export of high value-added products by the bioeconomy industries (**1T**).

The quantitative impacts of exogenous factors on endogenous factors ranked by the experts are presented in Table 1.

Table 1

Impacts of the most significant exogenous factors on the most significant endogenous factors affecting the development of the bioeconomy in Latvia

3S	2S	1S	3W	2W	1W	Indicator
6	9	3	12	12	9	3O
4	4	2	6	6	8	2O
3	4	2	4	4	4	1O
+13	+17	+7	+22	+22	+21	Total impact of opportunities on endogenous factors
6	9	6	3	3	6	3T
8	4	6	8	8	6	2T
1	2	1	3	2	2	1T
-15	-15	-13	-14	-13	-12	Total impact of threats on endogenous factors
-2	+2	-6	+8	+9	+9	Total impact of exogenous factors on endogenous factors

Source: authors' own compilation

The results obtained (Table 1) show that:

- the strength *Research infrastructure and modern technical equipment for the development of the bioeconomic knowledge base (3S)* was affected the most by the opportunities *Effective support for independent innovation projects implemented by large companies (3O)* and *Stimulation of innovation in the small and medium enterprise sector in active synergy with national research priorities and available funding (2O)*, yet the most significant threat was caused by *Public policies and insufficient and unpredictable funding for research and development hinder the development of bioeconomy industries and steady growth opportunities (2T)*. The overall trend in the strength was negative (-2), as the total impact of the threats (-15) exceeded the total impact of the opportunities (+13);
- the strength *Extensive initial activities and the knowledge base for bioeconomic research (2S)* was affected the most by the opportunity *Effective support for independent innovation projects implemented by large companies (3O)*, yet the most significant threat was caused by *Insufficient replacement of scientific personnel (3T)*. The overall trend in the strength was positive (+2), as the total impact of development opportunities exceeded the total impact of the threats;
- the strength *Vast regional coverage of and cooperation among leading research institutions in the field of bioeconomics (1S)* was affected the most by the opportunity *Effective support for independent innovation projects implemented by large companies (3O)*, yet the most significant threat was caused by *Insufficient replacement of scientific personnel (3T)* and *Public policies and insufficient and unpredictable funding for research and development hinder the development of bioeconomy industries and steady growth opportunities (2T)*. The overall trend in this endogenous factor was negative (-6);
- the most significant exogenous factors that weakened the three most significant weaknesses *Insufficient and unpredictable government and private sector funding for research and development (3W)*, *Dependence of R&D on the availability of foreign (mainly EU) funding (2W)* and *Weak cooperation with researchers from other fields in interdisciplinary research (1W)* were the opportunities *Effective support for independent innovation projects implemented by large companies (3O)* and *Stimulation of innovation in the small and medium enterprise sector in active synergy with national research priorities and available funding (2O)*. The threat *Public policies and insufficient and unpredictable funding for research*

and development hinder the development of bioeconomy industries and steady growth opportunities (2T) made a significant impact on the main weaknesses by exacerbating them. The total impact of exogenous factors on the three main weaknesses was positive; therefore, the total impact of exogenous factors tended to weaken the weaknesses.

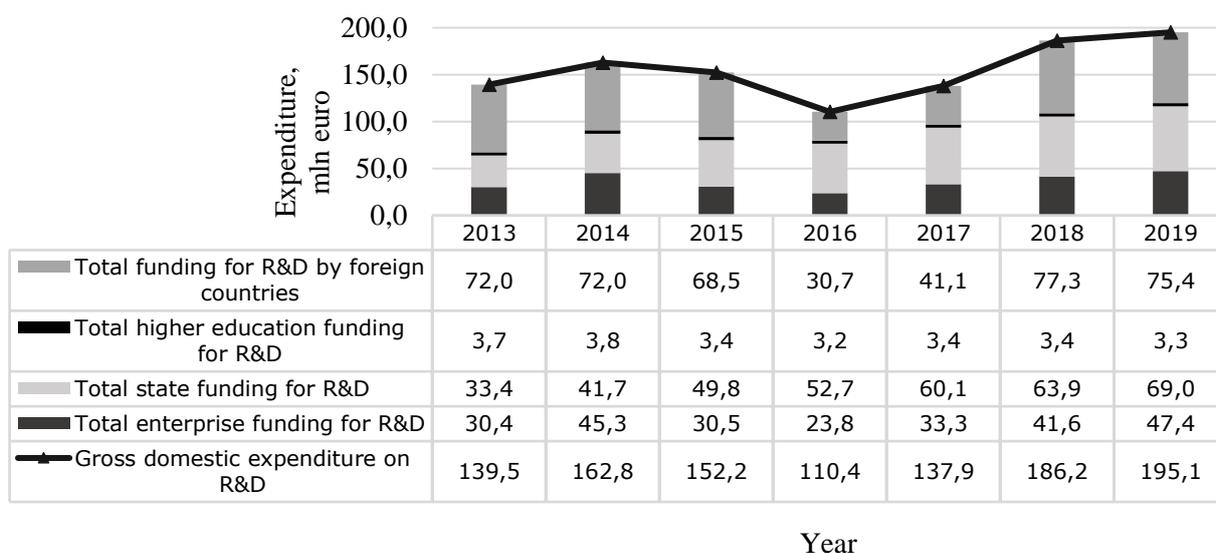
According to the expert assessment, the largest positive impact on endogenous factors were made by the opportunities *Effective support for independent innovation projects implemented by large companies (30) and Stimulation of innovation in the small and medium enterprise sector in active synergy with national research priorities and available funding (20)*. This means that it is necessary to increase government and private sector funding for research and development in order to contribute to the development of the bioeconomy in the country. In addition, the availability of funding should be balanced and predictable in the long term in order to reduce the impact of the threat *Public policies and insufficient and unpredictable funding for research and development hinder the development of bioeconomy industries and steady growth opportunities (2T)*.

The Guidelines for the Development of Science, Technology and Innovation for 2021-2027 (draft) (2020) also point to the need to increase both the proportion of public research funding and the amount of private sector investment in R&D in order to contribute the development of research excellence and innovation in the long term, as the effectiveness "ceiling" has been reached at the current investment level and higher research quality and performance could not be achieved without additional investments in R&D (incl. from the government budget).

The CSB data show that R&D intensity (i.e. investments in research and development as a percentage of GDP) in Latvia moderately increased, yet is insufficient and does not sufficiently contribute to the development of research excellence and innovation (Smart Specialization Strategy..., 2020).

In the period 2013-2019, the R&D intensity in Latvia averaged 0.59 % of GDP, reaching 0.64 % of GDP in 2019, thereby significantly lagged behind the national 2020 target of 1.5 % of GDP (Smart Specialization Strategy..., 2020).

The total expenditure on R&D was EUR 195.1 million in 2019, and compared with 2018, it increased by 4.8 % (Figure 1).



Source: CSB, [s.a.] (table ZIG030)

Fig. 1. Expenditure on R&D by type of funding in Latvia in the period 2013-2019, million EUR

The CSB data show that the increase in investment was determined by an increase in foreign funding. The main sources of foreign funding in Latvia were the EU Structural Funds. The dependence of R&D on foreign funding in Latvia was more than 2.7 times higher than that in EU innovation leaders and on average also higher than in the EU-27 (Smart Specialization Strategy..., 2020). The cyclical fluctuations in available EU structural funding do not contribute to steady and sustainable development of research human capital and continuity of research processes (Guidelines for the Development ..., 2020).

Recognizing this problem and taking into account the changing availability of structural funding, allocating more funding for R&D by balancing the amounts of national and EU structural funding and increasing the amount of funding from the government budget was set as one of the priorities of Latvia in the field of science, technology development and innovation policy during the programming period 2021-2027 (Guidelines for the Development..., 2020; Smart Specialization Strategy..., 2020).

The OECD (2019) has indicated that the public sector in Latvia is insufficiently used as a customer of innovation – the government does not act as a customer of innovative, modern solutions (for example, in public procurement) –, as well as innovation capacity and opportunities to implement innovative projects are insufficiently developed. Latvia has a fragmented institutional framework for R&D and innovation support, as there are too many institutions involved in R&D support. At the stage of Validation of the SWOT, the opinions of the experts regarding the development of the bioeconomy were similar.

It should be emphasized that EU funding instruments have contributed to the development of research, technology and innovation in the thematic areas of the knowledge-intensive bioeconomy. Most research and innovation projects under EU funding programmes were implemented in crop production, animal production, forestry, biotechnology, as well as rural development. However, a small number of projects have been implemented in the field of fisheries and aquaculture (Ministry of Education and Science, 2020). The Ministry of Education and Science (2020) has concluded that despite the fact that a significant part of research personnel was employed in the bioeconomic field (about 35 % of total research personnel in Latvia), the funding attracted through various R&D financial instruments was one of the lowest among the areas of the Smart Specialization Strategy of Latvia (i.e. smart materials, biomedicine, smart energy, ICT).

The amount of private sector investment in R&D in Latvia was low and did not have a sustained positive trend. Between 2011 and 2019, the private sector investment in R&D accounted for an average of 23.4 % of total investment in R&D (0.14 % of GDP). This figure lags significantly behind the EU Member States where entrepreneurs provide more than half of the total investment in R&D (in 2018: 58.9 % in the EU-27 and 23.3 % in Latvia). Besides, the private sector investment in the higher education and science sector in Latvia was insignificant, which indicated insufficient cooperation between entrepreneurs and scientists (Ministry of Economics, 2020).

The low activity of national entrepreneurs in the field of R&D was largely influenced by structural factors: the low proportion of high and medium-high technologies in the economy of Latvia, as well as the dominance of micro and small enterprises with limited capacity to invest in research and development. Companies lack entrepreneurial skills and knowledge about the role of innovation in business development and competitiveness. The current economic and business pattern determines both a low demand for R&D by the private sector and the low R&D funding capacity of entrepreneurs (Smart Specialization Strategy..., 2020).

The business strategies of companies in Latvia are not focused on innovation. The profitability of national companies is relatively higher than the profitability of companies in Europe, yet at the same time companies in Latvia invest significantly less in productivity-related projects. At least some national entrepreneurs have free funds that could be invested in increasing productivity, which would mean lower profits in the short

term, but would significantly increase the opportunity to continue operating and successively earning in the long term, thereby ensuring the company's cross-border competitiveness (Cross-Sectoral Coordination Centre, [s.a.]).

The low level of private investment could be explained by the lack of motivation in companies (the availability of EU funding and other foreign financial instruments is considered a disproportionate administrative burden), as well as the lack of qualified labour (European Commission, 2019; OECD, 2019; Guidelines for the Development of Science, Technology and Innovation for 2021-2027, 2020)

In summary, in order to encourage the business sector to invest in R&D, public support and various incentives for entrepreneurs would be necessary, which was in line with the opinions of the experts involved in the research that the largest positive impact on endogenous factors was made by the opportunities *Effective support for independent innovation projects implemented by large companies (3O) and Stimulation of innovation in the small and medium enterprise sector in active synergy with national research priorities and available funding (2O)*. The data from the Ministry of Economics (2020) also confirmed this assumption: in 2019, entrepreneurs' investments in R&D activities in Latvia increased by 13.9 %, which was affected by the measures implemented to promote innovation in state-owned companies, as well as measures to promote innovation in SMEs.

Conclusions, proposals, recommendations

- 1) The overall trend in the strengths of the bioeconomy Research infrastructure and modern technical equipment for the development of the bioeconomic knowledge base (3S) and Vast regional coverage of and cooperation among leading research institutions in the field of bioeconomics (1S) was negative, as the total impact of the threats exceeded the total impact of the opportunities. However, the overall trend in the strength Extensive initial activities and the knowledge base for bioeconomic research (2S) was positive, as the total impact of the opportunities exceeded the total impact of the threats.
- 2) The total impact of exogenous factors on the weaknesses affecting the development of the bioeconomy Insufficient and unpredictable government and private sector funding for research and development (3W), Dependence of R&D on the availability of foreign (mainly EU) funding (2W) and Weak cooperation with researchers from other fields in interdisciplinary research (1W) was positive; therefore, the total impact of exogenous factors tended to weaken the weaknesses.
- 3) Since the largest positive impact on endogenous factors was made by the opportunities *Effective support for independent innovation projects implemented by large companies (3O) and Stimulation of innovation in the small and medium enterprise sector in active synergy with national research priorities and available funding (2IO)*, it is necessary to increase government and private sector funding for R&D in order to contribute to the development of the bioeconomy in Latvia. The availability of funding should be balanced and predictable in the long term in order to reduce the impact of the threat *Public policies and insufficient and unpredictable funding for research and development hinder the development of bioeconomy industries and steady growth opportunities (2T)*.
- 4) Public support and various incentives for entrepreneurs are needed to encourage the business sector to invest in R&D, including in the bioeconomy industries.

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INTEGRATED FARMING: THE WAY TO SUSTAINABLE AGRICULTURE IN LATVIA

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Abstract. Agricultural production is currently at a crossroads due to the need to balance the requirements of climate, biodiversity, air quality, and access to food health, farmers' incomes and economic conditions. These demands are often controversial, and the goals of policy makers are contradictory. Sustainability in agriculture needs to be put into practice. The concept of sustainable agriculture is based on agro-ecology and a system approach and aims to promote sustainable, resilient, cost-effective and stable farming systems. Based on the analysis of the scientific literature and the current situation, the paper authors have concluded that a logical path to sustainability is integrated agriculture. It is a whole farm management system that allows farmers to identify opportunities and threats and act accordingly, while also taking into account the interests of consumers in their business. The paper aims to outline the role of integrated agriculture in the development of sustainable agriculture based on the analysis of the relevant scientific literature and the current situation. Integrated management is the knowledge-based management of all available resources integrated farms are able to provide climate benefits, provide more diverse (especially pasture) land management, farm animals have a higher quality of life and survival.

Key words: sustainable agriculture, integrated agriculture, dairy, organic, agricultural land management.

JEL code: Q54

Introduction

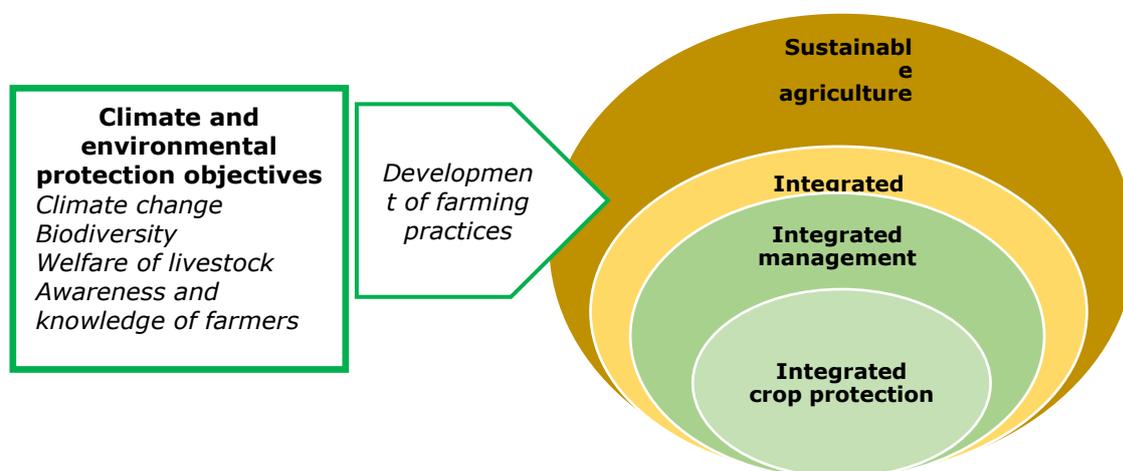
The concept of sustainable agriculture is based on agro-ecology and a system approach and aims to promote sustainable, resilient, cost-effective and stable farming systems. The International Organization for Biological and Integrated Control of Organic (IOBC) defines integrated farming according to the European standard UNI 11233-2009 as an agricultural system that produces high quality food, feed, fibre and renewable energy by using resources such as soil, water, air and nature and as well as regulating mechanisms to replace potentially polluting inputs and consequently ensure sustainable agricultural management (Bioagricert, 2020). Farming systems placing a focus on ecological objectives either reduce the amount of mineral fertilizer (e.g. integrated farming) and/or the stocking density or the amount of purchased feed (e.g. organic farming), thereby reducing the excess of nitrogen and other elements and their inputs into the soil. The integrated organic farming system ensures that organic residues and manure are processed; as a result, compared with conventional agriculture, 60 to 70 % less N fertiliser is needed. In addition, the reduced nitrogen supply under the organic system requires careful and efficient agricultural management (Kramer et al., 2006). Researchers in their research studies conducted in various countries and under diverse conditions have found that many small farmers cope with and even prepare for climate change, as well as deal with the factors that affect yields by applying a range of agro-ecological techniques. Observations on the adaptation of agricultural activity to extreme climatic conditions over the last two decades have shown that resilience to climate disasters is strongly linked to the high level of biodiversity on the farms, which is a typical feature of traditional integrated farming systems. In view of this evidence, various experts have suggested that the promotion of traditional farming systems in combination with agro-ecological management could be the only real way to increase the productivity, sustainability and resilience of agricultural production under the projected climate scenarios. Biodiversity, soil management and moisture supply could be achieved through the development and management of agro-ecosystems, thereby enabling farmers to implement practices that both bring economic benefits and increase agricultural sustainability, including reducing global warming (Altieri, Nicholls, 2013). The mentioned considerations

have been taken into account, and the EU developed the Farm to Fork Strategy, which is part of the European Green Deal that allows making the food system fair, healthy and environmentally-friendly (EC. Farm to Fork Strategy, 2020).

The paper aims to outline the role of integrated agriculture in the development of sustainable agriculture based on the analysis of the relevant scientific literature and the current situation.

Results

Integrated agricultural production focuses on managing ecological processes and their interactions on the farm to optimize the exploitation of the farm's internal resources, minimize the need for external resources and avoid or reduce the environmental impacts of agricultural practices, including GHG and ammonia emissions. Biodiversity is a basic element in the production of food and fibre under ecological farming systems. Many components of organic farming could be used to improve farming systems, including the conventional farming system. Sustainable and organic farming systems give many possibilities to reduce GHG emissions and global warming. For example, the organic farming system uses 25 to 50 % less energy to produce food than conventional agriculture, which applies agrochemicals. C absorption by soil provides even greater potential for GHG reduction. Carbon absorption increases the organic matter content of the soil; therefore, it is important for all types of farming systems and farms. Productive and ecologically sustainable agriculture is crucial to reduce trade-offs between food security, climate change and ecosystem degradation (Willer, Kilcher, 2009). Many components of organic farming could also be integrated into other sustainable farming systems, e.g. integrated farming. A conception based on the system approach and equivalent to organic farming, combined with new sustainable technologies (e.g. no-till technology), can offer very much-needed solutions to climate change (Niggli, Fließbach, Hepperly, Scialabba, 2009).



Source: authors' construction

Fig. 1. Integrated farming in the context of sustainable agriculture

Emissions of greenhouse gases and other air pollutants cannot be avoided if working outdoors, burning fossil fuels, keeping farm animals, storing and spreading manure, as well as carrying out other activities needed for the production of food. Integrated farming practices can help to preserve carbon stocks in soil by growing both annual and perennial crops, grasses, forests or plants in buffer zones (e.g. hedges, grasslands etc.). Minimum or reduced tillage, intercropping or incorporation of crop residues into the soil can even increase C absorption by the soil and also improve air quality. It is important to identify potential air pollutants and sources of emissions on the farm and develop emission reduction possibilities/strategies in order to reduce the potential emissions in particular. One of the most complete possibilities for emission reduction is a life cycle assessment, which can provide useful information. Applying the life cycle

assessment methodology, research studies have shown that GHG emissions per area unit were 36 % lower, per unit of production 18 % lower and the dry matter yield was 22 % lower in organic systems than in conventional systems. Most of the differences were due to CO₂ and N₂O emissions, both of which mainly relate to the application of fertilizers in conventional agriculture (Nemecek et al., 2006). Shifting to organic farming could reduce agricultural GHG emissions by approximately 20 %, as no industrially produced nitrogen fertilizers are applied. However, a complete shift to organic farming could reduce global yields. According to various research studies, the yield reduction could be 30 to 40 % in areas practicing intensive farming under the best geo-climatic conditions. In less-favoured areas, crop losses are generally not observed. On subsistence farms and in areas having periodic water supply disruptions caused by droughts or floods, organic farming is more competitive than conventional farming and often yields are higher due to crop rotation and the inclusion of legumes in it. Consequently, organic farming has huge potential, both considering the recommendations of the IPCC Fourth Assessment Report and in terms of future food security (Badgley et al., 2007; Sanders, 2007).

Table 1

**N₂O emissions from N input into managed soils in the period
 in Latvia 2014-2018, kt**

Source of emissions	2014	2015	2016	2017	2018
Inorganic nitrogen fertilizer	1.15	1.19	1.23	1.22	1.17
Manure	0.26	0.26	0.25	0.24	0.21
Sludge	0.006	0.004	0.003	0.003	0.004
Urine and manure of grazing animals	0.18	0.19	0.20	0.20	0.20
Crop residues	0.41	0.51	0.48	0.49	0.39
Managed organic soil in pastures and crop areas	2.66	2.64	2.62	2.63	2.63

Source: authors' calculations based on the National Inventory Report, 2020.

An increase in the consumption of inorganic fertilizers is due to several factors, yet the most significant one is an increase in the number of large farms and the area managed by them. Farms with a standard output of over EUR 500 thou. increased by 39 % between 2013 and 2016, while the total number of farms decreased by 15 %. It should be noted that large farms are usually conventional and intensive farms. Farming systems placing a focus on ecological objectives either reduce the amount of mineral fertilizer (e.g. integrated farming) and/or the stocking density or the amount of purchased feed (e.g. organic farming), thereby reducing the excess of nitrogen and other elements and their inputs into the soil. The integrated organic farming system ensures that organic residues and manure are processed; as a result, compared with conventional agriculture, 60 to 70 % less **N** fertiliser is needed. In addition, the reduced nitrogen supply under the organic system requires careful and efficient agricultural management (Kramer et al., 2006).

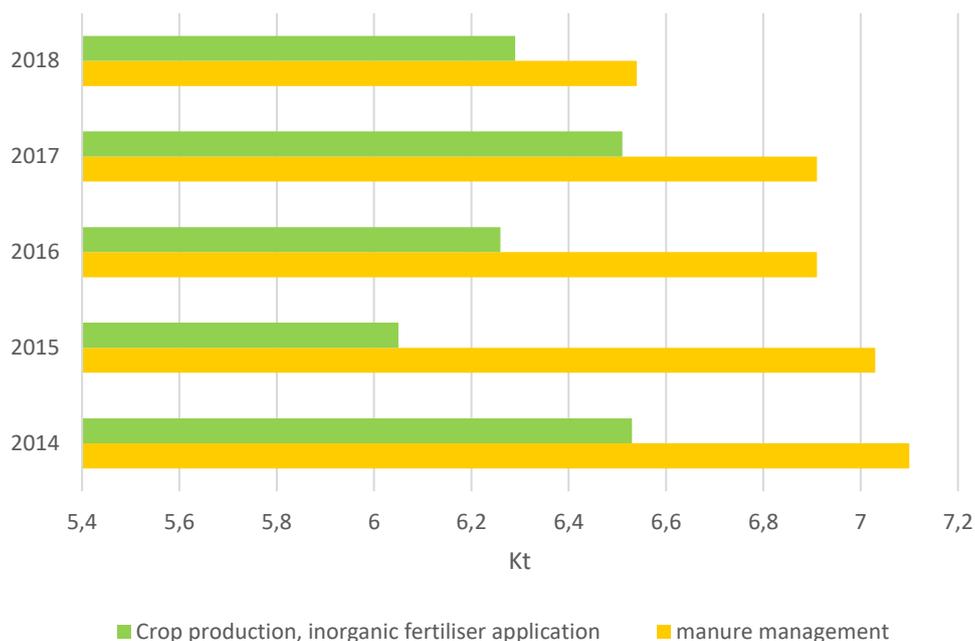
On the one hand, such farms are more cost-effective, on the other hand, they use less pasture, which is an essential precondition for sustainable farming and the contribution of agriculture to the preservation of biodiversity.



Source: authors' construction based on the CSB

Fig. 2. Uses of agricultural land in Latvia (thou. hectares)

Owing to the environmental policy guidelines, it is not possible to significantly reduce the amount of meadows and pastures, which means that practically the only way to manage them economically is to produce livestock products. Besides, according to the available information, there are 158.3 thou. ha of organic soils in Latvia, which cause ten times more emissions per area unit than mineral soils do, and it is now difficult to use these lands for economic activity (National Inventory Report. Latvia, 2020). The recast Renewable Energy Directive (2018/2001) provides for the non-use of such lands for renewable energy purposes, which means that crops grown on such soils cannot be used for energy production. At the same time, there is a possibility that the area of meadows will increase even more, as half of the organic soils are arable land, the use of which would be difficult if taking into account the ten times higher GHG emission potential. About half of the grasslands in Latvia are currently used, while the rest are simply mowed. In summary, animal production practices are essential for the management of agricultural land. Integrated crop and animal production as well as cooperation between specialized farms is the basis for the proper management and use of manure, as well as for the diversification of production in various agricultural industries, with a particular focus on the diversity of food crops and fodder crops and the cultivation of leguminous grasslands. The concept of mixed farms or close cooperation between crop and livestock farms, especially organic ones, can significantly reduce nutrient leaching and water pollution, carbon dioxide (CO₂), nitrous oxide (N₂O) and methane (CH₄) emissions. In addition, under organic farming systems, the use of various forms of compost, especially composted manure, can increase the microbiological activity of the soil and contribute to the stable formation of soil organic matter (Fließbach, Mäder, 2000)



Source: authors' construction based on Latvia's Informative Inventory..., 2020.

Fig. 3. Ammonia emissions from manure management and crop production and fertilizer application in Latvia in the period 2014-2018, kt

The living space of livestock is just one of the indicators of animal welfare. Science refers to three preconditions for animal welfare – the animal function well (e.g. good health, productivity etc.), the animal feeling well (e.g. absence of pain etc.), the animal able to live according to its nature (e.g. perform natural behaviours that are thought to be important to it, such as grazing) (Von Keyserling, et al., 2009). The possibility of livestock to graze significantly improves their quality of life and at the same time reduces GHG emissions. Large intensive livestock farms usually keep their livestock indoors and do not graze animals. The lifespan of livestock is a closely related aspect. One of the most common reasons for excluding cows from herds is unsuccessful insemination – 23.9 % of all the discarded cows. The second, no less important reason relates to udder health (mastitis, quarter dysfunction, udder injuries), which together make up 26.1 % of the discarded cows. Only a small proportion of cows are discarded due to age and infertility. This means that most of the dairy farms practise forced rather than selective cow discarding. Forced discarding makes up 88.6 %, while selective 11.4 % of the total cases. The economic benefits could also be increased by reducing forced livestock discarding. It is more efficient to use selective discarding. The average number of cows discarded per year is in the range of 16-26 %. It is considered that the herd is managed effectively if the cows produce at least 32000 kg of milk during their lifespan and 15 kg of milk a day, the cows have at least 3.5 lactations, and first calving is at the age of 24 months. The age of first calving is one of the factors affecting the lifespan of the cow and the cow's productivity during the subsequent lactations (Bimsteine, 2017). The reasons for the higher discarding rate for cows during lactation were lower milk yields, the somatic cell count above 200000 mL⁻¹ and the fat/protein ratio above 1.5 during early lactation. The highest probability of discarding cows was for those from larger herds and having higher milk yields (Rilanto, Reimu, Orro et al., 2020). Livestock breeds should also be taken into account when assessing the milk productivity and lifespan of dairy cows. Several research studies have shown that cows in red breed cows have a longer lifespan than black-spotted cows, while black-spotted cows have higher productivity not only during lactation but also throughout the lifespan (Dillon et al., 2003). On the farm Vecauce, Latvian

brown cows had a significantly longer lifespan, which were discarded on average 1.3 years later than Holstein Black and White cows (Cielava, Jonkus, Paura, 2015).

Table 2

Characteristics of dairy cows and farms in Latvia 2019

Kind of dairy cows	Number of cows	As % of total cows	Number of farms	As % of total farms	Milk yield, kg		Lactations	
					avg.	wavg.	avg.	wavg.
Organic	17 751	13.6	880	21.4	5861.00	5742.00	4.28	4.0
Intensive (>300)	36 394	27.9	64	1.6	9799.70	9839.70	3.04	3.0
Conventional home farm (<5)	1 883	1.4	654	15.9	6185.51	6162.30	4.48	4.3
Conventional (5 - 300)	74 318	57.0	2523	61.2	6634.96	7394.69	3.94	3.5

Source: authors' calculations based on the ADC 33

The milk yield is 41 % higher on intensive livestock farms than on organic farms and 37% higher than on small conventional farms, which mostly use pastures. At the same time, it should be noted that neither type of cow keeping in itself provides a higher milk yield. It is a complex of activities, ranging from the selection of breeds to diets and rations. On the other hand, organic and home farms have a higher number of lactations, which mostly means a longer lifespan for the cows. On organic and home farms, cows live longer, in some cases the entire lifetime, which is not possible in intensive farming, leading to a rapid deterioration in cow health and their discarding.

Agricultural production is a complex kind of business because the amount of knowledge needed and the flow of relevant information is very significant. Knowledge management plays a crucial role in sustainable agriculture. Large farms usually have a large amount of knowledge and information that they manage through outsourced services. In contrast, small farms usually experience a significant lack of knowledge without proper contact with agricultural advisers, thereby leading to unsustainable production, including financial losses (Labarthe, Laurent, 2013). This is particularly important with regard to environmental awareness. It includes five dimensions: a) environmental knowledge; b) environmental values; c) environmental concern; d) connectedness to Nature; e) environmental attitudes; and f) environmental behaviour. It is easy to understand that farmers involved in sustainable farming practices such as integrated and organic farming are more environmentally conscious (Despetovic et al., 2021) A multidisciplinary perspective of farmers' competencies, emphasizing environmental awareness, confirms that farmers of integrated agricultural practices are forced to devote much more time to learning, and financial motivation is less necessary.

Conclusions, proposals, recommendations

- 1) Climate and environmental protection requirements tend to increase, which requires a review of farming practices, especially in animal production.
- 2) Integrated and organic farms produce less GHG emissions, absorb more C (mixed type farms) and have higher resilience to various shocks.
- 3) Integrated and organic farms are able to manage organic soils by means of pastures, which is not typical of conventional intensive farms.

- 4) Integrated and organic farms ensure a higher quality of life for farm animals, which involves keeping them in natural conditions (pastures) and feeding a better diet, which results in more lactations and a longer lifespan. It should be noted that this also means lower GHG emissions, as cow discarding is reduced and fewer offspring are required.
- 5) Integrated and organic farms are more knowledge intensive, which increases their environmental awareness compared with conventional farms.

Acknowledgement

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DIGITALISATION IN TIMES OF COVID-19 - THE BEHAVIOURAL SHIFTS IN ENTERPRISES AND INDIVIDUALS IN THE SECTOR OF BIOECONOMY

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Abstract. Although our daily life within a modern society is unimaginable without the use of information and communication technologies (ICT), the COVID-19 crisis really highlighted the ways we can maximise the use of digital technologies in optimising our work in distance working conditions with limited ability to contact each other physically, make direct sales and ensure the physical document rotation. All these limitations have pushed the governmental organisations, enterprises, and households to utilize numerous means of digital services and digital transformation aspects that had been started to be used, but the last year has rapidly pushed forward such aspects of digitalisation as digital sales, distance work using co-working platforms and cloud storage, electronic signature of documents and others. This study aims to assess the trends in online sales and use of e-tools from the perspective of enterprises and individuals in Europe in the sector of bioeconomy with the focus of the Baltic States and Latvia that could be used to strengthen the digitalisation component during and post COVID-19. In this paper, the authors have reviewed the scientific literature, policy planning documents, analysed relevant statistical data, performed statistical analysis, and estimated the tendency of the use of eSignatures in Latvia by applying the Holt's two-parameter model of exponential smoothing. The main results indicate a significant increase in motivation towards digitalisation that has increased rapidly in line with the necessity for an online shopping and distance work setting. Authors suggest supporting this tendency also in the after-COVID life, which would have a great impact on the overall digital transformation and potential to unlock new markets for bio-based products.

Key words: digitalisation, bioeconomy, entrepreneurship, COVID-19, e-commerce.

JEL code: O13

Introduction

Digital transformation is an ongoing process that has intensified in the past decade, but the year 2020 with all social and physical limitations has been a real turning point and it has pushed governmental organisations, enterprises, and households to utilize numerous means of digital services and digital transformation aspects. Digitalisation has had a substantial impact on e-commerce, distance work using co-working platforms and cloud storage, electronic signatures of documents, and others.

ICT are essential to perform international processes, therefore the increase in the importance level and frequency of use of these technologies allows perceiving better results in international business and exportability. Thus, for some businesses this time can provide an opportunity for internationalisation and expanding of their market, although the change of behaviour towards a wider range of everyday produce bought online can open a huge market for producers of bio-based products also nationally. Digitalisation goes hand in hand with the changes in the business model, it allows to gain new markets nationally and internationally. Scholars from different research areas have recognized the potential of new business models in promoting competitive advantages of enterprises (Clauss, 2017). Digitalization is a new source for business model innovation and leads to a higher degree of enterprise competitiveness (Schallmo et al., 2017, Peļše, Zeverte-Rivza, 2015). In previous studies it has been determined that in Latvia the most important factor groups that affect the use of e-commerce are technological development, organisational, legislation, and economic factors. At the same time, language and content barriers as well as the lack of secure payment infrastructure are considered significant barriers avoiding to adapt e-commerce (Jekabsone I., Gudele I., 2020)

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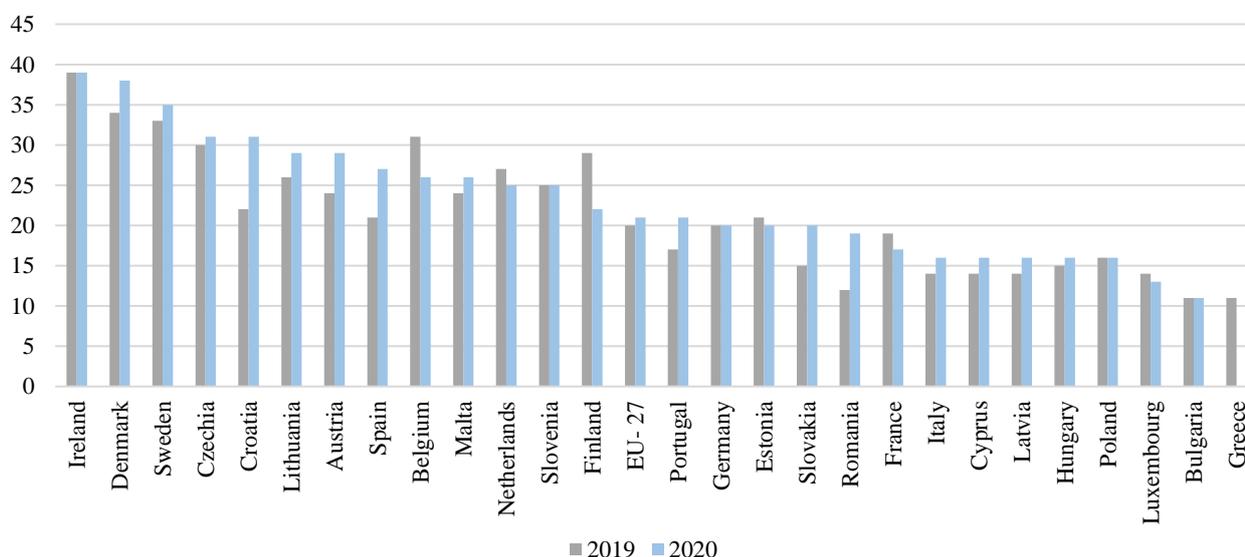
This study aims to determine the tendencies of digitalisation in the sector of bioeconomy that could be used to strengthen the digitalisation component during and post COVID-19. The authors have set the hypothesis – the current situation has increased the motivation towards digital transformation in enterprises and will determine the digitalisation trends for the future. Research tasks are to: (1) review the scientific literature, regulatory and policy planning documents regarding the digitalisation of enterprises in the bioeconomy sector; (2) analyse the relevant statistical data; (3) apply a Holt's two-parameter model of exponential smoothing to estimate the tendency of the use of eSignatures.

For this study, the authors have applied monographic and statistical research methods and used the scientific literature sources; policy planning documents; statistics databases (Eurostat) and data from Latvia State Radio and Television Centre about the use of e-signatures.

Research results and discussion

According to the Digital Economy and Society Index (DESI) 2020 report, which is based on the 2019 data and assesses the status of the digital economy and society prior to the coronavirus pandemic, only 10 % of internet users in Latvia sold goods online, which is much lower as the European Union (EU) average of 23 %. The leading countries on '4a business digitisation' are Finland, the Netherlands, and Belgium, with scores above 60 points. Bulgaria, Hungary, Poland, Romania, Latvia, and Slovakia lag behind in the adoption of e-business technologies, scoring below 40 points. Latvia also has the 5th lowest score in e-commerce (DESI 2020, 2020).

The data from Eurostat (Fig .1) indicate that in 2020 there has been a slight increase in enterprises with e-commerce sales – from 20 % in 2019 to 21 % in 2020 in the EU 27 countries with a higher growth of countries like Croatia, Spain, Romania and Slovakia. However, there is also a decline in Finland, Belgium, France, The Netherlands, Estonia and Luxembourg.

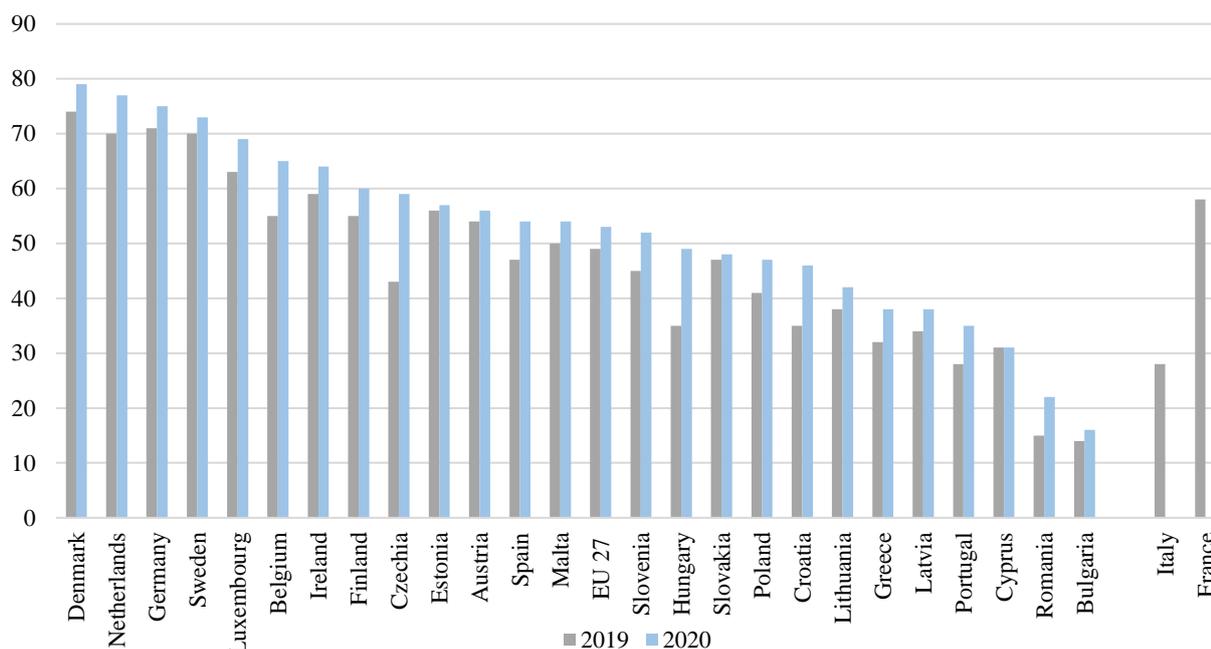


Source: author's creation based on the data from Eurostat, 2021

Fig. 1. Enterprises with e-commerce sales percentage of enterprises in EU-27 countries, 2019-2020

Although the percentage of enterprises with e-commerce sales has increased slightly (Fig. 2.), the percentage of individuals that are making internet purchases has increased considerably comparing 2019 to 2020. The highest increase in internet purchases by individuals is experienced in Czechia – by 16 %, Hungary – 14 %, and Croatia by 11 %. All of these countries were below the EU-27 average in 2019, and

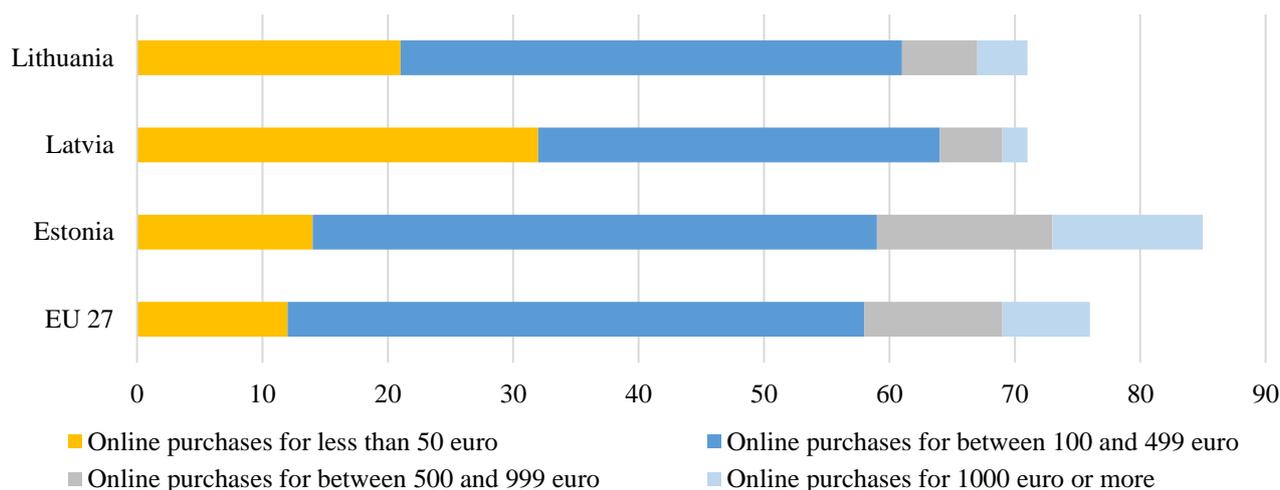
this increase has brought Czechia well above the EU-27 average in 2020 and approached the other two member states to the EU-27 average as well. The increase of internet purchases by individuals in the Baltic States are rather moderate – by 4% in Lithuania and Latvia and only 1 % in Estonia. Although the purchasing activity of individuals in Estonia was already high in 2019 – 56 % and increased to 57 % in 2020, which is well above the EU-27 average. In 2020, the most active internet customers are from Denmark (79 %), the Netherlands (77 %), Germany (75 %), and Sweden (73 %) and the countries comparatively lagging behind are Romania and Bulgaria with 22 % and 16 % respectively. This indicates not only the willingness and readiness of individuals to shop online, but more importantly, the wideness or narrowness of the offered goods online as well as the availability and terms for online orders such as shipping fees.



Source: author's creation based on the data from Eurostat, 2021

Fig. 2. Internet purchases by individuals, percentage of individuals, last online purchase in the last 3 months in EU-27 countries, 2019-2020

The analysis about the money spent on internet purchase percentage of individuals who purchased online in the last 3 months in EU-27 countries and in Estonia, Latvia, and Lithuania in 2020 shows (Fig. 3), that on average almost half (46 %) of Europeans are spending 100-499 euros on their internet purchases in the 3 month period. 12 % are spending less than 50 % and thus are comparably less active online customers, but 11 % are spending between 500 and 999 euros and 7 % are spending more than 1000 euros. If we look at the Baltic States, Estonia equals the EU-27 percentages with the biggest distinction in the percentage of individuals spending more than 1000 euros – which is 12 % and is 5 % higher as the EU average. In Latvia, there are 32 % of individuals in both groups – the ones spending less than 50 euros and the ones spending 100-499 euros. Only 5 % are spending more than 500 euros and only 2 % - more than 1000 euros. Similarly, in Lithuania only 6 % are spending more than 500 euros and 4 % - more than 1000 euros. However, the group of people spending between 100-499 euros are bigger compared to Latvia – 40 %, which is closer to the EU-27 average. 21 % of individuals are spending less than 50 euros. These data clearly show the higher activity and larger sums spent by individuals in Estonia and a more conservative attitude towards online shopping by Latvians.



Source: author's creation based on the data from Eurostat, 2021

Fig. 3. Money spent on internet purchase percentage of individuals who purchased online in the last 3 months in EU-27 countries and in Estonia, Latvia, and Lithuania, 2020.

If we look more specifically on the sector of bioeconomy – the businesses that rely on biological resources – animals, plants, etc and which are also primary production sectors that use and produce biological resources (agriculture, forestry, fisheries, and aquaculture); and all economic and industrial sectors that use biological resources and processes to produce food, feed, bio-based products, energy and services (European Commission, 2018) These sectors have been a focus of the European policy for a decade now with political decision to strengthen the bioeconomy sectors of EU as one of the fundamental resources for a sustainable growth. In the latest action plan for the bioeconomy sector - European Bioeconomy: the European way to use our natural resources (Bioeconomy: the European way..., 2018), which is a follow-up of the European Bioeconomy Strategy in 2012: Sustainable bioeconomy for Europe: strengthening the connection between economy, society, and the environment (updated in 2018) (A sustainable bioeconomy..., 2018), two of the main priorities are linked to the use of bio- resources by accessing new markets – 1. Strengthen and scale-up bio-based sectors, that will be done by unlocking investments and markets and deploying innovative bio-based solutions (..) and 2. Rapidly deploy local bioeconomies across the whole of Europe, for example, via the transition to sustainable food and farming systems (..) and more diversified revenues for farmers, foresters and fishermen (Bioeconomy: the European way..., 2018). These priorities go very well together with the currently trending increase of online sales among which, the sales of bio-based products are also increasing, i.e. the demand for buying local food online provides new market opportunities for farmers, producers and wholesalers, especially in the last year of COVID-19 restrictions. Local food is linked to social embeddedness in the sense of social connections, mutual exchange, and trust that is viewed by some as an important feature of direct agricultural marketing (Hinrichs, 2000; Sage, 2003, Pelse et al, 2015). The concept of local food may also extend to who produced the food: the personality and ethics of the grower; the attractiveness of the farm and surrounding landscape; and other factors that make up the "story behind the food" (Martinez et al. 2010), which holds value in the eyes of customers either buying directly or online.

In 2020, most of the EU countries had some form of restrictions in place regarding the accessibility of nonprimary necessity goods during certain periods of 2020 that fostered the online shopping of such goods as clothing and home goods. The analysis of data of the goods and services that are purchased online related to bioeconomy in EU-27 countries for 2020 indicates that the sector dominating in online sales in

all EU member states is clothing (including sports clothing), shoes and accessories. In the Netherlands, Germany, and Denmark, more than 50 % of individuals had bought clothing online last year. The percentage of people ordering within the groups of "Deliveries from restaurants, fast-food chains, catering services"; "Printed books, magazines or newspapers"; "Furniture, home accessories or gardening products" and "Cosmetics, beauty or wellness products" are approximately the same ranging from 17-15 %. An interesting group of produce is "Food or beverages from stores or from meal kits providers" - on average 11 % of people in EU-27 have ordered food online in 2020, but combined with the group of food deliveries from restaurants, fast-food chains, catering services, which is 17 %, it makes one third of Europeans who has ordered food online. In the Netherlands, these two groups combined made 60 % and 57 % in Denmark. Therefore, definitely a remarkable amount of food produce has been ordered online last year that is significant to the bioeconomy sector and indicates the changes in the business module of selling food that might take on more widely in the rest of EU countries.

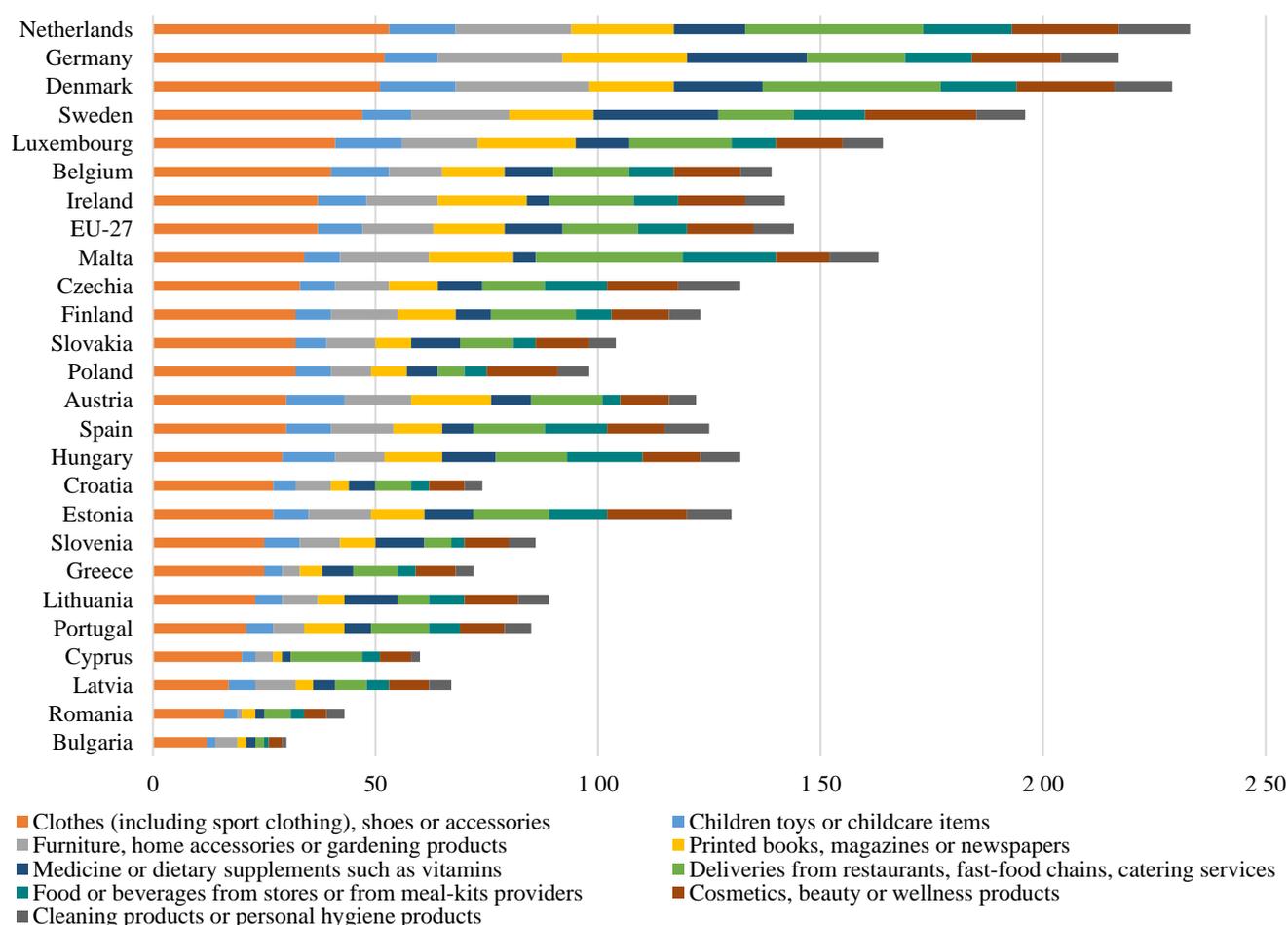
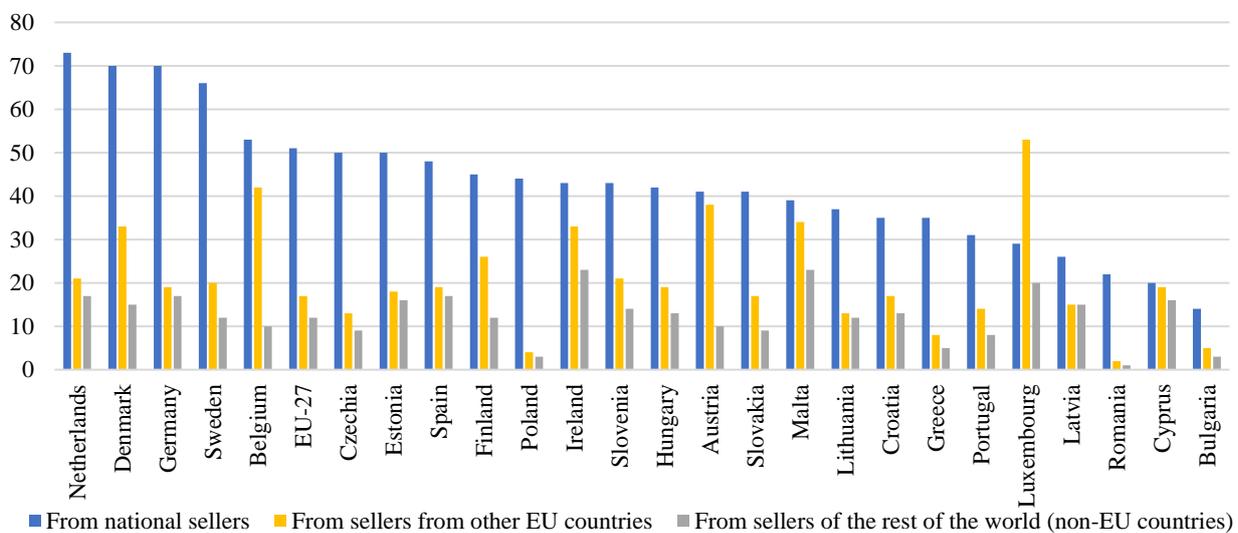


Fig. 4. Internet purchases - goods or services related to bioeconomy, percentage of individuals who purchased online in the last 3 months in EU-27 countries, 2020

The data about the country of origin (Fig. 5.) of sellers for internet purchases indicates that half of the sellers for internet purchases in the last 3 months in EU-27 have been national sellers, 17 % have been from other member states and only 12 % - from the rest of the world. In the Netherlands, Denmark, and Germany, which all have been in the top 3 in internet sales, more than 70 % of sales are from national sellers. Overall this shows the interest of people buying locally also when using e-commerce and in combination with the analysis of produce bought by the individuals of these countries, it allows to assume

that online sales are of a growing importance for the bioeconomy sector especially in the groups of food and beverages and food delivery; clothing, furniture, home accessories and gardening products. The same structure of national/international sellers can be observed also in the Baltic States, With Estonia being very close to the EU average of 50 % of goods bought from the national sellers, 18 % from other EU countries and 16 % from the rest of the world. Lithuania is in-between with 37 % bought from national sellers, but only 26 % of online sales in Latvia is from the national sellers. As previously described, Estonia is ahead of other Baltic states in the amount of money spent on online sales and in the analysis of the produce groups bought online and their frequency, it can be concluded that it is similar to the EU countries that are leading the online sales, thus the authors assume that this is the direction also other Baltic States are going in - the increase in the groups of food and beverages and food delivery; clothing, furniture, home accessories and gardening products. A wider use of online purchases for the everyday items and buying groceries, buying from local sellers and increasing the frequency and amount spent in online purchases.



Source: author's creation based on the data from Eurostat, 2021

Fig. 5. Internet purchases – origin of sellers, percentage of individuals that have done online purchases in the last 3 months in EU-27 countries, 2020

Due to lack of data available for deeper analysis of the digitalisation of bioeconomy sectors in Latvia for the last year, the authors decided to use the data about eSignatures, which is one of the indicators showing the digital transformation in enterprises, state entities and in the life of individuals that has data available already about the COVID-19 period of 2020 in Latvia. The data about the use of eSignatures in Latvia reflect (Fig. 6.) a rapid increase after the COVID restrictions were enforced in March of 2020. To estimate the future trend of the amount of eSignature users Holt's two-parameter model of exponential smoothing, also known as linear exponential smoothing, was used. It is a popular smoothing model for forecasting data on trends. Holt's model has three separate equations that work together to generate a final forecast (Hyndman R. J., Athanasopoulos G. 2018, Jansons V., Kozlovskis K., 2012).

Forecast equation

$$y^*t + h|t = \ell t + hbt \quad (1)$$

Level equation

$$\ell t = \alpha y t + (1 - \alpha)(\ell t - 1 + bt - 1) \quad (2)$$

Trend equation

$$b_t = \beta * (\ell_t - \ell_{t-1}) + (1 - \beta) b_{t-1} \quad (3)$$

Where:

ℓ_t denotes an estimate of the level of the series at time t ,

b_t denotes an estimate of the trend (slope) of the time series at time t ,

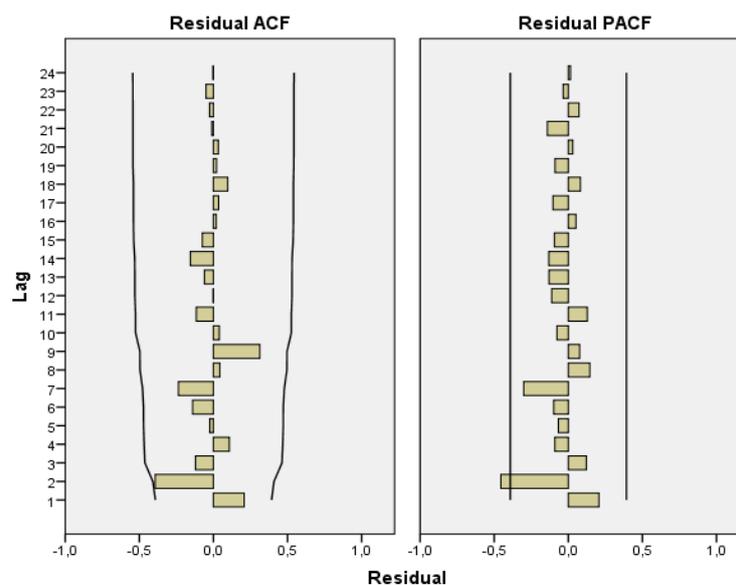
α is the smoothing parameter for the level $0 \leq \alpha \leq 1$,

and β is the smoothing parameter for the trend, $0 \leq \beta \leq 1$.

The first is a basic smoothing equation that directly adjusts the last smoothed value for last period's trend. The trend itself is updated over time through the second equation, where the trend is expressed as the difference between the last two smoothed values. Finally, the third equation is used to generate the final forecast. (Holt's Forecasting., 2000)

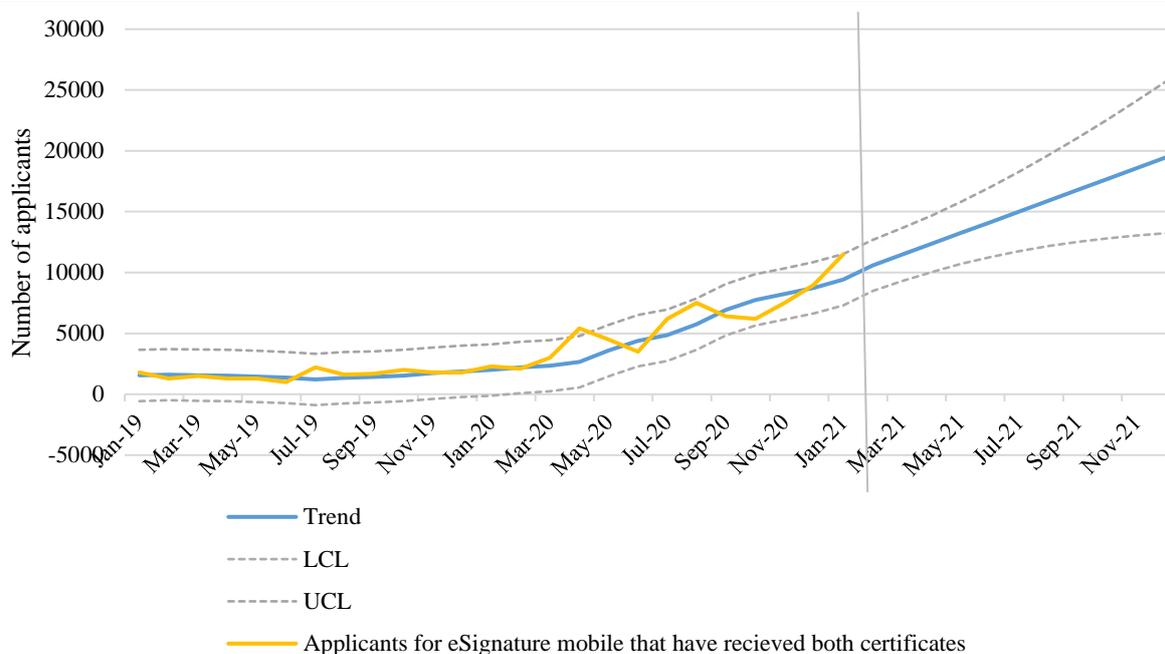
Holt's model uses two parameters, one for the overall smoothing and the other for the trend smoothing equation. The method is also called double exponential smoothing or trend-enhanced exponential smoothing.

R-squared of the applied model is 0.881, which indicates that the model is sufficiently explaining the data. The values ACF and PACF of residuals are within the confidential intervals, which indicates the statistical insignificance of residuals thus the residuals are stationary.



Source: author's creation

Fig. 6. Values ACF and PACF of residuals after the use of Holt's two-parameter model of exponential smoothing



Source: author's creation

Fig. 7. Applicants for eSignature mobile that have received both certificates in Latvia in 2020 and an estimated trend for 2021

The data about the applicants for eSignature mobile that have received both certificates (and thus are ready to use the eSignature) in Latvia throughout 2020 and January of 2021 indicates that there is a rather fast growing interest in the application for and use of the eSignature mobile, which is one of the technologies that allows signing documents using the mobile authentication platform and therefore is very user-friendly. The combination of the approachability of this technology and the current necessity to sign e-documents are providing the right circumstances and motivation for the use of this tool. According to the calculated forecast using the Holts model, the applications for the eSignature will continue to increase in 2021 and reach almost 20 000 applicants by November of 2021, assuming that the COVID-19 restrictions will still be in place. However, the activity and positive user experience for the use of e-Signatures allows to assume that the use of e-Signatures will not decrease also after the restrictions will be cancelled. The part-distance work module will likely to persist due to the positive effects it brings and thus the need for signing e-documents will remain high. The analysis of these data also indicates a change in the behaviour of state entities, enterprises and individuals towards a more intensive use of the digitalisation tools that will likely transfer to the other digitalisation aspects in the business and household lives.

Conclusions, proposals, recommendations

- 1) In 2020, the most active internet customers are from Denmark (79 %), the Netherlands (77 %), Germany (75 %), and Sweden (73 %) and the countries comparatively lagging behind are Romania and Bulgaria with 22 % and 16 % respectively. This indicates not only the willingness and readiness of individuals to shop online, but more importantly, the wideness or narrowness of the offered goods online as well as the availability and terms for online orders such as shipping fees. In previous studies, it has been determined that in Latvia the most important factor groups that affect the use of e-commerce are technological development, organisational, legislation, and economic factors. At the same time, language and content barriers as well as the lack of secure payment infrastructure are considered significant barriers avoiding to adapt e-commerce. The authors assume that these barriers might be similar also in other EU member states that are not as active in e-commerce.

2) We can't be sure how long the COVID-19 will leave an influence on our work and everyday life habits, but we can say with certainty that this time has motivated and pushed people to manage and use the tools of digitalisation that might not be used in such extent in the pre-COVID world. This has opened many opportunities to change the business model and work methods towards more efficient and competitive and these initiatives should be supported as they will be the ones to increase the efficiency and competitiveness in the post-COVID times we are all so eagerly looking forward to.

3) The interest of people buying locally also when using e-commerce and in combination with the analysis of produce bought by the individuals of the most active EU countries in online sales, allows to assume that online sales are of growing importance for the bioeconomy sector especially in the groups of food and beverages and food delivery; clothing, furniture, home accessories and gardening products.

4) Estonia is ahead of other Baltic states in the amount of money spent on online sales and in the analysis of the produce groups bought online and their frequency, it can be concluded that it is similar to the EU countries that are leading the online sales, thus the authors assume that this is the direction also other Baltic states are going in - the increase in the groups of food and beverages and food delivery; clothing, furniture, home accessories and gardening products. A wider use of online purchases for everyday items and buying groceries, buying from local sellers, and increasing the frequency and amount spent in online sales.

5) According to the calculated forecast using the Holt's model, the applications for the eSignature will continue to increase in 2021 and reach almost 20 000 applicants by November of 2021, assuming that the COVID restrictions will still be in place. However, the activity and positive user experience for the use of eSignatures allows to assume that the use of eSignatures will not decrease also after the restrictions will be cancelled. The part-distance work module will likely persist due to the positive effects it brings and thus the need for signing e-documents will remain high. The analysis of these data also indicates a change in the behaviour of state entities, enterprises and individuals towards a more intensive use of the digitalisation tools that will likely transfer to the other digitalisation aspects in the business and household lives.

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INTEGRATED AND SUSTAINABLE REGIONAL DEVELOPMENT

CHANGES AND PROPOSALS TO BOOST BUSINESS PRODUCTIVITY AND COMPETITIVENESS IN RIGA PLANNING REGION

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Abstract. The result of the wider application of new digital skills is an increase in productivity as a basis for the growth of Latvian companies in the global market and an increase in material well-being in the market as a whole. In turn, the growth and competitiveness of companies is based on the ability to create and sell demanded, knowledge-intensive products and services on the basis of science, integrating into increasingly higher value-added global chains.

Many companies are facing economic difficulties during the COVID- 19 crisis and have to suspend or significantly reduce their operations and staff. However, for some companies, the crisis has also given them the opportunity to reorient their operations to the digital environment, both in serving customers and in organizing the company's operations.

The data obtained during the study show that the majority of entrepreneurs predict a decline in customer solvency and the emergence of new digital technologies in the market. Entrepreneurs think they should make more use of the latest technologies (forms of digital sales and communication with customers), new forms of cooperation in company communication (forms of digital communication with employees) and plan to introduce remote and / or semi-remote work. Entrepreneurs expect that the biggest challenges after the crisis caused by the pandemic will be the acquisition of new leadership skills and the acquisition of new digital technologies, as well as attracting investment.

Unfortunately, the data of the study show that the majority of entrepreneurs did not use the support programs of state and local government institutions, but assessed the support measures developed by the government as very fragmented.

The aim of the research: to assess the changes in the planning region at companies in different sectors in Riga planning region and to develop proposals to increase business productivity and competitiveness.

Research methods: statistical data collection, business survey and in-depth interview.

Keywords: digital environment and technologies, business productivity, increasing competitiveness.

JEL code: M21

Introduction

Productivity and competitiveness - factors determining business growth - are two interlinked concepts between key priorities of public policy. Especially in the context of the last decade, characterised by instability in relation to one of today's most serious financial and economic crises. Investment in production and technological progress play a key role in productivity growth. The most powerful companies show a greater capacity to take advantage of technological progress and thus play an increasingly dominant role in the market. The weaker companies that fail to take advantage of the opportunities provided by technological progress are lagging behind. This phenomenon also has social consequences, since higher productivity gaps between companies can also lead to greater disparities in wage levels in the economy as a whole, thereby increasing income inequalities in society. Productivity growth is essential because it also directly impacts international competitiveness. External competitiveness and exports are particularly important for Latvia, given the degree of openness of the European economy.

In the Baltic States, two areas – investment and business readiness for change – for technology planning – play an important role in boosting productivity and competitiveness.

Labour productivity increases if added value increases thanks to better use of all production factors, coordination etc. Added value can grow if the workforce works smarter, harder, faster or with better skills. Added value can also increase by using more or better equipment, reducing waste of raw materials or introducing technological innovation.

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Research hypothesis: investment and investment in the development of digital skills for companies are important to increase productivity and competitiveness.

The aim of the study is to assess the changes in the planning region at companies in different sectors in Riga planning region and to develop proposals to increase business productivity and competitiveness.

Study tasks:

- 1) to identify the factors affecting productivity and competitiveness;
- 2) to explore the views of entrepreneurs on the consequences of COVID-19 on business in Riga planning region;
- 3) to develop proposals to increase business productivity and competitiveness.

Study methods: compilation of statistical data, survey of entrepreneurs.

Research results and discussion

Productivity and competitiveness driving factors for business growth

Productivity is a driver of progress and its continued improvement. Productivity is a belief that today one should do as much as possible. Productivity is a new development of life. This clarification of the definition of Mata Bjorkman (*Mata Björkman*) highlights the importance of continued improvement of the business as a result of changes in the company's environment, which makes it smart to survive. Survival means survival of the company and its employees who are able to adapt most effectively.

Productivity can also be defined as the relationship between the results and the time needed to accomplish it. Time is often a universal measurement and is out of human control. The less time it takes to achieve the desired result, the more productive is the system. Productivity is a comparative tool for managers, since it compares production at different levels of the economic system (organisational, sectoral and national) with the resources consumed (*Joseph Prokopenko*).

Productivity growth is one of the most effective ways of boosting the overall wellbeing of the population and real convergence (in the context of economic growth, real convergence sets the convergence of living standards of the poorest countries with the living standards of the richest countries, usually measured using GDP per capita) between the Member States of the European Union. Over the past decade, Latvia, like the other Baltic States, has shown one of the highest productivity growth rates, which are also reflected in real convergence (Raising productivity: trends and future challenges, 2019),

Latvia's economic growth reached 4.6 % in 2017, driven by growing external demand and a recovery in investment flows, and similar rapid economic growth remained in 2018, when GDP increased by 4.8 % at comparable prices. The rapid economic growth in 2018 was driven by both strong growth in investment volumes and still fast-growing private consumption, while the growth rate of exports declined, both by slowing global economic growth and by a number of one-off factors. The largest contribution to economic growth in 2018 was investment, which increased by 16.4 % compared to 2017, showing an even steeper rise than in 2017, when gross core capital formation increased by 13.1 % (Latvian Stability Programme 2019-2022). In 2019, the economy's rise had become more moderate. GDP grew by 2.1 %. The slowdown in growth rates was driven by both internal factors (EU fund investment peaks, developments in the financial sector, changes in port management etc.) and external factors (review of global trade relations, Brexit, slower growth in EU countries) (Ministry of Economy Latvia's economic development report, 2020).

However, economic development in 2020 is mainly driven by the negative effects of COVID-19. GDP fell by 4.3 % in the three quarters of 2020, the steepest drop in the past decade. The biggest impact on GDP declines was the fall in private consumption, which was affected by rising unemployment and falling

incomes. In the three quarters of 2020, COVID-19 restrictions on Latvian export markets and delays in raw material supply chains have affected exports of goods and services. A relatively moderate decline was seen in investment. Government consumption, on the other hand, continued to grow, based on government support measures to mitigate the negative effects of COVID-19 (Ministry of Economy Latvia's economic development report, 2020).

The dynamics of the sectors will be largely influenced by the ability to restore growth following the removal of COVID-19 restrictions. Like in wave 1 of the crisis, commodity exporting industries, mainly the manufacturing industry, will reach pre-crisis levels. In the manufacturing industry, production volumes are projected to rise by 4 % in 2021. In 2021, relatively good growth rates are expected in the IT sector as well as retail and commercial services sectors, including the agricultural and forestry sectors, as well as in the construction sector, albeit more moderate than in previous years. In view of the significant drop in volumes in 2020, 2021 also started with a drop in the most heavily affected sectors – trade, accommodation and catering, transport services, arts, entertainment and recreation. In some areas, it is expected that achieving pre-crisis levels may take several years, particularly in the aviation and tourism sectors (Ministry of Economy Latvia's economic development report, 2020).

In times of high uncertainty, it is difficult to fully assess the impact of the COVID-19 pandemic on the future dynamics of productivity. In the short term, productivity fluctuations lead to adjustments in product, labour and capital markets, in response to measures to combat the pandemic and to stabilise the economy. In turn, the impact of the COVID-19 pandemic on long-term productivity trends will largely determine changing business models and consumer behaviour. It is clear that changes are taking place, for example, by significantly increasing the degree of digitisation (e-services, remote work etc.), but there is still great uncertainty about the resilience of these changes and the impact on long-term productivity trends. Structural changes in Latvia's economy towards higher value-added activities and knowledge-intensive industries will also greatly determine the positive dynamics of productivity (Ministry of Economy Latvia's economic development report, 2020).

In order to maintain high productivity growth and consequently real convergence rates, Latvia should pay particular attention to citizens' skills, investment in research and innovation, and structural reforms that contribute to productivity and competitiveness at both national and business levels. Increasing productivity: the basis for sustainable economic growth and further increases in population welfare (Raising productivity: trends and future challenges, 2019).

The business card of Riga planning region (RPR)

RPR is the region of the capital city of Latvia. Geographical location in the centre of Baltic States on the border of European and eastern cultures has carved Riga region as a bridge between different countries and their people. The region is characterised by the dynamic capital city of Riga, organically including influences from different nations. Other cities of the region – Jurmala, Limbazi, Tukums, Ogre and Sigulda, as well as the pure countryside, are important as well. Riga Gulf of the Baltic Sea and the long coastline as well as the inner waters are of special value to the region. (see Fig. 1)



Source: RPR

Fig. 1. Administrative division of Riga planning region (RPR)

Socio-economic, technological, and scientific development is defined by the centre of national, international, and European importance – Riga city and Riga Metropolitan area. The functional space of the region significantly exceeds the physical borders of the region. Strategically significant geographical location of the region, high ability of inhabitant attraction and comparatively large market capacity form the economic potential of the region and promote national development. The most important elements of cultural, educational, scientific, sport, healthcare, and transport infrastructure of the state are concentrated in the Riga Metropolitan region. RPR economic indicators are shown in table 1 (Action plan for the development of the Riga metropolitan area, 2018).

Table 1

Economic profile of Riga planning region

Territory	Area: 10 437 km ² Local governments: 30	Republic cities: Riga, Jūrmala
	Coastline: 185 km	Regional centres: Tukums, Ogre, Sigulda, Limbaži
Inhabitants	Population (2018): 1 096 411	Net population change (2017): -3,9 %
	Population density: 105 ppl/km ²	in Riga: 165 ppl/km ²
Economic	GDP (2018): 25 820 EUR per capita.	Income tax (2018): 777 EUR/pers.
	Number of businesses (2018): 104 656	Average wage (2018): 949 EUR

Source: author's calculations based on statistics (CSP, RPR, 2018)

RPR economy is dominated by service businesses with the associated areas – sales, professional services, property market. Each of these areas individually make up more than 10 % of the total economy of Riga planning region. Sales come close to a quarter. Significant portions in the total economy are taken up by agriculture, construction, transport and storage businesses. Processing manufacturing takes up 6 % of the total economy of Riga planning region (Action plan for the development of the Riga metropolitan area, 2018).

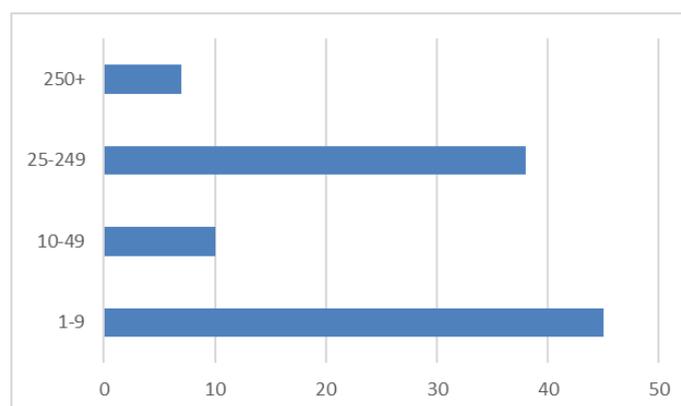
Analysis of the results of the study

A survey of experts was conducted at www.visidati.lv. The aim of the expert survey was to assess the consequences of COVID-19. In order to develop proposals to increase business productivity and competitiveness, it is necessary to clarify the views of entrepreneurs, which have changed since the first wave of the pandemic, what future trends are expected and planned in the company, which will be the biggest challenges following the pandemic crisis, as well as comparing the results of the study, depending on the number of employees in the company and the economic sector.

The survey of experts was represented by 76 respondents to the Latvian Chamber of Commerce and Industry (LCCI) all of whom are businessmen who run a manufacturing, manufacturing and services company. Some of the experts are members of the Board of Governors of Riga Regional Entrepreneurship Associations, as well as some deputies of local municipalities.

Of all respondents, 90 % represented services, while only 10 % of production. The respondents were divided as follow – 72 % were from Riga, while 28 % from Pieriga planning region.

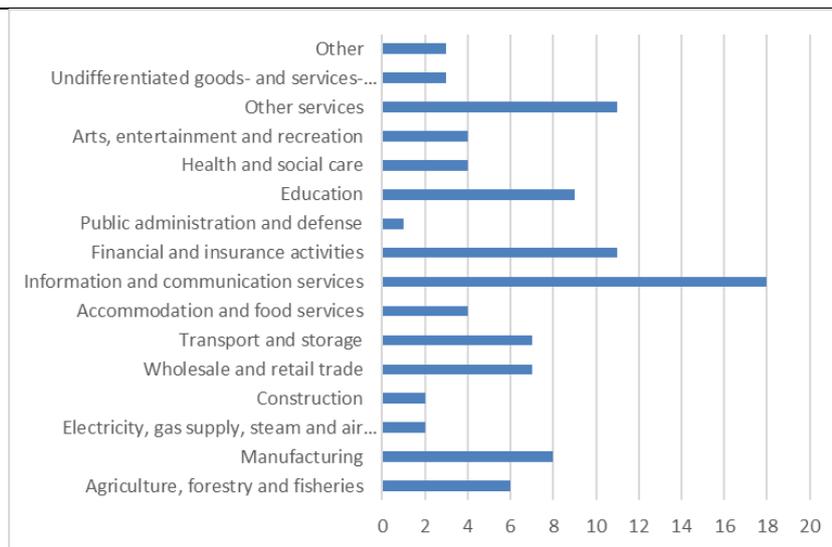
Number of employees in responding companies: the vast majority 45 % represented micro-enterprises (from 1 to 9 employees), 10% - small enterprises (from 10 to 49 employees). Medium-sized companies with 50-249 employees were represented by 38 % of respondents, while large companies with more than 250 employees were represented by only 7 %.



Source: based on author's survey results

Fig. 2. Number of employees in the company

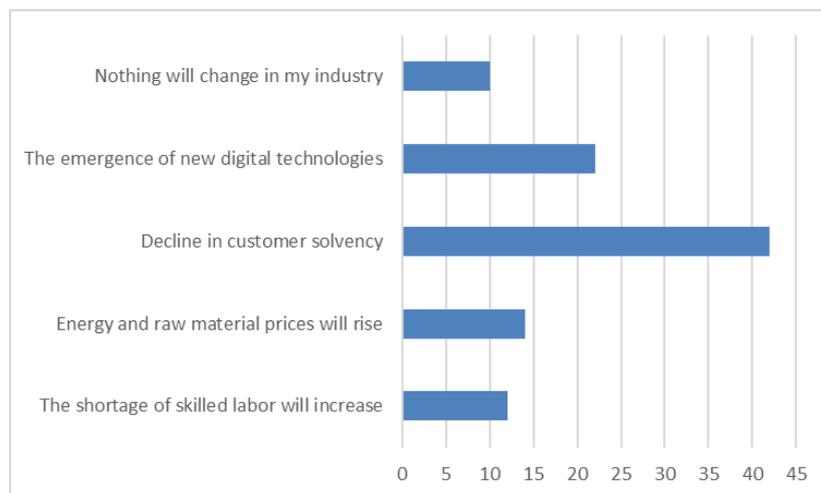
According to the NACE code classification, respondents represented very different sectors of the economy: agricultural, forestry and fisheries companies – 6 %, manufacturing industry – 8 %, electricity, gas supply, heating and air conditioning companies – 2 %, construction companies – 2 %, wholesale and retail businesses – 7 %, transport and storage – 7 %, housing and catering services – 4 %, most were information and communication services – 18 %, financial and insurance activities – 11 %, public administration and defence – 1 %, educational institutions – 9%, health and social services – 4 %, arts, entertainment and recreation businesses – 4 %, other services – 11 % self-consumption production of goods and services in individual households – 3 % and other 3 %.



Source: based on author's survey results

Fig. 3. Economic sector in which the company operates

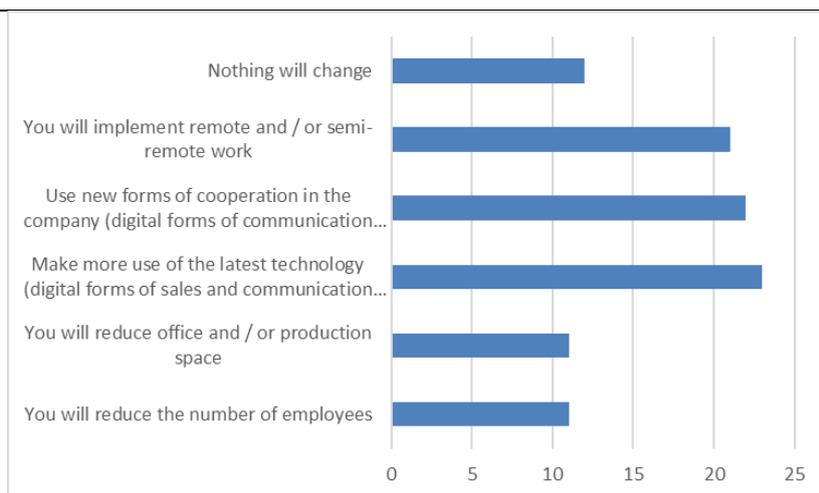
The following issues clarified respondents' assessment of the effects of the pandemic on their business and industry. Regarding the issues that will change due to the pandemic crisis, the most frequent response was expected 42 % drop in customer solvency, a 22 % rise in new digital technologies, a 14 % increase in energy and raw material prices, a 12 % increase in skilled labour shortages, while 10 % of respondents expected no changes in their sector.



Source: based on author's survey results

Fig. 4. Expected changes after pandemic crisis

Asked on the issue related with changes in their business following the pandemic crisis, three factors were almost similarly assessed: 1) to make more use of the latest technologies (forms of digital sales and communication with customers) – 23 %; 2) new forms of cooperation in the company (forms of digital communication with employees) – 22 %; 3) to introduce remote and/or semi-remote work – 21 %, while 12 % predicted no changes. Two additional factors, however, were assessed in the same way that 11 % of employees would be reduced and 11 % of office and/or production facilities would be reduced.



Source: based on author's survey results

Fig. 5. Expected changes in the company after pandemic crisis

The most frequent response to the challenges of the pandemic crisis was the absorption of new digital technologies – 31 %, followed by the acquisition of new management/management skills – 23 % and the attraction of investment – 21 %. And 13 % attracting skilled labour and 12 % mastering the international market

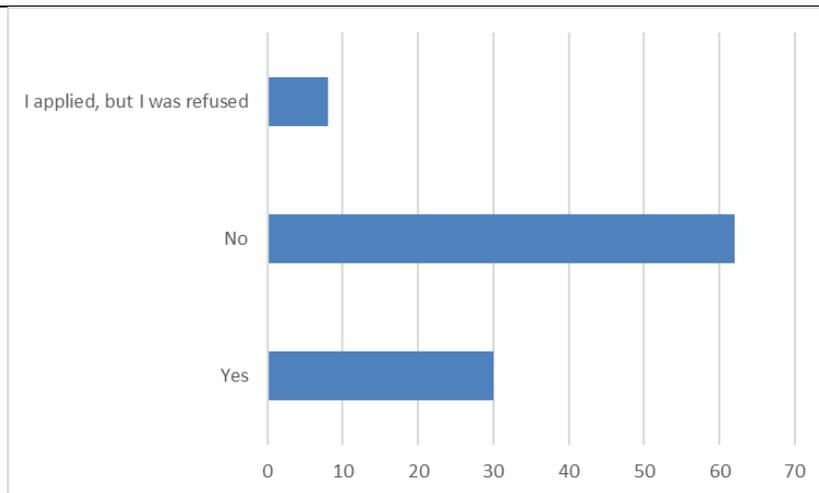


Source: based on author's survey results

Fig. 6. The biggest challenges after the pandemic crisis

A further study examined whether the companies represented by respondents used national and local authorities' support programmes and assessed the policies implemented by the national authorities to address the problems posed by the pandemic.

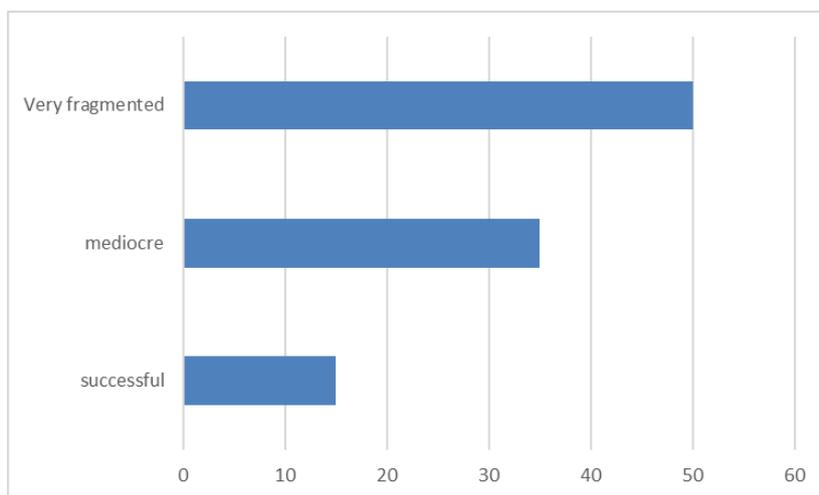
When asked whether the company used national and local government support programmes, 62 % of the respondents denied, 30 % confirmed, and 8 % confirmed applying for aid, but were refused.



Source: based on author's survey results

Fig. 7. Using support programs of state and municipal institutions

As regards the overall assessment of the policies implemented by national authorities to address the problems posed by the pandemic, 50 % of respondents assessed them as highly fragmented, 35 % as mediocre, but only 15 % regarded them as successful.



Source: author based on survey results

Fig. 8. Evaluation of the policy implemented by state institutions to solve the problems caused by the pandemic

A number of important conclusions can be drawn after compiling the data from the study. Activities were not interrupted and support programmes offered by state and local authorities were not used by undertakings operating in the manufacturing industry, electricity, gas supply, heating and air conditioning, construction companies, bulk trading and retail businesses, transport and storage companies. It was noted that both manufacturing and services companies are planning to make more use of the latest technology in the future - forms of digital sales and communication with customers. Service companies plan to introduce new forms of cooperation within the company: forms of digital communication with employees and remote and/or semi-remote work. Companies in all sectors of the economy acknowledge that the biggest challenges following the pandemic crisis will be the acquisition of new digital technologies, the acquisition of new management/management skills and the attraction of investment.

Proposals to increase business productivity and competitiveness

The authors emphasize the need to provide productive investment and develop human capital. Latvia's challenge is the desire and capacity to attract productive investment to increase labour market participation, boost business and productivity. Investment in human capital (health, education, skills) needs to be balanced with investment in infrastructure.

The following priority actions need to be promoted in order to be practical in ensuring increased productivity and competitive pay, promoting the creation and commercialisation of high value-added technologies, promoting environmentally friendly technology and business development:

- competitiveness and sustainable use and development of the cost of production resources, which means available production resources (natural, capital, work, business capacity), energy sources and raw materials (electricity, gas, wood) and infrastructure (transport, communications, commerce, energy, water management, apartments, schools, health, culture, sport etc.), efficient and sustainable use and development by developing sustainable business and creating favourable conditions for investment in higher value added industries;
- the preconditions for increasing corporate productivity mean promoting the redeployment of workforce and capital from less productive to more productive businesses and industries, the cooperation of companies with universities and companies from other countries, as well as cross-disciplinary cooperation in the creation and commercialisation of various innovative products; promoting the necessary specialists in the labour market – information and communication technology specialists, highly skilled in the chemical, pharmaceutical, electronics, wood industry and other sectors with information and communication technology skills – accessibility, promoting young people's choice for education in the fields of science, mathematics and engineering (STEM), managing labour market change and acquiring the necessary skills through digitisation, automation and technology.

Conclusions

- 1) In the Baltic States, two areas – investment and business readiness for change – for technology planning – play an important role in boosting productivity and competitiveness.
- 2) The persistent positive dynamics of productivity are determined by structural changes in the Latvian economy towards the development of higher value-added activities and knowledge-intensive industries.
- 3) The impact of the COVID-19 pandemic on long-term productivity trends will be determined by changing business models and consumer behaviour: increasing the degree of digitisation (e-services, remote work etc.), uncertainty about the resilience of changes and the impact on long-term productivity trends.
- 4) Data from the study show that a majority of entrepreneurs are predicting a fall in customer solvency and the emergence of new digital technologies in the market; the problem will make more use of the latest technologies (forms of digital sales and communication with customers), new forms of digital cooperation in the company's communication with employees and introduce remote and/or semi-remote work.
- 5) The survey shows that entrepreneurs associate the biggest challenges following the pandemic crisis by the acquisition of new management/management skills and the up taking of new digital technologies, as well as the attraction of investment.

6) The survey shows that most entrepreneurs did not use national and local government support programmes intended to overcome the pandemic crisis, while assessing the support measures developed by the government as highly fragmented.

7) Promoting the competitiveness and productivity of businesses and the workforce would provide an opportunity for the economy to develop, allowing additional resources to flow into the economy, including from export markets.

Proposals, recommendations

1) **Digital transformation (development).** RPR municipalities, in cooperation with educational institutions, should engage in the development of digital skills, which at the same time would raise productivity and contribute to other objectives, both in terms of reducing inequalities, education, increasing regional GDP and creating well-paid jobs.

2) **Economic transformations (development).** RPR municipalities should support small and medium-sized enterprises and ensure their sustainability in the post-crisis period, support mechanisms to ensure access to finance for the small and medium-sized enterprises sector, promote the operation and development of exporting companies, provide for measures aimed at increasing export capacity, and measures aimed at continuous business and their employment supplementing the knowledge of workers, which would contribute to their export capacity.

3) **Infrastructure transformation (development).** RPR municipalities should invest in upgrading and restoring infrastructure, which would lead to a significant increase in business productivity, enabling them to work more effectively and reduce costs by providing financial means that could be invested in other business development and growth-related areas: promoting long-term green innovation, supporting the "green" initiatives of the transport system, Investment and Development Agency of Latvia (LIAA) business incubators developing start-up ideas and open office spaces.

4) **Mobility and economic growth.** The RPR should provide municipalities with investments in the construction and renewal of regional roads in order to promote regional mobility and economic activity, as well as investments in the construction and development of regional industrial parks in line with market demand and the ability to use investments made for economic growth (On the draft Recovery and Stability Mechanism Plan, 2021)

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EUROPEAN UNION FUNDING FOR RURAL DEVELOPMENT IN LATVIA

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Abstract. Rural areas are defined differently in various literature sources. However, any scientist points to changes in rural areas that are associated with the outflow of people to cities and land abandonment in some regions. The multifunctionality of rural areas determines their importance in the development of any country. In the European Union (EU), 28.0 % of the EU-28 population lived in a rural area in 2015, while in Latvia – 32.3 % of its total population. Therefore, support instruments of the second pillar of the EU Common Agricultural Policy (CAP) (rural development) contribute to a sufficient standard of living for the rural population and include both economic and social objectives. The *research aims* to analyse the EU support instruments for rural development that promote economic and social development in rural areas in Latvia. The research analyses the definition of the concept of rural territory given in national and EU policy documents and the results of project-type measures of the EU CAP second pillar (rural development) support instruments implemented during the planning period 2014-2020 for national rural development policy. It was found that in Latvia total available public funding for the RDP 2014-2020 was EUR 1.541 million, there were 6 main priorities and 88 % projects were funded at the end of February 2021. Progress in implementing the support measure Farm and business development was analysed in detail.

Keywords: rural territory, non-agricultural activities, rural development.

JEL code: O18

Introduction

Over the past decades, major changes have taken place in Europe's rural areas. These changes include contrasting developments like depopulation and land abandonment in some regions, and urbanisation and agricultural intensification in others. Many people have concerns about the future of Europe's rural areas (Westhoek H. J., Van den Berg M., Bakkes J. A., 2006). Rural areas are key elements that underpin the social and economic European territory and shape its landscape. The rural setting is a dynamic concept, able to distinguish three stages on how the EU understands "rural": rural as image, rural as local, and rural as a social construction. The evolution of the concept is reflected in the need to adapt the approach used to address rural issues, and consequently the political design for rural development (Gallardo-Cobos R., 2010).

It is essential that rural development be recognized as a multi-level process rooted in historical traditions. It is the complex institutional setting of rural development that makes it a multi-actor process (Van der Ploeg J. D. et al., 2017). Multifunctionality of rural areas, considered in the context of their development follows from coherence of the multifunctional development of a farm, agriculture and rural areas as a whole, in connection with the idea of sustainable development of the country (Niedzielski E., 2015).

Rural areas cannot rely on conventional generalised top-down strategies and planning measures. They will always be dependent on instruments that are consistent with the geographical, cultural and historical context in which they are embedded. Growth and adjustment must be the result of openness and flexibility among local actors, acquired through a sustained development process (Fløysand A., Sjøholt P., 2007). The process of rural development is a coherent system where one factor affects another one (Straka J., Tuzova M., 2016).

Since the Sustainable Development Goals and rural development are closely interconnected, investment in both areas will have mutually beneficial impacts. Thus, rural development should be put at the heart of

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national development strategies in all countries at all development stages to ensure equal, inclusive and sustainable development (Dahlman C., 2016).

Just over one quarter (28.0 %) of the EU-28 population lived in rural areas in 2015 (Eurostat, 2018), while in Latvia, rural areas occupied most of its total area and 32.3 % of the country's population lived in rural areas, which is why the rural areas are very important for the country's development. As the concentration and efficiency of production increased in the agricultural industry, it is possible that approximately 80 thou. jobs could decrease in the industry over the next ten years. Therefore, support is needed for both small farms and the establishment and development of small and medium enterprises engaged in alternative kinds of business in rural areas in order to prevent migration from rural areas, provide alternative sources of income, use local resources more productively and increase rural prosperity. A rural area as a living space and the need to develop it is defined in EU strategic policy documents, the documents of the EU Funds, as well as the official documents and studies of EU institutions. All the above-mentioned documents emphasize the factors affecting development as a basis for further development of rural areas. In rural areas, economic development is a key objective of one of the priorities of the EU Rural Development Programme, which intends to promote social inclusion and reduce poverty in the rural areas.

The authors of the research examined the concept of rural territory and performed a comparative analysis of its definitions given in national and EU policy documents and the effects of the documents on the economic and social development of rural areas. In the course of the research, the main task was to assess preconditions for growth and development in the rural areas of Latvia if using the potential opportunities of the EU support instruments.

The present research aims to analyse the EU support instruments for rural development that promote economic and social development in rural areas in Latvia. The EU Common Agricultural Policy and the national rural development policy in the period 2014-2020 were used as a methodological basis of the research. To achieve the research aim, the following specific research tasks were set:

- 1) to examine the definitions of rural territory given in both national and EU policy documents;
- 2) to analyse the EU support instruments for the development of rural areas in the planning period 2014-2020 and the main results.

The research developed conclusions and recommendations for further development of rural areas and improvement of the absorption of EU funding.

A hypothesis was put forward in the research: the absorption of EU funding in the period 2014-2020 in Latvia was effective.

Materials and methods. The research employed qualitative and quantitative economic research methods to analyse national policy documents and the official documents of EU institutions as well as research conducted by scientists from other countries. Information from the Ministry of Agriculture (MoA) and the Rural Support Service (RSS) on the results of the Rural Development Programme (RDP) of Latvia for 2014-2020 and data from the Central Statistical Bureau (CSB) on economic development were used as well.

Research results and discussion

The definition of rural territory in Latvia

There are many ways to define areas that are "rural". Although the general idea of specifically conceptualizing "rural" areas came into use in the 1920s with its basis in sociology, many, if not most, of the current explanatory frameworks evolved to provide guidance for the distribution of government monies

or to perform a census of places and people (Wakchaure R. N., 2017). The scope of "rural" areas differs by country and region. At the international level, the most frequently used approach is that proposed by the OECD. The OECD has established a regional typology according to which regions have been classified as: Predominantly Rural, Intermediate and Predominantly Urban. This typology is based on a combination of three criteria: first, it identifies rural communities according to population density; second, it calculates the percentage of the population of a region living in rural communities; third, it takes into account the presence of large urban centres in such region (European Commission, 2008). Rural areas have different characteristics than urban areas. Data collection and analysis must take these differences into account. In rural areas, people live further apart than in cities and their livelihoods tend to be much more closely tied to the natural environment than are those of urban dwellers. Moreover, rural development is a key part of the overall structural transformation of a country's economy and its society (Food and Agriculture..., 2018).

Today a rural area, as a component of the living space needed by the population, receives increasing attention in the official documents of EU institutions, as well as in various EU studies (Rivza B., Kruzmetra M., Sunina L, 2018).

A precondition for sustainable and balanced development is the awareness and use of resources and opportunities throughout the entire area of Latvia, including rural areas. Development is facilitated by the expansion of an individual's various opportunities and capacity in the context of a specific place. In addition to natural resources, demographic and health resources, an important resource for development is also the identity of the territory – an awareness of one's belongingness to a place and people, which affects not only the distribution and daily movement of people but also births, deaths and health. A long and healthy life is not the only indicator of the quality of human resources. A common national (national), regional and local identity and the sense of belonging is also an important factor that unites individuals (each having specific life expectancy, health status and daily routine) in building a civil and responsible society. One of the most characteristic trends of modern spatial development both in Latvia and on a global scale is urbanization – an increase in the proportion of the population living in cities. As a result, people and other resources are concentrated in cities, thereby subjecting rural areas to unbalanced and uneven development.

The development of rural areas is referred to in international, national as well as local government policy documents; however, no comprehensive definition is given in the national policy documents. Rural development and a full-fledged life for the rural population is set as a goal in several national legal enactments and policy documents.

The rural development space is also often defined as one of the areas of national interest that has outstanding value and significance for the sustainable development of the country and the preservation of its identity, which includes strategic resources important for the development of the country. Rural areas often face a variety of conflicts of interest and problems that go beyond the competences of regions and individual industries and, therefore, require complex solutions and targeted public policies to implement qualitative changes in the rural areas, including economic, social and environmental aspects (Latvijas lauku telpas..., 2012).

From the spatial development perspective, the Sustainable Development Strategy of Latvia until 2030 (2010) refers to the rural space as one of the priorities in the area of national interests, which is defined as the territory where the most important natural resources for the national economy are located: agricultural land, forests, water, mineral deposits as well as outstanding nature and landscapes as well as cultural and historical areas where the unique values that contribute to the identity and international recognition of Latvia and its various regions are concentrated.

The areas of national interest are considered to be territories and areas of outstanding value and significance for the sustainable development of the country, the preservation of its identity and include strategic resources important for the development of the country. At the same time, various conflicts of interest and problems emerge there that go beyond the competence of regions and individual industries; therefore, complex solutions and purposeful public policies are needed (Sustainable Development Strategy..., 2010).

In accordance with the Law on Administrative Territories and Populated Areas adopted on 10 June 2020, a new territorial division came into force in Latvia as of 1 July 2021. Until then, there were 119 municipalities in Latvia: 110 rural municipalities and 9 cities of national significance, while from 1 July 2021 there will be 42 municipalities: 35 rural municipalities and 10 cities with the status of national significance. The annotation of the draft law explains that the municipal reform is necessary to create economically viable administrative territories with local governments that are able to perform their statutory autonomous functions at comparable quality and accessibly and provide quality services to the population at reasonable costs. In the Law on Administrative Territories and Populated Areas, an administrative territory is a unit of territorial division of Latvia in which a local government implements administration within its competence (Law on Administrative Territories and..., 2020).

According to the OECD approach, rural areas are defined based on population density if the population is less than 150 people per square kilometre. Since the population density in the rural territories of Latvia does not exceed the mentioned benchmark, it could be considered that the division into rural territories and cities is very close to the OECD definition. In 2020, the population density in Latvia was 31, in the capital Riga – 2479, while in Pierīga region – 38 people per square kilometre. This means, according to the OECD principles, the whole area of Latvia outside Riga is rural (Communication from the Commission to the Council..., 2006).

According to the RDP of Latvia for 2014-2020 (2020), the whole area of Latvia is considered to be rural, except for the territorial units of cities of national significance and municipalities with cities with a population over 5000. The population is determined according to the Central Statistical Bureau data on the population in the administrative territories of Latvia at the beginning of the previous year.

According to the national Law on Agriculture and Rural Development (2004), agriculture is defined as an industry of the national economy that ensures the production of agricultural products and the provision of related services. Rural development, however, involves the production of non-agricultural products in rural areas, as well as the provision of services related to the use of water and land resources and the preservation of rural landscapes. Nevertheless, such a definition is not in line with international practices, as agriculture is usually the main industry in rural areas.

Based on a multidimensional approach, rural areas could be defined in terms of economic activities, depending on the geographical location. In Latvia, agriculture and forestry are the main industries shaping rural development (Nipers A., Pilvere I., Bulderberga Z., 2017).

In an ESPON study on Europe's rural areas, the European Grouping of Territorial Cooperation points out that the rural areas are home to 28 % of the European population and that their decline has become a steady trend in recent decades. Therefore, one of the main challenges for European policies is not only how to deal with negative demographic trends in general but also how to balance this problem at regional level (Shrinking Rural Regions ..., 2017).

Until 2019, economic growth in Latvia remained steady, exceeding the EU average. From 2011 to 2019, its GDP grew on average by 3.3 % annually. In the period 2017-2018, the growth rate accelerated, with the GDP growing by 3.8 % and 4.3 %, respectively. The acceleration of growth was facilitated by the

improvement of the situation in the external environment, more intensive absorption of EU structural funding, as well as an increase in employment and wages. As mentioned in macroeconomic reviews, economic growth in Latvia as a whole has improved since joining the EU; however, the indicators in some rural areas were less unambiguous (Macroeconomic Review of Latvia, 2020). Latvia has a long tradition of designating and identifying people in relation to their place of residence (urban residents, rural residents etc.) and assuming that the people living in the same area have similar traditions, values and even similar characteristics. In the relationship between an individual and a place in Latvia, the sense of belonging to the country and the place of direct residence is felt most strongly (Sustainable Development Strategy..., 2010).

According to the development of the rural space of Latvia and its potential future scenarios, five most important factors were defined that could affect the choice of place of residence: 1) opportunities to find a job; 2) opportunities to receive medical services; 3) availability of shops; 4) availability of public transport; 5) surroundings and natural landscape (Latvijas lauku telpas..., 2012). The EU support instruments have a significant effect on the factors in Latvia.

EU support instruments as factors affecting the development of rural areas in Latvia

Rural development is associated with the "rural development" support instruments of the second pillar of the EU CAP. One of the objectives of the CAP is to achieve a sufficiently high standard of living for the rural population, and it includes both economic and social objectives based on the desire to protect the interests of producers and consumers. EU rural development policies are designed to support the rural areas of the EU and deal with the many economic, environmental and societal challenges of the 21st century. Greater flexibility (compared with the first pillar) allows regional, national and local authorities to design individual rural development programmes for seven years based on the European strategy and the subordinate action plan.

According to the RDP of Latvia for 2014-2020 (2020), the population in rural areas has decreased by 13.2 % during the last decade, the population density is low in the rural areas, and a larger decrease is observed moving away from the capital, especially in the eastern direction. Disposable income per capita is 22.7 % lower in rural areas than in urban areas.

A SWOT analysis and the identification of needs done in the RDP of Latvia for 2014-2020 (2020) has concluded that there are signs of degradation in the rural socio-economic space in Latvia, i.e. the movement of people as well as economic and social activities from rural areas to cities or other countries. During the last decade, in two thirds of the total area of Latvia the population has decreased by more than 15 %, while in a quarter of the total area the decrease exceeded 20 %. It was observed not only in remote border areas but also in populated areas in the middle of Latvia. This process shows a significant trend in rural population change and cannot be explained by the desire to move from the periphery to the centre.

According to the national Law on Agriculture and Rural Development (2004), national and EU support is granted to promote the development of agriculture, fisheries and rural areas, as well as to raise the living standard of rural residents and create equal competition conditions for agricultural producers in Latvia and other European Union Member States.

The document according to which national and EU support is granted for the development of rural areas is the RDP of Latvia for 2014-2020. The European Agricultural Fund for Rural Development (EAFRD), which is a financial instrument of the EU CAP second pillar and one of the European Structural and Investment Funds, is intended to contribute to the agricultural and forestry industries in the EU and rural areas in general. In Latvia, six rural development priorities have been set, and the sixth one pertains to promoting

social inclusion, reducing poverty and contributing to economic development in rural areas. The RDP of Latvia for 2014-2020 (2020) defines measures to be implemented by using EAFRD funding. The current situation in the country, as well as the possibilities to promote rural development in the country by means of the EAFRD were assessed during the development of the measures.

Total public funding for the RDP of Latvia for 2014-2020 was planned to be EUR 1541 million (including additional funding of EUR 10 million from the government budget). Six main priorities were identified to implement the RDP of Latvia for 2014-2020, and the largest amount of public funding was allocated for two of the priorities: P4 Restoring, preserving and improving ecosystems related to agriculture and forestry (EUR 581.0 million) and P2 Increasing the profitability and competitiveness of all kinds of agricultural enterprises in all regions and promoting innovative agricultural technologies and sustainable forest management (EUR 470.1 million). At the end of 2019, both priorities also had the highest performance indicators: the largest absorbed public funding of EUR 463.0 million or 79.7 % of the planned amount was reported for priority P4, while EUR 318.9 million or 67.8 % was reported for priority P2 (Ministry of Agriculture, 2020a).

All the RDP support measures were implemented in two ways in the period 2014-2020: 1) project-type measures, i.e. any applicant for support needed to prepare a project proposal, and if it was approved, only then the implementation of the project was possible; 2) area payments, i.e. the support was paid for particular eligible areas, and the measures were administered simultaneously with direct payments after submitting a single area payment application (LAP 2014.-2020. finansu plans ..., 2020).

The latest available data on the implementation of the RDP for 2014-2020 in relation to its measures are available for the end of February 2021. Therefore, Table 1 summarizes the data on planned funding for project-type measures and the implementation of the programme. Of the total funding for the RDP for 2014-2020, EUR 967.6 million or 63 % was planned to be implemented as project support, while EUR 573.9 million or 37 % as area payments (Table 1). Until the end of February 2021, projects with total public funding of EUR 853.6 million or 88.2 % of the total funding for project-type measures have been implemented and are still being implemented. The activity of applicants for support was high, as a total of 45416 project proposals were approved in the announced rounds of project proposal submission from the beginning of the planning period. Of the total funding, 52 % was provided for the support measure *Investments in tangible assets*, 13 % – *Basic services and village renewal in rural areas* and 8 % – *Community-led local development*. High funding absorption rates were reported for the support measures *Risk Management* (100 %) and *Investments in tangible assets* (91 %), which also had the largest numbers of project proposals submitted – 27 % and 32 % of the total, respectively. The largest projects were implemented under the support measures *Technical assistance* (EUR 2.4 million), *Advisory services, farm management and farm support services* (EUR 650 million), whereas the smallest ones under the measures *Risk management* and *Investments in expanding forest areas and improving forest viability* (EUR 2.6 thou.).

Table 1

**Results of implementing the project-type measures under the RDP for 2014-2020
 in Latvia as of 28/02/2021**

Support measure code and name	Available public funding in 2014-2020, million EUR	Breakdown of public funding, %	Funded until 28/02/2021			
			Number of projects	Public funding in 2014-2020, million EUR	Per project, EUR	% of total funding
A001 - Knowledge transfer and informative activities	13.4	1.4	66	9.4	142424	70.1
A002 - Advisory services, farm management and farm support services	10.4	1.1	4	2.6	650000	25.0
A004 - Investments in tangible assets	501.7	51.8	14747	457.7	31037	91.2
A005 - Restoration of agricultural production potential affected by natural disasters and catastrophic events and the introduction of appropriate preventive measures	5.0	0.5	98	4.3	43878	86.0
A006 - Farm and business development	77.8	8.0	3453	67.6	19577	86.9
A007 - Basic services and village renewal in rural areas	126.6	13.1	363	118.8	327273	93.8
A008 - Investments in expanding forest areas and improving forest viability	36.9	3.8	10952	29.5	2694	79.9
A009 - Establishment of producer groups and organizations	0.6	0.1	3	0.5	166667	83.3
A016 - Cooperation	20.3	2.1	102	8.1	79412	39.9
A017 - Risk management	32.5	3.4	12321	32.6	2646	100.3
A019 - Community-led local development	79.1	8.2	3282	62.9	19165	79.5
A020 - Technical assistance from the EAFRD	63.3	6.5	25	59.6	2384000	94.2
Total	967.6	100.0	45416	853.6	18795	88.2

Source: authors' calculations based on the Financial Plan for the RDP 2014-2020, 2020, RSS, 2021.

Under the support measure *Farm and business development*, the total budget of implemented and ongoing projects equalled EUR 67.6 million (86.9 % of the total public funding available for the Sub-measure in the planning period) or 8 % of the total funding for all the measures, which was **the third largest amount of funding** among the project-type measures under the RDP of Latvia for 2014-2020, which indicates the importance of this measure for the promotion of rural development.

There was also a lot of activity under the measure *Support for the implementation of activities in accordance with the community-led local development strategy*, as 3282 projects worth EUR 62.9 million (79.5 % of the total public funding available for the Sub-measure in the planning period) were approved.

According to an assessment of the needs defined by the RDP of Latvia for 2014-2020 in which six priority support measures were designed to maintain population, raise the standard of living and provide employment and access to services in rural areas, the last two support measures are more important for rural economic development in Latvia. EU Priority 6 for rural development intends to promote social inclusion, reduce poverty and facilitate economic development in rural areas based on measures such as the implementation of the LEADER principles in rural development, access to basic services and business development. The priorities/priority areas of the measures are as follows:

- 6A) promoting business diversification, establishing and developing small enterprises and creating jobs;
 6B) facilitating local development in rural areas.

One of the most important measures of Priority 6 aimed at promoting economic growth in rural areas is considered to be the measure *Support for investments in the creation and development of non-agricultural activities*. The purpose of this measure is to promote non-agricultural economic activities and employment in rural areas, as well as to diversify non-agricultural activities in order to develop alternative sources of income and increase the level of income in rural areas (RDP 2014-2020, 2020). The support measure *Farm and business development* has several sub-measures: 1) *support for young farmers to start up a business (No. 6.1)*; 2) *support for starting up a business by developing small farms (No. 6.3)*; 3) *support for investments in the creation and development of non-agricultural activities (No. 6.4)*.

As Sub-measure level data for the RDP for 2014-2020 are available only for the beginning of 2020, Table 2 summarizes and analyses the data on the results of the implementation of Measure 6. Funding of EUR 77.8 million is available for Measure 6, of which 55 % is allocated for Sub-measure 6.3, 27 % for Sub-measure 6.4 and 18 % for Sub-measure 6.1. Until the beginning of 2020, 3384 projects in the amount of EUR 80.1 million or 103 % of the available funding were approved, which means that the liabilities were increased in order to reduce the risk of non-implementation of projects. Of the total projects approved, 2982 or 88 % were implemented, disbursing EUR 55 million or 70 % of the total funding available under the support measure *Farm and business development* to the beneficiaries. The average size of the approved project was EUR 23.7 thou., while the average size of the funded project was EUR 18.3 thou. The largest approved projects were reported under Sub-measure 6.4, the average budget of which was 2.6 times larger than the average, whereas the smallest ones were under Sub-measure 6.3, which represented 63 % of the average. Among the funded projects, those under Sub-measure 6.4 were 2.8 times larger than the average, whereas the smallest ones were under Sub-measure 6.3, representing 69 % of the average project size.

Table 2

**Implementation results for Measure 6 - Farm and business development (A006)
 under the RDP for 2014-2020 in Latvia as of 01/01/2020**

Sub-measure number	Available public funding in 2014-2020, mln. EUR	Approved until 01/01/2020				Funded until 01/01/2020.			
		Projects, number	Funding, mln. EUR	Per project, EUR	% of available funding	Projects, number	Funding, mln. EUR	Per project, EUR	% of available funding
6.1.	13.9	363	14.5	39945	104.3	332	11.3	34036	81.3
6.3.	42.8	2578	38.7	15012	90.4	2389	30.0	12558	70.1
6.4.	21.1	443	26.9	60722	127.5	261	13.2	50575	62.6
Total (A006)	77.8	3384	80.1	23670	103.0	2982	54.5	18276	70.1

Source: authors' calculations based on the Financial Plan for the RDP 2014-2020, 2020, Ministry of Agriculture, 2020b.

The objective of the Sub-measure Support for young farmers to start up a business is to promote the involvement of young people in permanent agricultural activity and to ensure the renewal of the labour force and generational change in the agricultural industry through supporting young people setting up economically viable farms for the first time or taking over existing farms; a total of 363 projects with total public funding of EUR 14.5 million were approved in all three rounds of project submission and successfully implemented (91.9 % of the total funding available for the measure or EUR 15.8 million), while 332 projects

(84.1 %) with total public funding of EUR 11.3 million were partially or fully implemented (71.5 % of the total funding available for the sub-measure). Therefore, the implementation of this Sub-measure has been successful until the end of the reporting period.

The Sub-measure *Support for starting up a business by developing small farms aimed to promote the competitiveness of small farms* by increasing their productivity and efficiency, supporting cooperation and market access. The implementation was successful because the activity of applicants was high, and totally 2578 projects (with public funding of EUR 38.7 million) were approved, while 2389 projects worth EUR 30.0 million were partially or fully implemented by the end of the reporting period.

In the Sub-measure *Support for investments in the creation and development of non-agricultural activities*, one of the criteria set – the number of beneficiaries receiving support for business development and investments in non-agricultural activities in rural areas was met by 65.3 % by the end of 2019 (project proposals were approved for 367 beneficiaries (91.8 %), while 261 beneficiaries out of the planned 400 implemented or partially implemented their projects). At the end of 2019, the second criterion – newly created jobs in the projects implemented or partially implemented – was met by 53.6 %, i.e. 73 jobs out of 140 planned (Agriculture in Latvia 2020, 2020).

The strategic environmental assessment of the Rural Development Programme for 2014-2020 considers this Sub-measure has the greatest potential to make a significant contribution to the preservation of the environment and nature quality in Latvia and the prevention of potential environmental problems. The inability of small farms to develop competitive market-oriented production encourages potential rural entrepreneurs to stop operating not only in the agricultural industry but in rural areas as a whole, which might lead to depopulation in rural areas to a critical level and cause various environmental risks increasing the number of degraded areas and unmanaged objects (LAP 2014.-2020. gadam stratēģiskais ..., 2013).

It is the development of non-agricultural activities in rural areas that is most strongly aligned with the measures of Priority 6 that aims to improve and develop non-agricultural business in rural areas, diversify agricultural activity into non-agricultural activities, contribute to the expansion of non-agricultural industries and promote employment in rural areas.

Conclusions, proposals, recommendations

- 1) In Latvia, rural areas occupied most of its total area and 32.3 % of the country's population lived in rural areas, which was 4.3 percentage points more than the EU average in 2015 and therefore the rural areas are very important for the country's development. However, neither the definition of rural development nor the clearly defined indicators of rural development can be found in the long-term policy documents of Latvia and in the RDP of Latvia for 2014-2020. The whole area of Latvia is considered to be rural, except for the territorial units of cities of national significance and municipalities with cities with a population over 5000.
- 2) EU rural development policies are designed to support the rural areas of the EU and deal with the many economic, environmental and societal challenges. In Latvia, total public funding for the RDP for 2014-2020 was EUR 1.541 billion, and 6 main priorities were set. At the end of February 2021, 88 % of the total projects were funded, and the support measures *Risk management* (100 %) and *Investments in tangible assets* (91 %) had the highest public funding absorption rates, which also had the largest numbers of submitted project proposals – 27 % and 32 %, respectively, of the total projects.
- 3) The support measure *Farm and business development* is important for rural development under the RDP of Latvia for 2014-2020, and EUR 78 million were allocated for it and the measure was implemented through three sub-measures. Until the beginning of 2020, 3384 projects in the amount of

EUR 80.1 million or 103% of the available funding were approved. The largest amount of public funding was approved for the sub-measures *Support for investments in the creation and development of non-agricultural activities* (128 % of the available funding) and *Support for young farmers to start up a business* (104 %), which allows us to hope for successful rural development as a result of the implementation of the projects. The hypothesis - the absorption of EU funding in the period 2014-2020 in Latvia was effective proved to be true.

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PROSPECTS FOR THE DEVELOPMENT OF SUSTAINABLE ENTREPRENEURSHIP IN LATVIA.

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Abstract. A prominent business topic of nowadays in the context of sustainability is balanced economic management – one that contributes to economic development, environmental protection and public wellbeing. Given the positive growth potential of the European market for sustainable entrepreneurship and the improvement of Latvia's environmental sustainability in the entrepreneurship sector, it is important to find out the prospects of further development of sustainable entrepreneurship in Latvia. The aim of the research is to define sustainability in the context of business, to identify the factors that motivate and determine the sustainability of the company and to evaluate sustainable business perspectives in Latvia. Hence, the process of business management has to provide for interaction among the company, the management and utilisation of its resources, its financial management, and the stakeholders of the buying and selling process – businesses, consumers and public authorities. In light of the above, business management can not only contribute to a sustainable product consumption but also make a positive impact upon public action and thinking. The author's research fields conclusions regarding the key factors for running a sustainable business in Latvia. Based on expert interviews, it was analysed what promotes / hampers the development of sustainable entrepreneurship in Latvia, looking into the prospects of sustainable entrepreneurship in Latvia. During the research it was found, that the development of sustainable entrepreneurship in Latvia is promoted by the regulatory pressure created by the European Union, as well as the growing public interest in sustainability issues created by the available information space. The development of sustainable entrepreneurship in Latvia is hindered by the lack of interaction between public education and the regulatory system in terms of sustainability, reducing the effectiveness of motivating sustainable choices.

Key words: sustainability; sustainable development; sustainable entrepreneurship; corporate responsibility, climate neutrality.

JEL code: M14; M31

Introduction

Sustainable entrepreneurship revolves around a number of factors: resource management (including water and energy use, waste production, generation of GHG and other emissions), financial management (innovative capacity, CEO-to-average employee pay ratio), personnel management (employee turnover, clean revenue – the percentage of total revenue generated from ecological products and services), as well as the operational and strategic processes within the company.

Purpose of the article: to define sustainability in the context of business, to identify the factors that motivate and determine the sustainability of the company and to evaluate sustainable business perspectives in Latvia, based on an analysis of scientific literature, secondary data and expert opinions. Object of the research – sustainable entrepreneurship. Subject of the research – the impact of sustainable entrepreneurship upon public action and thinking.

Methodology/methods: using scientific databases, fundamental literature is embedded in this study as well as contemporary scientific research. This research includes secondary and primary research methods. The research used the results of the author's previous studies and there were expert interviews conducted to assess the prospects of sustainable entrepreneurship in Latvia. Qualitative research method was used - expert interviews, the opinions and recommendations of five independent experts were obtained, the representatives were selected from among both the academic and the business fields. Interviews with experts in the domain of sustainability (representatives of entrepreneurship, the academic environment, fashion, marketing, manufacturing companies and specialists from the institute for sustainable development) conducted in 2020. The experts answered a total of seven questions, which include the

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definition of sustainable business, the impact of societal norms and consumer buying trends, motivating factors, the sustainability of the most developed and promising industries, and recommendations for entrepreneurs and government.

The importance of sustainable entrepreneurship

Scientific literature increasingly emphasises the key role of sustainability in the development of enterprises and the challenge of building business management systems and, thus, creating consumer needs.

Sustainable entrepreneurship encompasses the ability to use resource-preserving methods, factoring in the nature neutrality level and keeping it unchanged in the long run. The International Institute for Sustainable Development (IISD, 2015) has put forward a definition of sustainable development – it is a development that meets the needs of the present without compromising the ability of future generations to meet their needs. Importantly in the context of sustainable entrepreneurship, sustainable development of businesses envisages ensuring that the present and future needs be satisfied. Sustainable entrepreneurship is based on preserving nature, life supply and society with a view to enable the creation of future products, processes and services, giving economic and non-economic benefits to individuals, the public, and the economy as a whole (Shephard D. A., Patzelt H., 2011). In the present situation, the operation of businesses needs a sustainability direction, which is necessitated by the expansion of public thinking resulting from the development of science and information technologies available. Specifically, it is the idea of importance of optimum use and preservation of resources that impacts the present and will impact the future generations' lifetime and drives the need for sustainability prescribed by the market. The need for sustainable entrepreneurship is explained as the process of discovery, assessment and utilisation of economic opportunities through market imperfections (Dean T. J., McMullen J. S., 2017). For instance, searching for economic opportunities using market imperfections is consolidated by creating social and natural benefits for the public whilst also ensuring that the future society be able to satisfy its needs (Greco A., de Jong G., 2017). However, the possibility of identifying the needs of future generations is low, since historically the rate of growth and development experienced by society has been rapid.

With the importance of sustainability primarily manifesting itself in adaptability, entrepreneurs' motivation to act sustainably when choosing between profit and goal comes to the forefront. Sustainable entrepreneurship envisages companies' work to be motivated by and processes to be driven towards prosperity. Entrepreneurship and sustainability as separate notions require innovation and together those yield a creative combination of available resources. Entrepreneurship and sustainability innovation are entrepreneurship with a cause and a purpose, transforming the company's operation from being part of the problem to being part of the solution (Abrahamson A., 2008). This approach represents: 1) focusing on some of the global, social or sustainability problems, 2) by finding, identifying or creating a solution and introducing the innovation in the market, and thus 3) creating or deeply transforming an existing company, promoting it as a mission- or cause-oriented sustainable business, adding economic, ecological or social values and benefits through dematerialisation.

In sustainability-driven entrepreneurship one can distinguish between two types of entrepreneurship which both feature innovation, creative expression and business functionality yet differ in terms of motivation, purpose, economic and non-market objectives, growth challenges and potential. Specifically, the essence of eco-preneurship lies in innovative activities, with environmental aspects as priority and competitiveness as advantage. Eco-preneurship is based on identifying ecological innovations, determining their market potential, and implementing them in the market. There are thus two types of entrepreneurship

in terms of motivation: 1) for-profit companies (ecopreneurial corporations who use ecological products and processes for the utmost personal benefit); 2) social ecopreneurs (companies who work towards promoting ecologically beneficial ideas, products, technologies through market or non-market channels). Overall, the objective of ecopreneurs is to profit from the solution of environmental issues, which involves dealing with ecological challenges and creating added value.

In social entrepreneurship, the motivation stems from the need to solve social problems and lies in the generation of profit for public needs. The attainment of the social purpose and the securing of financing are set as the main objectives. Social entrepreneurship creates innovations with a view to change the public thinking and action and give benefits to the public in general. Hence, the success of such business is measured not by profit or turnover but by progress and impact in terms of public benefit.

The motives behind the choice of working principles of sustainability differ from company to company. They are based on the company's sector, size, goal and values. One motivation of pursuing sustainable entrepreneurship manifests itself in creating a vision, identifying the resources needed, and using them to put the vision into effect. Thus, the individual commitment to solving environmental problems results in a three-dimensional understanding of causes: affective (emotional cause), growth continuation (economic and social cause) and regulatory cause (Leno M .J., 2011). Such ideas lead to a conclusion that the motivation for sustainable entrepreneurship lies in the implementation of the company's core vision and values based on adherence to the purpose of its foundation and meeting the stakeholder and consumer needs and the regulatory requirements. A key motivator of sustainability is effective attraction of investment. In light of the global tendencies of moving towards sustainable economy, the consideration of sustainability is a criterion widely used in deciding upon investments. Motivational factors of sustainability can be divided as follows: 1) internal factors of the company (internal beliefs, concern for social and environmental issues) and 2) external factors (market imperfections, networking, social capital and public acceptance). A key role in the motivation of small and medium enterprises is typically played by the company's attitude towards and knowledge on sustainability, adherence to social norms as a result of public pressure and building a positive image of itself (attraction of positive associations) (Greco A., Jong G., 2017). The idea of treating a profit-making business and a sustainable business as opposites has been a common practice throughout the development of the concept of sustainability, with sustainability believed to require funds without a result in return, but nowadays there is an interplay of environmental, social and profit factors in business. The causes of motivation for sustainable entrepreneurship are the regulatory framework (the regulatory aspect), the public views, the expected competitive advantage and the senior management commitments (Gast et.al., 2017). The external stakeholders – the legislators and the public – are an effective means to drive a company's sustainability, but companies mainly respond to these external forces by drawing up and implementing environmental strategies for their business. The expected competitive advantage is an internal and external driving force for the company's sustainability, one that stems from the management's conviction that the company can surpass competitors by implementing or improving an environmental strategy. The management's commitment towards implementing sustainability factors in the company's functioning needs to be planned in an efficient and controlled manner and effected by the management, and this is integrated long-term in the company's corporate strategy. In light of the increased global attention to sustainability over the last five years and the increased pressure upon natural resources and climate change along with an increase in deliberate consumption and ethical life, there are three major sustainability trends that make companies alter their operation across all industries and urge them to implement sustainability (from raw material and product manufacturers all the way to logistics companies and retailers). Businesses that operate in an ethical manner, pursue circular economy, and

practice sustainable packaging can improve their brand image and reputation and draw more ethically oriented and demanding consumers. 61 % of consumers take interest in climate change, 64% believe that they can change something in the world through their purchases, and 51% trust companies' statements of sustainability (Euromonitor Lifestyles survey 2019), ethical lifestyle (factoring in environmental considerations in commercial and household decisions) is one of eight most common trends as per Euromonitor, 39 % of consumers choose less products but of higher quality, 35 % are willing to purchase recycled goods, while 28 % are happy to buy ethical products.

Although the dynamics of the number of consumers choosing goods, products and services produced through sustainable business is positive, there is a gap between the consumers' wish to reduce their environmental impact and the actual buying decision. Effectiveness, value and aesthetics are still the main features sought for when choosing products. The high price of products that conform to the principles of sustainability and the lack of transparency and traceability throughout the supply chain at times prevent consumers from deciding, e.g., to purchase sustainable products or changing their housekeeping habits. Providing information and raising awareness of the origin, composition, transportation and manufacturing of products might make people willing to pay more for those products.

From the standpoint of sustainable marketing, previous pieces of research based on a survey of companies' leading specialists and buyers (a random sample of 1 003 respondents) showed that businesses need to create a well-thought approach, a sustainable product assortment and promotion and selling activities in line with sustainability conditions. The consumers of nowadays are very sensitive to any price changes, and businesses may use price changes as marketing communication tool in communication with their consumers to help not only sell or promote new products, but also boost the sales of healthy, ecological, domestic manufactured products (Bormane S., 2018). It was also concluded that 1) value proposition may be directly related to product consumption value – quality, ingredients, the manufacturing process, sufficient information, including the re-use and utilisation of packaging, the need for products and the benefits from their use etc.; 2) consumers lack information and competence on product characteristics, which businesses can raise by applying marketing communication – on packaging, labels, informational marking, thus boosting the consumption of sustainable products. (Skiltere D., Bormane S., 2018)

The improvement of business in terms of adherence to a sustainable marketing concept relates not only to the product assortment, quality, packaging and design, but also to distribution and promotion, thus contributing to the formation of public opinion on the importance of environment conservation, the raising of consumer awareness, the enhancement of corporate social responsibility for consumer health, ecological products overall, and the role and contribution of a green economy to the country's economy as a whole (Bormane S., 2018)

In order to reach the company's goals in communication with consumers, the marketing communication must be implemented through specific, customer-oriented tools for sustainability to increase the consumption value of a product or service for sustainability – economic development, public well-being, and environment preservation (Skiltere D., Bormane S., 2018).

In order to avoid greenwashing, the entire business process needs to be aimed towards sustainable development: incorporating innovations in products, services and processes alike, i.e., creating: 1) a value proposition and supply chain, interfacing with customers, 2) a financial model. This highlights the contributing and hindering factors for sustainable entrepreneurship, as well its prospects of development.

Research results and discussion

Subsequently, in order to assess sustainable entrepreneurship in Latvia, the authors employed a qualitative research method – interviews with experts in the domain of sustainability (representatives of entrepreneurship, the academic environment, fashion, marketing, manufacturing companies and specialists from the institute for sustainable development) conducted in 2020.

The expert opinion and suggestions make it possible to identify the key aspects that cause both favourable and adverse conditions for sustainable development – i.e., the impact of social norms and consumer purchase trends, motivational factors, the more developed and promising sectors in the context of sustainability – and to give recommendations to entrepreneurs and the government.

In Latvia, renewable sources of energy cover 40 % of the country's energy needs, which is one of the highest shares among the OECD countries. Yet, despite the progress, the state needs to do more towards the development of sustainable growth. The residential sector is the main energy consumer in Latvia, followed by transport which is also the main source of GHG emissions and air pollution.

When it comes to developing sustainable entrepreneurship, there are three main directions – environment, vital resources and communities where: 1) environmental protection encompasses biodiversity, ecosystems and natural landscapes; 2) vital resources refer to nature as a whole, natural resources and opportunities presented by ecosystems: the preservation of resources that are essential to the survival of humanity, such as clean air, water, environmental accessibility etc.; 3) communities are a network of individuals with common values, norms, history and identity so that, if the culture, groups of people or geographical locations are under threat, the communities may be broken up. Culture is a central aspect of society – maintaining the expression of a unique culture in a wider public maintains the identity of an individual which is crucial to the functioning of society (McMullen J.S, 2017). These factors are what sustainability mostly relies on, and opportunities arise in the development and application of these directions at a given company, contributing to long-term importance in one or multiple aspects of sustainability.

Entrepreneur-oriented recommendations can be used both for the transformation of an existing company into compliance with the principles of sustainability and for the creation of a new company focused on sustainability. For the sustainable development of the company, it is necessary to draw consumers' attention to the impact and consequences of choosing sustainable products, thus emotionally creating consumer awareness and desire to reduce negative environmental and social impact, provide consumers with information about the impact of the purchase decision. It is possible to use sustainable activity as a tool of reputation, but by proving it with the work done, to create a company's sustainability goal and develop principles, that the parties involved must also meet the specific sustainability criteria. It is important to experiment and focus not only on one, but to work with different tools to achieve sustainable operations (both product production, raw material extraction, product packaging, internal business process management and operation, and other areas of the company's operations). At the beginning of a company's sustainable development, it is important to understand and learn to start with minimal investment, perform activities that do not require financial resources, start with a small optimization of daily activities, selection of electronic solutions and other resource-saving means). An important factor is to start with the organization of the company's system - to make the system as digital as possible, including order acceptance, marketing, automatic answers, invoice generation, document management and other functions, because daily processes and work account for the largest consumption of time, pay and resources. The operation must be systematic in order to build consumer connectivity and confidence that

the business is stable and efficient in the long run. Before starting a sustainable business, it is also necessary to understand your personal thoughts, issues and values, thus understanding whether the entrepreneur is really ready to enter this sustainable business market, it is important to understand how the company has the greatest impact in the current or potential case. In addition, it is possible to form partnerships with suppliers and other companies, effectively combine sustainability with open innovation, focusing on cooperation, use a circular strategy, ensuring that the activities of cooperation partners and suppliers are also in line with sustainability. In general, it is important to introduce innovative ways in all aspects of business to promote sustainable development.

A number of directions have been set forth for sustainable development in Latvia: cultural space development, investment in human capital, change of paradigm in education, promotion of innovative and efficient economy, treating nature as future capital, observance of spatial development prospects, innovative governance, and public participation. Social norms and consumer purchase trends contribute favourably to the development of sustainable entrepreneurship in Latvia, but to a limited extent for now, which is why building consumer awareness for evaluating the long-term benefit and a change of consumer lifestyle and purchase trends towards sustainability is important. According to the experts, currently the most advanced industries in terms of implementing the principles of sustainability are energy, forestry, agriculture and the banking sector, also the food industry due to the plastic packaging used, as well as the industries with more environmental and human impact, such as the financial sector and transport. Hence, it matters what decisions the companies of these sectors make and what projects or initiatives they fund and support.

According to the experts, when it comes to the development of sustainability, Latvia needs improvements in transport infrastructure, energy efficiency and renewable energy diversity in terms of better profitability of public spending, reduced dependency on EU funds, and enhanced financial support for investments in business environment. The experts named educational programmes, standards and requirements, product labelling regulations, special tax conditions (for natural resource tax, individual income tax), public availability of studies, reports and open access information, and state and municipal procurement requirements incorporating the principles of sustainability as the main instruments towards sustainable development on a state level.

Conclusions, proposals, recommendations

The results of the research are of both theoretical and practical value.

Conclusions:

- 1) The development of sustainable entrepreneurship in Latvia is propelled by the regulatory pressure exerted by the European Union, as well as the increasing public interest in sustainability matters aroused by the available informational space.
- 2) The importance of sustainability in entrepreneurship manifests itself in companies' adaptability and motivation when choosing between profit and goal and envisaging their work as advancement towards prosperity. Sustainable entrepreneurship requires innovation, and together they make a creative combination of available resources.
- 3) In light of the global tendencies in terms of sustainable economy, a key motivator for business reorientation towards adherence to the principles of sustainability is effective attraction of investment, implementation of innovations, change of management process, adaptation of corporate strategy,

considering such factors as concern for social and environmental problems, market imperfections, social capital, and public capability and willingness to accept changes.

4) Social norms and consumer purchase trends contribute favourably to the development of sustainable entrepreneurship in Latvia, but it is important to build the awareness of consumers as members of the public for the evaluation of the long-term benefit and to change people's lifestyle and purchase trends towards sustainability.

5) Industries that are major impact makers – energy, forestry, agriculture, the banking sector, food production, the financial sector and transport – possess a high potential of promoting sustainability.

6) When it comes to promoting sustainability and implementing sustainable entrepreneurship in Latvia, there are improvements to be made in transport infrastructure, energy efficiency and renewable energy diversity, profitability of public spending, reducing dependency on EU funds and enhancing financial support for investments in business environment.

Proposals, recommendations

7) The key instruments for the promotion of sustainable entrepreneurship in Latvia are educational programme supply, improvement of standards, requirements and regulations to incorporate the principles of sustainability, special conditions for the application of natural resource tax, individual income tax, social tax, public availability of studies, reports and open access information, requirements of state and municipal procurements.

8) There are in-depth studies of consumers needed that would reveal the emergence of a need for sustainable products and the factors in favour of buying sustainable products.

9) The main tools for the development of sustainability from the state level - educational programs, regulations and requirements, regulations on product labelling, tax rebates (natural resources tax, personal income tax, social tax), studies, reports and open access information to the public, procurement tenders and their sustainable requirements.

10) The development of sustainable entrepreneurship in Latvia is hampered by insufficient interplay between the public awareness and the regulatory system from a sustainability perspective, reducing the effectiveness of motivation towards sustainable choices.

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THE ROLE OF INTEGRATED MARKETING COMMUNICATION FOR SUSTAINABLE DEVELOPMENT IN FOOD PRODUCTION

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Abstract. The decrease in food production output, the suspension of production, and the decrease in product demand have influenced the operation of producers and their communication with customers in 2020. This brings to the forefront the producer's role in the use of IMC for sustainable development in Latvia.

The purpose of the survey of leading specialists at Latvian food producers was to find out their opinion on the trends of development and a sustainable use of IMC in business. The object of the research: IMC for sustainable development. The subject: IMC for sustainable marketing at Latvian food producers.

The study uses monographic, quantitative, qualitative methods – interviews of leading specialists of producers. It represents a follow-up to the author's previous studies in the food retail industry where she researched food retail chains and conducted a survey of buyers. She developed a conceptual model of IMC for sustainable business development and found that each sector has peculiarities in product selling, service provision, etc., yet there are also common trends that apply to all industries. The author urges further market research, covering producers.

The results show some trends: 1) the motivation to use IMC for sustainable development has grown due to the increased use of technologies; 2) extended periods of sedentarism have exacerbated the problem of overweight in society and given rise to demand for healthy ecological products, including natural ingredients in production; 3) the risk of employee illness and the reorganization of production has contributed to the use of digital marketing.

Key words: sustainability; sustainable development; sustainable marketing; integrated marketing communication.

JEL code: M14; M31

Introduction

Background. More and more companies face the challenge of encompassing sustainability in their business, searching for opportunities to integrate in a global sustainable development (Marioka S. N. et.al., 2016). The merging of both fields - sustainable innovations and business - is beneficial and fosters sustainability (Boons F. et. al, 2013). Moreover, these business tools may be adjusted to and structured within companies already in operation. The company may improve its efficiency using a performance assessment system that incorporates the dimensions of sustainable business development combined with elements supporting business sustainability: 1) *the production process* – the use of technical equipment and manufacturing technologies (capacity, economy, modifiability); 2) *the selling process* – a strategically reasoned selection of product type and market orientation; 3) *the staff management process* – a rational and stable provision and coordination of internal structures among structural units; 4) *the financial management process* – an optimum movement, structure and efficient use of financial resources; 5) *the accounting process* – an analysis of management functions as basis for decision-making (Ciemleja G., 2010).

Based on the results of the author's previous research on food retail chains and the survey of buyers conducted in 2017-2019, it was concluded that: 1) value proposition may be directly related to product consumption value – quality, ingredients, the manufacturing process, sufficient information, including the re-use and utilisation of packaging, the need for products and the benefits from their use etc.; 2) consumers lack information and competence on product characteristics, which businesses can raise by applying IMC – on packaging, labels, informational marking, thus boosting the consumption of sustainable products; 3) IMC focuses on the consumer and its possible behaviour. By implementing IMC through messages and stories, businesses may improve the public's understanding of sustainability and expand the opportunities

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for people to get involved in the promotion of a sustainable life style; 4) businesses lack understanding of the importance of domestic and ecological products for sustainable development and the influence of the share of imported products upon human health and natural capital; 5) businesses are ready to use IMC tools, which raise consumer awareness of sustainability, in their marketing strategy within the next 3 years as they believe such tools are beneficial to the environment, economy, and social well-being; 6) the national legislation may be conducive to sustainable development if it applies not only to the product seller or consumer, but also to the manufacturer – a mandatory statement of information on the product, its packaging etc. has a role in building the supply of sustainable products, with both the seller and the manufacturer involved; 7) there are in-depth studies of consumers needed that would reveal the emergence of a need for sustainable products and the factors in favour of buying sustainable products (Skiltere D., Bormane S., 2018).

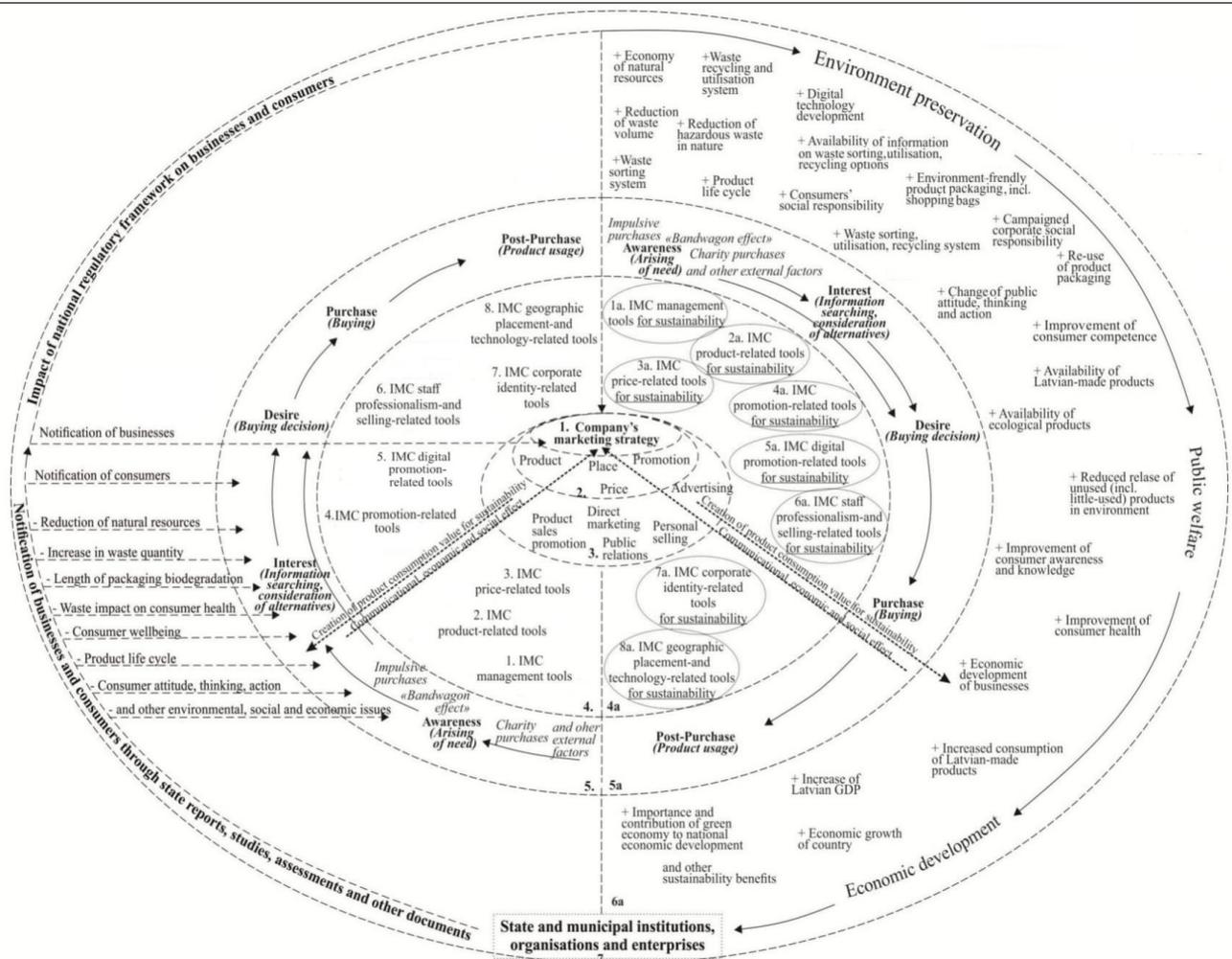
Research results and discussion

Based on the results of the author's previous research on food retail chains and the survey of buyers conducted in 2017-2019, the author has developed, aggregated and classified IMC tools for sustainability (80 pcs) and divided them into 8 main groups: 1) management IMC tools for sustainability (8 pcs); 2) product-related IMC tools for sustainability (14 pcs); 3) price-related IMC tools for sustainability (5 pcs); 4) promotion-related IMC tools for sustainability (28 pcs); 5) digital promotion-related IMC tools for sustainability (12 pcs); 6) staff professionalism- and selling-related IMC tools for sustainability (2 pcs); 7) corporate identity-related IMC tools for sustainability (6 pcs); 8) geographic placement- and technology-related IMC tools for sustainability (5 pcs) (Bormane S., 2018).

The results of the survey of buyers dating back to 2017-2019 show that a key role in buying decisions in the context of sustainable development is played by marketing communication activities pertaining to price discounts on ecological and Latvian-made products, products with environmentally friendly packaging, best-before dates, loyalty system, payment options, staff knowledge and advice, proportion of domestic products etc. This draws attention to the factors of influence upon buyers' decisions.

Seeking to identify the complex factors of influence upon buyers' decisions in the context of sustainable development, the author used the commonly applied principal components method that allows to reduce data dimensions with minimum loss of information and the widespread varimax factor rotation method. Upon grouping IMC tools for sustainable development so as to find the regularities and links among the tools – i.e., what factors buyers possibly pay more attention to in their buying decisions – it becomes evident that the previous trend of the author's classification of IMC tools for sustainable development persists, with product-, promotion- and price-related and digital promotion tools most influential in communication with buyers in the context of sustainable development. Specifically, the author has identified the complex factors that influence buyers' buying decisions in the context of sustainable development. Those can be sorted in the order of importance as follows: 1) *product packaging*, 2) *availability of information*, 3) *consumer involvement*, 4) *loyalty system and programmes*, 5) *availability of results of scientific research*, 6) *affordability*, 7) *product quantity and availability*, 8) *functional product features*, 9) *company information online*.

Based on the above, the conceptual model of IMC for sustainable business development presented in Figure 1 was developed and approved.



Source: model developed by the author

Figure 1. The conceptual model of IMC for sustainable business development

The specific nature of the conceptual model of IMC for sustainable business development lies in not only IMC tools in companies' communication with consumers and society to achieve their communicational, economic and social goals but also fostering environmental conservation, public wellbeing and economic growth based on organising a different kind of business and a change in public action. A systemic approach to the integration of marketing communication tools and their focusing on the observance of sustainability can not only educate and raise the awareness of businesses and consumers but also create a consumption value, i.e., purchases based on a need (Skiltere D., Bormane S., 2018).

The recent years have seen a major change in the buyers' behaviour, with an increasing tendency of buying decisions being based on other customers' feedback. The buyers' behaviour is determining by searching product information from various online sources. Hence, by placing information on social media and making it possible to browse and compare products, producers or traders can give rise to a positive attitude and behaviour of consumers and draw more visitors to their website or social media page (Pentina I., Tarafdar M., 2014). The author finds that the use of IMC still needs to consider that the social media communication goals need to be focused on delivering and presenting information to consumers, not merely on buying. This would also contribute positively to production – selling – buying decisions in the context of sustainable development. Specifically, there is one goal – more information about the importance of sustainability in economy to encourage the pursuit of such lifestyle.

In this regard, a growing number of scholars pay attention to the dark side of social media, the possible risks faced by business users and associated with sharing, presence, conversations, identity, relationships, groups, reputation (Baccarella C. V. et.al., 2018).

When it comes to using social media and choosing communication tools, researchers suggest that businesses should experiment and collect data and cases before deciding on their communication strategy and creating an algorithm. As social media destroys many features of members of the public, researchers are urged to focus more on the use of social media, its impact upon individuals, and the cost-benefit ratio for investments in communication.

The author urges further market research, also covering producers that provide the product assortment.

Use of the conceptual model of IMC for sustainable business development in food production

Since the previous research lead to a conclusion that food retail chains have a motivation to use the IMC tools developed, collected and classified by the author in communication with buyers, and in fact they have been extensively using these IMC tools during the last three years. For instance, 1) the proportion of Latvian-made and ecological products in certain food categories is constantly revised and increased, 2) there is a more extensive range of products with recyclable packaging, 3) an increasing proportion of products contain information on product healthiness or ingredients with a positive health impact (e.g., nutritional value) through design and/or on the label, 4) gifts on purchase - ecological products etc.

Due to COVID-19 there was a more rapid implementation of digital communication tools by food retail chains in marketing communication with consumers – mobile shopping applications, development or upgrade of web shops, focus on communication on social media and on the web in general and, most prominently, the service of home delivery of food and meals, online payment options. Importantly, as motivated as the product seller – i.e., food retail chains – may be to contribute to sustainable development through their offering of food products, a key role is played by the food producers who supply the retailers with products and are the first link of the supply chain. This brings to the forefront the producer's role in the use of marketing for sustainable development.

The volume of industrial products in Latvia in 2020 fell by 1.7 %. This includes food production (Central Statistics Bureau, 2021) where the 3.2 % decrease in production output was predominantly caused by such factors as suspension or outage of production and decrease in product demand due to partners and customers ceasing activity etc. The impact of closed borders upon ingredient (material) deliveries and product export is just partly responsible for the overall production decline. The geographical location of businesses, i.e., the places of production and trading, has become less important due to the COVID-19 restrictions, resulting an increased role of marketing communication in production and trading processes. Producer companies lack funds for advertising costs, but the market conditions where entrepreneurs attempt to adapt to the new situation by moving part of trading to the digital environment in a way benefited the online media. Those suffered the least decline in advertising revenue in 2020 – 3.3 % (Latvian Advertising Association, 2021).

The economic situation of 2020 has had an impact on the companies' habits in terms of marketing communication. They were forced to switch to an increased use of digital promotion-related IMC tools for sustainability in communication with customers and partners. Creation of safe, effective work environment, emphasizing human oriented approach in contemporary business process management is one of the main conditions for sustainable development of an enterprise (Kalkis H. et.al., 2018).

Hence, in 2020, in order to find out the role of food producers in the promotion of sustainable development, the author followed up on her previous research (2017-2019) and launched an expert survey,

conducting interviews at Latvian food producer companies (sweet producers). The scientific purpose of the survey of leading specialists at Latvian food producer companies was to find out their opinion on the trends of development at their companies and a sustainable use of IMC in business. In order to find out about the use of the conceptual model of IMC for sustainable business development in food production, the experts were asked what factors affect the use of IMC tools for sustainability.

The results of the research showed that IMC tools for sustainability are usable as sustainable business management tools in the context of sustainable development. While the businesses have not yet used some of the IMC tools in their marketing strategy, those are still considered demand-increasing and conducive to economic development, environment preservation, and public wellbeing. Although the expert interviews are still in progress, one can already notice a trend that food producer companies intend to use IMC tools for sustainability, especially those related to product packaging, design, and information to consumers, especially interactive and digital marketing activities. The experts have also highlighted the importance of product ingredients in the production process. The results of the research show some preliminary trends which are presented below.

The experts from food producer companies predominantly attribute the motivation of using IMC for sustainable development to the rapid increase in the use of the Internet and technologies in daily social processes and business. More specifically, 1) remote work, communication (or life) and shopping online due to the spread of COVID-19, the state of emergency announced in the country, the lockdown, and the general rule of social distancing. Hence, the experts mention digital communication and interactive marketing activities online as the key IMC tools for sustainable development, as those provide a link with the consumer and enable businesses to not only optimise their marketing processes but also to create a dialogue with customers, the public and the market outlets remotely or online. 2) When it comes to communication with the public, food producer companies focus on using social media. However, they admit that there are major differences between the two most popular ones – *Facebook and Instagram* – in terms of both target audience and content to be published. Furthermore, the expert interviews reveal that food producer companies tend to outsource social media communication and the dialogue with the public to marketing and communication service providers on a contractual basis. The companies admit that the content and methods of communication have substantially changed, with a more prominent role taken by short and interactive subtitled videos that require special knowledge of content creation, implementation and promotion as well as equipment and digital tools. For instance, when communicating on social media, one must not forget about constantly analysing return to find the best-suited tools, technique, time of day and intensity in communication with consumers. The pandemic has brought changes in the established principles in terms of what social media tools – video content, podcasts, live broadcasts, recordings, photos etc. – reach the target audience (the particular generation) more effectively. Since 2020, the situation has become different – elderly individuals, too, are forced to master the use of social media (sometimes via their children and grandchildren), which is why companies devote rather substantial time and resources towards producing appropriate content and making it available to as broad audience as possible (across different categories of age, gender, education, income etc.). Social media as a place of communication has also become a shopping platform. Hence, the volume of information on these sites and Facebook pages of businesses is increasing, as is the need for structuring. Specifically, businesses need to work on making their messages more visible yet distinct, appealing and easily comprehensible through various colours and symbols, for instance, by formatting posts of one kind (such as change of working hours) differently from other content. Thus, instead of spending funds on personnel training, purchases of new technologies etc., specialists are outsourced (photographers, proof-readers, designers, social media administrators, analysts

etc.). Such decision also stems from the risk of employee illness that has prompted optimisation of daily processes, especially work organisation at such structural units as procurement and marketing departments.

This leads to a conclusion that more and more free agents offer their skills and abilities to several employers for limited periods. They are specialised, highly organised, super connected and able to work from wherever and whenever.

According to the experts, extended periods of sedentarism have exacerbated the problem of overweight in society and given rise to demand for healthy, ecological products. This has led to more natural ingredients being used in the process of production. Likewise, the progress of lactose and gluten intolerance for the affected individuals prompts producers to work more on promoting new product categories in the market. A key role is therefore played by product packaging, i.e., information on product ingredients, healthiness, nutritional value, as well as recyclable packaging and the variety of types of pre-packaging, given that retailers strive to sell products remotely (contactless ordering, sale, delivery), thus contributing to the increase in the volume of food packaging waste.

The experts unanimously confirm that food producer companies plan to continue applying IMC tools geared towards sustainable development in the years to come despite the challenging economic environment in Latvia and globally, as they believe that using these tools can help change not only the public thinking and action but also the companies' economic habits and methods, thus contributing to the economic development, environmental conservation and social responsibility.

Conclusions

- 1) The motivation of using IMC for sustainable development has substantially grown due to the increased use of the Internet and technologies for people's needs in work, study, shopping and other processes.
- 2) Extended periods of sedentarism have exacerbated the problem of overweight in society and given rise to demand for healthy ecological products, including using natural ingredients in the production process which prompts producers to consider entering new product categories.
- 3) The risk of employees falling ill and the reorganisation of the production process has contributed to the use of digital and interactive marketing activities. Specifically, more and more free agents offer their skills and abilities to several employers for limited periods. They are specialised, highly organised, super connected and able to work from wherever and whenever.
- 4) The role of information about product ingredients, healthiness, nutritional value etc. on product packaging has increased. In order to draw consumers' attention, more content needs to be published in the digital environment – when addressing consumers on social media, producers need to focus on informing as a marketing communication goal.
- 5) Given the variety of types of pre-packaging, as traders strive to enable contactless ordering, sale and delivery, it becomes increasingly topical to find new innovative solutions for making the packaging suitable for daily use (not just for recycling or returning to the producer for reuse), for instance, edible, soluble or destroyable without polluting nature.
- 6) Businesses using social media should consider the negative social impact of social media resulting from the message conveyed, i.e., analyse reachability and feedback when choosing communication tools, with a focus on content quality and being informative.

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FAMILY HOMESTEADS AND SUSTAINABLE DEVELOPMENT OF RURAL AREAS IN THE POST-COVID ERA

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Abstract. In recent decades, in the rural areas of Russia and some other states, a new form of land management - family estates - has been developing. This form, without a legal status, has significant distinctive features from farms and horticultural associations. Family estates form entire settlements, functioning on the principles of preserving family values, master's motivation, cooperation, and environmental friendliness. Coronavirus crisis has exacerbated the desire of residents of large urban agglomerations to move to live in rural areas.

The authors investigate the features of the current state of management of the settlements of family estates and their prospects in the post-COVID period. The aim of the work is to assess the potential of family homesteads in the formation of conditions for sustainable development of rural areas. The paper assesses the current state and forms of economic activity of settlements of family estates based on the results of the survey authors (structured interviews).

The authors analyse the current and potential impact of family homesteads on sustainable rural development. The conclusion is made that under certain conditions, family estates can serve as one of the significant elements of the model of the future society in the post-COVID era.

Keywords: family estates, sustainable development, rural areas.

JEL code: Q56, R11, R23

Introduction

In the last decade of the XXI century, a new form of land management – family estates and settlements consisting of them-began to take shape on the territory of the former Soviet Union and some other countries of the world. It is required to study the potential of family homesteads in ensuring the sustainability of the development of rural areas and the impact on the development of cities. The basic hypothesis of the study is the provision that these forms of management in the future can become an important system-forming element of sustainable development of rural areas. Their formation will reduce the severity of the problems of depopulation of rural areas, increase economic activity and reduce environmental risks in rural areas, increase the efficiency of their interaction with urban agglomerations and labor markets.

Urban agglomerations, by sucking out personnel from the countryside like a vacuum cleaner, along with economic benefits, create a large population density, which contributes to the spread of pandemics like COVID-19. Pandemics occur in the XXI century are increasingly (Madhav, 2017; Fan, 2018). The large concentration of the population in urban agglomerations, plus the growing globalization associated with the increase in contacts between people from different countries and regions, give the effect of pandemics of the 21st century. At the same time, the Internet and digital technologies enable a modern worker to work from anywhere on the planet, not just in urban agglomerations. Hence, there is a need for new forms of human settlement, such as family homesteads. According to Bollyky, pandemics were gradually disappearing, not because of vaccinations, but thanks to investments in sanitation and hygiene. Consequently, the sustainable development of the 21st century, in the trinity of economic, social and environmental components, should focus on the resettlement of people, including the expansion of the number of family homesteads.

The purpose of the study is to identify the potential and limiting factors of the formation of settlements consisting of ancestral estates as an element of ensuring the sustainability of the development of territories in the post-COVID era. To achieve this goal, the distinctive features of these forms of farming in rural areas will be considered on the basis of available statistical materials and data from surveys of representatives of ancestral estates. The article analyzes the relationship between the goals and elements of sustainable development and the potential for the formation of ancestral estates, taking into account the new challenges associated with the COVID-19 pandemic. The article examines the problems that limit the growth rate of family homesteads and possible measures of state regulation aimed at enhancing their development.

Research results and discussion

Family homesteads and settlements consisting of family homesteads represent an emerging type of small forms of farming on the land. Their differences from traditional forms of farming in rural areas in the form of personal subsidiary plots of the population, farms, summer cottages, farming within the framework of gardening partnerships are manifested in the totality of the features of the goals and methods of conducting their activities (Walker K. D., Plotnikova M., 2018; Chekmarev O. P., 2019).

The differences include:

- orientation to family values and the formation of a "place of procreation";
- maintaining a healthy lifestyle for members of family homesteads and the settlement as a whole;
- ecological orientation of agricultural production, the implementation of the principles of organic farming and the creation of balanced biogeocenoses within both an individual estate and in the settlement as a whole;
- the relatively large size of the land plots on which the estate is located (usually 1-2 hectares), in contrast to summer cottages, household and horticultural farms;
- striving for cooperation and mutual assistance of the members of the settlements;
- optional high level of marketability of agricultural production, in contrast to farms;
- a combination of different sources of income generation for members of the economy (agricultural production, self-employment in other areas of the economy, employment, etc.).

Thus, the listed features of ancestral estates largely overlap with the goals of sustainable development of territories, since they are aimed at simultaneously solving socio-economic and environmental problems of human activity. Therefore, it is advisable to understand in more detail the question of what is the current level of formation of family estates and what is their potential in creating conditions for sustainable development of territories. The sustainable development of territories will be considered not only from the standpoint of the well-known triad of balances of ecological, economic and social components of sustainable development (Medouz D., Randers J, Medouz D., 2007), but also by paying attention to other mandatory properties of sustainability. This is a reliance on development goals, which give the researcher the opportunity to assess the effectiveness of measures in the field of sustainable development of territories, and issues of the formation and disclosure of development potentials, and protective mechanisms that support the dynamic stability of territorial systems of sustainable development (Chekmarev O. P., 2018). It is also advisable to take into account a rather important aspect of the interconnectedness of sustainable development of rural and urban areas. The cities and countryside of any country or region are dependent on each other in a wide range of areas of interaction and resource allocation. Examples of this are the processes of labor force migration between the city and the countryside, cooperative ties of agricultural

producers with suppliers of material and technical resources and buyers of agricultural products, the formation of transport and logistics corridors passing through rural areas, recreational and environmental protection functions of rural areas, educational and scientific potential cities and much, much more.

The COVID-19 pandemic has posed a new challenge to the global economy. It has intensified discussions on maintaining the sustainability of the development of socio-economic systems. This is especially true position of their protection from the effects of negative factors, restrictions must be imposed on the usual kinds of economic activity. These limitations were associated with the incidence rate of the new coronavirus infection. A review of primary statistical data provides contradictory estimates of the relationship between the level of population concentration in the territory and the proportion of infected people (Puzanov A. S., Bobrova K. V., 2020; Fang W., Wahba S., 2020). Within urban and adjacent areas, data contradicting the formal logic are noted, indicating a relatively large proportion of cases in urban areas and suburban areas with relatively lower population densities (Density and COVID-19 ..., 2020). Coronavirus restrictions have exposed other problems that hinder the sustainable development of territories. First of all, these are the issues of maintaining the quality of life of the population in the context of falling production and the functioning of labor markets. The prevailing trend in the evolution of the labor market has become the spread of remote work and restrictions on migration flows of labor (Remote work ..., 2020; Ryazantsev S. V., Bragin A. D., Ryazantsev N. S., 2020).

The pandemic has created a new economic reality by changing the relationship between the values of life in urban and rural areas. Let's highlight two of its most striking features.

1. Telepresence distribution, as Mindell aptly defined, is a modern form of automation (Mindell D. A., 2015). This trend is long-term, as if the pandemic is over soon, many lost jobs will not recover, and the proportion of days worked at home will rise from 5 % to COVID-19 to around 20 %, in line with the average desire of workers (Barrero J. M. et al, 2020). 2. Relocation of the most educated, successful professionals from urban agglomerations to the countryside, those, according to Paul Collier, constituted a new prosperous class - they are not capitalists and not traditional workers: they are educated people who have mastered new professions (Collier P., 2018).

In addition to the factors of the pandemic, other trends in their development are also affecting the development of rural areas, associated with the continuing increase in urbanization and a decrease in the amount of arable land in the overwhelming number of European countries and the group of economically developed countries (Tables 1, 2).

Table 1

The level of urbanization and changes in the rural population in selected countries of the world

The country	Urbanization rate, %			Change in the rural population in 2018 to 1995 / thousand people
	1995	2010	2018	
Belarus	68.4	75.1	78.6	-1229.8
Czechia	74.6	73.3	73.5	158.0
Estonia	70.3	68.1	68.0	-18.9
Finland	81.0	83.8	85.7	-164.3
France	75.5	78.6	80.7	-1854.6
Germany	74.0	77.0	77.1	-2515.0
Hungary	65.2	68.9	71.2	-825.0
Latvia	68.8	67.8	68.2	-169.0
Lithuania	67.3	66.8	69.5	-256.7
Poland	61.5	60.9	60.3	413.1
Russian Federation	73.4	73.5	73.5	-2678.8
United States of America	77.4	80.7	82.2	-2438.4

Source: FAOSTAT

The data in Table 1 indicate the ongoing process of urbanization and the increasing concentration of people living and working in urban agglomerations. This creates additional risks associated with the possibility of future spread of epidemics. The processes of urbanization, along with an increase in the concentration of the population in cities, reduce the population in rural areas. Of the countries considered in the table, only two (the Czech Republic and Poland) were able to increase the number of rural populations between 1995 and 2018. In other countries, more or less pronounced tendencies towards a decrease in the number of the rural population are observed. This decrease leads to various negative effects that threaten their sustainable development of territories, among which the following should be especially noted:

- the decline in the efficiency of social and economic infrastructure in rural areas (communication systems, education, health care, etc.), due to the fact that these objects have pronounced positive effects on the scale of detail;
- the living conditions of the rural population are deteriorating, business activity and incomes of the population are declining, and incentives for further outflow of the population to cities are increasing;
- a shortage of personnel is formed to ensure agricultural production and other traditional sectors of the economy in rural areas;
- depopulation of rural areas creates risks to the national security of states in connection with the threat of soft forms of seizure of territories by migrants, lack of control over territories;
- the number of labor force with valuable properties of economic motivation, responsibility, trust and other features that are actively formed earlier among the young rural population in connection with the specifics of residence and the need to maintain the multifunctionality of activities in rural areas is decreasing;

- cities are deprived of a source of replenishment of the labor market with motivated and nationally identical labor resources. what causes the need for a cross-border influx of labor and the strengthening of the problems of relations between migrants and the indigenous population (Lukichev P. M., 2021);
- replacing the labor force with technical and robotic systems can provoke the intensification of agriculture, the concentration of production and the aggravation of environmental problems of land use in rural areas (depletion of soil fertility, the formation of volumes of animal waste. which cannot be effectively used in the territories nearby to the livestock complexes, etc.).

The development of family estates requires the availability of land for their formation. The potential of land areas is available in many countries. We will consider it on the basis of a study of the dynamics of only the arable lands most adapted for the formation of family estates. Although, of course the nature of the activities of these estates allows to allocate land for their formation and from other areas (such as meadows, pastures, forest).

Trends in the decrease in the amount of arable land in the countries under consideration are shown in Table. 2.

Table 2

Dynamics of changes in the area of arable land in some countries, thousand hectares

The country	1992	2000	2010	2018	2018-1992	% of lost arable land from the total area of 2018
Belarus	6084	6133	5535	5712	-372	6.5
Czechia	-	3243	3171	2484	-848	34.1
Estonia	1115	843	645	688	-427	62.1
Finland	2284	2188	2254.8	2244	-40	1.8
France	17847	18354	18301	18126	-228*	1.3
Germany	11467	11804	11846	11731	-73*	0.6
Hungary	4742	4602	4392	4324	-418	9.7
Latvia	1688	970	1173	1295	-393	30.3
Lithuania	2885	2878	2127	2115	-770	36.4
Poland	14337	13993	10829	11009	-3328	30.2
Russian Federation	132008	124374	121649	121649	-10359	8.5
United States of America	184080	175368	157717	157737	-26343	16.7

* - compared to 2000.

Source: FAOSTAT

A decrease in arable area is a fairly pronounced trend in all countries considered in the table. In general, it can be seen that both in the countries of Eastern Europe and in the developed countries of the world there is a tendency to a decrease in the area of arable land, which creates the potential for family homesteads as a factor in eliminating the depopulation of rural areas. This potential is especially high in the Baltic countries, the Czech Republic, Poland, the USA and the Russian Federation. Now, in the period of the COVID-19 pandemic and the heyday of remote employment (telepresence according to Mindell D. A., 2015), there are new opportunities for the relocation of economically active, educated workers to rural areas.

Now let's return to the issue of the impact of the pandemic on the sustainability of the development of rural areas. Almost all studies show that rural areas, as located at a distance from the primary foci of infection, have a slower development of the epidemic relative to urban agglomerations (Puzanov A. S., Bobrova K. V., 2020; Healy D., at all, 2020). The peak of the incidence appears with a significant lag from the latter. This creates a reserve of time for the adaptation of the health care system to the conditions of the pandemic, creates opportunities for the adaptation of the health care system to the new situation. This is a factor in smoothing out the consequences of the disease, reducing the mortality rate. The study of the statistics of the incidence rate in the Leningrad region of the Russian Federation shows that the incidence rate in rural settlements for almost a year of the epidemic is statistically significantly lower than in regional centers and urban areas as a whole (Table 3).

Table 3

The incidence rate in urban and rural areas of the Leningrad region, people per 1000 inhabitants 2020-2021

Districts	Urban settlements	Rural settlements	District centers
Leningrad region	20.09	17.60	26.56
Boksitogorsk municipal district	24.96	15.76	31.74
Volosovsky municipal district	24.86	20.13	24.86
Volkhov municipal district	15.66	12.17	15.21
Vsevolozhsk municipal district	18.54	16.95	24.41
Vyborg municipal district	20.71	12.50	26.32
Gatchina municipal district	22.62	20.24	24.06
Kingiseppsky municipal district	19.78	13.53	20.15
Kirishi municipal district	32.29	20.50	32.80
Kirovsky municipal district	13.83	12.47	16.59
Lodeynopolsky municipal district	40.44	19.27	40.97
Lomonosov municipal district	16.08	17.67	19.75
Luga municipal district	21.43	19.76	21.61
Podporozhsky municipal district	30.41	40.39	32.08
Priozersky municipal district	39.95	22.72	42.78
Slantsevsky municipal district	30.56	16.29	30.56
Tikhvin municipal district	28.75	26.89	28.75
Tosno Municipal District	14.38	14.56	18.87
Average	24.43	18.93	26.56

* - compared to 2000.

Source: Rosstat; The total number of registered ..., 2021

Statistical data on people living in rural and urban settlements were obtained from the Rosstat database, and the incidence rate from data from the regional body of Rospotrebnadzor. To compare the number of COVID cases in urban and rural areas, a relative indicator was taken - the number of cases per thousand people, which averaged: 18.93 in rural areas, 26.56 in regional centers and 24.43 in cities. The assessment of the significance of the differences in the sample averages for the Student's t-test showed that the discrepancies are significant for rural areas and cities ($t_{\text{fact}} = 2.11$ versus $t_{\text{crit}} = 2.04$), as well as for rural areas and regional centers ($t_{\text{fact}} = 3.01$ versus $t_{\text{crit}} = 2.04$) with 5- the percentage level of significance

and 32 degrees of freedom, which confirms the influence of the place of residence on the incidence rate. This is also confirmed by the empirical correlation calculated on the basis of the variance addition rule: between the number of cases per thousand of the population and the location of cases. There is a moderate statistical relationship (number of cases and residence in urban / rural areas - 0.35, number of cases and residence in district centers / rural areas - 0.47).

Thus, in contrast to the previous studies, when assessing the structure of the incidence rate based on the division of rural and urban areas, the hypothesis of less prevalent COVID-19 in rural areas was confirmed. The reasons for the discrepancy are assumed to be related to the fact that studies in China and the United States were aimed at a general delineation of territories with a predominantly rural and urban settlement, but they did not take into account the division of the number of cases within these territories. In predominantly rural areas, there are urban settlements in which significant incidence rates may exist. Some deviations from the general dependence, identified on the basis of the study of the Leningrad region, partly confirm this assumption. So, the only area where there is a significantly higher incidence rate in rural areas relative to urban areas is Podporozhsky. However, a detailed study of the reasons for this phenomenon shows that the increase in the percentage of cases was provided only by one settlement in the village of Vinnitsa. It is very close to the category of urban-type settlements in terms of the number of inhabitants (more than 2 thousand people). If we do not take into account the outbreak of morbidity in this village, then the statistics for the Podporozhsky district as a whole will fully fit into the general trend. Low differences between the incidence in urban and rural areas are also observed in those areas that are in close proximity to St. Petersburg and have a significant degree of intra-district urbanization. This also confirms the conclusions of foreign studies that with wide pendulum migration, more dispersed areas of settlement may be exposed to greater risks of spreading infections due to the specifics of employment conditions and population movements. In general, rural areas of the Leningrad region show a higher resistance to the spread of the disease.

Of course, we are not dealing with a pure experiment, and the research results could be influenced by the peculiarities of the practice of statistical registration of sick people in rural and urban areas, as well as other factors, for example, the propensity to seek medical help, its availability for the population. However, the same problems should be taken into account in alternative studies of foreign analysts. Therefore, at the current stage of the analysis, we can say that with the existing registration system in the Leningrad Region, significant differences were found between the incidence rate of COVID-19 in urban and rural areas with a downward trend in the percentage of cases along the line: regional center - urban settlements of the region - rural settlement. The moderate level of this relationship is quite understandable due to the presence of multiple other factors affecting the spread of infection, which reflects the overall complexity of modeling socio-economic processes. For more unambiguous conclusions, more extensive research is required, including at the level of other regions of the country.

Thus, the intermediate conclusions suggest that the development of rural forms of settlement is an important component of the sustainable development of not only rural areas but also urban agglomerations. Now it is necessary to analyze the current and potential role of family estates in this process.

Table 4 presents the main statistical characteristics of family homesteads, mainly of the Russian Federation, obtained on the basis of studying the database of family homesteads and settlements of them, which are available in the public domain (Eco-settlements, family homesteads..., 2021).

Before analyzing the data shown in the table, it is necessary to make a few comments on the content of the database on the basis of which they were calculated. First, not all settlements contained in the database have up-to-date and complete information, which reduces the accuracy of estimates of

aggregated indicators. The database on estates abroad in Russia is rather weak and makes it possible to speak with confidence about the presence of developed settlements, consisting of family estates only in Ukraine, and then in an extremely limited number (4 settlements). Note that according to Walker K. D., Plotnikova M. (2018), there are much more family homesteads in Ukraine. Nevertheless, a fairly large list of settlements and the allocation of the category of developed settlements (in which more than 10 people permanently live) within them, makes it possible to identify general trends in their development. Although, for more accurate research, it is necessary to update the existing information base.

In Table 4, a developed settlement of family homesteads is understood as a settlement in which more than 10 people live on a year-round basis. Other categories of settlements presented in the sample are groups of "wintering" estates (in which there are families permanently residing in them), settlements under construction, taking shape, and settlements for which initiative groups work to allocate land for their arrangement.

Table 4

Separate characteristics of family homesteads and settlements

Characteristics	Numerical indicator
Total number of settlements / including in Russia	522/435
Regional representation, Russia (number of regions) total / with developed settlements	61/28
Country representation (of countries). total / with developed settlements	15/4
Average number of estates in a settlement, total /in a developed settlement	15/34
Average number of people in a settlement, total /in a developed settlement	43/93
Average number of families in a settlement living on a year-round basis, total / in a developed settlement	9/18
Average number of people in a settlement living on a year-round basis, total / in a developed settlement	26/52
Average household size in a settlement, total / from the group of developed settlements, people	2.75/2.84
The share of developed settlements / settlements in which at least one family permanently resides, in % of the total number of settlements	13,8/33,0
Average size of an estate in a group of developed settlements, ha *	1.19
The possibility of building a residential building on the land of the estate with the right of registration / without the right of registration in % of the total number of settlements	38,5/13,2

* - excluding five settlements with large areas (10-50 ha / settlement).

Source: author's calculations on Eco-settlements, tribal settlements ..., 2021

The results of the analysis of the statistics of family estates and settlements (Table 4) allow us to draw the following conclusions:

- the greatest distribution and development of settlements consisting of ancestral estates is characteristic of Russia. this is due to the fact that it was here that the basic principles of both formation and functioning were born;
- the total number of people living in the family estates of Russia. the number of people included in the database can be conditionally estimated at 18-20 thousand people, which is not a significant value today and is about 0.05 % of the total rural population of the country;

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- a significant number of ancestral estates are at the stage of formation, but almost half of the settlements have families permanently residing on their territory, and 13.8 % of the settlements have a significant group of households on a year-round basis;
 - the average size of land plots assigned to an estate is 1.19 hectares, which generally corresponds to the basic characteristics of this form of farming, which were noted above, although in remote regions this area can increase significantly (10-50 hectares / estate);
 - the characteristics of developed settlements make it possible to consider them as small centers of economic activity in rural areas, which can play the role of central places (according to Walter Kristaller's theory) of a lower level than villages and settlements where municipal authorities are located;
 - the average household size in developed settlements is slightly higher than that in rural areas as a whole and significantly higher than the average household size in urban areas (2.84 versus 2.5 people/family in urban agglomerations (Rosstat)). this confirms the provision on the priority of family values of the residents of the settlements.

The results of the survey of representatives of family homesteads, kindly provided by the authors of the Public Chamber Chairman Committee on Agrarian Issues of the State Duma of the Russian Federation on Agriculture and personally Samokhina I. N., as well as the results of interviews with the heads of family homesteads, conducted by the authors, can not only prove the correctness of the above at the beginning of the work of the distinctive features of family estates, but also to reveal the problems of their development. As part of the survey, information was collected on the functioning of 32 settlements, consisting of family homesteads of 12 regions of Russia. The main problems most often mentioned by the respondents are the following:

- the lack of a legal status of a family estate and a settlement consisting of family homesteads, which makes the settlements look for surrogate mechanisms for the legal legitimization of their existence and complicates the possibilities of active development within the framework of basic goals;
- restrictions on the construction of housing on agricultural land restricts the possibilities of permanent residence within settlements;
- difficulties with ensuring the supply of infrastructure objects to settlements (electricity, gas, communications, roads, etc.), while as a rule, the internal infrastructure of the settlement is provided at the expense of its members' own resources through cooperation.

Settlements consisting of family homesteads are widely represented on the territory of the Russian Federation. At the same time, the pace of formation and development of family homesteads does not yet make it possible to talk about the mass nature of their functioning, which is associated with the problems that will be discussed below.

The interview also shows the actual activity of settlements in the field of ensuring the environmental safety of living, the formation of sustainable agrobiocenoses on the territory of estates and settlements. The cases of Yaroslavl, Vladimir, and some other regions of Russia demonstrate that settlements can play a significant role in recreating natural landscapes, increasing soil fertility and ensuring their water balance, etc. In addition, as a result of the interview, the wide spread of the multidisciplinary nature of the sources of income of family estates was confirmed. At the same time, most of the members of settlements receive the bulk of their income, conducting economic or labor activities in cities. Thus, rural areas receive an inflow of expenditures, the source of income of which is urban agglomerations.

Assessing the potential for the development of family homesteads and their settlements from the point of view of the possibilities of accommodating a part of the employed population, which can be transferred to a remote mode of work in the Russian Federation, the possibilities of resettlement to family homesteads of up to 29 million people were identified, incl. at least 11 million employed population. The calculations were based on the average land area of an estate of 1 hectare, an average household size of 2.6 people, and the use of only the area of unused arable land for the formation of family estates (other sources of the potential for expanding estates were not taken into account). Using the forecasts of McKinsey & Company on the possibilities of transferring workers to remote work in certain sectors of the economy (McKinsey & Company, 2020) and applying them to the structure of employment in Russia (Rosstat), the authors calculated the potential number of remote workers, which amounted to more than 16 million people. ... in general for the Russian Federation. Thus, even a partial achievement of the noted levels of resettlement, remotely employed in family estates, makes it possible to locate a significant number of remote workers in rural areas and significantly increase the population of rural areas. If we compare these figures with the data on the request of the townspeople for resettlement to the countryside (Zvyagintsev V. I., Neuvazhaeva M. A., 2015), then we can conclude that obtaining the noted results is quite achievable. This will require a set of measures of state regulation to solve the previously listed problems that limit the possibilities for the development of family homesteads settlements.

Conclusions, proposals, recommendations

- 1) Family estates and settlements consisting of them are a promising form of farming in the countryside for solving the problems of sustainable development of not only rural areas, but also cities. Their benefits are amplified in the face of the COVID-19 pandemic.
- 2) On the basis of statistical data for the Leningrad Region, the existence of significant differences in the level of the pandemic spread in rural, urban settlements and regional centers has been proved. The lower morbidity rate in rural areas enhances the feasibility of reducing the level of urbanization of the Russian economy. Other advantages of this process are the reduction of the severity of the country's demographic problems, the provision of the labor market with human capital with high indicators of manifestation of the values of trust, economic motivation, and responsibility typical of rural residents.
- 3) Sustainable development of rural areas and cities are interrelated and cannot be considered in isolation from each other.
- 4) The potential for the development of family homesteads is provided by the availability of land, the possibility of remote work in rural areas in the interests of urban agglomerations, as well as the existence of a request for the resettlement of townspeople in the countryside.
- 5) A similar potential for the development of family homesteads is characteristic not only for Russia, but also for many economically developed states.
- 6) The development of family homesteads is constrained by the lack of a legal status of this form of management, restrictions on the use of land for the development of estates and general problems of infrastructure development in rural areas. Without solving these problems within the framework of state regulation, family estates will not be able to reveal their potential in solving the problems of sustainable development of territories.

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DEVELOPMENT OF RURAL AREAS THROUGH FISCAL DECENTRALIZATION

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Abstract. The ratification of the European Charter of Local Self-Government and the adoption of the Concept of the Reform of Local Self-Government and the Territorial Organization of Power in Ukraine in April, 2014 laid the groundwork for the approval of fiscal decentralization and the creation of fiscal frameworks for the development of rural areas. One of the defining conditions of fiscal decentralization is the provision of the local government with financial resources in an amount sufficient to perform their tasks for development of rural areas. Therefore, the purpose of the article is to study the peculiarities of rural development of Ukraine in terms of fiscal decentralization, identify the main problems, and present an argument for the directions towards enhancing the positive impact of fiscal decentralization on the social and economic development of rural areas. The methodological basis of the article is general scientific and special methods of research, in particular: economic and statistical; analysis and synthesis; tabular and graphical.

The conducted research has made it possible to establish that the implementation of fiscal decentralization has resulted in greater interest of village council in increasing revenues to local budgets by transferring the right to receive more tax revenues and non-tax revenues, finding contingency local budgets, improving the efficiency of tax administration and fees. The study gives grounds for proposing approaches to increase the effectiveness of fiscal decentralization in the context of rural development, including expanding of the list of taxes and fees in budget revenues of united territorial community (e.g. corporate income tax, personal income tax, environmental tax); improving the mechanism for providing local budgets with inter-budget transfers from the State Budget of Ukraine; optimization of budget expenditures under the condition that a guaranteed and affordable level of public services is provided; increasing the accountability of local governments in order to prevent corruption; involvement of the population in active participation in development policy of rural areas.

Key words: decentralization, fiscal decentralization, RURAL AREAS, united territorial communities.

JEL code: R13, R51, R58, H77

Introduction

The purpose of the article is to study the peculiarities of rural development of Ukraine in terms of fiscal decentralization, identify the main problems, and present an argument for the directions towards enhancing the positive impact of fiscal decentralization on the social and economic development of rural areas.

The main tasks of the research are to reveal insights into the essence of fiscal decentralization; to identify the peculiarities of the implementation of fiscal decentralization and its impact on the development of rural areas of Ukraine; to present an argument for the directions towards enhancing the positive impact of fiscal decentralization on the social and economic development of rural areas.

Information sources are scientific articles and monographs on fiscal decentralization, data from the Ministry of Finance of Ukraine, the State Statistics Service of Ukraine, and the State Treasury Service of Ukraine.

The methodological basis of the article is general scientific and special methods of research, in particular: economic and statistical – to determine the dynamics and composition of revenues and expenditures of local budgets; analysis and synthesis – to study the structure of revenues and expenditures of local government budgets; tabular and graphical – to represent the results of the study.

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The ratification of the European Charter of Local Self-Government (Council of Europe, 2009) and the adoption of the Concept of the Reform of Local Self-Government and the Territorial Organization of Power in Ukraine (Order of the Cabinet of Ministers of Ukraine, 2014), in April, 2014 laid the groundwork for the approval of fiscal decentralization and the creation of fiscal frameworks for the development of rural areas. One of the defining conditions of fiscal decentralization is the provision of the local government with financial resources in an amount sufficient to perform their tasks. As for 2013, only 23.75% was the share of local budget revenues in the consolidated budget of Ukraine, 13.93 % was the share of local budget revenues (including inter-budgetary transfers) in GDP, 6.63% was the share of local budget revenues (without inter-budgetary transfers) in GDP. Insufficient revenue of local budgets confirms the relevance of fiscal decentralization and the urgency to reform the financial support of local government, including rural areas.

Research results and discussion

The issues of fiscal decentralization are covered in numerous scientific papers of both foreign and domestic financial scientists. Tanzi V. believed that properly implemented, decentralization provides important economic and political benefits as local jurisdictions improve the efficiency and accountability of public spending. The key to successful decentralization is good planning: decentralization should mean devolving both spending responsibilities and revenue sources—and determining the magnitude of both simultaneously and in advance (Tanzi V., 1995).

Baskaran T., Davoodi H., Feld T. P., Zou H. and Thiessen U. have investigated the relationship between fiscal decentralization and economic growth. Davoodi H., & Zou H. have found a negative relationship between fiscal decentralization and growth in developing countries, but none in developed countries over the 1970-1989 period (Davoodi H., & Zou H., 1998). Thiessen U. has analyzed the long-run empirical relationship between per capita economic growth, capital formation and total factor productivity growth, and fiscal decentralisation for the high-income OECD countries. The evidence supports the view that the relationship is positive when fiscal decentralisation is increasing from low levels, but then reaches a peak and turns negative. (Thiessen U., 2003). Baskaran T. & Feld T. P. studied the relationship between fiscal decentralization and economic growth for 23 OECD countries from 1975 to 2001 and concluded that fiscal decentralization is unrelated to economic growth (Baskaran T., & Feld T. P., 2009).

Decentralization essentially is a matter of the devolution of power from the centre to the periphery. More precisely, fiscal decentralization generally refers to the devolution of taxing and spending powers from the control of central government authorities to government authorities either at sub-national levels (regional, provincial, municipal etc.) (Boschmann N., 2009).

The reform in the administrative and territorial structure and the system of financial support of local governments, taking into account the possibility to form the united territorial communities, was the starting point of fiscal decentralization in Ukraine. Thus, special conditions for the development of rural areas have been created – the possibility to create a new type of administrative and territorial units (united territorial community) or maintaining the existing type of administrative and territorial units (village, urban-type settlement).

Table 1

Comparative characteristics of the main revenues of villages' and urban-type settlements' budgets in terms of fiscal decentralization

Indicators	The period before decentralization (2014)	The period during decentralization	
		for refusing to unite territorial communities	in case of formation of united territorial communities
The revenues of the General Fund of budgets			
personal income tax	25 %		60 %
excise tax on retailers of excisable goods		100 %	100 %
enterprise profit tax for the municipal enterprises and financial institutions	100 %	100 %	100 %
property tax		100 %	100 %
flat tax		100 %	100 %
the rent for use of subsoil resources for the extraction of minerals of local significance; rent for use of subsoil resources for the purposes unrelated to extraction of minerals; rent for special use of water from water bodies of local significance; rent for special use of forest resources (other than the rent for special use of forest resources with regard to timber harvested in the course of final felling)	100 %	100 %	100 %
the rent for use of subsurface resources for the extraction of oil, natural gas, and gas condensate			3 %
rent for the use of national-significance subsurface resources			5 %
rent for the use of subsoil for amber mining			30 %
land tax	100 %		
local taxes and charges (except flat tax, tax for immovable property other than land)	100 %		
fixed agricultural tax	100 %		
fee for temporally free funds	100 %	100 %	100 %
the rent for water bodies of local significance	100 %	100 %	100 %
concession fees with regard to municipal properties		100 %	100 %
environmental tax (except the environmental tax levied for creation of radioactive waste (including already accumulated waste) and/or temporary storage of radioactive waste by its producers in excess of the period established by special license terms)		25 %	
The revenues of the Special Fund of budgets			
motor vehicle first registration charge	50 %		
tax for immovable property other than land	100 %		
flat tax	100 %		
funds from compensation for loss of agricultural and forest production	60 %	60 %	
monetary penalties for damage caused by violation of environmental legislation as a result of economic and other activities	50 %	50 %	
deduction of the cost of drinking water by business entities that sell drinking water through centralized water supply systems with deviations from the relevant standards	10 %	10 %	
environmental tax (except the environmental tax levied for creation of radioactive waste (including already accumulated waste) and/or temporary storage of radioactive waste by its producers in excess of the period established by special license terms)	25 %		

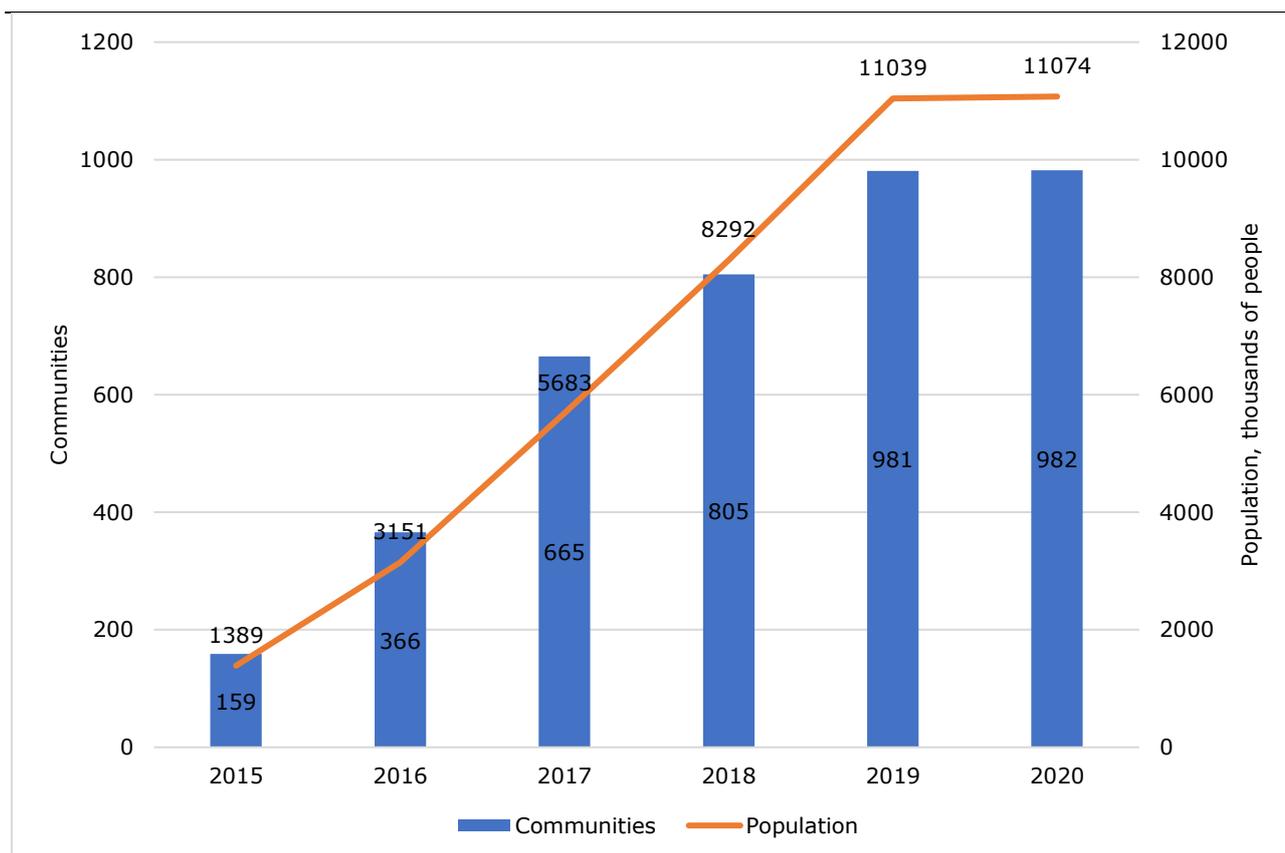
Source: author's compilation based on Budget Code of Ukraine

During 2015, based on the provisions of the Law of Ukraine "On Voluntary Unification of Territorial Communities" from February 5, 2015 going under No. 157-VIII and the Resolution of the Cabinet of Ministers of Ukraine "On approval of the Methodology for the formation of capable territorial communities" from April 8, 2015 going under No. 214, the mechanism of voluntary unification of territorial communities was created; the amendments to the Budget Code of Ukraine in terms of forming the revenue and expenditure part of budgets and the Tax Code of Ukraine in terms of taxation of agricultural enterprises were made. Established that the simplified tax system in 2015 has undergone significant changes, combined with a single tax fixed agricultural tax, reduced the number of groups simplified, reduced tax rates for the third group gradually introduced cash registers in cash settlements (Davydenko N., 2016).

In accordance with the Budget Code of Ukraine, there are the sources of composition of the revenues of local budgets of rural areas either belonging to the united territorial communities (Article 64) or maintaining the existing form of administrative and territorial structure (Article 69). The common component of budget revenues of rural areas are excise tax on sales by retail trade economic entities of excisable goods; enterprise profit tax for municipal enterprises and financial institutions; property tax and single tax; proceeds from the rent for use of a property complex and other municipally-owned property; the rent for use of subsoil resources for the extraction of minerals; use of subsoil resources for the purposes unrelated to extraction of minerals of local significance; rent for special use of water from water bodies of local significance; rent for special use of forest resources; fee for placement of temporarily idle funds; concession fees with regard to municipal properties; the rent for water bodies (parts thereof), which are provided for use on lease terms etc. (Table 1).

Thus, the fiscal advantage of amalgamation of village and urban-type settlement communities is the crediting of 60 % of personal income tax paid (transferred) in rural areas. Personal income tax in Ukraine is the main direct budget-forming tax. At the beginning of fiscal decentralization, the fiscal significance of the personal income tax was realized by providing one-sixth of the revenues of the Consolidated Budget of Ukraine and more than a half of the revenues of local budgets (Boiko S .V., Drahan O. O., 2016).

The experience of creation of the united territorial communities shows the use of the possibility of voluntary amalgamation of territorial communities of rural areas (villages and urban-type settlements) (Figure 1) and the creation of 982 united territorial communities in 2015-2020, which united 11 073.77 thousand people and 4,487 local councils by the following division: Vinnytsia region – 46 UTC against 156 local governments, Volyn region – 54 UTC against 235 local governments, Dnipropetrovsk region – 71 UTC against 229 local governments, Donetsk region – 13 UTC against 74 local governments, Zhytomyr region – 56 UTC against 412 local governments, Zakarpattia region – 17 UTC against 61 local governments, Zaporizhzhia region – 56 UTC against 199 local governments, Ivano-Frankivsk region – 39 UTC against 176 local governments, Kyiv region – 24 UTC against 142 local governments, Kirovohrad region – 27 UTC against 81 local governments, Luhansk region – 18 UTC against 75 local governments, Lviv region – 41 UTC against 174 local governments, Mykolaiv region – 42 UTC against 146 local governments, Odesa region – 37 UTC against 158 local governments, Poltava region – 53 UTC against 195 local governments, Rivne region – 45 UTC against 148 local governments, Sumy region – 38 UTC against 187 local governments, Ternopil region – 54 UTC against 314 local governments, Kharkiv region – 23 UTC against 114 local governments, Kherson region – 33 UTC against 115 local governments, Khmelnytskyi region – 51 UTC against 370 local governments, Cherkasy region – 57 UTC against 222 local governments, Chernivtsi region – 37 UTC against 132 local governments, Chernihiv region – 50 UTC against 372 local governments.



Source: author's calculations based on data from www.decentralization.gov.ua (Decentralization, 2021)

Figure 1. Dynamics of united territorial communities in 2015-2020

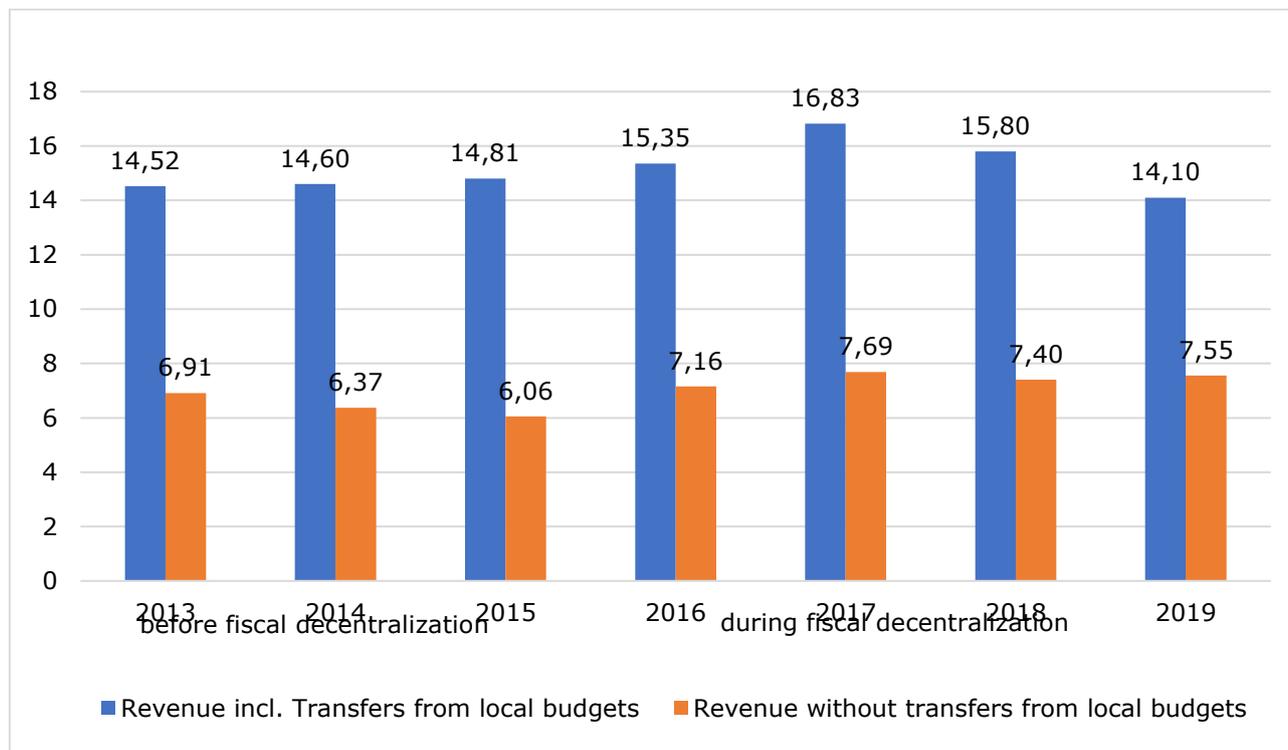
The functioning of the united territorial communities as full-fledged and independent administrative-territorial units is possible only if the amount of financial potential and the ability to form the revenue part of the budget are sufficient to cover expenditures. Since the personal income tax is considered as budget-forming one for the budget of Ukraine, the legislator has determined its main role not only in forming of the budget revenues of the united territorial communities.

Article 99 of the Budget Code of Ukraine determines the methodological basis for assessing the level of taxpaying capacity of budgets by comparing the income tax of individuals from the budget of the united territorial community with the average income tax of individuals from the budgets of the united territorial communities in Ukraine in per capita terms.

Fig. 2 demonstrates the distribution of budgets of the united territorial communities in 2016-2019 by the tax capacity index.

To identify the extent of fiscal decentralization, an analysis of the share of local budget revenues in GDP, the share of local budget revenues in the Consolidated Budget revenues was carried out.

Analysis of data from the Ministry of Finance of Ukraine on the redistribution of GDP through local budgets (Figure 3) shows an increase in the relative indicator (local budget revenues / GDP). Thus, in 2015, the share of local budget revenues (without inter-budget transfers) was 6.06% against 7.69 % in 2017. It was a result of the redistribution of tax revenues in favour of local budgets in terms of personal income tax, excise tax on retailers of excisable goods etc.



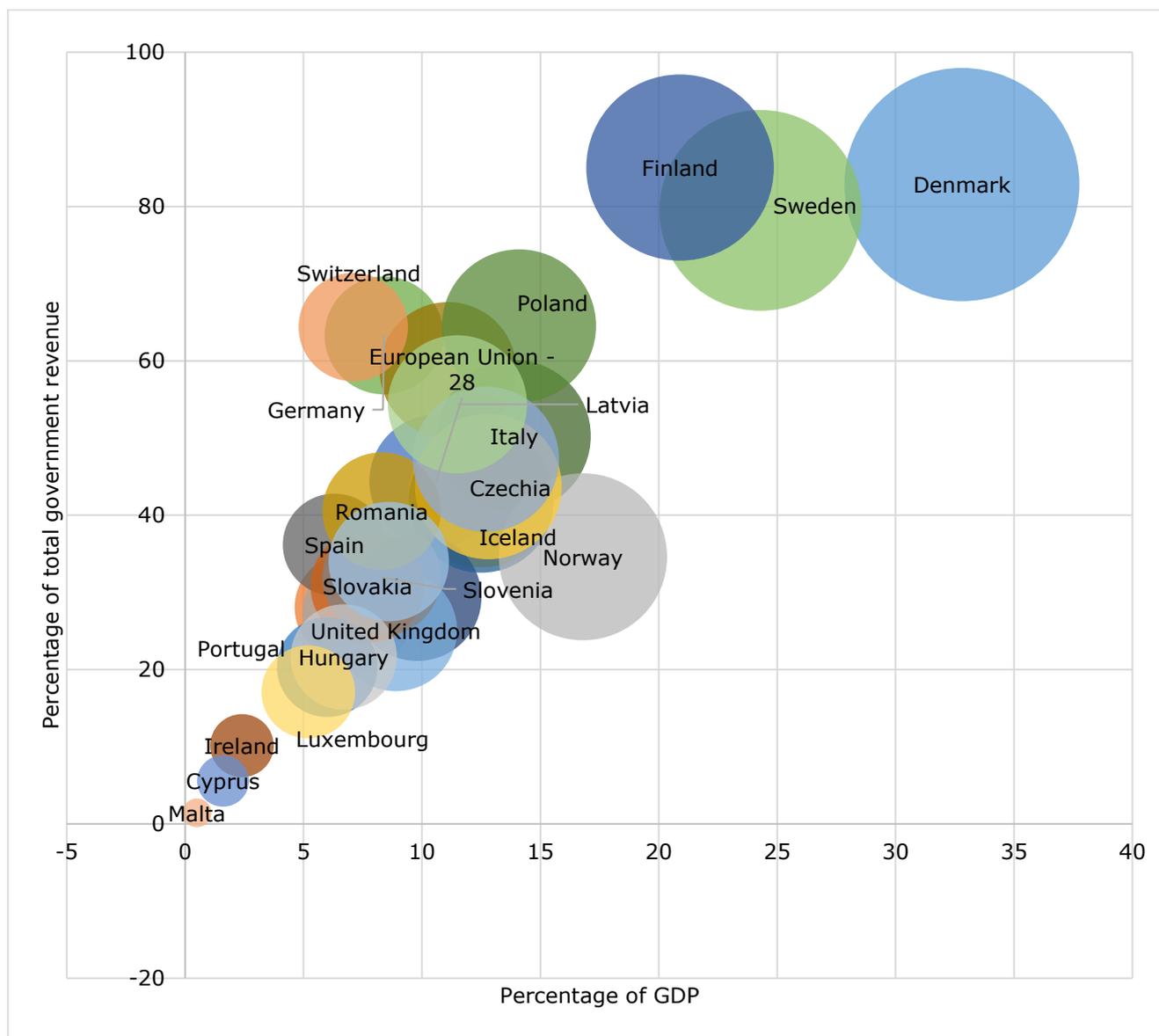
Source: author's calculations based on Ministry of Finance of Ukraine

Figure 3. Dynamics of the share of local budget revenues in GDP of Ukraine, %

The share of revenue including transfers from local budgets in GDP fluctuated at the level from 14.10 % to 16.83 %. It indicates an increase in the indicator during the first years of fiscal decentralization, whereas in 2018-2019 the decrease in the corresponding indicator was noted. In 2019, the share of revenue including transfers from local budgets to GDP of Ukraine was 14.10 % that exceeds the average level of revenue including transfers from local budgets to GDP in EU member states – 10.6 % (Figure 4). The extent of variation in the share of local budget revenues in GDP in EU member states was high in 2019: from 32.8 % (Denmark) to 0.5 % (Malta). The value of the share of revenue including transfers from local budgets in GDP in 2019, which exceeds the value of Ukraine, is observed in Denmark (32.8 %), Finland (20.9 %), Sweden (24.3 %), Norway (16.8 %).

In 2019, the share of revenue including transfers from local budgets in the revenues of the Consolidated Budget of Ukraine was 43.46 %, which was close to the average indicator in the EU member states – 28 %. The highest level of fiscal decentralization of income is in Italy (50.27 %), Latvia (54.37 %), France (58.83 %), Germany (63.30 %), Switzerland (64.38 %), Poland (64.54 %), Sweden (79.50 %), Denmark (82.85 %), and Finland (85.05 %) (Figure 4). The share of revenue including transfers from local budgets in the revenues of the Consolidated Budget of Ukraine in 2019 was 23.28 % against 18.48 % in 2015, which confirms the gradual increase in own revenues of local budgets and their share in the consolidated budget.

In 2014-2019, the absolute amount of revenues of local budgets without transfers has tripled, which confirms the effectiveness of the implemented measures of fiscal decentralization. In 2016, the growth rate of local budget revenues (without inter-budget transfers) was 41.72 % with a tendency to slow down during the following years (2017 – 34.41 %, 2018 – 14.81 %, 2019 – 13.95 %). It should be noted that the dynamics of revenues of local budgets without transfers is determined, first of all, by its positive dynamics of tax revenues (growth rate – 3.10 times, absolute growth – UAH 183 212 million), then – non-tax revenues (growth rate – 2.13 times, absolute growth – UAH 13 851 million) and revenues from capital transactions (growth rate – 2.60 times, absolute growth – UAH 1 801 million).



Source: author's calculations based on Eurostat

Figure 4. Dynamics of the share of budget revenues of local budgets in GDP and total government revenue, %

The implementation of fiscal decentralization has resulted in structural changes in revenues of local budgets of Ukraine in favour of tax revenues, the share of which in 2019 was 90.11 % (Table 2).

Table 2

Revenues of local budgets of Ukraine without transfers, %

Indicators	The period before fiscal decentralization		The period during fiscal decentralization				
	2013	2014	2015	2016	2017	2018	2019
Tax revenues	86.71	86.38	81.52	86.03	87.59	88.25	90.11
Taxes on revenue, taxes on income, taxes on the market value increase	62.05	62.13	49.14	49.69	51.04	55.97	58.53
personal income tax	61.41	61.88	45.59	46.25	48.22	52.44	55.13
Rent and fees for use of other natural resources	14.27	14.40	1.79	1.47	1.08	1.83	1.76
Domestic taxes on goods and services	1.29	0.16	6.38	6.81	5.73	5.24	4.57
Local taxes and charges	6.95	7.97	22.44	24.75	22.91	23.16	24.51
Other taxes and charges	1.59	1.33	1.77	3.31	6.82	2.06	0.75
Non-tax revenues	11.53	12.12	16.72	12.80	11.32	10.64	8.70
Revenues from capital transactions	1.31	1.12	1.35	0.82	0.82	0.81	0.98
Official transfers from the European Union, foreign governments, international organizations, donor agencies	1.31	0.00	0.07	0.05	0.01	0.04	0.01
Special funds	0.45	0.38	0.34	0.29	0.27	0.26	0.20
Revenues	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Source: author's calculations based on Ministry of Finance of Ukraine

The highest fiscal efficiency was provided by domestic taxes revenues on goods and services (excise tax on retailers of excisable goods), local taxes and charges (property tax, vehicle tax, flat tax, tourist fee). All of the abovementioned tax revenues are credited to the budgets of villages, regardless of the formation of united territorial community. According to the criterion of fiscal potential of local taxes and fees, cluster ranking of regions was carried out. Low potential of local taxation was determined in 15 regions, average potential in 3 regions (Dnipropetrovsk, Zaporizhzhia, Poltava), and high potential in 4 regions (Kyiv, Kharkiv, Lviv, Odesa) (Boiko S. V., 2016).

Table 3

Comparative characteristics of the main expenditures of villages' and urban-type settlements' budgets in terms of fiscal decentralization

Expenditure	The period before decentralization (2014)	The period during decentralization	
		for refusing to unite territorial communities	in case of formation of united territorial communities
Local government	+	+	+
Education			
pre-school education	+		+
general secondary education	+		+
pre-higher education			+
higher education			+
out-of-school education			+
Health			
primary medical care			+
co-financing of payment for medical services provided under the program of state guarantees of medical care			+
Cultural and physical development			
village, town palaces and houses of culture, clubs, leisure centres and libraries	+		+
maintenance and educational work of children's and youth sports schools			+
cultural and artistic programs of local significance		+	+
activities in physical culture and sports			+
Social protection and social security			
programs of local significance for children, youth, women, families		+	+
compensation to individuals who provide social services to the elderly, persons with disabilities, children with disabilities		+	+
Housing and utilities			
local programs for the development of housing and communal services and improvement of settlements		+	+
Transport			
construction, reconstruction, repair and maintenance of roads		+	+

Source: author's compilation based on Budget Code of Ukraine

The increase in revenues of the budgets of villages and rural settlements, united territorial community occurred simultaneously with the increase in the expenditure authority in such areas as education, health, cultural and physical development, social protection and social security, housing and utilities etc. (Table 3).

Identification of the impact of the fiscal decentralization on the development of the rural areas of Ukraine is realized through the analyses of the dynamics and structure of expenditures of local budgets. In 2019, the expenditure of local budgets of Ukraine without transfers was UAH 5 346 344 million, that is 2.5 times higher than in 2014. Considering the expenditure of local budgets by functional classification, we note, that the increase in the overall indicator is due to an increase in the expenditure for economic affairs – 9 times, public order, security and judiciary – 5 times, environmental protection – 4 times, education – 3 times, housing and utilities, health, cultural and physical development, social protection and social security – 2 times.

Table 4

Expenditure of local budgets of Ukraine without transfers, %

Indicators	The period before fiscal decentralization		The period during fiscal decentralization				
	2013	2014	2015	2016	2017	2018	2019
General public services	5.32	4.93	5.25	4.68	4.86	5.08	6.26
Defence	0.001	0.92	0.004	0.002	0.003		
Public order. security and judiciary	0.10	0.11	0.12	0.11	0.13	0.20	0.23
Economic affairs	4.33	4.13	6.90	10.04	11.40	13.70	14.68
Environmental protection	0.46	0.40	0.53	0.43	0.53	0.53	0.61
Housing and utilities	3.49	7.92	5.66	5.06	5.54	5.33	6.17
Health	22.31	20.84	21.50	18.20	17.48	16.55	16.11
Cultural and physical development	3.92	4.02	3.47	3.45	3.36	3.35	3.87
Education	34.18	31.96	30.33	27.32	27.87	29.42	33.56
Social protection and social security	25.90	25.70	26.23	30.71	28.83	25.83	18.50
Expenditures	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Source: author's calculations based on Ministry of Finance of Ukraine

In accordance with the calculated indicators of the structure of the expenditure of local budgets without transfers (Table 4), expenditure on education, social protection and social security, health prevail. Analysing the level of government expenditures are prevailing, Davydenko N. and Pasichnyk Y. conclude that "they have a wide range of fluctuations – both by years and by country. ... all countries experienced their growth, which was the consequence of government actions in support of the poor, in particular on social benefits. Ukraine had the lowest level of these expenditures for almost all of the year, despite annual external and internal borrowings of 2-3 billion USD." (Davydenko N., Pasichnyk Y., 2017).

Conclusions

Thus, the implementation of fiscal decentralization has resulted in greater interest of local governments (village and urban-type settlement council) in increasing revenues to local budgets by transferring the right to receive more tax revenues and non-tax revenues, finding contingency local budgets, improving the

efficiency of tax administration and fees (primarily personal income tax, excise tax on retailers of excisable goods, property tax, vehicle tax, flat tax). In terms of the use of local budgets, there is a need to place emphasis on forming the most appropriate structure of budget expenditures with the predominance part of expenditures in such areas as education, social protection and social security, health, economic affairs. It will create conditions for sustainable social and economic development of rural areas.

The study gives grounds for proposing approaches to increase the effectiveness of fiscal decentralization in the context of rural development, including expanding of the list of taxes and fees in budget revenues of united territorial community (e.g. corporate income tax, personal income tax, environmental tax); improving the mechanism for providing local budgets with inter-budget transfers from the State Budget of Ukraine; optimization of budget expenditures of united territorial communities under the condition that a guaranteed and affordable level of public services is provided; increasing the accountability of local governments in order to prevent corruption; involvement of the population in active participation in development policy of rural areas. We agree with the scientific position of Ukrainian scientists that without the active position of local residents it is impossible to successfully implement the principles of fiscal decentralization in the country, as well as to ensure efficient use of taxpayers' funds without accountability at all levels of government (Oparin V., Sarnetska Y., 2020).

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TEACHERS' QUALITY OF WORK-LIFE IN THE REGIONS OF LATVIA

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Abstract. In Latvia, during the COVID-19 pandemic teachers represent one of the professions with a special role in solving the problems caused by the crisis. It is important to provide the highest possible quality of education during the state-of-emergency, despite the increased risks of COVID-19 what teachers face while work in a classroom. The workload of teachers has increased and for many of them working conditions have deteriorated. Multiple factors pose a risk to the quality of work-life in general. The aim of the paper is to find out the teachers' opinions on the factors influencing their quality of work-life, comparing the situation in the regions of Latvia, and to develop proposals for strengthening social dialogue to improve teachers' quality of work-life. In February 2021, the Latvian Trade Union of Education and Science Employees conducted a survey "Teachers' Salaries, Principles of Workload Formation and Risks of Professional Burnout", in which 10 077 teachers were surveyed to study various aspects of their quality of work-life. The results revealed differences between regions in the teachers' assessment of their quality of work-life and the factors influencing it. The quality of work-life of teachers has decreased, comparing to the situation a year and five years ago. Significantly that 9 out of 10 respondents did not feel cared for at the national level. The authors conclude that it is crucial to improve the social dialogue between the state institutions, employers and employees in order to increase the quality of teachers' work-life.

Key words: teachers, quality of work-life, region, social dialogue.

JEL code: R23, K31

Introduction

In Latvia, teachers' quality of work-life (QWL) has been one of the central issues on political agenda of the education sector for decades. Every year amendments are made to the regulatory enactments regulating wages, but work is ongoing on improving the pay model for teachers. In order to develop proposals for amendments to the regulatory framework to improve the QWL of teachers, it is necessary to ensure a high-quality social dialogue between the state, the municipalities and the educational institutions. Social dialogue means all types of negotiation, consultation or information-sharing among social partners (representatives from employers' and workers' organizations, with or without the involvement of the government) in order to increase support for and the legitimacy of the policies agreed (Ishikawa J., 2003). Similar definition is provided by the International Labour Organization stating that social dialogue is organized on issues of common interest related to economic and social policy (The Social Dialogue and Tripartism Unit). The aim of the social dialogue is to promote cooperation between the social partners and reach an agreement, thus ensuring social stability and economic development in the country. The quality of social dialogue depends on cultural traditions, historical, economic and political processes in the country (Socialais dialogs).

In Latvia, workload of teachers constitutes more than 40 hours per week what exceeds the norm stated in the legal regulations according to which the norm is between 30 and 40 hours per week for most of the professions. The downside is that teachers work overtime and carry out duties that are not paid for. During the spread of the COVID-19, teachers play a special role in tackling the problems caused by the crisis. It is important to ensure the highest possible quality of the education despite increased health risks caused by the pandemic. There is a trend of even further increase in the workload for teachers leading to reduced QWL in general. The aim of the paper is to find out the teachers' opinions on the factors influencing their

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QWL, comparing the situation in the regions of Latvia, and to develop proposals for strengthening social dialogue to improve teachers' QWL. The following tasks were defined: (1) to describe the theoretical aspects of the QWL and social dialogue in education sector; (2) to study and compare the QWL of teachers in Latvian regions; (3) to define the proposals for improving the quality of teachers' QWL. In Latvia, this study is the first attempt to measure teachers' QWL and to compare it between the regions of the country.

1. Conceptualization of the Quality of Work Life

The quality of work-life is a concept describing the broader job-related experience of an individual; however, still relatively unexplored and unexplained. There are different views on core constituents of the QWL. It covers a worker's feelings about every dimension of work including economic rewards and benefits, security, working conditions, organisational and interpersonal relationships and its intrinsic meaning in a person's life (Quality of Work Life). As a process it is value-based aiming to meet goals of enhanced effectiveness of the organisation and improved QWL for the employees (Quality of Work Life: it's ...). According to the literature review done by S. I. D. Ishak, N. A Razak, H. Hussin, N. S. D. Fhiri and A. S. Ishak (2018:4), frequently used variables in teachers' QWL research are job satisfaction, demographic factor, pay and benefits, supervision, organization commitment, growth and development, safety and healthy environment. Other social integration, attitude and perception, employee participation, work life balance and relationship, rewards, team work, welfare and opportunities, autonomy, and other (Ishak S. I. D., Razak N. A., Hussin H., Fhiri N. S. D., Ishak A. S., 2018:4). Recent study in Sweden has shown that teacher job satisfaction is greatly affected by school working conditions, teacher workload, teacher cooperation and student discipline (Toropova A., Myrberg E., Johansson S., 2021:92). P. Andersson and S. Kopsen (2019) have focused on boundary processes between school and working life. Another study has confirmed a close relationship between burnout and job satisfaction, self-efficacy, coping strategies and social support among teachers: respondents with lower burnout scores reported stronger self-efficacy, more frequent using of positive coping strategies, and better workplace social support (Smetackova I., Viktorova I., Pavlas Martanova V., Pachova A., Francova V., Stech S., 2019:6). Authors of the paper, on the basis of theoretical aspects of QWL, indicate factors that influence the teachers' QWL, such as motivation for work, labour rights, the working environment and relations, social guarantees, professional support, social assistance and benefits, reconciliation of work and private life (Table 1). The study focuses on the following aspects of QWL: remuneration, workload, psycho-social working environment, relations with the employer, health insurance and reconciliation of work and private life.

Table 1

Factors affecting the teachers' quality of work life

No	Factors	Major objective/ subjective aspects
1	Motivation to work	Salary, workload, vacation, assessment of teacher work quality
2	Labour rights	Equal opportunities for all, respect for labour rights
3	Working environment	Working conditions, safety at work, psycho-social working environment
4	Relationships at work	Relations with the employer, relations with the pupils, relations with the parents of children
5	Social guarantees/ security	Health insurance, benefits
6	Professional support	Methodological support, professional development
7	Social assistance	Social support for pre-retirement age, compensatory allowance
8	Reconciliation of work and private life	Flexible working time, care for dependent children or parents

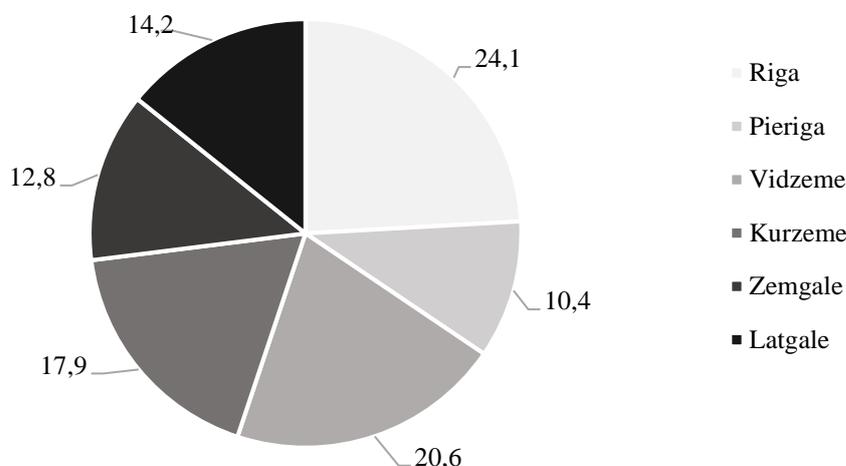
Source: authors' compilation based on the literature studies

Social dialogue is an important process for improving the quality of work life for teachers, since the labour costs and working conditions of teachers are covered by both the national government and municipal budgets. The funding of the education sector is the most important factor influencing the teachers working life and it has been at the centre of political debate for a long time in Latvia. Representativeness of social partners, trade unions and employers' organizations, is crucial in negotiations at different levels (The Social Dialogue and Tripartism Unit), therefore survey results reflecting opinions and attitudes of teachers are extremely supportive in argumentation developed by the teachers' trade union.

2. Research methodology

In February 2021, the authors of the paper conducted a survey "Teachers' Salaries, Principles of Workload Formation and Risks of Professional Burnout" on behalf of the Latvian Trade Union of Education and Science Employees (LIZDA), in which 10 077 teachers were surveyed to study various aspects of their QWL. The questionnaire was developed and posted on the webpage *visidati.lv*. Information about the survey was disseminated via LIZDA homepage, trade union's member organizations in schools, and social media. The respondents were offered to use symmetric 5-point Likert scale (strongly agree, slightly agree, neither agree nor disagree, slightly disagree, strongly disagree) in order to assess the statements. The teachers' survey was conducted on the basis of the methodological and ethical principles of the online survey (Roberts D. L., Allen, J. P., 2015; Toepoel V., 2015). The survey was anonymous and the results were used only in an aggregated way. The survey identified the views of respondents on the financial and psycho-emotional well-being of teachers in the workplace in order to raise motivation for teachers to work and reduce risks of professional burnout. Part of the results obtained in the study is presented in the paper describing the self-assessment of teachers' QWL and the factors affecting it. The authors also present comparison the situation in Latvia's regions and compiling proposals on ways of strengthening social dialogue to improve the quality of the life of educators. The research sample (n=10 077) included teachers from all regions of Latvia (Figure 1), different age and seniority groups working in one or more (small/medium/large) educational establishments. Among them, there were pre-school teachers (17.5 %), teachers of general education institutions (54.4 %), teachers of the vocational secondary education institutions (2.4 %), special education teachers (3.8 %), interest education teachers (8.8 %), vocational

orientation teachers (2.4 %), school principals and administration members (6.4 %), and other pedagogical staff (4.3 %).



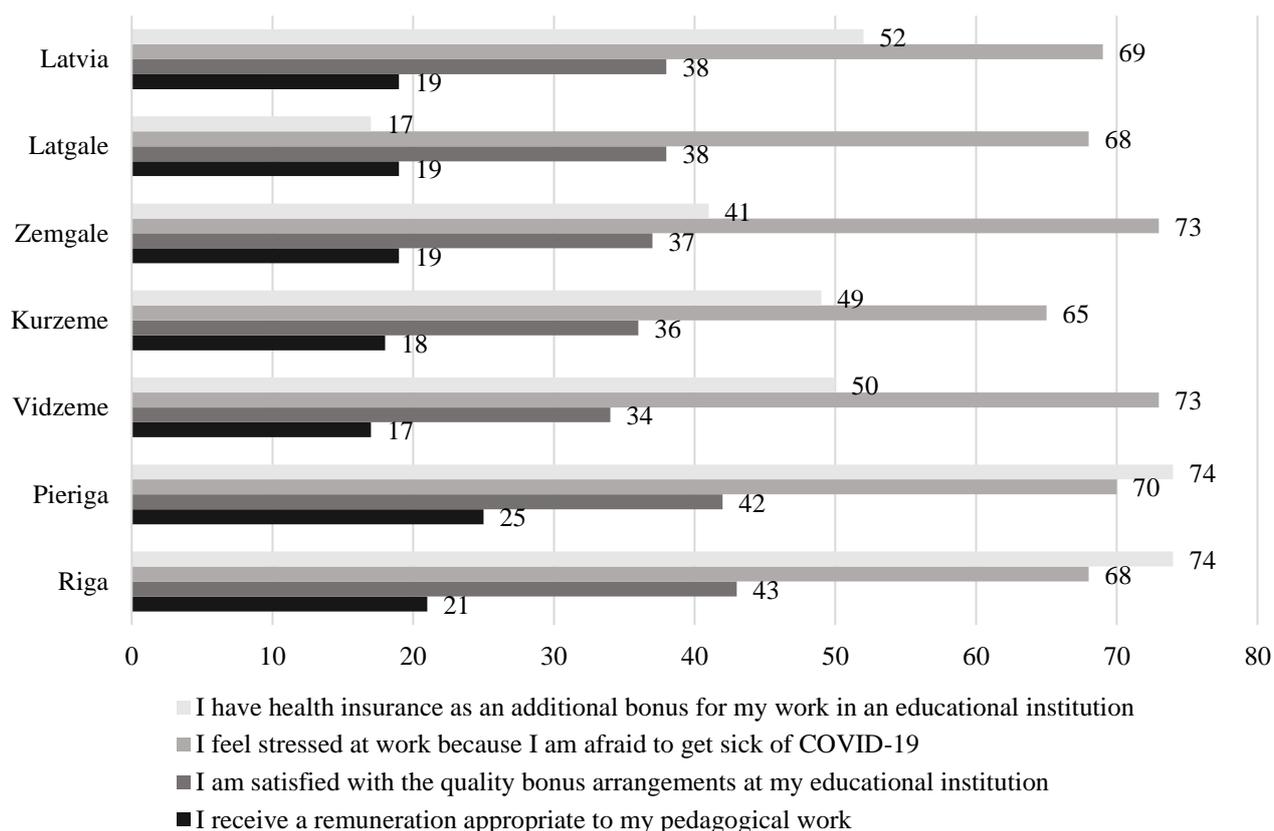
Source: authors' calculations based on LIZDA data, 2021

Fig. 1. The number of respondents representing the statistical regions of Latvia, %

Pearson Chi-Square tests for categorical variables were performed to assess the statistical significance of possible differences between respondents from different regions in Latvia. For all analyses, a p-value of <0.01 (two-tailed) was considered statistically significant. The analyses were performed in SPSS.

3. Regional disparities: analysis of the research results

One of the most important factors influencing the teachers' QWL is the motivation for work in order to provide the pupils with the highest possible quality of the educational service. On average, only 19 % of the respondents in Latvia believed that they have received the appropriate remuneration for their job. According to the Pearson Chi-Square test, no statistically significant difference was detected among the respondents from different regions regarding this aspect. Still, according to the survey data (Figure 2), the biggest difference is between those Pieriga teachers (25 %) and Vidzeme teachers (17 %) who more frequently have pointed that they slightly agreed or strongly agreed with the statement (answers "slightly agree" and "strongly agree" are counted together in Figure 2).

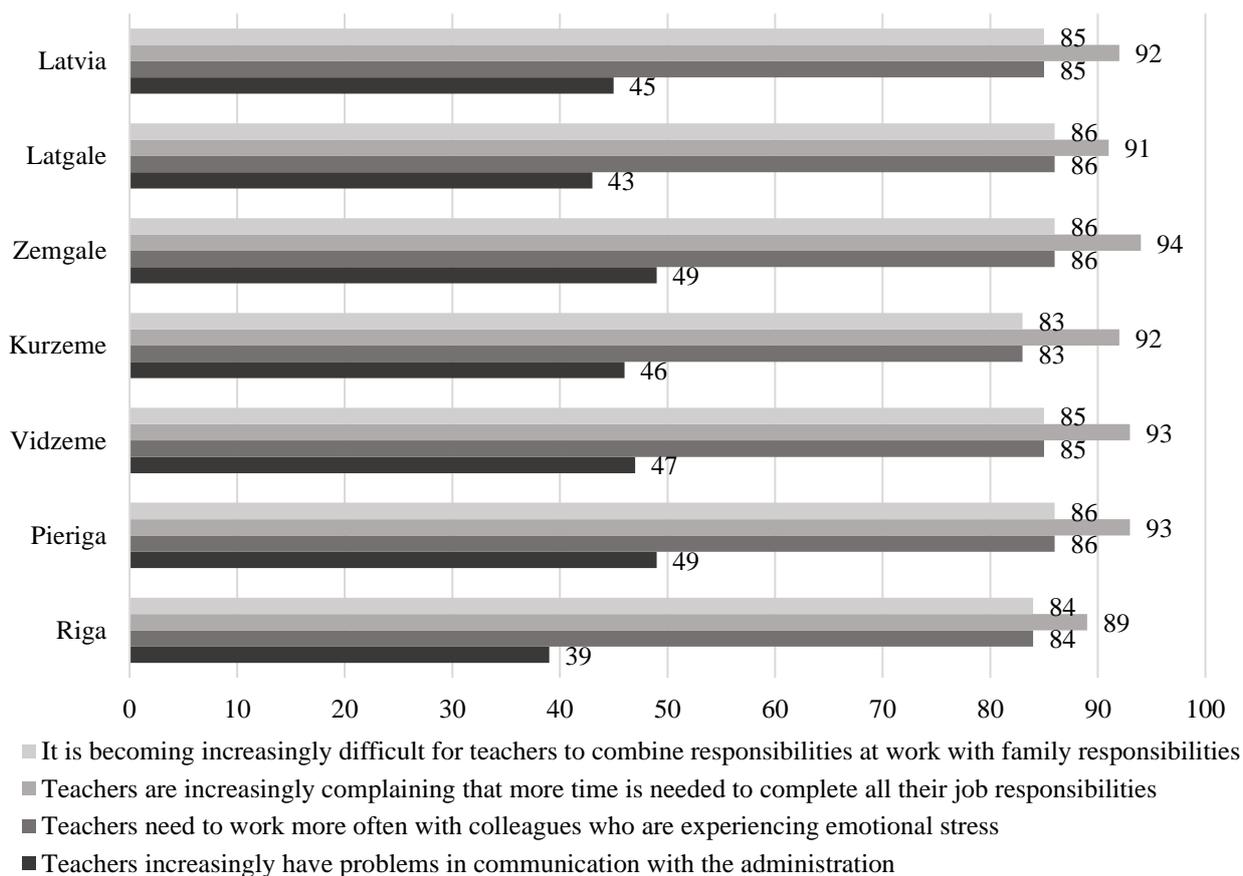


Source: authors' calculations based on LIZDA data, 2021

Fig. 2. Respondents' views on the statements about job motivation and health insurance, %

The quality of the teacher's work is stimulated by setting a quality premium. In recent years, however, the arrangements for the granting of premiums were changed and the study therefore measured how satisfied the teachers were with the quality arrangements in their schools. Statistically significance difference is between the respondents from Riga (43 %), Pieriga (42 %) and Vidzeme region (34 %) and their satisfaction about the quality premium arrangements ($p < 0.01$). In teachers' attitudes towards the risk of getting COVID-19, there were no statistically significant differences identified between regions. However, teachers from Vidzeme (73 %) and Zemgale (73 %) in comparison to Kurzeme region (65 %) more frequently reported on stress caused by their fear of getting sick with COVID-19. Teachers admitted that employer-paid health insurance ensures some security. There is a correlation between variables such as a region and the possibility to have a health insurance ($p < 0,01$): seven out of ten teachers in Riga (74 %) and Pieriga (74 %) indicated that they had access to health insurance what they treated as an additional bonus, while in Latgale only two teachers out of ten or 17 % admitted this opportunity.

The study also clarified the views of teachers on the statements related to relationships at work and the performance of their duties (Figure 3).



Source: authors' calculations based on LIZDA data, 2021

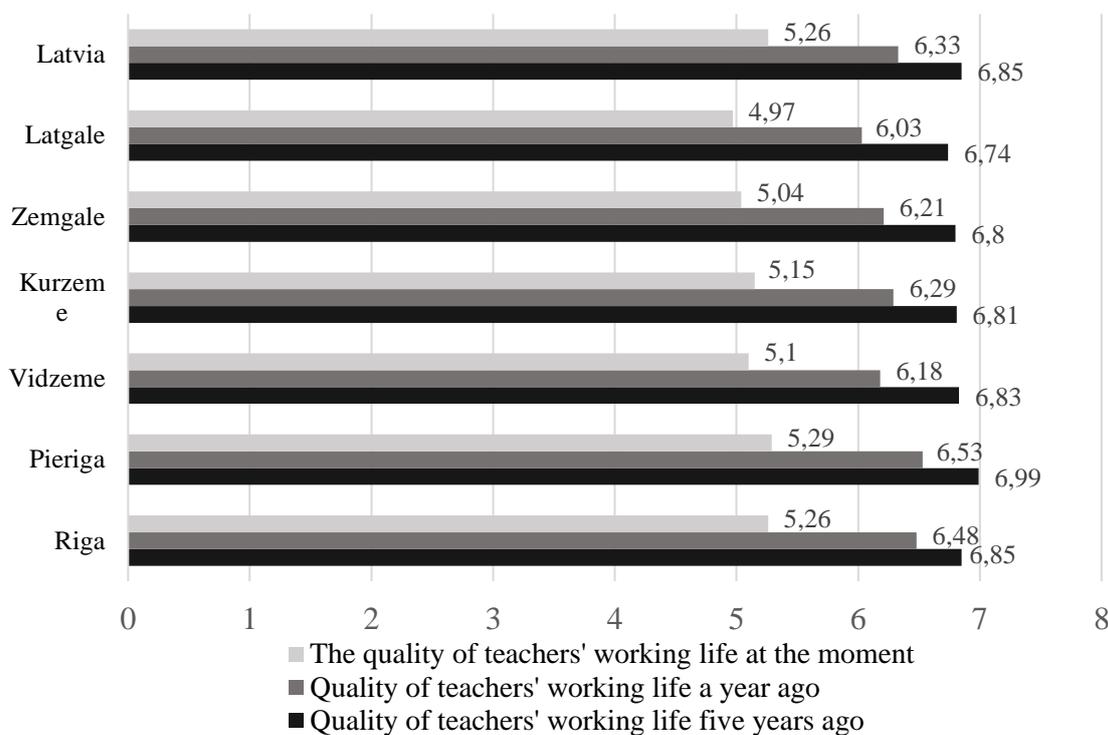
Fig. 3. Opinion of the respondents on the relationships at work and the performance of their duties

Teachers in Pieriga (49 %) and Zemgale (49 %) more often than those in Riga (39 %) indicated that they have increasingly faced problems with the administration. Equally in all regions, around 85 % of educators strongly agreed or slightly agreed that more collaboration is required with colleagues experiencing emotional tension. There is a statistically significant relationship between variables such as a region and growing problems in communication with the administration ($p < 0.01$), and a region and collaboration with colleagues experiencing emotional tension ($p < 0.01$). Similarly, there is a statistically significant relationship ($p < 0.01$) between variables such as a region and the fact that teachers are frustrated by the need to take more and more time to complete all job responsibilities. In Riga region, the ratings are slightly more positive (89 %) compared to the Zemgale region (94 %), but on average every 9 out of 10 teachers responded positively.

One of the key factors influencing working life is the possibilities for reconciliation work and private life. The survey revealed that on average teachers' working hours have actually increased during the COVID-19 pandemic by an average of 11 hours per week due to an increase in the amount of additional duties to be performed. The increase includes also additional time for lesson preparation because remote teaching requires different approach, learning materials and home tasks, more active cooperation and communication with parents and pupils. According to the survey, the actual working time of the respondents, on average, is 49 hours a week. It should be noted that these additional hours are neither listed nor paid. This suggests that the personal lives and interests of teachers are at odds with their working lives, which are essential aspects of quality of life. In general, quality of life describes all areas of life, but the need to balance with work and other aspects of life is essential. In all regions, teachers in similar ways

(around 85 %) find it increasingly difficult to connect family responsibilities with their job, but there was no, however, statistically significant differences detected.

Within the study, the teachers were asked to assess their QWL according to a 10-point scale (1 meant the lowest and 10 meant the highest assessment). The respondents were asked to compare their QWL five years ago, a year ago and now during the COVID-19 pandemic. The overall assessment of the QWL and its regional comparison is presented in Figure 4.



Source: authors' calculations based on LIZDA data, 2021

Fig. 4. Respondents opinions on their quality of work life, 10-point scale.

For all three QWL measurements, there is a statistically significant difference between regions ($p < 0.01$). On average, in Latvia, teachers estimate their QWL five years ago by 0.52 points lower than a year ago and by 1.07 points lower than in 2021 during the pandemic. Compared to Latvian average (1.59), the teachers in Zemgale believed that their QWL has declined by 1.76 points during the last five years; the respondents from Latgale were of similar opinion (1.77 points).

Ensuring the teachers' QWL is a joint responsibility of educational institutions, municipalities and organizations at national level. Representatives of all these levels are social dialogue partners which should mutually agree on areas of responsibility, so that teachers' work is evaluated. The study identified whether teachers feel support and care from their schools, municipalities and the state (Figure 5). On average, 70 % of educators across Latvia and similar in all regions strongly agree and slightly agree that they are cared of at the level of the educational institution. There is a similar consensus between regions on the state support for educators, but on average only 12 % of the respondents agree with this statement. However, there was no statistically significant relationship between variables such as a region and support (care) at the level of the educational establishment and at the national level. Statistically significant relationship ($p < 0.01$), however, was indicated between respondents' regional affiliation and municipal support: there were differences between Pieriga, in which half of the teachers (52 %) admitted municipal support in comparison to Kurzeme region (33 %) and Latgale region (31 %) where only one-third of the teachers was positive.

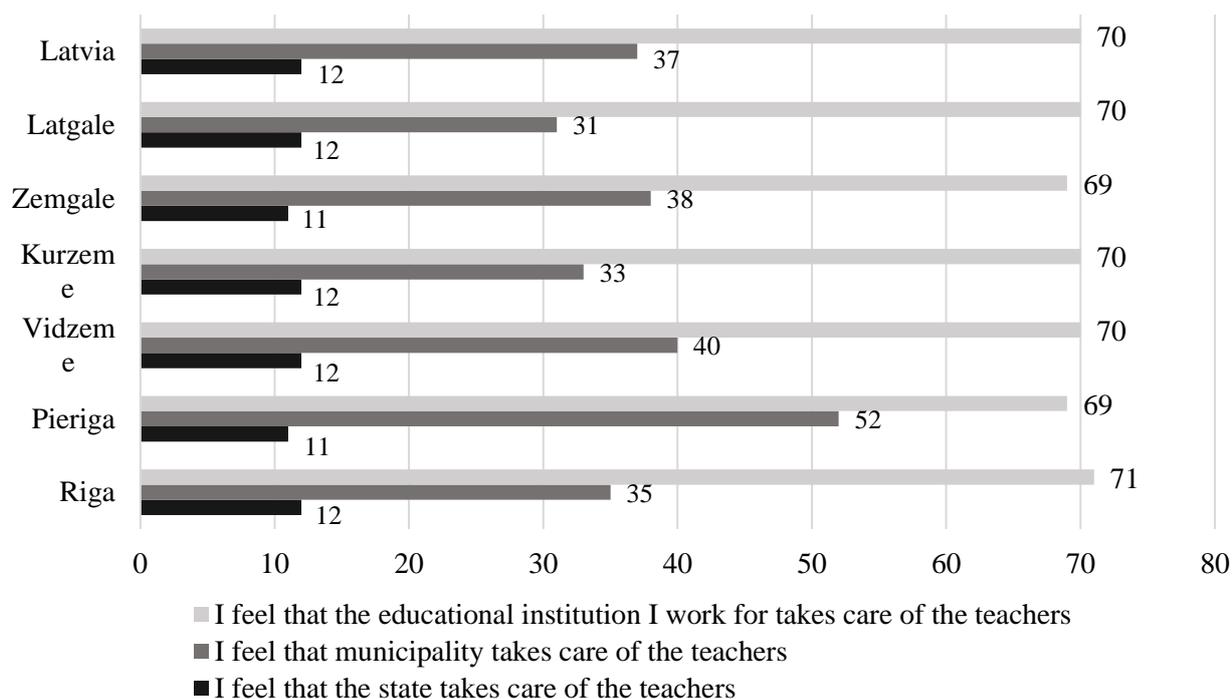


Fig. 5. **Teachers' opinions on support of the social dialogue partners, %.**

In the survey, respondents were asked to answer the open-ended question on what should be done as a priority, so that the teachers would be more satisfied with their QWL. The content analysis of the responses through identification of the main keywords led to the following proposals: (1) a competitive remuneration system including pay for all responsibilities for teachers must be developed; (2) a workload in terms of contact hours must be reduced; (3) it is necessary to improve the attractiveness of the teaching profession. All these proposals can only be implemented at national level through a high-quality social dialogue between the social partners.

The study confirms the hypothesis that there are differences between regions in the assessment of teachers' QWL and the factors that affect it. The study also highlights the views of respondents on how they assess concerns on the part of the state, municipality and educational institution in relation to their QWL, as well as the expectations of teachers to increase QWL. The study provides information in a survey organised by the trade union on teacher salaries, workload formation principles and professional burnout risks.

Conclusions and recommendations

- 1) There are differences in opinions between the respondents from different Latvia's regions in the assessment of the teachers' QWL and the factors affecting it. In Riga, the teachers are more positive whereas in Latgale and Zemgale the respondents are more critical. Overall, the teachers' QWL in all regions of Latvia has decreased compared to the situation a year ago and five years ago, with a slightly more rapid decrease observed in Latgale and Zemgale regions.
- 2) In general, assessment of the aspects of QWL related to the motivation for work was critically low; while in Riga and Pieriga they were somewhat less critically assessed, respondents from Vidzeme region were the most critical in terms of motivation for work.
- 3) A very different situation is regarding the availability of employer-paid health insurance: two-thirds of the teachers in Riga and Pieriga regions can use it, half of the respondents in Vidzeme and Kurzeme

also, whereas only 4 out of 10 respondents in Zemgale and 2 out of 10 teachers in Latgale have employer-paid health insurance.

4) In Vidzeme and Zemgale, in contrast to Kurzeme, teachers are more often stressed at work because they are afraid of getting sick with COVID-19.

5) In Riga, teachers admitted that they have increasingly faced problems in communication with administration whereas in Zemgale region teacher more struggle with time constrains indicating that they needed more time to complete all job responsibilities.

6) Teachers believe that in order to improve their QWL, competitive teacher remuneration system including pay for all the duties performed must be defined as a priority; reduced number of contact hours and increased prestige of the teaching profession were also mentioned as crucial factors.

7) Half of the teachers from Pieriga indicated that they feel municipal support, unlike, Latgale, where only a third of the respondents were positive about municipal support. Policy makers need to develop social dialogue at national level, since only 1 out of 10 teachers feel support and care at national level, while 7 out of 10 assessed highly support at the level of the educational establishment. In Latvia, the social dialogue between the social partners represented by the state and employers should be improved to improve the quality of life and the prestige of the teaching profession.

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CHALLENGES OF THE ADULT LEARNING SECTOR IN CONTEXT OF COVID-19 IN LATVIA

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Abstract. The COVID-19 pandemic has affected the way people work and learn in unprecedented ways. Also, the pandemic has moved more business activity online, increasing the need for training and prompting them to build more online trainings. In this time of crisis, a suitable response requires novel ways to enable interaction between adult learners, adult learners and teachers, adult learners and content using online tools so that no one is left behind.

In the context of regional development, online adult learning provides economic active inhabitants with wide opportunities since employees are able to attend high-quality trainings regardless the place of residence.

In context of COVID-19, during the emergency situation Latvia has fully moved to remote learning, including adult learning. Educational institutions as well as enterprises that organise trainings for adults have to implement remote learning using several online tools.

The aim of the paper is to analyse the main challenges of the adult learning sector in Latvia in context of COVID-19 taking into consideration the regional development issues.

In order to achieve the aim, following research methods have been used: scientific literature studies, statistical data analysis, interviews.

Main results of the survey: in case of Latvia, the Ministry of Education and Science of Republic of Latvia has launched several initiatives towards enabling the shift to online learning, providing recommendations, digital tools as well as good practice sharing. At the same time, there is no methodology and detailed step-by-step recommendations, how to develop the online education learning for educational institutions in Latvia. However, there are incentives to develop online adult learning via project funding.

Key words: adult learning, online learning, regional development, COVID-19.

JEL code: I25.

Introduction

The ongoing COVID-19 pandemic situation has disrupted education provision all over the world, including adult learning and education. This crisis is forcing adult education institutions to rethink how education opportunities, including adult learning, are offered.

Adult learning and education is a core component of lifelong learning. It comprises all forms of education and learning that aim to ensure that adults can participate in their societies and the world of work. It denotes the entire body of learning processes, formal, non-formal and informal, whereby those regarded as adults by the society in which they live develop and enrich their capabilities for living and working, both in their own interests and those of their communities, organisations and societies (UNESCO, 2015).

With educational institutions across the world having to close as part of broader measures to curb the spread of COVID-19, information and communication technologies (ICTs) have been used more than ever before. It is therefore important to instil or reinforce competences that enable people to feel confident in a digital environment (UNESCO, 2020).

Leading surveys like the OECD's Survey of Adult Skills (PIAAC) show that adults with lower levels of education, lower paying jobs, and lack of or insufficient employment are least likely to participate in adult learning (OECD, 2019).

In the same time, it is admitted that adult education can be a force for connecting people who, after months of social isolation and physical distancing, may recognise more than ever the value of supportive networks and solidarity among members of society (Boeren, et al., 2020).

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Since adult students are heterogeneous regarding their previous life, work, and educational experiences, a one-size-fits-all approach is insufficient for supporting adult learners (Vanslambrouck et al., 2019). In this context, it is crucial to train self-regulating learning skills. There had been studies arguing that older adult learners have higher self-regulating learning skills (Kizilcec et al. 2017); while adult learners with masters and PhD degree reported stronger self-regulating learning skills (Basol and Balgalimis, 2016).

Nowadays, nearly 75 % of adult education is related to the workplace (Boeren et al., 2020). As highlighted by the Fourth Global Report on Adult Learning and Education, adult education is currently positioned as a way to serve economic needs (UNESCO, 2019). In the same time, it is indicated that situation in adult learning and training sector could lead to a "Matthew effect," where education often serves the already highly educated adults (Boeren, 2017). Boeren et al. (2020) also emphasise that older adults might be even harder to reach now, because their access to learning opportunities may be further restructured at a time when access to information and learning is most vital.

There are limited studies concerning the implications of pandemic to adult learning. E.g., Lopes and McKay (2020) argue that adult learning and education can play a pivotal role particularly in countries where average literacy levels are low. They explain why adult learning and education, especially the promotion of health literacy as part of lifelong learning, is necessary to enable individuals to make informed health-related decisions. In this context, adult education and learning is understood as inherent element of every national emergency strategy. In turn, Boeren et al. (2020) stress that difficult-to-reach and underserved populations face further obstacles to adult education.

Latvia, similarly as other EU Member States, has fully moved to remote learning, including adult learning. Educational institutions as well as enterprises that organise trainings for adults had to implement remote learning using various online tools. The Ministry of Education and Science of Republic of Latvia has launched several initiatives towards enabling the shift to online learning, providing recommendations, digital tools as well as good practice sharing (Ministry of Education and Science of Republic of Latvia, 2020).

Another aspect in favour of development of online adult learning process in Latvia is promotion of polycentric development that is indicated as one of the long-term priorities of Latvia (Cross-Sectoral Coordination Centre of Latvia, 2010). Riga is a centre of economy, formal and non-formal education. Recently adopted administrative-territorial reform aims to decrease the disparities between the regions and municipalities (Ministry of Environmental Protection and Regional Development of Republic of Latvia, 2020). On the one hand, the established territorial units should provide quality services, including education, on the other hand, the new territorial units are in dire need of human capital, which could ensure the economic growth of the region. Online adult learning can address both these challenges.

The aim of the paper is to analyse the main challenges of the adult learning sector in Latvia in context of COVID-19 taking into consideration the regional development issues.

Tasks are formulated as follows:

- 1) to review the framework of adult learning sector in Latvia;
- 2) to compare the practice of organisations involved in online adult learning process in Latvia;
- 3) to define the main challenges of online adult learning sector in Latvia.

In order to achieve the aim, following research methods have been used: scientific literature studies, statistical data analysis, interviews.

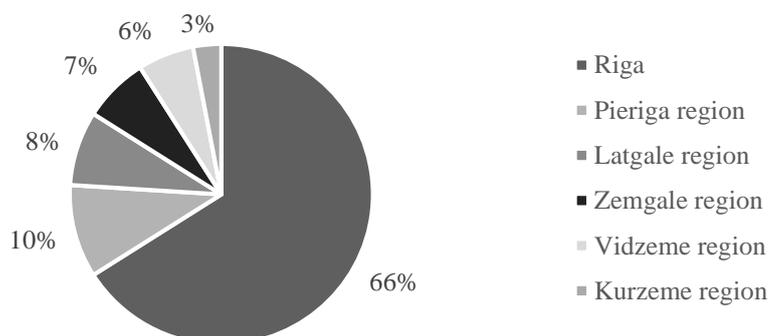
Research results and discussion

In this section, the analysis of the adult learning sector is provided.

1. Adult learning sector in Latvia – state of the art

According to Education Law of Republic of Latvia, adult education is a multi-dimensional educational process of persons which ensures the development of the individual and his or her ability to compete in the labour market during the lifetime of a person. It may be offered in formal and non-formal educational programmes. In addition, non-formal adult education programmes shall lay down the content of such education and the conformity thereof with the interests of the State and employers, as well as individual development, and adults have the right to undertake the completion of such programmes throughout their lives regardless of the previous education. Educational institutions the tasks of which include implementation of adult education programmes are entitled to implement non-formal adult education programmes without obtaining a licence, but other legal and natural persons which are not registered in the Register of Educational Institutions - after receipt of a licence from a local government (Education Law of Republic of Latvia, 1998).

According to recent available data from the Register of Educational Institutions (March, 2021) there are 100 accredited continuing professional education and development educational institutions. In the same time, there are 26 accredited higher education institutions providing adult education programmes (Ministry of Education and Science of Republic of Latvia, 2021). As it can be seen from Fig. 1, most of the educational institutions are located in Riga (66 %) and Pieriga region (10 %). However, there are other institutions that are not registered in the Register but receive a licence from local governments delivering adult education programmes. Precise information on the number of these institutions are not summarised.

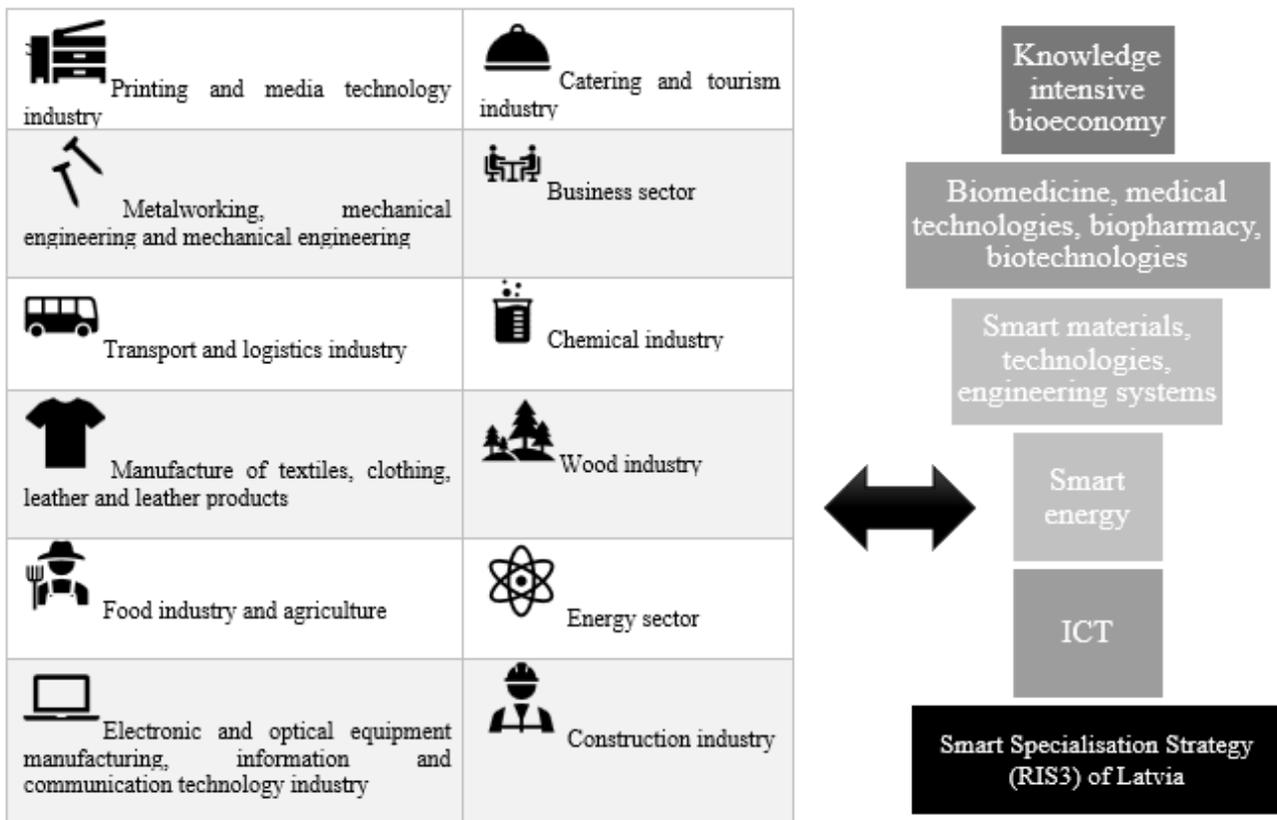


Source: Ministry of Education and Science of Republic of Latvia, 2021

Fig. 1. Regional distribution of continuing professional education and development educational institutions in Latvia (03.03.2021)

Analysing the scope of the provided adult education programmes, it may be concluded that they cover a wide range of offer starting from very specific professional training programmes for targeted audience to general trainings to a wider audience. However, within the scope of this research, under analysis of this study are education programmes that serve the needs of the economy in Latvia. In this context, State Education Development Agency (SEDA) has developed an initiative aiming to eliminate the mismatch of labour force qualifications with the demand of the labour market (within ESF project "Improvement of professional competence of employed persons"). In addition, as a response to COVID-19, SEDA has announced the call of proposals for adult trainings to be organised online. Within this call, online adult learning is offered by 23 education institutions in 11 economy sectors (expected number of learners – 5000). Also, over the next call announced (learning process has started in February 2021), almost 20 000 adult learners develop their competences according to 12 economy sectors, thereby ensuring the competitiveness of labour market that serves to the needs of Latvian economy. The interconnection between supported economic sectors and Smart Specialisation Strategy of Latvia is shown in Fig. 2. Also,

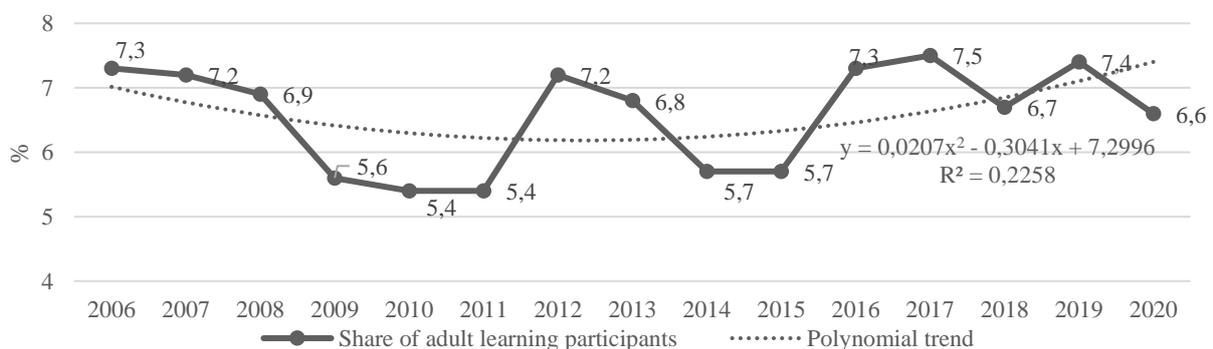
in following calls educational institutions will be able to organise online or blended adult learning process (State Education Development Agency, 2021). Thereby, there are incentives for educational institutions to move towards online adult learning process in Latvia.



Source: Authors' illustration based on State Education Development Agency, 2020 and Ministry of Education and Science of Republic of Latvia, 2018

Fig. 2. Interconnections between smart specialisation areas of Latvia and supported economy sectors within adult education programmes

It may be concluded that there is a need of development of online adult learning processes, so adult learners could develop their competences based on the needs of the regions regardless of place of residence.



Source: Authors' calculations using databases of Official Statistics of Latvia (2021)

Fig. 3. Share of population aged 25-64 years participating in adult learning in Latvia (Labour Force Survey) (per cent) in 2020

In turn, analysing the overall tendency of participation of the labour force in adult learning process, the participation rate of population aged 25-64 varies from 5.4 to 7.5 % per year (Fig. 3.). Time series analysis showed that there is no certain tendency describing the variation of data in the period from 2006 to 2020

(determination coefficient shows that only 22.6 % of data fluctuations can be explained by the Polynomial trend model).

In addition, analysing the recent results of the Labour Force Survey on adult learning participants (Fig. 4), in 2020, 8.4 % of women and 4.6 % of men in the age category 25-64 have participated in adult learning process. It shows that women tend to use the possibilities of adult learning programmes more often. In the same time, from the educational perspective, the adult learning programmes are attended higher by participants with higher education.



Source: Authors' illustration using databases of Official Statistics of Latvia (2021)

Fig. 4. Share of population aged 25-64 years participating in adult learning in Latvia by highest educational level attained and gender (Labour Force Survey) (per cent) in 2020

In 2020, 12.8 % of women with higher education aged 25-64 have participated in adult learning process, while only 6.4 % of women with secondary and 3.6 % of women with professional secondary education have attended adult learning programmes. In case of men, the state of art is similarly distributed. 8.4 % of men with higher education aged 25-64 have participated in adult learning process; while only 3.9 % of men with secondary education and 3.1 % of men with professional secondary education have attended adult education programmes.

2. Adaptation to online learning - analysis of practice

In Latvia, the emergency situation was declared from 12 March 2020 to 9 June 2020 (Latvijas Vestnesis, 2020) and from 9 November 2020 to 6 April 2021 (Latvijas Vestnesis, 2020b). During these time periods, the completion of adult continuous vocational training, vocational in-service training and non-formal adult education programmes shall be held remotely, except for some practical and clinical trainings. Also, between the periods of emergency situation, there were specific organisational requirements, e.g., regarding the size of the groups, mixing of the groups and others.

As regards the adult education institutions, they were forced to quickly adapt the situation. However, in the same time, there are some adult educational institutions that had focused on online adult learning process before the pandemic situation. For example, online training centre "TALIZ" provide adults with online courses for more than ten years. Director of the centre Tatjana Juskane stressed that in case of the online adult learners one of the success factors is to develop **a platform** that promotes participatory process where adult participants are not passive listeners. Aspects like functionality (availability of reports, available functions, administration, etc.), necessary investments, complexity, stability of the platform

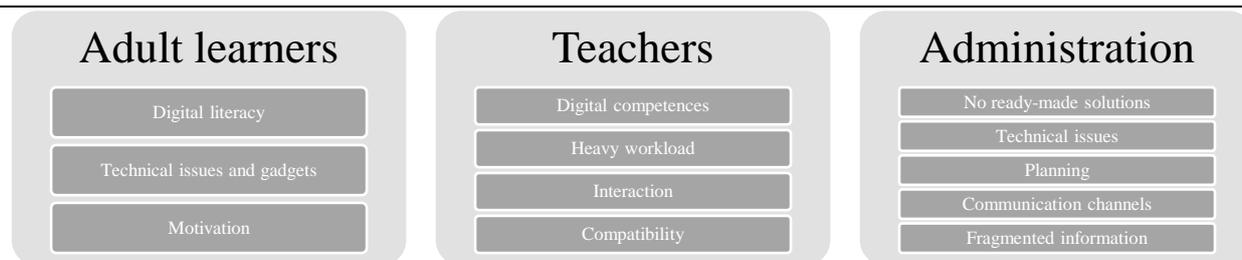
should be analysed. Another key success factor is **quality management** regarding the teachers and study materials. T.Juskane admitted that it takes from two to six months to develop a qualitative online course. Experience of the teacher is important, however, quite often experts are not aware of recent tools used for interactive learning process; thereby, the combination of various skills is crucial there. The training centre provides teachers with the methodology for developing structured and logical materials, as well as methodological and technical support in the development of teaching materials (Ministry of Education and Science of Republic of Latvia, 2015). According to the vision of the centre, main principles of the study programme and study materials are following: **topicality, usefulness, quality, compliance with regulations and interactivity**. At the same time, the centre has developed methodological materials for adult learners, explaining online teaching process and how to improve self-regulatory skills. It is highlighted that it is important to create a specific study environment, allocate at least two hours for studies (three times per week) and apply practically gained knowledge as much as possible (TALIZ, 2021).

In turn, adult education institutions that had not implemented online learning process before had to adapt to it quite quickly. As it was mentioned before, the support for EU structural funds contributed to this transformation process. The educational institution "Training Centre MP" is a structural unit of SIA "Magnetic Professional", which is engaged in the provision of professional development and lifelong learning courses for adults. In 2020, more than 2000 adult learners had participated in the adult learning programmes. Director of the training Centre Ina Gudele admitted that transformation to online process was challenging. The centre used ESF funding for development of Moodle system, ZOOM licence, trainings of teachers to improve their competences in online environment. In the same time, I. Gudele admitted that to ensure the quality of the online learning process, the centre used trial and error approach. Over the first period of emergency situation, the centre including its teachers did not have much experience in online teaching; however, by implementing regular feedback mechanisms for both adult participants and teachers, the process was constantly improved. Now, during the second period of emergency situation, it is much easier to organise a process as both adult participants and teachers are used to distance learning process and more upgraded tools are available. I. Gudele explained that key success factors for adult online learning process are following:

- **precise, timely and dozed internal and external communication** by using effective information channels;
- **continuous team development** (this concerns the improvement of competences of administrative personnel and teachers);
- **cooperation with other adult education institutions and strategic partners** (SEDA, international adult education institutions, Latvian Adult Education Association, Latvian Internet Association, etc.).

3. Main challenges of online adult learning

During the initial research, the pilot unstructured interviews were conducted with representatives of the adult education institutions to have an overview of the strategies how adult education institutions adopted to online teaching process as well as to outline the main challenges that adult education institutions have faced in context of adaptation process. Main identified challenges are summarised below (Fig. 5).



Source: Authors' illustration using the results of expert interviews

Fig. 5. Main challenges of adult learning sector during the pandemic situation

All challenges were categorised in four groups according to perspective of adult learners, teachers and administration. Considering that adult learners are heterogenous, the digital literacy of the learners differs. The same refers to the self-motivation and technical equipment. In turn, teachers are facing heavy workload due to the fact that they have to adapt all study materials to online mode and improve their competences to develop a qualitative content. In addition, depending on the content, teachers find it difficult to adapt their teaching methodologies to online environment. In the same time, administrations of the adult education institutions face the situation that there are no ready-made solutions or practice available that could be adopted by the institution regarding online adult learning processes. In addition, there is fragmented information available from public institutions. Thereby, the administrations go through trial-and-error process and spend much time on planning and communication processes.

As the next step of the research will be a development of the questionnaire for adult education institution to analyse more in details the challenges that they have faced in context of pandemic situation and online learning process. Based on the results of the survey, the recommendations will be formulated towards improvement of implementation of online adult learning process.

Conclusions, proposals, recommendations

- 1) COVID-19 has strongly affected the adult learning sector in Latvia. During the period of emergency situation, adult education institutions had to adapt their programmes to online mode. In the same time, the EU structural funds support was available to the institutions to implement this transition. However, adult education institutions admitted that public authorities did not provide any ready-made solution, methodologies or good practice how to ensure the transition to online learning sector in the most efficient way.
- 2) The analysis of the adult learning sector showed that the number of adult learning institutions and higher education institutions that provide adult education programmes is significant. In the same time, most of these institutions are located in Riga. Thereby, it may be concluded that online adult programmes promote the strengthening the competences of regions as there are no obstacles to participate in the education process related to the distance. In addition, there is developed support mechanism funded by the EU structural funds for the adult learning programmes that serves most important economic sectors. This leads to the conclusion that online adult learning programmes also serve the needs of the regions for development.
- 3) Pilot expert interviews showed that the main challenges regarding the transition to online mode are following: no ready-made solutions, heavy workload and intensive planning process, limitations regarding the information and communication channels and technologies. In the same time, from the perspective of the adult learners, main challenges are regarding the digital skills, motivation and technologies. Teachers also have to deal with heavy workload, due to the adaptation of the study materials to the online mode, continuous improvement of their digital skills.

4) Taking into consideration preliminary results of the research on main challenges of adult learning sector, the recommendations could focus on actions to provide adult education institutions with ready-made solutions, summary of good practice and methodologies that adult education institutions could apply to ensure implementation of online adult learning process in the most efficient way.

Acknowledgements

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MODELLING THE NEO-INDUSTRIALIZATION STRATEGY AS A MECHANISM OF INNOVATIVE ACTIVITY OF INDUSTRIAL BUSINESS

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Research goal: discover the importance of the innovation process in the context of education - science and production.

Research tasks: describe the theoretical elements of the innovation process in relation to the Belarusian experience; to develop a model of innovation implementation science - education – production. Research methods: methods of situation description and process systematics were used in the research; statistical and modelling method of data. The most important competitive advantage of industrial enterprises, especially in the current situation - the coronavirus crisis, are innovations formed in the product concept, technological vector, management tactics and the general strategy of the organization. To bring an idea to the market requires its detailed feasibility study, testing, commercialization, scaling, and re-innovation. Successfully passed the stages of approbation and implementation of new innovations create a basic complex of competitive advantages of the industry, and its new orts of development. The role of scientific and educational potential, the introduction of a cooperative model of resource use to achieve economic and social effect has been determined. The paper proposes a toolkit for assessing the effectiveness of a neo-industrialization strategy in the direction of enhancing the innovative activity of industrial business entities, analysing the calculated results, including using the proposed visualization toolkit. Types of neo-industrialization strategies with a set of key components of the impact on the level of development of the sector are presented. Research innovation: a stage model for the introduction of useful innovations from science - education to production has been developed.

Key words: innovation; neo-industrialization; strategy; assessment toolkit.

JEL code: O30

Introduction

In the context of global trends and national development priorities, the task of national policies is to create the necessary preconditions - human capital, knowledge, skills and competences, technology - to ensure quality education and skills, social and economic prosperity and security, quality of life and transition to a climate-neutral economy.

Scientific and educational organizations are the main generator of innovative ideas. The challenge in these commercialisation-related activities is that they must simultaneously consider the processes of generating innovations, developing products and services based on these processes and then forming a business model around the product-service system [5]. The most important problem in creating innovations is the low level of their commercialization, which is due to several reasons:

- low level of market analysis (market supply and demand, competition, promotion system and other components);
- insufficient level of innovation (originality) of the offered product;
- external risk factors;
- a narrow range of financing instruments (investment proposals).

Research goal - discover the importance of the innovation process in the context of education - science and production. **Research tasks:** 1. Describe the theoretical elements of the innovation process in relation to the Belarusian experience. 2. To develop a model of innovation implementation science - education – production. **Research methods:** Methods of situation description and process systematics were used in

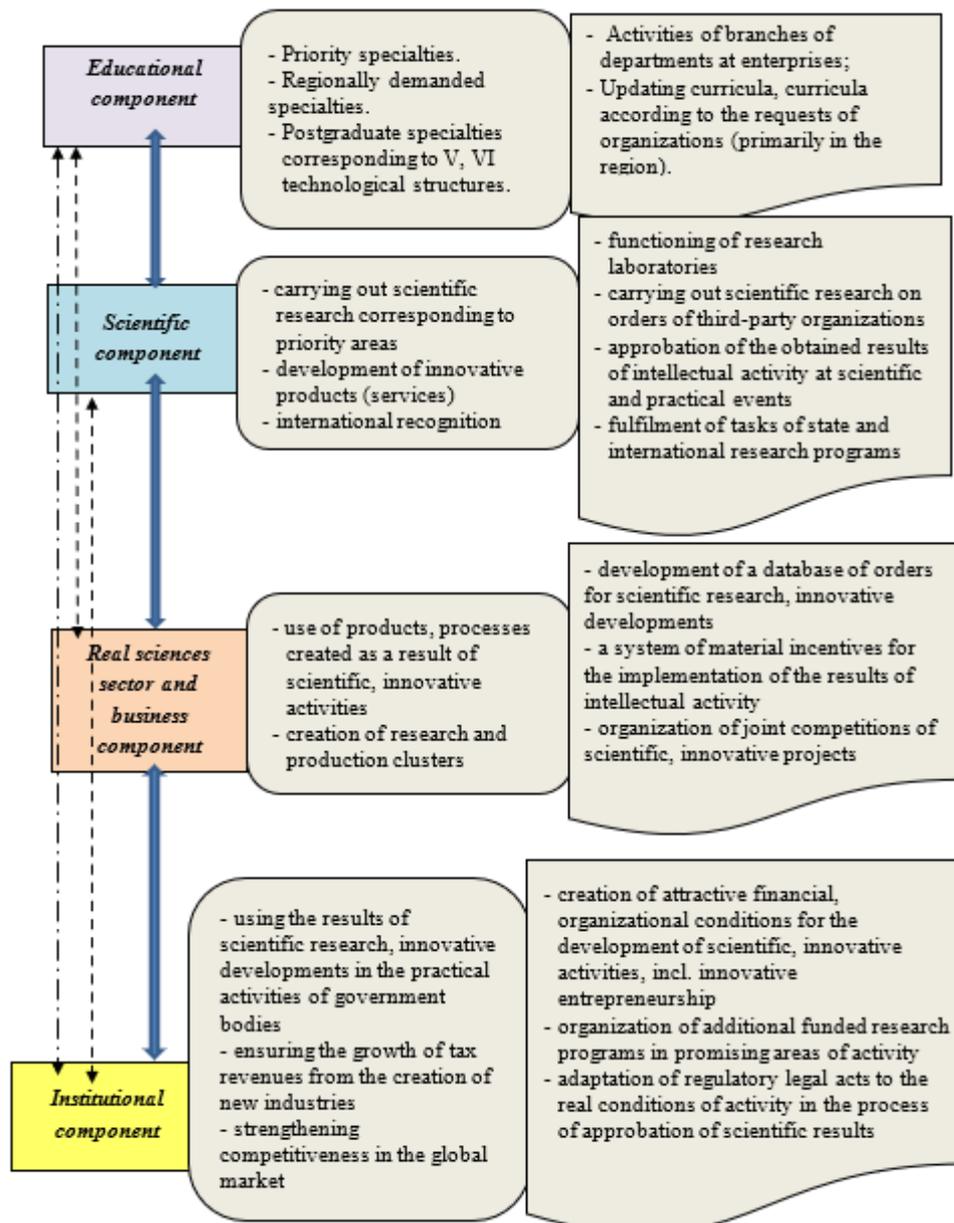
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the research; statistical and modelling method of data. Research innovation: A stage model for the introduction of useful innovations from science - education to production has been developed.

Research results and discussion

The problematic issues that are currently being formed in the scientific and educational system related to the digital transformation of the economy and the labour market, the development of distance employment, resistance from teachers to the introduction of digital technologies, the limitation of budgetary resources, the impossibility of implementing international mobility, make it necessary to initiate new and activate existing partnerships. This will make it possible to implement the principle of cooperation of benefits, ensuring the pooling of intellectual resources, investment, material and technical (Collaborative Mechanisms for ..., 2011).



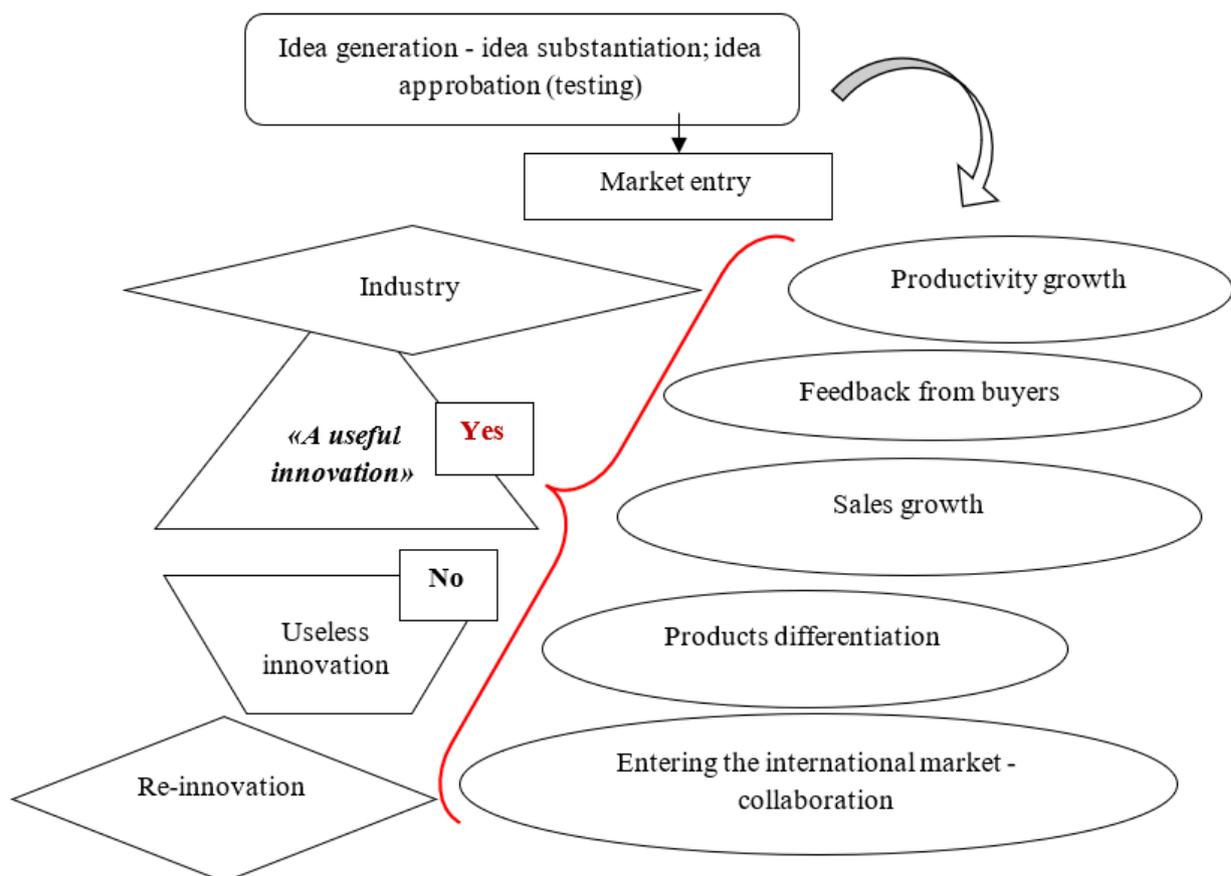
Source: author's calculations based on Klimuk V. V., Chernova O. A., Lazdins A.

Fig. 1. The cooperative model of the development of the innovative potential of the region (Klimuk, V. V., Chernova, O. A., Lazdins, A., 2020)

As a result of the implementation of the model of collaboration of agents interested in the development of the innovative potential of the region - on the basis of the cooperation of the resources of educational organizations, opportunities open up in the direction of generating joint innovative ideas, obtaining additional sources of funding, forming a new and strengthening existing project teams, sharing elements of material and technical infrastructure and other vectors of interaction (Klimuk, V. V., 2017; Terziev, V., Andreeva, O., Georgiev, M., Klimuk, V. V., 2020).

However, in this process of combining, only the resources of the educational organizations themselves are not enough, since the final product must be delivered to the recipient, which, in turn, requires attracting investors in order to form the necessary financial resources for conducting procurement operations, organizations of the real sector of the economy and business to form actual product requests, authorities to assess the priority, the need for specific product segments for the region (country) (Pecherskaya, E. P., Klimuk, V. V., Tarasova, T. M., 2019; Collaborative Mechanisms for ..., 2011; Terziev, V., Georgiev, M., Klimuk, V., 2020).

Thus, the main challenge of most national economies is the need for balanced interaction between subjects of scientific and innovation systems, economic entities and businesses, authorities in regions and countries (Fig. 1).



Source: developed by the authors

Fig. 2. Step-by-step process of creating a "useful" innovation

State industry is one of the main economic development sectors. The product and process innovation model forms a new ort for industrial development: neo-industrialisation, which is characterized only using new technologies aimed at "useful innovation" (Fig. 2):

- in product and service production processes - to improve products or services;

- in management processes - to improve the efficiency of the management system (decision, planning, organisation, motivation, control).

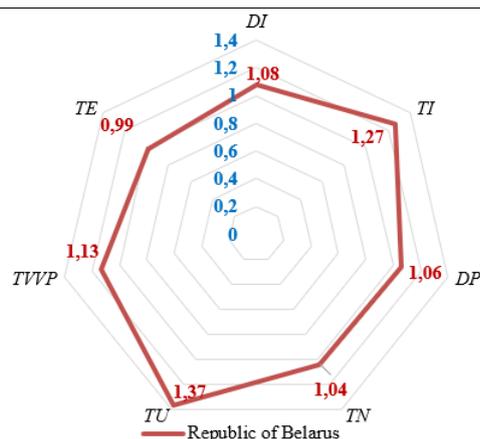
For the development of the process, making quality decisions regarding the necessary adjustments, it is imperative to evaluate the activities in the area under study. To assess the effectiveness of the implementation of neo-industrialization, a system of the following new indicators is proposed.

- 1) The rate of change in the share of innovative products in the total volume of industrial production.
- 2) The rate of change in the volume of production of innovative industrial products.
- 3) The rate of change in the volume of investments in the industrial sector.
- 4) The rate of change in the share of employed workers performing research and development in the industrial sector in the total number of employed in industry.
- 5) The rate of change in the volume of production of "latest" technological modes.
- 6) The new ratio of the rate of change in the volume of production of innovative industrial products to the rate of change in growth domestic product (GDP).
- 7) The new ratio of the rate of change in the volume of exports of innovative industrial products to the rate of change in the volume of imports of this product (Terziev, V., Georgiev, M., Klimuk, V., 2020; Klimuk, V. V., 2015).

The complex of these indicators determines the estimated characteristic of the industrial sector's efficiency, which indicates the implementation of a "new" normality in the ort of the country's industrial development – neo-industrialization, or the established model of industrial activity.

The indicators of the system characterize the dynamics of production and management processes in industry and indicate the dynamics in the studied area - the formation of neo-industrialization - with a positive change in the quantitative index (Terziev, V., Georgiev, M., Klimuk, V., 2020).

To test the proposed assessment methodology, calculations were performed in a comparative analysis of the Republic of Belarus.



Where:

- DI** - is the rate of change in the share of innovative products in the total volume of industrial production;
- TI** - is the rate of change in the volume of production of innovative industrial products;
- DP** - the rate of change in the volume of investments in the industrial sector;
- TN** - is the rate of change in the share of employed workers performing research and development in the industrial sector in the total number of employed in industry;
- TU** - is the rate of change in the volume of production of the "latest" technological modes;
- TVVP** - is the ratio of the rate of change in the volume of production of innovative industrial products to the rate of change in gross domestic product;
- TE** - is the ratio of the rate of change in the volume of exports of innovative industrial products to the rate of change in the volume of imports of this product.

Source: developed based on the National Statistical Committee of the Republic of Belarus

Fig. 3. Component vectors of neo-industrialization according to the data of the Republic of Belarus for 2019

To visualize the results of calculations, it is proposed to use the ort diagram that clearly reflects the current and changing state of the proposed indicators, which, as a result, allows you to quickly make decisions regarding adjustments to management, production processes based on identified bottlenecks (Fig. 3).

Thus, the innovative development of the country's industrial sector is characterized by positive dynamics in 2019 - by 7.8 %.

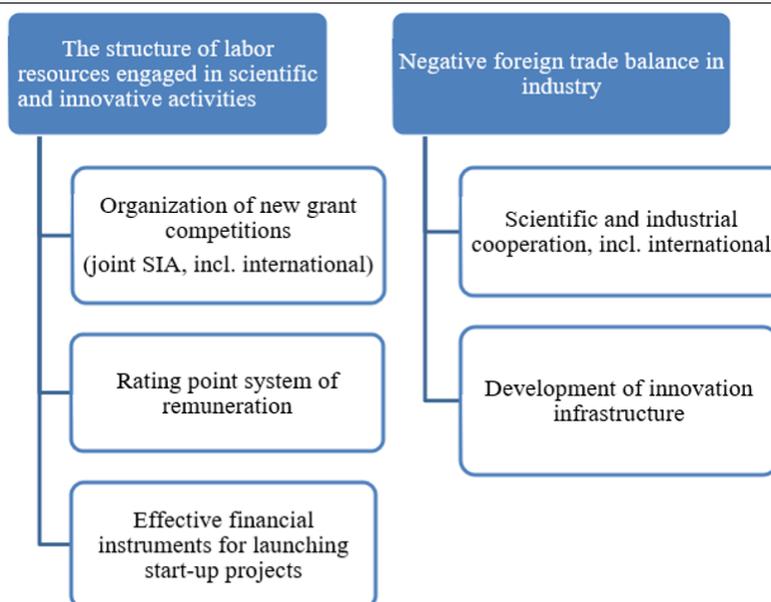
The emphasis in the analysis should be made on a significant increase in the production of industrial products based on new, high ("breakthrough") technologies (Nacionalnij statisticeskij komitet ..., 2020).

The following should be noted as "weak points" in the direction of neo-industrialization:

- an indicator of the number of involved labour resources engaged in research and innovative development;
- excess of import of innovations over export.

To solve the first problematic task, it is necessary to strongly stimulate research and innovation among the personnel of industrial organizations. The following incentives are offered as new incentive tools: rating point system of remuneration of employees; organization of joint fundamental, applied scientific research; bonuses for scalability, export orientation, search for potential new market.

To solve the second problematic task, it is necessary to implement the direction of cooperation of scientific organizations (universities), organizations of the industrial sector (their research departments) to form a research and production cluster, realizing the principle of synergy of results of activities, and consider the possibility of creating joint international research and production (network) alliances aimed at the production of products technological orders (Fig. 4).



Source: developed by the authors

Fig. 4. Directions for enhancing innovation in industry

The implementation of the parts of neo-industrialization can be carried out based on a collaboration strategy due to the cooperation of partners of the scientific and production ecosystem (scientific and educational organizations; the real sector of the economy; business; authorities; public organizations). This will strengthen innovation policy by focusing on the development of a new innovation platform (which forms the basis of the new innovation infrastructure), the gradual introduction of innovation, and the intensification (cooperation) of research and deployment based on improving organizational mechanisms to stimulate the development of industrial business.

The establishment of an effectively coordinated and integrated knowledge and technology transfer system is necessary to:

- 1) promote the exchange of ideas, skills, competences, experiences and data, mutual learning and the strengthening of innovation capacity;
- 2) promote the invention of new knowledge-intensive technologies and the creation of innovative products and services with higher added value that are competitive in international markets;
- 3) stimulate purposeful development and implementation of technological and social, digital, and eco-innovations in industrial or public administration processes.
- 4) The development and availability of an open, secure, and interoperable public data infrastructure for research and innovation is essential for the establishment of an efficient knowledge and technology transfer system. Clearly, the transformation of traditional economic sectors in the regions towards greater resource efficiency and productivity, the creation of higher value-added products and services, as well as the development of technologically intensive, internationally competitive innovations.

Conclusions, proposals, recommendations

- 1) The current situation (2020 - 2021) requires the development of new knowledge, introduction of new technologies and communication opportunities in the country and in the international environment to promote the implementation of science and innovation.
- 2) The analysis of the development of the innovation process in the Republic of Belarus reveals that the biggest obstacle to the successful implementation of innovations in production is the insufficient knowledge of employees (low level of education) about innovations and their implementation.

3) The development of production requires an increase in productivity, an increase in the production of innovative products, the promotion of the development of sectoral innovations, an increase in the level of knowledge of those working in production to promote innovative processes.

4) To promote the introduction of innovations in production, motivating elements must be used, which would promote the acquisition of new knowledge, create the need to work on the implementation of new technologies, products, organizational forms. Cooperation between scientists, universities and manufacturing companies is important for a successful innovation process, where a common position is formed - the innovation ecosystem.

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MUNICIPAL LAKE GOVERNANCE DEVELOPMENTS IN LATVIA: TOWARDS COMPLEX APPROACH MANAGEMENT PRACTICE

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Abstract. Latvia has a significant number of lakes, even eventually more as 10 000 as they never been fully accounted, but just comparatively small number are subject to lake governance, since the entire national lake governance system is still under development and currently mostly municipalities themselves are step-wise developing and realising lake management plans, but municipal capacities vary significantly. According to EU Water framework directive, there are four river basin management systems established in Latvia, having related water and risk management documents in place, as well as, in the past decade, there have been both national and regional level planning guidelines developed for lake and river waterbodies management, but all mentioned has been not yet utilized in local practice, having some legal responsibilities' and admin capacities' deficiencies. Despite this, there has been seen slow improvement of the water quality and socio-economic usage of lakes, but more in the lake management practice is to be done, accounting also for climate change.

The goal of this research was to study the municipal level lake management practice developments, applying general research-and-development (R&D) framework approach and researching particularly the status and development trends of the three governance's dimensions' employment – governance content by socio-ecological system (SES) approach, governance segments as for main stakeholders' involvement and participation, as well as, the set of governance instruments, especially, institutional/administrative ones. There were chosen pilot municipalities, having diverse and successful lake management approaches utilised, and, for the first study stage, document analysis and semi-structured interviews with related municipal specialists were done, using case study research (CSR) methodology application.

There were recognized five lake management approaches, even in most municipalities in Latvia, particularly in rural ones, lake management is traditionally done by the scarce municipal territory administrative units and Utilities departments/services, and, only limited number of municipalities, also particularly studied, have developed and are employing for lake management also nature resource/environmental departments, while only in few municipalities there are established special municipal lake management agencies. Promising looks NGO sector management approach used by some municipalities, both top-down either bottom-up establishment chosen to apply, but as most perspective could be recognised complex approach (cross-sector) management practice, where most or all above mentioned approaches are combined and complementary supporting each other, within particular municipality. All studied municipalities possess certain lake management success stories, to be studied further in very detail, however, in general, there is to be seen still limited understanding and utilisation of the SES approach, also still potential of various stakeholder's involvement and pro-active development of all complementary governance instruments, even many of instruments are available in studied municipalities, but lake communication instruments (information, education/training, participation and lake-friendly behaviour) are mostly underdeveloped.

Keywords: lake governance, management approaches, governance instruments, segments and content.

JEL code: Q01, Q25, Q56, R58

1. Introduction

Lake governance in Latvia is an important issue, as some municipalities in the country are to some extent dependent on lakes and rivers as an important socio-ecological resource system. However, lakes in Latvia, just like in other Northern European countries, are subject to eutrophication (Lakes of Latvia 2015) and, furthermore, lakes in Latvia also suffer from pollution with biogenic elements due to wastewater inflow from smaller settlements, and surface runoff from agricultural areas and forests. Infrastructure issues are also common, as smaller lakes may not have access roads, while larger lakes often are subject to irregular studies and infrastructure improvements since rural municipalities having limited resources. Latvia's lake

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governance has been, until recently, rarely studied by researchers, with most research done about lakes in Latvia being about environmental quality and rare species of plants and animals (Blenckner et al., 2009). The state owns the public waters, to be used by all Latvia residents as is established by Civil Law – Latvia have eventually more as 10 000 lakes as never been fully accounted, but comparatively small number of the most important ones are public lakes (207) and private lakes with fishing rights belonging to the state (208) and all other are private lakes - altogether, there are 2 256 lakes, covering above 1 ha, making lake covered territory around 100 000 ha, what covers 1.5 % of Latvia territory. Just 16 lakes are above 10 km², but those lakes cover almost half the territory of all lakes. Even lake quality has been slowly improving; according to OCED and European Commission statistics, lakes in Latvia are below average in Europe regarding their environmental quality.

According to the European committee and OCED reports, Latvian lake governance and water resources management is in permanent step-wise developing, including lake and river monitoring yet are partly developed as all depending on environmental administrative capacities and capabilities compare to the number of lakes and other waterbodies. National environmental governance is aware about situation in general and, besides main legislation and planning documents, has developed also ministerial guidelines for governance of rivers and lakes, and, also special guidelines have been done by several planning regions in Latvia. There is improved lake and river monitoring and lake governance in protected areas (Zacharias et al., 2020). Most of the practical improvements are done by the municipalities themselves, particularly during last year's actively developing lake governance plans and as possible succeeding with lake management. National environmental agencies, such as the Nature Conservation agency, are providing advice, some funding and as possible also monitoring. Regional lake governance is partially developed and flood management is more developed due to this issue being of more socio-economic value. However, needs for necessary final lake governance system design and development in Latvia shall be constantly stressed, particularly, looking towards cross-level and cross-sectorial integration framework establishment (Konkovs, Ernsteins, 2021).

Many European countries have well developed lake governance studies, also management process discussion (Bréthaut, 2014; Blenckner, 2009; Bitterman, 2020), as well as, governance approaches and models development, and application (Kooiman, 2008). Also, there could be seen more involvement of NGO's, including ones that focus on specific lakes, such as the Lake Constance foundation in Austria (Lake Constance Foundation, 2020), and, in general, municipalities in many European countries are much larger and have more capacities and resources, including more overall public communication and particular information regarding lake governance environmental issues and nature. In Latvia, research on lake management in general as well as the development of lake management guidelines was carried out during last decade and more actively starting from last seven year planning period 2014-2020. These guidelines were developed to enable local governments to coordinate their lake and river management work, provide a basis for the development of lake and river management plans, and have a common water management methodology (Urtans, 2012; Veidmane, 2020). Lastly, also in-depth studies, taking into account both environmental and economic issues in lake management, governance approaches and legislation improvement issues were commissioned (Veidmane, 2020), but, in general, there are missing studies on lake governance and administration.

2. Research approach and case study research methodology

The goal of this research was to study the municipal level lake management practice developments, applying general research-and-development (R&D) framework approach and researching particularly the

status and development trends of the three governance's dimensions' employment – governance content by socio-ecological system (SES) approach, governance segments as for main stakeholders' involvement and participation, as well as, the set of governance instruments, especially, institutional/administrative ones. Particularly, study was designed around the lake governance instruments framework consisting of six, necessary complementary, types of instruments meant to be the mandatory bases for establishing and functioning of necessary governance system (Ernsteins, 2017a; Konkovs, Ernsteins, 2020), performing analysis of the instruments available for the lake governance at the various administrative levels in Latvia - policy and legislation instruments, planning, institutional and administrative, economic and financial, infrastructure and technology, and also communication and collaboration instruments. Besides this instrumental dimension, there were started to study also the other two governance process dimensions – governance content dimension, being based on a socio-ecological systems (SES) approach and governance stakeholders dimension (Ernsteins, 2017ab). Latter is to be mandatorily framed and represented by following five governance segments as governmental and corporate segments, societal/household and municipal segments, as well as, instantly growing mediator segment, including media and NGO's but also formal/non-formal education and science-technology sectors, being so crucial for communication instruments development and implementation.

There were chosen pilot municipalities, having diverse and successful lake management approaches utilised, and, for the first study stage, document analysis and semi-structured interviews with related municipal specialists were done, using case study research (CSR) methodology application, also in the future offering guidelines for the development of municipal lake management. Within the framework of the pilot study, the assessment of water resources/lakes management instruments in Vidzeme planning region in general, and, in practice, in Burtnieki, Madona, Vecpiebalga, Limbazi and Aluksne municipalities, as well as, for complementary approach there were chosen Liepaja city municipality case in Kurzeme planning region, having also rich experience in coastal research and coastal integrated management, as definitively the case to be studied and as much as possibly transformed to inland waterbodies governance applications (Ernsteins, 2017b).

Within the framework of the research, altogether the employees of the eight municipalities - Aluksne, Burtnieki, Madona, Vecpiebalga, Liepaja and also Jurmala, Carnikava and Daugavpils – were interviewed on the municipal organisations involvement in the lake management, especially, on the three lake governance dimensions – governance content, instruments and target groups. At least two water/lake (environmental) management related key persons in each municipality were interviewed (in total 13 semi-structured interviews) and all municipal frame of legislative-planning documentation were studied in six municipalities (Aluksne, Vecpiebalga, Burtnieki, Liepaja, Madona, Limbazi) as for case study research. There were interviewed - municipal environmental/natural resources specialists and some existing lake management specialists, municipal executive directors, public relations specialists, chairmen and employees of lake NGOs, chairmen of lake and water management agencies, utilities departments managers. While in the case of Carnikava, Jurmala and Daugavpils municipalities, 4 semi-structured interviews were conducted.

3. Municipal case studies research: lake management approaches

In the studied municipalities, the executors of the municipal lake administration differ between the municipalities – in some cases, the administration is performed by municipal companies, in others by municipal regular territorial administrative structures, while in Madona the implementation is performed by NGOs, but in Limbazi we see mixt or combined management option. The part of communication instruments

is insufficiently developed and unused in the studied municipalities – information on the lakes and their management is difficult to access for the residents. Education in this respect is also insufficiently developed yet even growing recently. A similar problem exists at the national level: information on lakes and their management is limited and insufficient, and dissemination opportunities have been little studied or used. National legislation also does not specify which organisation is the executor of river basin plans (including lake management) at the national level. Municipalities are currently fully responsible for their lakes, but they have sufficient resources for only part of the lakes, and private lakes are not under their direct control. The studied municipalities had the following lake performance and we have recognized 5 lake management approaches as studied in chosen municipalities, being described separately in the next chapters.

3.1 Utilities management sector approach.

In the Utilities management sector approach case lake management is performed by municipal utilities/service departments and municipal territorial management structures as a part of the municipality's overall territory management. This is the most common form in Latvia, but municipalities more and more are adopting other, more specialised forms in the country.

Vecpiebalga rural municipality

The area of the municipality is 542.2 km², of which the waters cover 27.2 km², having seven public lakes in the municipality, the largest of which is Lake Alauksta and in 2020 around only 4000 inhabitants lived in the municipality, spread across five local administrative units exist in the municipality. The municipality has a wavy, uneven terrain, as well as about half of the territory is covered by forests and tourism sector is very important for the municipality, as it has limited other types of resources, but tourism is seasonal, limiting its development opportunities.

In Vecpiebalga municipality, lakes are managed by the Utility division of the municipality and subdivisions of its administrative units. In 2016, regulations for the use of public lakes were commissioned and developed for Vecpiebalga municipality, as well as the municipality has strict regulations related to the protection of the landscape of the municipality. The management of the municipality's lakes and water resources is rather integrated into its general development plans, as it is part of its landscape protection and is important for its economic development, so also subsequently, even very limited, funded by municipal budget. The municipality has a decentralised water supply and treatment infrastructure and a very well-developed swimming infrastructure near Alauksts and Inesa lakes, which also includes playgrounds and drinking water taps. The municipality publishes information about the lakes on its website, including in connection with their management, but much of this information is related to the tourism sector. Residents of the municipality are involved in the public discussion of the management of lakes, water and the natural environment, as well as in the case of Lake Alauksta the voluntary fishing inspectors are involved. The management of lakes and water resources is not separated from the overall environmental and territorial management. The management of lakes and water resources is integrated into the socio-economic sector of the municipality and the municipality's main target groups are local residents, tourists, anglers, holidaymakers and farmers, in whose interests the water management is performed and who are also involved in the management of the sector itself.

3.2. Environmental management sector approach

In the environmental sector management approach, lakes are managed by special environmental/nature resources management institutional structures or departments in the municipality or by commissioned

separate environmental/natural resources specialists. These structures may be part of other municipal departments, such as the utilities department. An example of is Carnikava and Burtnieki municipalities.

Burtnieku rural municipality

The municipality consists of six territorial units and the area of the municipality is 702.6 km², of which 50.4 km² is water – in 2020 around 8 000 inhabitants lived in the municipality and the population density is 11.3 inhabitants / km². The largest lake in the region is Lake Burtnieki, one of the largest lakes in Latvia. The municipality's tourism sector is an important funding source, but most tourists come to the municipality seasonally.

In Burtnieki municipality, the lake and water resources are managed by the Utilities department having specialized and specially commissioned natural resources specialist. Burtnieki municipality has also special regulatory provisions regarding water management and the connection procedure of the municipality's decentralised water supply system, and procedure requirements of fishing, crayfish, and underwater hunting in the municipality's lakes, especially in Lake Burtnieki. Sustainable use and management of water resources, especially with regard to the management of Lake Burtnieki, is integrated into the development planning documents of Burtnieki municipality and the spatial plans. There is also special the Lake Burtnieki Council in municipality, which receives funds from the municipality's environmental budget and the municipality's territory and housing management budget, as water resources management is integrated into the municipality's overall economic management. Burtnieki municipality manages the municipality's hydro-technical infrastructure, including the decentralised water supply and treatment system, as well as has created a diverse, well-maintained swimming infrastructure at the most frequently visited lakes in the municipality. The website of Burtnieki municipality contains various information about water resources, including their management, as well as the municipality provides educational materials for schools, environmental education programs, as well as, has a free monthly publication, "Burtnieki News", which frequently also publishes information about lakes and rivers. Municipality involves local population in the management of its lakes and water resources, as it cooperates with fishermen's and hunters' associations, as well as lake management issues related to Lake Burtnieki are regularly submitted for public discussion. Burtnieki municipality also integrates other nature protection sectors in the management of lakes and water resources, as it is located in the territory of the North Vidzeme Biosphere Reserve and the natural environment sector as common management. For Burtnieki municipality, the water sector is integrated into the socio-economic sphere, as it is managed by the municipality's economic structures and the management of the water sector is important for its economy and culture, which is closely connected with Lake Burtnieki. The Burtnieki Municipality Lakes and Water Resources department's main target groups are the local residents and anglers of the municipality, who are involved in the Burtnieki Lake association and whose interests the municipality performs the water sector management.

3.3. Water Management Sector Approach

In the water management sector approach, municipalities have set up special divisions/corporations/agencies to manage their lakes and public waters. These organisations receive their funding mostly from the municipality, in addition to other forms of support. An example of such municipalities is Aluksne, where such functions are performed by the municipal agency "ALJA". In Latvia, this is yet a very rare form of lake management, but Limbazi, Usma and other municipalities are currently setting up their own agencies following the example of Aluksne.

Aluksne rural municipality

In 2020 around 14 000 inhabitants lived in the municipality, with territory of the municipality covering 1 697.6 km² - the population density is 8.4 inhabitants / km². Most of the territory is covered by distinctly hilly terrain and by the type of land use, 57.1% is occupied by forests, 29.3 % by agricultural land, 3.8 % by bogs and 9.4 % by other lands. The municipality includes Aluksne city and 15 local administrative units and there are seven public lakes in the municipality, the largest of which is Lake Aluksne within municipality central town. The tourism sector of the municipality is of a seasonal nature, as most visitors come to it in the summer, but it is not particularly important, as other sources provide its profits.

In Aluksne municipality, lake management is performed by a special agency, "ALJA" founded by the municipality, which manages the municipality's all the public lakes and is responsible for all municipality's water resources and their management issues. Aluksne municipality has several water resources planning/management documents, and regulations, including special normative regulations related to public order maintenance at water bodies and their use. The municipality's water resources management is well included in its general development planning, and the municipality has special planning documents regarding water objects and their coastal zones. Aluksne municipality has a special budget for environmental protection and management of municipal territories. The agency "ALJA" is budget financed, and water management of the municipality is performed, being monitored from municipality management too. Agency "ALJA" is also responsible for the management of hydro-technical infrastructure of the municipality; thus, all dams, locks, as well as water supply and treatment system are under the responsibility of this Agency. The main source of information resources related to environmental issues (including water resources) for the residents of Aluksne municipality is the municipality home page, where the municipality planning documents and related regulations can be easily found, and in 2019 special "nature information houses" were established in Veclaicene protected landscape area, where residents and visitors can receive various types of information about natural objects, including lakes. Aluksne municipality actively involves local residents by conducting various surveys and public discussions on various issues, including water resources and involving local residents in the development of development plans. In the natural environment content of the Aluksne municipality, water resources are related to other sectors of the natural environment because the territory of the municipality includes part of the protected landscape area and several nature reserves and protected habitats are lakes or lake islands. Lakes and water resources management is also integrated into the municipality's socio-economic environment, as water resources management is important in the municipalities' joint management. Lake Aluksne contains cultural and historical values that the municipality is entrusted to manage and maintain. The main target groups are local residents, tourists, and local entrepreneurs, whose businesses (processing of agricultural and agricultural products) impact water resources or depend on tourists attracted to the lakes (hotels, guest houses and restaurants).

3.4. NGO management sector approach

In the NGO sector management approach, the lakes in the municipality are managed by NGOs, which perform most or all of the lake management work. Such NGOs can be established by municipalities (Top-Down) as in the case of Liepaja, where the lakes are managed by the municipal association "Liepajas lakes", but there are also NGOs founded by local residents, as in the case of Madona, where lakes are managed by local lake associations, founded in mixed by the local inhabitants/entrepreneurs, supported by municipality and some NGO's incomes, fishing taxes.

Liepaja city municipality

Liepaja is the third-largest city in Latvia, one of the nine cities of national importance in the country, located on the western shore of Latvia between the Baltic Sea and Lake Liepaja, which is connected to the sea by the Trade Channel. The area of the city is 68.0 km², of which 16.7 km² is water. In 2020, the city had a population of around 70 000. In Liepaja, lakes and water resources are managed by the association "Liepajas lakes", founded by the city of Liepaja and several other municipalities around the lake, coordinated by the city's Environmental health and public participation department, which cooperates with the association on water resources management, especially lakes. Liepaja has strictly binding regulations concerning the management of Lake Liepaja, nearby protected areas and coastal areas. The city's Utility department also manages most of the city's public areas, including all parks and green territories in the city and the hydro-technical infrastructure. Liepaja city development documents and spatial plan include integrated lake and water resource management and coastal area management as important elements for city development.

The management of lakes and water resources receives funds from the income of the association "Liepajas lakes" from the sale of fishing and layout licenses, financial support of the city to the association, as well as from the environmental budget of the city of Liepaja. The city is responsible for the management of the technical infrastructure (including hydro technicals), but the machinery and tools (including the water grass mower) needed for the direct maintenance of the lakes are owned by the association. Residents of the city of Liepaja have access to extensive information about the management of lakes, coasts and protected areas; there are eco-schools and ordinary schools having educational material on these issues, and the city has recently established an environmental education centre on water management. The city promotes public participation in the management of the water and coastal sector through public consultations on the issues of these sectors, clean-up of the territory of coastal and water bodies, as well as listening to the suggestions and opinions of the residents. The city does not separate its water resources from the general natural environment management sector, as they are closely related to the management of protected areas, and Lake Liepaja itself is partially a nature reserve. The city's socio-economic environment depends to some extent on the efficient management of water resources, so the water sector is closely linked to the overall operation and management of the city. The city's main target groups are its inhabitants, anglers and fishermen, as well as tourists and holidaymakers.

Madona rural municipality

The area of Madona region is 2 160.2 km² and in 2020, the population of the municipality was around 22 000. Lake Lubana is located partially in the region, which is the largest lake in Latvia. There is a total of 26 public lakes in the municipality. Tourism is an important source of resources in the municipality, but it is not the only one, and tourism in the municipality is seasonal, which hinders its development. In Madona municipality, lakes are managed by a number of local territorial communities' development NGOs and two lake management associations, including the Kala Lake Council, which was by local residents founded, and the municipality itself performs mainly support functions. The municipality sets strict quotas and restrictions for fishing in the lakes of the municipality and has binding regulations regarding the use of the lakes. Lake and water resources management is also integrated into the municipality's development programs and plans, as part of Lake Lubana is located in the municipality and protected landscape areas. The municipality lake management receives funding from three sources – the municipality territory, housing and environmental protection budget, NGO profits from the sale of fishing and angling licenses, and municipal income from the rental of fishing gear, which is invested back into the lake management. Madona's hydro-technical and lake management infrastructure is divided between the municipality and NGOs – the municipality manages all technical, including hydro-technical infrastructure, while NGOs manage special

lake infrastructure, including swimming infrastructure. The communication issues of the lakes of the municipality are solved by NGOs, of which the "Kala Lake Council" has special educational programs related to the lakes. In Madona municipality, issues of public participation are addressed by NGOs, but the municipality also organises public consultations on environmental issues, including the management of protected areas and lakes and related plans. The management of the Madona region's natural environment does not distinguish the management of lakes and water resources from other sectors because environmental management is considered a unified system. In Madona municipality, water resources management is integrated into socio-economic management because the environmental management of the municipality, especially with regard to water resources, is closely related to its economic activities, the income of which is provided by tourism, agriculture, recreation and fishing, as well as their provision. The main target groups for the management of Lake Madona are locals, entrepreneurs, anglers and fishermen.

3.5. Cross-sector management complex approach

The Cross-sector management complex approach is a combination of several sector management approaches or even all above mentioned four sectoral approaches of management. Usually, they are Utility structures in combination with local government or NGOs founded by residents.

Limbazi rural municipality

Limbazi municipality is the clearest example because of having all of the previous forms of management operated in this municipality. There is a lake management agency ALDA, lake NGOs, municipal departments and Utilities department and municipal territorial units involved. The municipal lake management agency manages the three largest lakes in the municipality, while the other lakes are managed by local NGOs or municipal territory administrative units. Limbazi has 4 NGOs that manage lakes established by the local inhabitants and landowners. Limbazi is also the only municipality in Latvia, who has Blue Flag swimming area for lake. Limbazi municipality is a municipality in the north-west of Vidzeme, which combines the city of Limbazi with 7 administrative units, haing an area of 1 171.2 km², of which 34.4 km² is water. In 2020, around 17 000 inhabitants lived in the municipality. There are eight public lakes in the municipality. Tourism is an important source of additional funds for the municipality, but it is not the main one because the municipality has well-developed agriculture and industry, including one of the largest dairy companies in Latvia.

In Limbazi municipality, lake management is performed by three types of organizations - the lake management agency "ALDA" founded by the municipality, which is responsible for the management of the three largest lakes, local government institutions responsible for lake and water management in their territory, and 4 NGOs that manage three lakes and one a series of lakes in the municipality. The municipal Utilities and Planning departments are involved in managing the lakes as well. Limbazi municipality has binding regulations regarding fishing, angling, the use of swimming areas, the use of motorized water transport (excluding electric motors) is prohibited, as well as strict regulations regarding public behavior in public recreation areas. The municipality lake management agency ALDA has regulations, which determine its responsibilities, as well as each managed lake or group of lakes has management plans, as well as special planning documents regarding fishing. Limbazi municipality maintains ALDA with its own budget, as well as the agency and NGOs make a profit from issuing fishing licenses and providing other services related to water or coastal recreation.

The infrastructure of swimming places is at the largest lakes, as well as in all public swimming places. Water treatment and transmission systems are under the control of the municipality itself, as well as special hydrotechnical infrastructure. The agency and associations manage recreational infrastructure by the lakes,

including boat docks. For the residents of the municipality, information about the lakes is available on its website, social portals, as well as in the municipality newspaper. There are environmental education programs provided by both the Blue Flag program, Ecoschools and the municipality itself. The municipality does not have special advisory councils, but their lack is compensated by the large number of NGOs in which residents living near the lakes work.

Other environmental and nature protection sectors are integrated with regard to water, coastal and recreation management. Not all sectors are integrated, but those related to direct lake management are. Socio-economic sectors are integrated into the lake management, as the provision of recreation and recreational facilities by the lakes is important for both the municipality and the local population. The main target groups of Limbazi lakes are locals, holidaymakers, tourists, anglers, fishermen, the municipality, as well as young people (regarding environmental education).

There relevant interesting examples of lake governance planning in few other municipalities.

Carnikava rural municipality - the municipality's total area is 80.2 square kilometres, which is the third smallest municipality in Latvia; moreover, most of it is covered by forests, but a quarter of the total area is used for agriculture. Carnikava is known for its nature park "Seaside", which is included in the European Union's network of specially protected areas "Natura 2000". In 2020, the municipality had a population of around 9 000. For the region, tourism is important, but it creates difficulties for local residents who live near lakes, so the municipality does not want to develop tourism too much. In Carnikava municipality, lakes are managed by the Environmental division of the Utilities department, as well as the municipal Planning department has its own environmental specialists. Carnikava has a number of binding rules on behaviour in public places, coastal management and other areas, but the most important are Binding regulations of Carnikava district council On the Procedure for Using the Public Waters in the Administrative Territory of Carnikava Region and Their Shores. These include the management of all public waters in the municipality.

Daugavpils rural municipality - there are 19 administrative units in the Daugavpils municipality. In 2020, the population of the region was around 20 000. It covers an area of 1 876.1 km², of which 82.2 km² is water. The municipality includes part of the Daugava River and has five public lakes. The tourism sector is important to the region, but it has many other sources of funding, including a well-developed agricultural sector, which reduces the need to focus on tourism. Daugavpils municipality lakes are managed by the Environmental department of the Economic division of the municipality. The largest lake management works are carried out by the municipality, while smaller works, such as the creation of swimming areas, are carried out by each local administrative unit. The municipality has rare specific - an Environmental Management Specialist in Lake Management, part of its Natural Resources Division.

Jurmala city municipality is the largest resort town in Latvia, about 25 kilometres west of capital city Riga. The city covers an area of 100 km² and stretches for 24 km along the Gulf of Riga and having meandering Lielupe river from other side. The population was around 50 000 in 2020. The municipality does not have its own lakes, but it has a coastal governance practice, and the Kemeri National Park is nearby. Tourism in Jurmala is the main source of funds, but it is seasonal in nature, and outside the tourist season, the city has difficulties with resources. For the city of Jurmala, the waters and coast are managed by the city Development and environmental issues committee and the municipalities Utilities department manages all hydro-technical infrastructure. Other commissions are also involved in coastal and the city's water infrastructure management. The city has various binding regulations regarding public behaviour in public areas, swimming areas and on the coast. The city has strict national regulations regarding

construction in the dune area. The city of Jurmala has a special Action plan for the protection of water resources of Jurmala city (2016).

4. Discussion and conclusions

In Latvia, the lake governance system is developing - there are basic instruments, but all kinds of resources, including human resources and institutional capacity are insufficient, and, legislation need to be further specified, particularly, the surface waterbodies management enforcement. In Latvia, there is an insufficient communication system for lake management - mediators are not sufficiently involved, and the information is also mainly intended for tourists, and this group of instruments is insufficiently researched and developed. There is recognizable necessity of further but system-based comprehensive improvement of the lake governance, in particularly, the system of the lake governance instruments at the national level and various support mechanisms and framework governance to pro-actively contribute to local level lake governance. **Three complementary governance dimensions'** employment towards coordinated multi-actor, multi-instrumental, multi-sectorial thematical applications would be seen as necessary potential for the further establishment of the local and national lake governance system.

The capacity of local governments, especially rural counties, is not sufficient, but after 2021 administrative-territorial reform the combined, aggregated municipalities will have more capacities. All studied municipalities in the first R&D stage possess certain lake management developments, what also needs to be studied further in particular. The study of all three governance dimensions showed, that there is still limited understanding and approach towards SES approach utilisation. Potential of main local stakeholder's involvement and pro-active self-participation has been not yet understood and target-oriented. There are wide range of governance instruments available in studied municipalities, also new water/lake management targeted planning documents, but lake communication instruments (information, education/training, participation and lake-friendly behaviour) are mostly underdeveloped. There could be done also further conclusions on administrative-institutional governance instruments, surveyed in particular.

5) There are **five different approaches (models) of municipal lake management identified**, which have their own local history, characteristics and operating instruments with their combinations, compare to the any single model/system: Utilities management sector approach; Environmental management sector approach; Lake management sector approach; NGO management sector approach and also Complex (cross-sector) management approach using several of the previous approaches at once. There is not realistic to develop one standard approach of lake management, since municipal management conditions are very diverse in the size, location, number of population, existent administration traditions, and, subsequently, the capacities and resources available to particular municipalities, as well as, the availability and number, size and multiple use of lakes. Basically, lakes as any other municipal territories are managed by usually scarce municipal territory administrative units and also Utilities departments/services, responsible for standard communal services (water/wastewater, waste, heating and territorial clean-up), but various combined (cross-sector) approaches to lake management are becoming more widespread, and various types of NGOs are increasingly involved in such work.

6) Municipal agencies and also by municipality established NGO could be seen as the most successful forms of lake management, as they have clearly defined functions, responsibilities and more or less efficient specialized organization. Agencies possess also a range of governance instruments, partnership

interests/tasks and more open SES understanding and application approach - it would be desirable to develop this experience further and process of this experience dissemination has already started as neighbour and further afield municipalities are studying experience of those few lake management agencies. Also **complex (cross-sector) management approach** for the lake management appears more and more often in the lake management sector in Latvia, being promoted by the limited municipal capacities, especially, having many, diverse and distantly spread lakes in the municipality, but also initiatives of local residents or already existent NGO's, and, some other factors, including the presence of nature protected areas / objects.

7) The national environmental/water sector governance is not yet in the position to offer to municipalities any specific lake management models and cannot sufficiently support by various necessary governance instruments (besides recently growing funding for lake management planning) the municipal lake management. As a result of administrative-territorial reform taking place in 2021, 42 out of 119 municipalities will be formed, which will have significantly more resources and eventual staff required for environmental/lake management, but it might also promote the spread of complex approach of lake management by merging combined municipalities with already existent different approaches of lake management and due to its eventual efficiency and complementary and participatory character. In order to maximize the management efficiency of lakes and all water resources, the **cross-level networking governance system** with both top-down and bottom-up approaches used/combined would be required and possible.

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CREATIVE INDUSTRIES IN SMALL CITIES: CONTRIBUTIONS TO SUSTAINABILITY

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Abstract. The paper addresses the gap in analysing the complex role of creative industry businesses in small towns with regard to sustainable development. It takes a scholarly literature review approach and in the final section proposes a typology of sustainability-oriented actions, which creative industry businesses may or may not take in practice. As a typology of positive contributions, it lays groundwork for an empirical study, which is envisaged as the next step. The paper reinforces the idea of the complexity of the dimensions of sustainability as context-dependent, negotiated and situated, and the ambivalent role of creative industry businesses, stemming from the material realities of creating, distributing and consuming cultural and digital products.

Keywords: creative industries, sustainable development, small cities, trade-offs.

JEL code: Q01

Introduction

Cities, both large and small, are central nodes of the spatial development of the countries. Often the significant role of large cities is emphasized due to a positive link between the city size and economic growth. A high share of industries that benefit from agglomeration economies and a well-developed urban infrastructure, along with governance effectiveness allow countries to take advantage of agglomeration benefits from larger cities (Frick, Rodriguez-Pose, 2017). The significant role of creative industries in large cities has been frequently discussed in scientific literature, emphasizing the attractiveness of urban environment concentrating in the cities as a critical part of the so called creative class (Florida, 2014) that in return contribute to the overall development of the cities, innovation, science and industrial expansion.

Simultaneously, a debate about increasing significance of small and intermediate cities is taking place. They are attractive places of living for those who migrate from the large cities and at the same time appealing to rural inhabitants who tend to move to urban places (Sietchiping et al., 2014). Culture, and in particular creative industries, which in small cities are often represented by small enterprises or even individual entrepreneurs, make a significant part of local industries, play a crucial role in the city development, regeneration and also contribute to liveable places, improve quality of life of local residents. Creative industries – advertising, architecture, art and crafts, design, fashion, film production, video, photography, music, performing arts, publishing, research and development, software and computer game development, electronic publishing, as well as TV and radio (OECD, 2018) (including both business enterprises and freelancers) are often positioned as important players in local development, if only because of bringing to the scene the resource of creativity. They are considered to provide innovative inputs to diverse areas of activity in local economies, such as agriculture, furniture, textiles, tourism, gastronomy (Collins et al., 2018).

Sustainable development is a central concept for the development of any territorial entity – either on national or city level. Not only countries, but also cities – large and small – compete for all kinds of resources for their development goals. While these goals are context-specific, one of the most important common aspects of pursuing these goals is doing so in a sustainable way (see the United Nations' "Transforming our world: the 2030 Agenda for Sustainable development"). Also, when looking in particular at the development of cultural agendas in the cities, we see that sustainable development is one of the key concepts ('Agenda 21 for Culture' approved by The World Organization of United Cities and Local Governments).

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The authors of the article are in particular interested to have a closer look at interconnections between the development of small cities, the role of creative industries and the way creative industries can contribute to sustainable development of the cities.

However, it is not self-evident that creative industry activities indeed promote and strengthen any of the aspects of sustainability: cultural, economic, environmental, and social. In other words, creative industries are not by default benign with regard to sustainability (Maxwell and Miller 2017 on environmental aspects).

For instance, scholarly literature demonstrates that some models of development (e.g. that of enhanced consumption of which creative industries may be a part) result in exacerbated inequalities in workforce, as well as gentrification, and displacement of local identities and small manufacturing businesses (Oakley and Ward 2018; Scott 2007).

Scholarly literature also notes the possibility of downplaying the potential of creative industries to provide critical reflection on local issues, to generate alternative visions of community life, and redefine what good life is, as well as prioritise the values of egalitarianism and sharing (Banks 2018) - all directly related to ideas and practices of sustainability.

There is a shortage of studies teasing out "the complexity of the role of culture in sustainability" (Oakley and Ward, 2018). In the present paper, the authors contribute to addressing this gap through identifying the ambivalence of the role of creative industries with regard to sustainable development, and through "teasing out" the types of interventions, which may be considered providing positive contributions. These – or indeed, contrary – kinds of contributions would then be identified through an empirical study, for which this paper lays some groundwork.

The research question addressed in the paper is as follows: *What are the types of creative industry businesses' positive contributions to sustainability in the specific context of a small city?*

To address the question, the paper will first briefly outline the concept of sustainability and its four pillars. Second, the paper will analyse the specific traits of small cities, valued in their contexts and hence needing to be engaged with in a sustainable way. Third, the authors will discuss the current scholarly literature on creative industry businesses in small city settings and their possible trade-offs with regard to sustainability. Finally, the paper will propose a scholarly literature-based body of actions that may be taken by creative industry businesses to promote any of the four pillars of sustainability. The latter does not mean that these contributions are indeed always positive; they merely provide some initial guidance in looking for types of contributions, which might be considered positive. Similarly, they point to a possibility of less benign actions.

Overall, the paper will contribute to knowledge of the complex roles that creative industry businesses might play in small cities.

The paper is based on the research project "Creative Industries in Small Towns: Potential and Contributions (CRISP)" which is implemented as a case study in the small town of Cesis, Latvia.

1. Sustainability and its pillars

The introductory statement of the report Our Common Future, popularly called the Brundtland Report (1987) defines sustainable development as that which "*..meets the needs of the present without compromising the ability of future generations to meet their own needs*" (section 27, p. 16).

The definition implies that the goal of achieving development should attach equal and balanced attention to economic growth, protection of natural environment and social equity, which jointly function as three pillars of sustainability (Hojnik 2019). It is essential to note that sustainable development is an unfolding,

dynamic process, including the realisation of individuals' potential and improvement of their quality of life, while simultaneously safeguarding the systems that make the above possible (Hojnik 2019).

While the traditional view of sustainability includes three pillars, in later years there have been proposals of a fourth pillar, of which the most relevant in our opinion is the pillar of culture. A recent overview of literature on the relationships of culture and sustainability (Dessein et al., 2015) notes that already in the Brundtland report which does not emphasise culture as a separate pillar, Chapter One accentuates the need for new moral and value criteria, and new patterns of behaviour. These can be said to mark a "cultural turn" in thinking about development, as they refer to culture in a broader sense (Dessein et al., 2015).

The same broader definition of culture (as distinctive spiritual, material, intellectual and emotional features that characterize social group or a society) is proposed as the fourth pillar - a fundamental missing dimension of a healthy society in the sense of wellbeing, creativity and diversity, by Jon Hawkes (Hawkes, 2001).

While the conceptual practice of compartmentalising sustainability has been widely criticised (Gibson 2006; Griggs et al., 2013; Duxbury et al., 2017), for instance for reduction of reality and leading to sectoral rather than cross-sectoral thinking, the pillar model is also valuable as a metaphor and as a means to explore the role of its constituent parts (Dessein et al., 2015), for instance, the analysis of three possible relationships between culture and sustainability (Duxbury et al., 2017).

Importantly, the pillars may be seen as contradictory, proposing the need to make value judgements between different dimensions – one of them may be considered primary, followed by others (Duxbury et al., 2017: 220; Oakley and Ward, 2018). This is a particularly pertinent note when analysing actual practices of actors who may have to engage in complex trade-offs between values of economic and environmental or any other dimensions.

It must be noted that culture may not only be a positive result of development, but also a hindrance – if entrenched traditions or ways of thinking discourage adaptation to new ways of life (Dessein et al., 2015).

The context-dependence of sustainable development is the reason why the diversity of actual meanings has to be acknowledged. "Meanings are shaped by diversity of human life-modes and by adaptations to living conditions, even more so by aspirations and needs or wants"(Dessein et al., 2015); all forms of capital negotiated in the face of changes (ibid).

Sustainable development is best examined in specific locations, as all human activity happens in societies, neighbourhoods and cities. These contexts reveal the links between creative and cultural activities and sustainable development (Hojnik, 2019). The authors of this paper view cultural and creative aspects as forming linkages between economic, social and environmental sustainability.

As already noted, the specific meaning of sustainability has to be negotiated in the face of developmental changes; it is dynamic. This underscores the value of creativity in addressing the various challenges and trade-offs that small cities may face in their sustainable development. Thus, sustainable development is not about preserving everything as it is currently, since changes are ever-present; the issue is about balancing the values in concrete solutions to challenges and doing so creatively.

Scholars note that the best approach is by "trial and error"; it is iterative, bottom-up and inter-generational, with processes more important than products (Kirchberg, 2013).

Thus, sustainable development entails a dynamic, context-specific, iterative approach to all four capitals or pillars – cultural vitality, economic growth, environmental protection and social equity. These are in practice interlinked but kept separate in this paper for analytic purposes.

2. Small cities and traits to be sustained

This sub-section of the paper poses the following question: What are the specific positive traits that scholarly research associates with small cities and which are valuable enough to safeguard and develop in a sustainable way?

A key trend is that the economic base of small cities is diversifying with a visible decline of the importance of agriculture and other traditional sectors, accompanied by a growth in other activities, such as services and recreation, as postulated by the "new rural paradigm" (OECD, 2006). Although urbanization rates are still high, there is also an opposite trend – migration from large cities to small urban areas. It can be described as counter-urbanization phenomena, which Selada defines as "lifestyle migration" – when decisions to move are not related mostly to economic motivations, but are mostly due to uniqueness of the territorial capital of small cities in natural, cultural and symbolic terms and quality of life (Selada et al., 2011).

Sustainability in its ecological and social (community-related) aspects is attractive to the potential dwellers of small cities and highly valued among the existing population. Therefore, people who value healthier lifestyles are more likely to choose to move to a small city. Small cities are more privileged in such aspects as community engagement, a culture of cooperation and participation, and social proximity.

Individuals appear to value the human scale, community and quality of life, various amenities, including outdoor ones (McGranahan et al., 2011; Noonan, 2015). This brings to the forefront all four pillars of sustainability: preservation and development of valued and essential local traits of social, cultural, economic and environmental resources.

In particular, creative individuals might choose locations to live and work due to their "soft" infrastructure: networks, the image of the place or its "creative" identity, rich traditions and amenities (Clifton, 2008). In addition, it is worth to emphasize that as information and communication technologies are available, creative people who are highly mobile and flexible (most of them are freelancers, self-employed, owning a small company or work on project-by-project basis), are more open to a lifestyle which includes mobility and opportunity for change.

Creative individuals are looking for alternative lifestyles to those prevalent in big cities, giving priority to wellbeing associated with sports, healthy food, preservation of the environment and sustainable practices, and to the sense of community and local authenticity (Selada et al., 2011: 85). Competitive advantages based on liveability imply the consideration of issues such as well-being (sports, health, food, aesthetic etc.), sustainability (quality environment, low carbon lifestyles, sustainable commuting modes, green spaces, energy efficiency etc.) and social inclusion (community spirit, social proximity, meeting places etc.) (Selada et al, 2011). Possible amenities that may attract creative individuals to small cities may be categorized as follows in Table 1.

Table 1

Amenities that attract creative individuals to small cities

Amenities typology	Description
Natural	Warm climate, distinctive and picturesque countryside with topographical diversity, such as valleys, rivers, lakes, mountains and forests etc.
Cultural	Architectonic and archaeological heritage such as castles, churches, aqueducts and bridges etc., and intangible heritage like memories, testimonies, legends and traditions etc.
Symbolic	Community engagement, trust relationships, culture of participation, neighbourliness and sociability, social capital, presence of civic associations etc.
Built	Health and social services, quality schools, hotels, restaurants, bars, meeting spaces, small studios, live work houses etc.

Source: Adapted from INTELI (2011)

These are valued features of smaller places, based on territorial capital, natural and cultural amenities, rural lifestyles, and quality of life (Gülümser et al., 2011:12).

To sum up, the valuable traits of small cities that should be developed in a sustainable way are natural amenities and landscapes, community life and high levels of mutual trust, a distinctive lifestyle, and high levels of symbolic capital, which can be converted into economic one.

3. Creative businesses: are they sustainability-promoting by default?

Creative industries are often positioned as important players in local development, being a resource of creativity contributed to the scene and providing innovative inputs to other areas of activity in local economies, such as agriculture, furniture, textiles, tourism, gastronomy (Collins et Sand act as a catalyst for innovations that are taking place in other sectors, such as industries, energy, transport, agriculture, commerce (Streimikiene, Kacerauskas, 2020:1). The effects of knowledge spillovers derived from geographical proximity may induce transfer of information, technologies, innovative business models and organization forms to the overall local economy (Selada et al., 2011:88).

However, creative industries are not by default benign with regard to sustainability. Scholars note threats both to social inclusion and environmental health. Creative industry businesses and freelancers may be part of consumption trends which exacerbate inequalities, gentrification, as well as displace local identities and traditional local skills and businesses (Oakley and Ward 2018; Scott, 2007).

In a different vein, their potential may be underused concerning critical reflection on local issues, alternative visions of community life, redefinitions of what good life is, and prioritising the values of egalitarianism and sharing (Banks, 2018).

The case of impact on the environment is particularly pertinent. As noted by Banks, "creative, cultural and digital industries and technologies are highly energy-intensive and often polluting" (Banks, 2018; 370). The "material practices of making, distributing and consuming culture" directly affect the environment (Maxwell and Miller 2017; 177). Book making creates pollution; movies have a carbon footprint, electronic media have a complex collection of problems, as does digitisation (ibid). Still, creative industries due to their small size and responsiveness to customer needs may often offer eco-friendly solutions to sustainable development challenges, for instance such as eco-friendly fashion, and protect biodiversity by marketing natural health and cosmetic products that work in harmony with nature (Sdrali, 2020:3).

Thus, while there is considerable excitement as to positive contributions by creative industry businesses to small city development, equally there is in scholarly literature that evidences trade-offs that are not necessarily benign with regard to sustainability. This requires further exploration.

The first step of that exploration is to propose a set of contributions to all pillars of sustainability, which may be supplied by creative industry businesses and freelancers. The next step, already outside the scope of this paper, would be to examine empirical evidence of either these positive contributions or the lack thereof.

4. Emergent typology of contribution by creative industry businesses for sustainability

To set the background for our proposed typology, the authors will first outline the setting of the proposed empirical study. Second, the concluding part of the paper is a scholarly-literature-based typology of contributions to sustainability, which may be made by creative industry businesses.

The location of the study reflected in this paper is Cesis – a small city not far (90 km) from the capital city of Riga; a recipient of lifestyle mobility of creatives, and home to quite a high level of activity by creative industry businesses and freelancers (CIBFs in further text). The activity was evidenced in a mapping pilot study by the Latvian Academy of Culture in 2018 and media monitoring conducted within the current study.

The authors of the paper aim to develop a scholarly-literature-based typology of activities by creative industry businesses and freelancers. During the next steps of the study, authors will explore the actual practices of creative actors and their interpretations.

As mentioned in this paper, the separation of the sustainability pillars is to a certain extent artificial, although useful for analytical purposes. We will follow this logic and first point out two overarching types of contributions, which can be attributable to any of the pillars of sustainability. The rest of the sub-section will be dealing with types of activities by the pillar.

Firstly, CIBFs may act as creative brokers. These agents function as connectors between arts, technology, and business. They occupy a position in the social space that provides them with access to non-redundant knowledge (Stea and Pedersen, 2017; Sdrali, 2020). It means that creative brokers can create ideas, stimulate transfer of knowledge and ensure cooperation between various groups of people, based on creativity. Thus, on the one hand, creative solutions to any aspect of sustainability may come about through connecting various "bubbles" of locals and newcomers. On the other hand, if there is a shortage of such agents, various groups may remain in their "bubbles", thus under-utilising their creative potential and contribution to sustainability.

Secondly, CIBFs may act as networkers or partnership-builders with like-minded partners and organizations. This is considered essential for the sustainability of small cities (Sdrali, 2020). It fosters cooperation between neighbourhoods, creates "bridges" between local and global spheres. Sdrali also notes that networks, especially local ones, provide opportunities for regular, practical support tailored to local needs. Networking enhances creativity and sustainability; enterprises support and learn from each other (Sdrali, 2020). Again, shortage of networking means that existing resources are under-utilised.

Thus, CIBFs may act as connectors between different worlds or connect similar agents. Both types of activities may enhance the potential of creative contributions of sustainability in a broader sense.

Another way to view the contributions of CIBFs is to examine scholarly literature on each of the pillars and note activities or types of contributions by the pillar. Below the authors present the result of this exercise. Each set of activities is sourced from works of multiple scholars and offers a pilot version of positive contributions to sustainability. When reversed, these identify the actions that are not positive.

Economic pillar: Creating jobs and creating innovation

- Preservation of local knowledge and a focus on high quality;
- Integrating local values, way of life, history and tradition in the design of CIBF products;
- Preservation of natural resources in local manufacturing units (Pesaresi, Laven, Skoglund, 2016). In essence, it means the creation of new versions of traditional foods or crafts, creating added value from local heritage;
- Finding new ways of land use, including tourism and recreation;
- Mobilising local creative resources to add value to tourism and recreation by cultural and creative references to art, literature, design, film, and more.

To sum up, studies point out to specific strategies to adding value to products and services (van Heur, 2010) based on geography and heritage (Collins et al., 2018), achieving new hybrid outcomes of resources (Woods, 2011) which are locally produced, narrative laden and authentic, and an antidote to massification practices (Collins et al., 2018).

Environmental pillar: "the greening" of operations

- Innovative solutions to minimise raw materials used, as well as energy
- Use of alternative resources (e.g. recycled, re-use of "waste")
- Concern for the provenance/sourcing of materials
- Concern for the amount of "stuff" produced
- Innovative solutions for developing products (rather than relying on natural resources) by imaginative use of design
- Nature conservation; considering issues of biodiversity or landscape

To sum up, actions "greening" the operations of cultural industries (Duxbury et al., 2017), which entails finding new, more sustainable ways for developing products (Luckman, 2018), thus decreasing the environmental impact (Hojnik, 2019) and paying attention to biodiversity (Dessein et al., 2015).

Social pillar: the quality of communities

- Actions promoting diversity
- Actions promoting social inclusion and participation (as opposed to polarization and non-representation)
- Actions promoting a better quality of life and well-being.

To sum up, actions that promote sustainability and community as being about social interaction, diverse networks of reciprocity (Dempsey and Bramley 2011), whose values are dynamic and may need to be re-negotiated (Dessein et al., 2015), overall contributing to well-being (Hojnik, 2019).

Cultural pillar: continuity and diversity

The following actions are borrowed from scholarly literature that does include the cultural pillar in the idea of sustainability:

- Safeguard and sustain cultural practices and rights by promoting continuity and diversity;
- Contribute artistic expression to raise awareness of sustainability and climate change towards transformation of modes of thinking and manners more complementary to sustainable living;
- Negotiation of memories, identities and heritage;
- Negotiation of the relevance of place, landscape and territory.

To sum up, actions to balance continuity and diversity (Duxbury et al., 2017), negotiating meanings of key aspects of place and relationships (Dessein et al., 2015), with artistic activities promoting a broader turn towards more awareness of sustainable living (Duxbury et al., 2017: 224).

Thus, based on the analysis conducted in the paper, the authors propose the following typology of positive contributions to sustainability explained in Table 2.

Table 2

Positive contributions of cultural industries (businesses and individual entrepreneurs) to sustainability in small cities

Key role 1: Creative brokers: connectors between arts, technology, and business.			
Key role 2: Networkers or partnership-builders with like-minded partners and organizations.			
Contribution to economic pillar	Contribution to environmental pillar	Contribution to social pillar	Contribution to cultural pillar
Using local creative knowledge and skills through providing employment.	Decreasing the environmental impact: minimise raw materials and energy used; use of alternative resources (e.g. recycled, re-use of "waste"); concern for the provenance/sourcing of materials; concern for the amount of "stuff" produced.	Actions promoting a better quality of life and well-being.	Balancing continuity and diversity in cultural practices.
Creating jobs for other related sectors	Nature conservation; considering issues of biodiversity or landscape.	Actions promoting social inclusion and participation.	Negotiation of memories, identities and heritage.
Integrating local values and heritage in original products or services of creative businesses.	Innovative solutions for developing products (rather than relying on natural resources) by imaginative use of design.	Actions promoting diversity, networking and reciprocity in community.	Negotiation of the relevance of place, landscape and territory.
Finding new ways of land use, including tourism and recreation.			With artistic activities promoting awareness of sustainable living.

Source: Developed by Kunda, Tjarve, Eglite, 2021

Conclusions

The paper has analysed the interconnections between (a) the development of small cities, which have become and appealing place of living among the population; (b) the role of creative industries (including businesses and individual entrepreneurs or freelancers) and (c) the contributions of creative industries to sustainable development, which has become a key notion in the development of any territorial entity. In this way, the authors contribute to the gap in scholarly literature through identifying the ambivalence of the role of creative industries with regard to sustainable development, and through "teasing out" the types of interventions, which may be considered providing positive contributions.

Small cities as sites of development have specific traits, namely their natural, cultural, and symbolic amenities, the value of human scale, community and quality of life. For that reason (and taking into account the connectivity afforded by the Internet), many creative individuals engage in lifestyle migration to these small cities. As a result, there may be a diverse scene of creative industry activity. Sustainability related

practices are best examined in specific locations, since all human activity has a territorial and community aspect. The paper reinforces the idea of the complexity of the dimensions of sustainability as context-dependent, negotiated and situated, and the ambivalent role of creative industry businesses, stemming from the material realities of creating, distributing and consuming cultural and digital products.

A review of scholarly literature allows proposing a typology of contributions to sustainability, which may be made by creative businesses in the context of a small city. The existence and actors' interpretations of these contributions will be further tested in an empirical study.

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ASSESSMENT OF TRANSPORTATION IMPACT ON REGIONAL DEVELOPMENT: CASE STUDY OF UKRAINE

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Abstract. An important consequence of development of transport complex of country is a growth of economic and social well-being of population. Focus on optimally functioning transport should be considered as an important factor in sustainable economic development, and deviations from optimal values as an indicator of additional reserves for growth. Defining national economic interests is one of the main tasks of Ukraine's development. In order to develop independently, and at the same time on the basis of partnership and cooperation, it is necessary to develop transport provision for the regions and interregional integration to form a whole transport space. The author's approach in considering this problem using general scientific and special methods of scientific research made it possible to investigate these processes. The article describes a methodological approach to the study of the transportation in the regions of Ukraine on the basis of intermodality and multimodality using forms of scientific - technical and static analysis, which will contribute to the implementation of the state policy of interregional integration, taking into account freight transportation using various types of transport. A scientific and applied approach has been proposed for determining the interdependence of the gross regional product per person on the freight turnover by kind of transport by using the methodological tools of the system analysis theory in order to identify transport regions and efficiently locate multimodal terminals (transport hubs), which will contribute to the implementation of effective instruments to promote interregional integration and regional economic integration, information, education spaces into a single transport space, overcoming interregional alienation and the introduction of effective instruments of state support for interregional integration, will contribute to the implementation of interregional programs and projects.

Key words: transport; region; interregional development; transport space; intermodal and multimodal transportation; gross regional product per capita; freight turnover; transport provision.

JEL code: R11, R41, R58

Introduction

Transport plays an important role in the functioning and development of the region's economy, providing inter-regional communication based on production and consumption, meeting the needs of the population and enterprises. The modern transport system of Ukraine and its regions is going through a period of deep systemic crisis, since the state of the infrastructure and the level of organization of transportation in many prospects do not meet the growing needs of society and European quality standards for the provision of transport services. This reduces the efficiency of the functioning of the transport system of the regions and necessitates its development by creating various committees, networks, platforms, directives, regional development strategies that guarantee continuous cooperation at all levels.

The aim of the research is to develop a model for the evaluation of relationship between gross regional product (GRP) per capita and freight turnover by regions of Ukraine for estimation of transportation impact on regional development.

Research tasks are:

- 1) to study international literature in the field;
- 2) to choose an appropriate method for model development;
- 3) to study indicators of freight turnover and GRP per capita by regions of Ukraine;

- 4) to develop a system of equations (model) for the evaluation of relationship between GRP per capita and freight turnover by regions of Ukraine;
- 5) to estimate model application for regions of Ukraine: to develop a comparative analysis of transport support, freight turnover and GRP per capita;
- 6) to substantiate the construction of centres for interregional transport integration in the regions of Ukraine.

Study of the compliance of the transport infrastructure of the regions of Ukraine are limited by the following criteria: time limit – last 5 years; geography - territory of Ukraine; statistical - quantitative and qualitative indicators of regional development; economic - GRP per capita shows the well-being of residents of a particular territory; freight turnover of regions; infrastructural - transport support.

Novelty the research is: a scientific and applied approach is proposed for assessing the provision of interregional development of the transport space of Ukraine, the basis of which is the identification of the interdependence of the GRP per person on the freight turnover by mode of transport by using the methodological tools of the theory of system analysis and economic and statistical analysis in order to form an effective state policy for the development of the transport sector in the economic regions of Ukraine on the basis of intermodality and multimodality.

Materials and Methods

The research materials and methods choose is based on international literature analysis.

Scientists from all over the world are constantly researching the transport provision of regions of different countries. In particular, American scientists (*Soyres, et al., 2020*) present a structural general equilibrium model to analyse the effects on trade, welfare, and gross domestic product of common transport infrastructure; scientists in Norway (*Hansen & Johansen, 2017*) have analysed the wider economic impacts (WEI) of a large number of planned Norwegian transport infrastructure projects; the example of Belgium (*Meersman & Nazemzadeh, 2017*) calls to considering the contribution of transport infrastructure to economic activity; in Chinese regions (*Yu, et al., 2013*) scientists examine the possibility of spatial spillover effects of transport infrastructure; scientists also have analysed the place and role of transport infrastructure in the interregional integration of the Russian Federation regions (*Gadelshina & Vakhitova, 2015*); the example of Spain (*Mohino, et al., 2016*) has proposed an approach to multimodal and diachronic accessibility of the transport network, which made it possible to evaluate the usefulness of accessibility for assessing regional interconnections, interactions and competition. On the example of Nepal (*Pokharel, et al., 2021*), two independent effects were identified in qualification of overall patterns – the impact of market potential on city primacy and the impact of highly localized, immobile resources on GDP.

The issues of transport support for the regions of Ukraine are reflected in the works on the analysis of the dynamics of the main indicators of the development of the transport and logistics system of the regions (*Ivanov, et al. 2019; Chernyshev, et al., 2019*), which applied econometric modelling to study the interdependence of GRP on the volume of imports and exports. An assessment of the level of provision of transport infrastructure in the border regions of Ukraine was also carried out and directions for the further development of the industry were determined (*Hudyma, 2013*); an assessment of the development and location of the transport and road complex of Ukraine was carried out (*Pashchenko, 2003*); methodological approaches to assessing the effectiveness of the participation of railway transport in the logistics systems of the region are presented (*Stetsyuk & Kostyaeva, 2017*); the systematization of directions of state support for the development of the transport industry as a basic branch of the economy is considered (*Khrustalyova, 2013*). However, in the context of dynamic changes taking place in the world and affecting

the country's economy, constant monitoring requires changes in the indicators of freight turnover, exports, imports and their impact on GRP.

Among the scientific achievements in the development of freight and passenger transportation by various types of transport and their integration, it should be noted: analysis of the current state of development of multimodal transport of goods and research into the feasibility of forming transport and logistics centers and transport and logistics clusters to intensify the development of multimodal transport of goods in Ukraine (*Karpenko & Babyna, 2013*); principles of logistics in multimodal transportation of goods (*Shyriaieva, 2012*); patterns and features of the development of the transport and logistics system in the existing legal field and developed proposals for improving the transit policy of Ukraine in modern conditions (*Braginskiy, 2011*).

Among the methods for model development are systems of linear equations, systems of nonlinear equations, interpolation and extrapolation; including matrix method, iteration method, bisection method, horde method (proportional division method), Newton method (tangent method) and so on. For the research authors selected method of systems of linear equations, which in common form is shown below:

$$\begin{aligned} a_{11}x_1 + a_{12}x_2 + \dots + a_{1j}x_j + a_{1n}x_n &= b_1 \\ a_{21}x_1 + a_{22}x_2 + \dots + a_{2j}x_j + a_{2n}x_n &= b_2 \\ &\dots \\ a_{i1}x_1 + a_{i2}x_2 + \dots + a_{ij}x_j + a_{in}x_n &= b_i \\ &\dots \\ a_{m1}x_1 + a_{m2}x_2 + \dots + a_{mj}x_j + a_{mn}x_n &= b_m \end{aligned} \tag{1}$$

In the research we combine one factor linear regression equations, logarithmic regression equations, moving average, polynomial equations, including polynomial equations of the 2nd, 3rd and 4th degree. The selection of equations type was related to the quality of equations (R^2 , Durbin-Watson and t-statistic).

Research results

According to the State Statistics Service of Ukraine (*State Statistics Service of Ukraine, n.d.*), the total transport network of Ukraine covers 166.1 th. km of hard-surface roads; 21.6 thousand km of railways, ranking second place in Europe: 2.1 thou km of operational river shipping routes with access to the Azov and Black Seas, along which there are 10 river ports; 18 seaports in the Black Sea, Azov and Danube basins 33 airports, 17 of which are international: 4.4. thou km of trolleybus lines; 1.9 thou km of tram lines; 0.1. th. km of metro tracks; 4.8 thou km of main oil pipelines; 3.9 thou km of gas pipelines and 1.0 thou km of ammonia pipelines. It is advisable to analyse the transport provision of the regions of Ukraine in the context of nine economic regions (*Zastavny, 2010*). Such an analysis will allow planning activities for interregional cooperation based on the exchange of experience and the development of a regional policy of Ukraine in the transport sector.

Previous studies based on the economic models have shown that the GRP per person from the main indicators of the development of the country's economic regions, in particular, the balance of exports and imports of goods and services of the region, average monthly wages, the volume of educational and medical subventions, are influenced by all the studied indicators (*Demianchuk, et al., 2019 a; Demianchuk, et al., 2021*). It has been proved that in order to solve the identified problems, it is necessary to form sustainable development of the country's economic regions, which should contribute to solving the problems of ensuring equal opportunities for economic activity for the population, business and stimulating a competitive economy, reducing disparities and developing small towns, cities, regions and economic regions of the

country (*Demianchuk, et al., 2019 b*). One of these issues is the development of transport support for the economic regions of Ukraine (*Maslii, 2020; Maslii, et al., 2020; Ilchenko, et al., 2019*).

Indicators of freight turnover and GRP volumes per person by region are presented in table 1.

Table 1

GRP per person and freight turnover by regions in Ukraine

Regions	Gross regional product per person, UAH					Freight turnover, mln. tkm				
	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Kiev	46058	60109	74216	90027	112521	2658	1736	1744	8836	10001
Zhytomyr	23678	30698	38520	49737	62911	3852	3275	4044	4326	4455
Chernihiv	26530	35196	41726	55198	69725	466	727	886	988	1075
Kharkiv	35328	45816	57150	69489	86904	23775	24013	23944	21297	19055
Sumy	26943	37170	41741	51419	62955	8793	6867	7371	6855	7944
Poltava	48040	66390	81145	106248	123763	7433	6961	6993	6677	7433
Donetsk	27771	26864	32318	39411	45959	702	597	438	13637	12395
Luhansk	14079	10778	14251	13883	16301	212	273	463	384	548
Dnipropetrovsk	53749	65897	75396	97137	114784	22744	27065	26475	27056	25451
Zaporizhzhia	37251	50609	59729	75306	85784	7928	8720	9441	9933	9983
Cherkasy	30628	40759	48025	59697	76904	10041	9850	10562	9919	10764
Kirovograd	29223	39356	47469	55183	67763	29632	25161	26447	26128	26945
Vinnitsia	27249	37270	46615	58384	71104	26044	25133	27271	27154	24511
Ternopil	20228	24963	29247	38593	46833	2054	2020	2108	2646	1817
Khmelnitsky	24662	31660	37881	49916	59583	1809	1727	1630	1541	1596
Transcarpathia	19170	22989	25727	34202	41706	7227	7342	7886	7572	7307
Lviv	28731	37338	45319	58221	70173	10391	10516	10973	11352	10479
Ivano-Frankivsk	27232	33170	37220	46312	57033	1258	1352	1178	1140	1236
Chernivtsi	16552	20338	23365	31509	37441	956	1018	1106	1258	1457
Volyn	23218	30387	34310	49987	58297	1380	1436	1606	1847	1984
Rovny	24762	30350	33958	42038	49044	9699	10311	10990	10307	11057
Nikolaev	30357	41501	50091	60549	70336	786	841	874	1110	1195
Odessa	31268	41682	50159	62701	72738	69470	61759	65274	63195	65950
Kherson	21725	30246	36585	45532	52922	5158	5225	5373	5097	1271

Source: constructed by the authors based on data from <http://www.ukrstat.gov.ua>

In order to determine the impact of the development of the transport sector on the state of socio-economic development of regions and justify the need to develop a state policy of integration in the direction of the development of transport provision for the regions of Ukraine on the basis of intermodality and multimodality, we will analyse the interdependence of freight turnover and the volume of its gross regional product per person using this forms of technical analysis as a trend line. It is a straight or curved line that approximates the initial data based on a regression equation or a moving average. The approximation is determined using the least squares method. Depending on the nature of the behavior of the initial data (decrease, increase, etc.), an interpolation method is selected that should be used to build a trend.

Constructed system of equations by regions in Ukraine are shown below:

Kiev	$y = -2E-10x^3 + 5E-05x^2 - 3,5017x + 83997$	$R^2 = 0,9389$	(2)
Zhytomyr	$y = -1E-10x^3 + 2E-05x^2 - 0,6206x + 11266$	$R^2 = 0,8212$	
Chernihiv	$y = 618,73\ln(x) - 5775,3$	$R^2 = 0,9432$	
Kharkiv	$y = -0,0994x + 28273$	$R^2 = 0,8327$	
Sumy	$y = -5E-11x^3 + 1E-05x^2 - 0,7324x + 21053$	$R^2 = 0,8753$	
Poltava	$y = 9E-12x^3 - 2E-06x^2 + 0,1021x + 5649,4$	$R^2 = 0,8642$	
Donetsk	$y = -2E-08x^3 + 0,0017x^2 - 58,408x + 662573$	$R^2 = 0,9928$	
Luhansk	$y = -2E-08x^3 + 0,0007x^2 - 9,066x + 40856$	$R^2 = 0,5918$	
Dnipropetrovsk	$y = -4E-06x^2 + 0,6338x - 456,99$	$R^2 = 0,8185$	
Zaporizhzhia	$y = 0,0435x + 6515,7$	$R^2 = 0,9216$	
Cherkasy	$y = 2E-14x^4 - 4E-09x^3 + 0,0003x^2 - 8,977x + 113872$	$R^2 = 0,9999$	
Kirovograd	$y = -5E-10x^3 + 8E-05x^2 - 3,8735x + 90110$	$R^2 = 0,8964$	
Vinnitsia	$y = -3E-10x^3 + 4E-05x^2 - 1,7573x + 49021$	$R^2 = 0,8795$	
Ternopil	$y = -4E-10x^3 + 4E-05x^2 - 1,094x + 12251$	$R^2 = 0,9830$	
Khmelnitsky	$y = 4E-07x^2 - 0,0377x + 2529,5$	$R^2 = 0,9714$	
Transcarpathia	$y = 2E-13x^4 - 2E-08x^3 + 0,001x^2 - 17,71x + 125956$	$R^2 = 0,9999$	
Lviv	$y = -1E-10x^3 + 1E-05x^2 - 0,5305x + 17011$	$R^2 = 0,9983$	
Ivano-Frankivsk	$y = 6E-11x^3 - 7E-06x^2 + 0,2766x - 2076,4$	$R^2 = 0,6570$	
Chernivtsi	$y = 0,0235x + 550,73$	$R^2 = 0,9866$	
Volyn	$y = 0,0178x + 952,28$	$R^2 = 0,9799$	
Rovny	$y = 7E-10x^3 - 8E-05x^2 + 2,8283x - 23949$	$R^2 = 0,8437$	
Nikolaev	$y = 0,011x + 406,39$	$R^2 = 0,9134$	
Odessa	$y = 1E-13x^4 - 2E-08x^3 + 0,0017x^2 - 58,62x + 785901$	$R^2 = 0,9999$	
Kherson	$y = -9E-06x^2 + 0,5968x - 3723,4$	$R^2 = 0,8658$	

Where:

y - freight turnover;

x - GRP per capita.

Model estimation and discussion

Freight turnover and volume of GRP per person in the Kiev and Zhytomyr regions are in a polynomial dependence of the 3rd degree, which indicates an interconnected alternating increase and decrease in the values of indicators, i.e. unstable influence; in the Chernihiv region - in a logarithmic relationship, that is, the indicated values had a rapid interrelated growth with subsequent gradual stabilization. Due to the significant transit potential and the developed transport infrastructure of the Kiev region, an increase in exports to European markets is possible.

Taking into account the favorable transport and geographical position of the Zhytomyr region (transport corridors, proximity to the capital of Ukraine), it is promising to use the transit movement of goods and services, cooperation with neighbouring regions etc., and the presence of an external border with the Belarus provides an opportunity for cross-border cooperation. The development of the transport industry in the Chernihiv region will be facilitated by the existing transit potential of the Baltic-Black Sea route (international checkpoints, transport corridors and European highways, existing waterways).

Freight turnover and volume of GRP per person in the Kharkiv region have a linear approximation, which indicates a direct influence and interdependence, which is characterized by growth at a constant rate; in the Sumy and Poltava regions is in a polynomial dependence of the 3rd degree, which indicates an interconnected alternating increase and decrease in the values of indicators, i.e. unstable influence.

Despite the fact that the Kharkiv region is a logistics center with a developed transport infrastructure, including an international airport, which contributes to the development of cooperation within the framework of the Association Agreement with the EU, with the political support of the EU and other countries of the world, it makes it necessary to create new poles of economic growth in the region as a powerful regional center of international transport and economic relations of the country. For the Sumy

region, an important development element is to ensure the proper condition of the road transport infrastructure and transport links of the territories by ensuring transport accessibility. Proceeding from the fact that the Poltava region is located in the center of the country and given the presence of a developed transport network and satisfies only the basic needs of the population and the economy in transportation in terms of volume (and not quality), and its current state does not fully meet the requirements of the effective implementation of the European integration course Ukraine and the integration of the national transport network into the Trans-European transport network, it is necessary to increase the efficiency and competitiveness of the transport industry, strengthen interaction between the public and private sectors, public authorities and local governments, contribute to the creation of all the necessary prerequisites for the creation of an international transport corridor on its territory. A developed transport infrastructure, a system of logistics and forwarding services are of strategic importance for the country's economic growth.

Freight turnover and volume of GRP per person in Donetsk and Lugansk regions are in a polynomial dependence of the 3rd degree, which indicates an interconnected alternating increase and decrease in the values of indicators, i.e. unstable influence. Despite the consequences of the armed conflict on the territory of the economic region, transport and logistics links both inside and with other regions and countries are hampered.

At the same time, all types of transport communications, including road, rail, sea and air transport, experience negative consequences. In the territory controlled by the Ukrainian authorities, the potential for the restoration and development of communications is preserved, taking into account the reorientation of transport links, which can be realized through the development of the existing and construction of new infrastructure for road, rail and sea transport, the development and technical modernization of the port infrastructure of the "Mariupol Sea Commercial Port" to restore its capacity; restoration of transport passenger and cargo air traffic; creation of transport and logistics clusters and basic logistics centers, taking into account the reorientation of traffic flows; introduction of innovative technologies and information systems for the management of the transport system based on electronic management. Thus, an important condition for the development of the transport sector is the restoration and gradual development of the regional infrastructure, primarily the logistics and transport network and the energy network.

Freight turnover and volume of GRP per person in the Dnipropetrovsk region is in a polynomial dependence of the 2nd degree, which indicates an interconnected alternating increase and decrease in the values of indicators, i.e. unstable influence; in the Zaporozhye region trend have a linear approximation, which indicates a direct influence and interdependence, which is characterized by growth at a constant rate. Modernization of transport and logistics infrastructure is important for the effective functioning of the economy, namely, it acts as an important factor in the formation of aggregate demand (logistics systems are associated with obtaining 20-30 % of the gross national product of industrialized countries), increasing the turnover of wholesale and retail trade, increasing the investment attractiveness of territories, and also carries positive effects, which are to reduce the influence of the distance between regions, ensure the integration of the national market and reduce the cost of transportation to the markets of other countries and regions.

Freight turnover and volume of GRP per person in the Cherkassy and Kirovograd regions is in a polynomial relationship of 4 degrees and 3 degrees, respectively, which indicates an interconnected alternating increase and decrease in the values of indicators, i.e. unstable influence.

The location of the economic region in the geographical center of Ukraine, at the intersection of international air corridors, the presence of important highways passing through the territory of the region, large railway junctions, as well as the main waterway of the country, the Dnieper River, opens up

opportunities for the development of transport infrastructure. Attraction of grant funds for the implementation of regional development projects will contribute to bringing the vast majority of road transport infrastructure facilities into proper technical condition based on intermodality and multimodality.

Freight turnover and volume of GRP per person in the Vinnitsa and Ternopil regions is in a polynomial relationship of 3 degrees, in the Khmelnytsky region – 2 degrees, which indicates an interconnected alternating increase and decrease in the values of indicators, i.e. unstable influence. Taking into account the unsatisfactory condition of highways, the transit provision of the region is not fully implemented and given the constant progressing process of the growth of the car park, in a few years the number of vehicles, the risks of accidents and losses from them will significantly increase. If fundamental measures are not taken to improve road safety, the process of attracting investments into the regional economy will be held back due to the danger of movement and transportation. The rapid destruction of road structures is caused by an increase in weight loads from vehicles, traffic intensity for which the existing road network is not designed.

Therefore, in order to develop the transport subsystem, it is advisable to update and expand the number of rolling stock units of all components of the transport subsystem, especially the railway one.

Freight turnover and volume of GRP per person in the Transcarpathian region is in a polynomial dependence of the 4th degree, in the Ivano-Frankivsk and Lviv regions – 2 degrees, which indicates an interconnected alternating increase and decrease in the values of indicators, i.e. unstable influence; in the Chernivtsi region - a linear approximation, which indicates a direct influence and interdependence, which is characterized by growth at a constant rate. A significant renewal of all types of infrastructure in Transcarpathia, transport and road, communal and border, environmental, energy, industry and communications, social, tourism based on EU standards and regulations will accelerate the achievement of competitiveness and innovativeness of the regional economy of the Transcarpathian region.

Taking into account the fact that the Ivano-Frankivsk region has a fairly powerful transport complex that provides transit, interregional and intraregional transport links, the priority tasks for its development are to ensure transport accessibility, modernization of the Ivano-Frankivsk International Airport, which, in turn, will lead to an increase in investment attractiveness and development of production, and the successful location and availability of international transport corridors, important main railways plays a leading role in increasing freight traffic and developing a transport (logistics) hub in the region.

Freight turnover and volume of GRP per person in the Volyn region have a linear approximation, which indicates a direct influence and interdependence, which is characterized by growth at a constant rate; in the Rivne region - in a polynomial dependence of the 3rd degree, which indicates an interconnected alternating increase and decrease in the values of indicators, i.e. unstable influence. The network of highways and railways available in the Volyn region is, in general, sufficient to ensure the development of the volumes of freight and passenger traffic expected in the medium term. At the same time, the existing infrastructure needs significant modernization in order to bring it closer to the standards of the European Union. The network of highways and railways available in the Rivne region is generally sufficient to ensure the development of the expected medium-term volumes of freight and passenger traffic.

At the same time, the corresponding infrastructure needs significant modernization in order to bring it closer to the standards of the EU. The infrastructure of checkpoints needs to be improved and developed in order to increase their throughput. The development of "Rivne International Airport" requires special attention. In particular, the creation of conditions for a significant increase in the volume of freight and passenger traffic, the creation of a transport and logistics hub.

Freight turnover and volume of GRP per person in the Nikolaev region have a linear approximation, which indicates a direct influence and interdependence, which is characterized by growth at a constant rate; in the Odessa and Kherson regions is in a polynomial relationship of 4 degrees and 2 degrees, respectively, which indicates an interconnected alternating increase and decrease in the values of indicators, i.e. unstable influence.

The strategic priority for the development of the transport system of the Nikolaev region should be the optimization of the use of infrastructure and transit opportunities to improve local accessibility. This requires stimulating the construction and reconstruction of highways, using the potential of special economic zones and priority development areas, stimulating the development of intermodal transport. To optimize the procedure for moving goods to the place of using electrification of railway sections, which allows to reduce the time of transportation and open a direct exit of railway transport to ports of Nikolaevskaya, river and sea freight flows dock, there is a redistribution of these freight flows, they are further transported by all types of transport - sea, river, rail and road. This gives a powerful impetus to the development of transport corridors in the region. A significant component of the economy of the Nikolaev region is the activity of handling cargo arriving at sea and river berths. Another important issue for the region is the development and further development of the airport "Nikolaev", which belongs to one of the largest in the south of Ukraine, but whose potential almost never used. Despite the fact that the Odessa region is distinguished by a favorable transport and geographical position, which leads to the leading role of transport in its development, among the main priorities is the development and development of a national logistics hub on the territory of the Odessa region, an increase in freight and passenger traffic, the interaction of all types of transport as a basis creating a multimodal transport hub, developing tourism, improving the investment climate and increasing the volume of attracting investments, which are a condition for the development of not only the transport industry, but also the national security and competitiveness of the country. Considering that the Kherson region stands out among the regions of Southern Ukraine with a low level of urbanization, the structure of the regional economy and in its typology is close to the Sumy, Kirovograd, Chernihiv and Vinnitsa regions, due to its favorable location and the presence of important main railways, the region has a significant transit potential and needs to attract investments for the development of the settlement system and increase the anthropogenic load of the territory without damage to the environment.

Conclusions, proposals, recommendations

- 1) The study of the indicators of freight turnover and GRP per capita by regions of Ukraine showed that these indicators are less than 80 % of the national average in 10 regions of Ukraine (that is, almost half). Among them - Chernivtsi and Transcarpathian regions have an indicator of less than 55 % of the average, and Luhansk - only 21.49 %. At the same time, the ratio between the minimum and maximum GRP per capita, excluding the indicators of the city of Kiev, increased almost 2 times and is 7.59 times. This indicates that the transport system of Ukraine has a low level of development of transport and logistics technologies and objects of multimodal transportation, which reduces its competitiveness and limits the exit of Ukrainian products to the world transport market.
- 2) The authors investigated 24 regions of Ukraine, taking into account the time, geographic, statistical, economic and infrastructural criteria. Models of interdependence of freight turnover and GRP per person in the regions of Ukraine have been built. Of the obtained models, 12 are reliable and statistically significant with a 95 % reliability level. These include Vinnytsia, Volynsky, Zaporozhye, Kiev, Lvov, Odessa, Poltava, Sumy, Kharkov, Khmel'nitsky, Cherkassy and Chernivtsi regions.

3) The comparative analysis of the transport provision of the regions of Ukraine with the regressions and trends of freight turnover and GRP per capita showed the potential possibilities of using and developing the infrastructure of the regions of Ukraine. The research results can be used in the implementation of interregional projects by providing access to transport connections for all regions within the framework of the National Transport Strategy 2030, to form territorial integrity. The results can be used in the formation and implementation of draft resolutions of the Cabinet of Ministers of Ukraine "On the approval of the State strategy for regional development for the period up to 2027" in the field of transport based on multimodality and intermodality. This will contribute to the achievement of the priority goal of the state authorities - ensuring interregional integration as the basis for the development of the transport space of Ukraine and compliance with the policy of the European Union.

4) As a result of the research carried out, interregional integration was proposed in the following regions: Zaporozhye, Nikolaev, Lvov, Odessa, Rivne. On the basis of the "Zaporozhye International Airport" it is possible to create a large multimodal logistics center for the transportation and storage of goods with the construction of a cargo terminal. The geographical location of the Nikolaev transport hub on the way of transporting goods from west to east determines its role as an intermodal center for economically profitable schemes for the movement of freight flows. The favorable location of the Lviv region and the presence of international transport corridors, important main railways play a leading role in increasing freight traffic and developing a transport (logistics) hub in the region. The interaction of all types of transport on the territory of Odessa is a prerequisite for the development and development of the national logistics hub of the region and the basis for creating a multimodal transport hub in the region. The Rovny region is favorable for the creation of a transport and logistics hub for multimodal transportation due to the creation of conditions for a significant increase in the volume of freight traffic.

5) Thus, it is substantiated that the state regional policy in the transport sector should be aimed at introducing effective tools to stimulate interregional integration. Integration of regional economic, information, educational spaces into a single transport space is of great importance. This will make it possible to overcome interregional alienation and introduce effective instruments of state support for interregional integration, the implementation of interregional programs and projects.

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ANALYSIS OF PRACTICAL IMPLEMENTATION OF SOCIAL INNOVATION IN EUROPEAN UNION

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Abstract. EU is promoting social innovation - the European Disability Strategy is part European Pillars of Social Rights. It is estimated that more than 80 million Europeans with disabilities are in need of special services. People with disabilities experience a lot challenges that arise from socializing, so that they cannot fully enjoy their life's. Innovating or anticipating disability-related social innovations can contribute to product and services for disabled people, but also to eliminate social barrier and to integrate them into society. The aim is to analyse the ways for implementation of social innovation which is bringing maximum value of life for people with disabilities. We expect that factor values affecting people with disabilities may vary since we have different regional infrastructure, social support and services. This literature review study sheds researches social inclusion among people with disabilities. Results: We investigated main domains and factors representing main values for people with disabilities. Findings from this study indicate that people with disabilities may feel deep depression and anxiety in response to social isolation. This study may contribute to values of perceived isolation and promote social barrier elimination. Conclusion: The social tasks associated with regional disability-oriented infrastructure as support require attention in literature. Offering social innovation and assessing current level of needs in regions to people with disabilities will significantly increase social value.

Keywords: social innovation, disability, individual value, regional development, social barriers, social isolation.

JEL code: L31, M14, O35, Z13

Introduction

The European Pillar of Social Rights in 20 principles is representing the guideline towards a strong social Europe full of opportunity in the 21st century. The European Disability Strategy is part European Pillars of Social Rights (Principle 17) - Equal opportunity. The latest European Pillar of Social Rights Action Plan is talking mostly about creating jobs, training for adults and poverty as major targets (EU Commission, 2021). People with disabilities have a higher risk of poverty or social exclusion (28.4 %) compared to persons without disabilities (18.4 %) and problems to access jobs and receive proper training - over half of persons with disabilities say they personally felt discriminated against in 2019 (Special Eurobarometer, 2019).

One of six people in the European Union (EU) have a disability and experience many barriers to access the physical environment and to participate in society as equals(Wutz, 2020) and we see it as very topical. This year the European Disability Strategy 2010 – 2020 is coming to an end and The European Commission is currently preparing a post-2020 European Disability Rights Agenda for the next decade(EUD, 2020). The process of evaluation of the current strategy is ongoing and the publication of a new strategy was foreseen in 2021 (EU Commission, 2020). To achieve further progress in ensuring the full participation of persons with disabilities, the new and strengthened Strategy for the Rights of Persons with Disabilities 2021-2030 was accepted in March 2021 (European Union, 2021). The new strategy was launched in 2021, is based on the results of the activities of the European Disability Strategy 2010-2020, one of the priorities of which was a barrier-free Europe and enabling persons with disabilities to enjoy their rights and fully participate in society.

In our paper we pay attention to people with disabilities in order to investigate factors which help to increase social value and help to create social innovation. **Our paper object** is social innovation; our aim is to analyse the ways for implementation of social innovation which is bringing maximum value of life for

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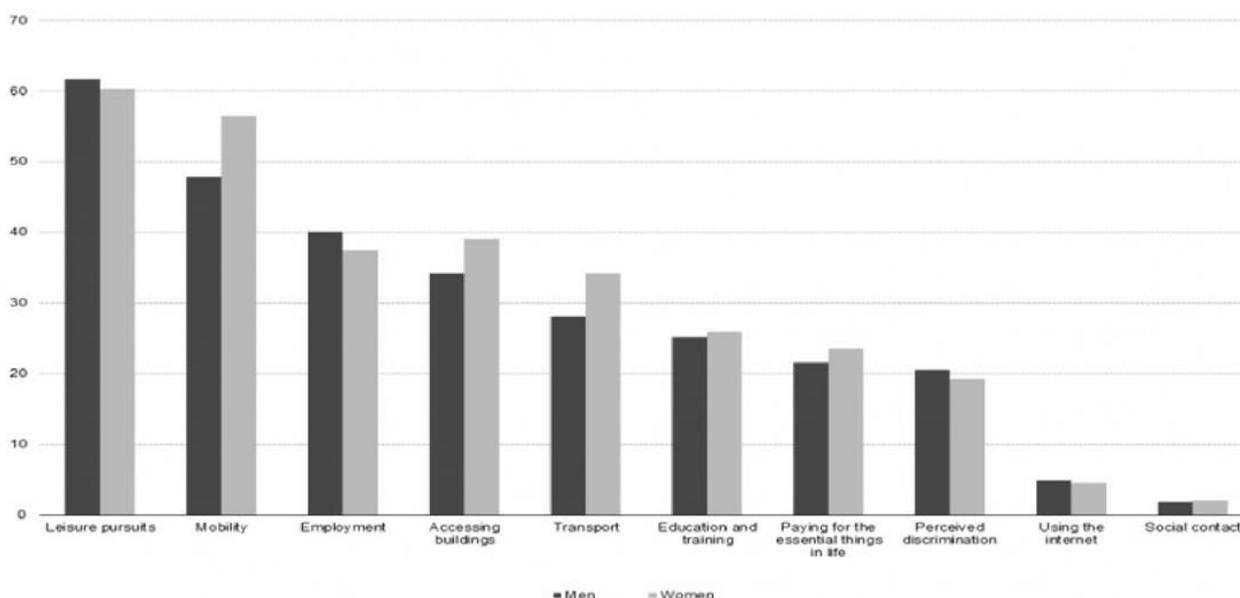
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people with disabilities. **Our hypothesis is** that there is possibility improve people's lives by breaking the social distance barrier between people. In order to achieve that we wish to conduct Systematic Literature Review to research factors affecting people quality of life.

Research clusters and focus

Based on data and analysis of Global Burden of Disease, the number of people with disabilities at the population level associated with health conditions showed a steady growth of 6.3 % over the period 2006-2016 (World Health Organization, 2019) . It is projected that between 2015 and 2030, the number of people aged 60 years and over will increase of 23 % and by 32.2 % among people aged 80 years and over, which in turn, will increase the prevalence of disability (UN Department of Economic and Social Affairs Population Division, 2015). Only 9 % of touristic services provide accessible offers. Current market value of accessible travel and tourism is €394 billion (TRAN Commettee, 2018). It must be recognized that due to attitudinal and/or physical barriers, people with disabilities are unable to fully participate in society (EU Commission, 2014).



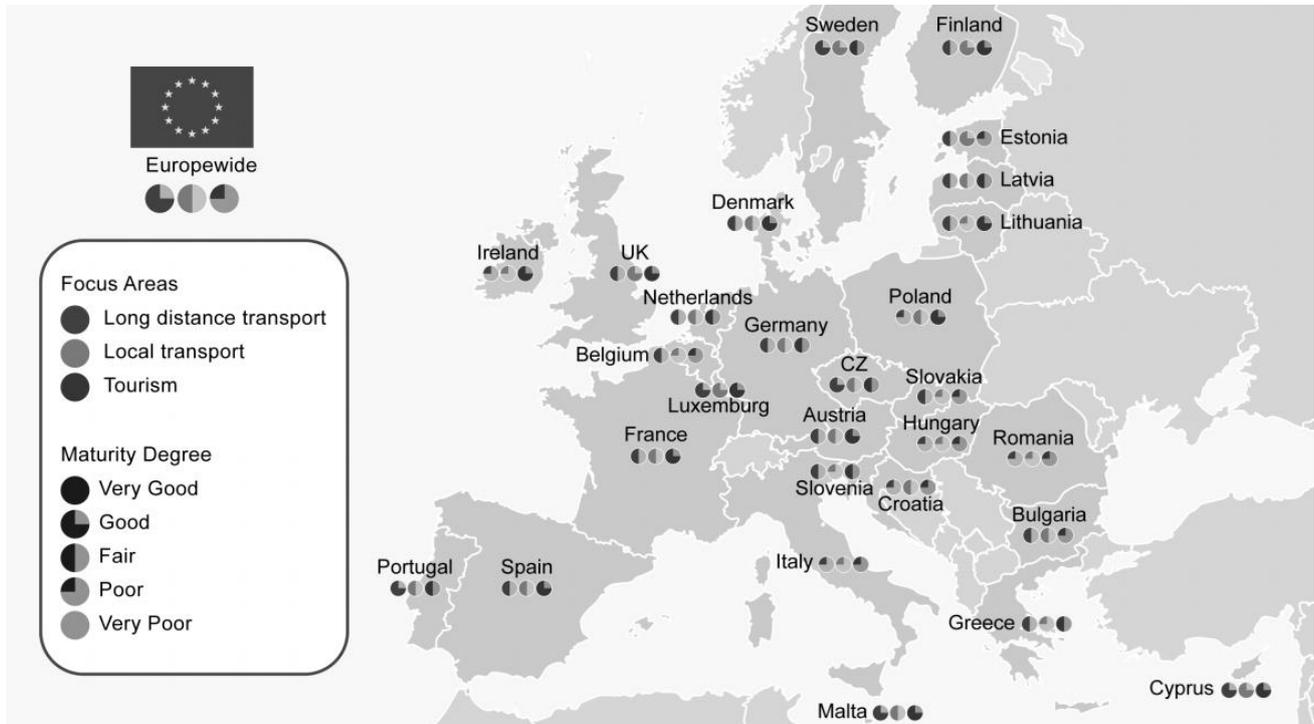
Source: Eurostat (online data code: hlth_dsi090)

Figure 1. **Number of persons with disabilities by sex, 15+ years, with disability in the specified life areas, EU-27, 2012.**

Considering the demand for travel from tourists with disabilities and the elderly, it is revealed that in the EU Member States, this is approximately 780 million trips, and an approximate income of €400 billion per year. The demand for travel will be growing by 1 % every year. If accessible services for people with disabilities were created, the analysis shows a potential increase in demand per year for accessible tourism and travel by 44 % per year. The value of accessible tourism market could be much higher (44 % more) if there were more accessible offers for people with disabilities on the market. Inaccessible tourism does not allow people with disabilities and/or limited mobility to fully participate in society on equal terms. There are currently a large number of people with disabilities who face travel problems, and this number may increase due to the significant growth of the aging population in the EU. Given these changes, it is very important to develop tourism accessibility in the EU Member States.

According to the 2014 research by Surey University for the European Commission, the problem of lack of accessibility in the EU travel industry threatens to lose up to € 142 billion per year according to inadequate infrastructure, attitudes and services towards travellers with special requirements for access.

Researchers of Surrey University found that people, who are travelling within the EU who require special access conditions (due to age or disability) made 783 million travels in 2012, generating € 394 billion in the EU economy and approximately 8.7 million jobs. Bu it is important to remember that if European destinations were accessible to all visitors with special needs, this demand could grow up to 44 % per year, creating an additional € 142 billion GDP and creating 3.4 million jobs (European Commission, 2015). So we see at as very perspective dimension for social innovation, new jobs, training and digitalization of economy that will considerably increase both social value and economic development (Polovko et al., 2019).



Source: Research for TRAN Committee - Transport and tourism for persons with disabilities and persons with reduced mobility

Figure 2. The accessibility of the local, tourism and long-distance transport in EU Member State.

The disability-friendly market segment is very fragmented (Figure 2) and does not have any large global players in Baltic States (in contrast to the tourism market that is larger and dominated by a few big players). These players however are not active in disabled segment due to scalability barriers. The research has identified 313 286 tourism companies in EU, and 224.036 companies were found in the published data from 79 Accessibility Information Schemes in 24 European Union Member States.



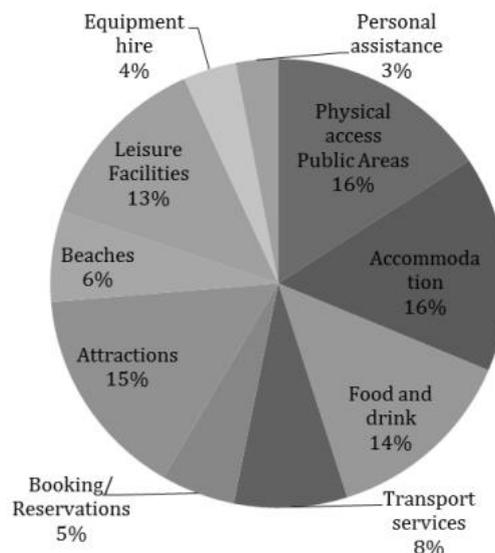
Source: European Commission (2015)

Source: based AIS and Pantou Sources. (220/PP/ENT/PPA/12/6491) Final Report, 02 April 2015.

Figure 3. Map of the number of Accessible Tourism Suppliers in EU-28

However, a number of caveats can be noted in this study, mainly due to the fact that they can only be considered as the "declared" providers of affordable tourism service in these two datasets. The number of available tourism service providers in EU will recently be an unknown number, especially given that there is no official registration of such companies and the services they offer in the EU. In addition, there are undeniably many methods for defining and measuring "accessibility", what means that nomenclature and metric issues should optimally be reduced to more manageable concepts in order to reveal useful statistics. Finally, vendors can improve infrastructure availability conditions that are not registered or publicised, but can improve access for different customer groups. The map below shows the frequency of available travel service providers in the EU Member States in 5 ranges from below 499 to over 10.000 (Figure 2)

Market competition in services can be divided by approach, process and used technology into four segments (Figure 4):



Source: Mapping and Performance Check of the Supply of Accessible Tourism Services (220/PP/ENT/PPA/12/6491) Final Report, 02 April 2015.

Figure 4. Frequency of Accessible Services Information in 79 National and Regional AIS (%)

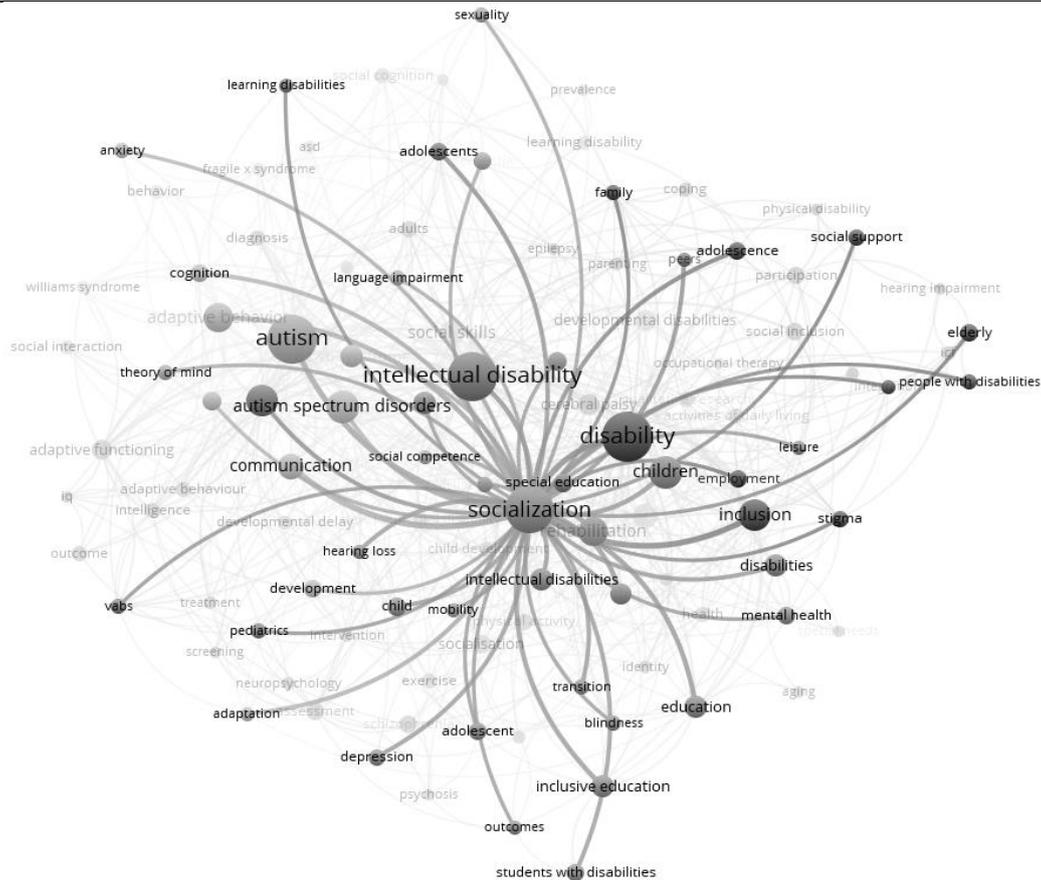
The Pantou (EU leading web-platform in Disability Transport & Tourism sector and users) the analysis identified over 146,760 available services more than 94,551 providers in the EU-28. All services include serving different groups of clients. The main types of services are accommodation, wellness and conference facilities, and the main customers are people with mobility impairments (including wheelchair users), people who are deaf or have hearing impairments and people who are blind or have vision impairments. Based on the above data, it is assumed that about 9.2 % of the current offer of tourist facilities and services available, a partial level of provision for travellers with special needs. This data is based on the mapping carried out in the study compared to the total supply of tourism businesses. This means that more than 3 million travel businesses are not ready to provide services for people with disabilities. By 2021, an additional 1.2 million companies should provide accessible services in order to accommodate the lowest forecasted demand (European Commission, 2014).

So we concentrated on 4 areas as factor groups of public value for end-users:

- **accessible transportation both local and long distance,**
- **accessible tourism and leisure,**
- **centers providing socialization both digital and physical,**
- **work opportunities and training.**

Research results and discussion

In order to narrow search for crucial factors about values for disability the bibliometric analysis of publications was done. Information search for bibliometric analysis was performed using the Scopus. Basic search parameters were defined as such: search by name, period from 2000 Until 2021, type of documents analyzed- "article".



Source: VosViewer map from first 834 sources, with visual focus on Socialization cluster

Figure 5. Frequency of author keyword co-occurrence from Scopus

A search of the Scopus database by name was performed using keywords corresponding to the English name of the green organization and their synonyms: green organisation, green organization, green company, green business, green management, green entrepreneurship (search summary: TITLE: ("disability" OR "green organization" OR "socialization") AND DOCUMENT TYPES: (Article). Timespan: 2000-2021, last decade. Information processing and visualization for bibliometric analysis were prepared using VOSviewer. Search results: 834 articles in English, which contain the keywords mentioned above Figure 5.

As we see, the most topical keywords are related to factor groups of public value for end-users (**Accessible transportation both local and long distance, accessible tourism and leisure, centers providing socialization both digital and physical, work opportunities and training**): employment, communication, leisure, social support and competence, mobility etc. Also we see the focus on social barriers: adaptation, inclusiveness, depression, cognition, anxiety, stigma, social inclusion, psychosis. By selecting 40 most relevant papers we found most crucial factors affecting people with disabilities. According to limitations of references of this paper, authors offer to see concentrated version of analysis in Table 1.

Table 1

Factors affecting people with disabilities

Accessible transportation both local and long distance	Accessible tourism and leisure	Socialization both digital and physical	Work opportunities and training (education)
Public transportation mobility (Zalewska, Migliore and Butterworth, 2016; Hu and Schneider, 2017; Gris� et al., 2019; Henly and Brucker, 2019)	Accessible social and economic services (Lin et al., 2012; Mackett and Thoreau, 2015)(Arbour-Nicitopoulos and Ginis, 2011)	Community participation/ Disability awareness (Sundar et al., 2016; Fisher and Purcal, 2017; Toro-Hernandez et al., 2020)	Employment possibilities (Brucker, 2015; Wo et al., 2015; Lorenti et al., 2020)
Regional infrastructure barriers (Lockwood, 2004; Noland and Thomas, 2007; Frank et al., 2008)	Leisure needs/ Loneliness (Sweet, Ginis and Tomasone, 2013; Pels and Kleinert, 2016; Bonnell et al., 2021)	Social isolation/ Stigma /Exclusion/ Connectedness (Chen et al., 2012; Cacioppo and Cacioppo, 2014; Cochran, 2020; Repke and Ipsen, 2020)	Education and training (G.Grinberga-Zalite et al., 2019; Bose and Heymann, 2020; Stillman et al., 2020; Spencer, Riley and Young, 2021)
	Health and wellness centers (Kissow, 2015; Mulligan, Miyahara and Nichols-Dunsmuir, 2017; Calder, Sole and Mulligan, 2018)	Digital socialization (Domingo, 2012; Myers et al., 2017; Abel, Machin and Brownlow, 2019; Peterson-Besse, Knoll and Horner-Johnson, 2019; Kadijevich, Maslikovi� and Tomi�, 2020; Epstein et al., 2021; Martinsa et al., 2021; van Holstein et al., 2021)	

Source: authors' group synthesis based on scientific papers (concentrated version)

At the moment, the expertise to accessibility tourism services is rare in Baltic States (Age-friendly tourism is more common). This is due to a very time-consuming service and know-how demanding specific to each patient. Another critical problem of current state of the art – socialization barriers. For children with disabilities, making friends and forming relationships can be especially challenging. Social obstacles are very difficult to overcome (we also call it attitudinal barriers). Attitudinal barriers that lead to stigmatisation and discrimination, can deprive people with disabilities of their development and dignity, and are also the biggest obstacle to achieving equality of opportunity and social inclusion. A negative attitude towards people creates an unfavorable environment in all spheres of life. They are quite often expressed in the inability of people with disabilities to see their violation; fear; bullying; discrimination; and lowered expectations of people with disabilities.

Conclusions, proposals, recommendations

- 1) Overall, 15 % of the world population (1 billion people) lives with some forms of disability, and it is expected to affect more than 1.2 billion people by 2021. Over 20 % of the global population will be over 65 by 2050. Concerning the EU, one in six people has a disability (from mild to severe), translating into approximately 80 million citizens. Only 9 % of European Union travelling companies offered services provide accessible offers. Current market value of accessible travel and tourism is €394 billion. Very

often, due to physical and/or attitudinal barriers, these people are excluded from participating fully in society and in the economy.

2) The most topical keywords are related to factor groups of public value for end-users are: employment, communication, leisure, social support and competence, mobility etc. Also we see the focus on social barriers: adaptation, inclusiveness, depression, cognition, anxiety, stigma, social inclusion, psychosis.

3) Our solution is to assess current regional differences regarding disability-friendly support in order to promote social innovation. The next part of our research is to conduct survey based on developed factors. The investigation of regional needs will significantly contribute to the EU strategy for disabled people in terms the effectiveness and improve the socialization, increase the accessibility of disabled people tourism across EU

4) The impact of Disability projects does not appear to have been systematically examined, although they may each have helped the development of Accessible Tourism and Transport within their respective geographical areas. Having committed resources at European level to enterprises there might have been a follow-up study to extract lessons learned and identify strategies for social innovation in EU Member States to help them develop social inclusion of people with disabilities across a wider front. Inaccessible society can prevent people with disabilities and/or reduced mobility from participating in society on equal terms. At present there are significant numbers of people with disabilities who face social barriers and this number is likely to increase in the near future with the significant growth of the ageing population in the EU. Given these changes, it is essential that social innovation related to Accessible Society in EU Member States should be developed.

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REMUNERATION SYSTEM ELEMENTS' IMPACT ON THE PERFORMANCE OF THE TEACHERS OF GENERAL EDUCATION INSTITUTIONS IN THE REGIONS OF LATVIA

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Abstract. The authors of the article present the results of a study on the evaluation of the remuneration and performance of teachers in general education institutions in the regions of Latvia, which is a topical issue in the implementation of education system reforms. The aim of the study was to find out the opinion of teachers working in general education institutions about the factors influencing work performance, paying special attention to the regional aspects of this problem. The study used quantitative research methods through an extensive online survey. The questionnaire identified the following factors influencing teachers' performance: financial remuneration, non-financial remuneration, organizational culture and politics. The opinion of teachers was analysed in depth by regions of Latvia. The results show that in all regions of Latvia the performance of teachers is most significantly influenced by financial remuneration, non-financial remuneration and organizational culture are also important, but political presence plays an insignificant role. The results also revealed that in all regions (least in Riga and Pieriga) the increase of the minimum monthly wage rate of teachers or the wage is not the determining factor that would increase the performance of teachers.

Key words: education performance, regional development, regional disparities.

JEL code: I25; H75; H52

Introduction

The teaching profession is becoming more complex, the demands are increasing. In contrast, teachers' wages are inadequate in the light of economic change at the time. The government is demanding an increase in the quality of education alongside wage increases, emphasizing that wages go hand in hand with the quality of education. In addition, the challenges posed by digitalisation and the tensions caused by global pandemics pose new challenges to the implementation of planned education reforms (Pelse M., Lescevic M., 2020; Grinberga-Zalite G., Zvirbule A., 2020). As dissatisfaction continues, their consequences may pose a threat not only to the education system, but also, in the future context, to the public and economic sector in Latvia. No research has been conducted in Latvia so far, and therefore there is no basis for the statement that increasing the wages will improve the performance of teachers. The authors present the results of an online survey on the factors influencing the performance of general education teachers in the regions of Latvia.

The aim of the research was to find out the opinion of teachers working in general education institutions about the factors influencing work performance. Tasks of the research: 1) to identify problems in various aspects related to teachers' financial and non-financial remuneration; 2) to determine which of the factors influencing performance most increases the performance of teachers; 3) to compare the results in the regions and in Latvia in general. Hypotheses put forward in the research: 1) increase of wages is not the determining factor for increase of teachers' work performance; 2) factors influencing teachers' performance will not differ significantly in the regions of Latvia.

The concept of quantitative research was used, and the quantitative survey of teachers was conducted using the web tool *visidati.lv* (n = 603) from 19 September to 23 October 2020. Information about the survey was disseminated by sending an e-mail to every general education institution in Latvia, using Latvian Trade Union of Education and Science Employees organizations in schools and social media. Based on the research of the scientific literature, the authors of the questionnaire had identified the following factors influencing the performance of teachers: 1) financial remuneration - wage, allowances, bonuses, relief and

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benefits; 2) non-financial remuneration – appreciation, responsibility and participation, development and growth; 3) organizational culture; 4) policy. In addition to financial and non-financial remuneration, the authors made statements about the impact of teachers' performance based on the current situation in Latvia. The opinion of teachers was analysed by regions of Latvia. The teacher survey was conducted based on the methodological and ethical principles of the online survey (Roberts & Allen, 2015; Toepoel, 2015). The survey was anonymous and the results were used only in aggregate way.

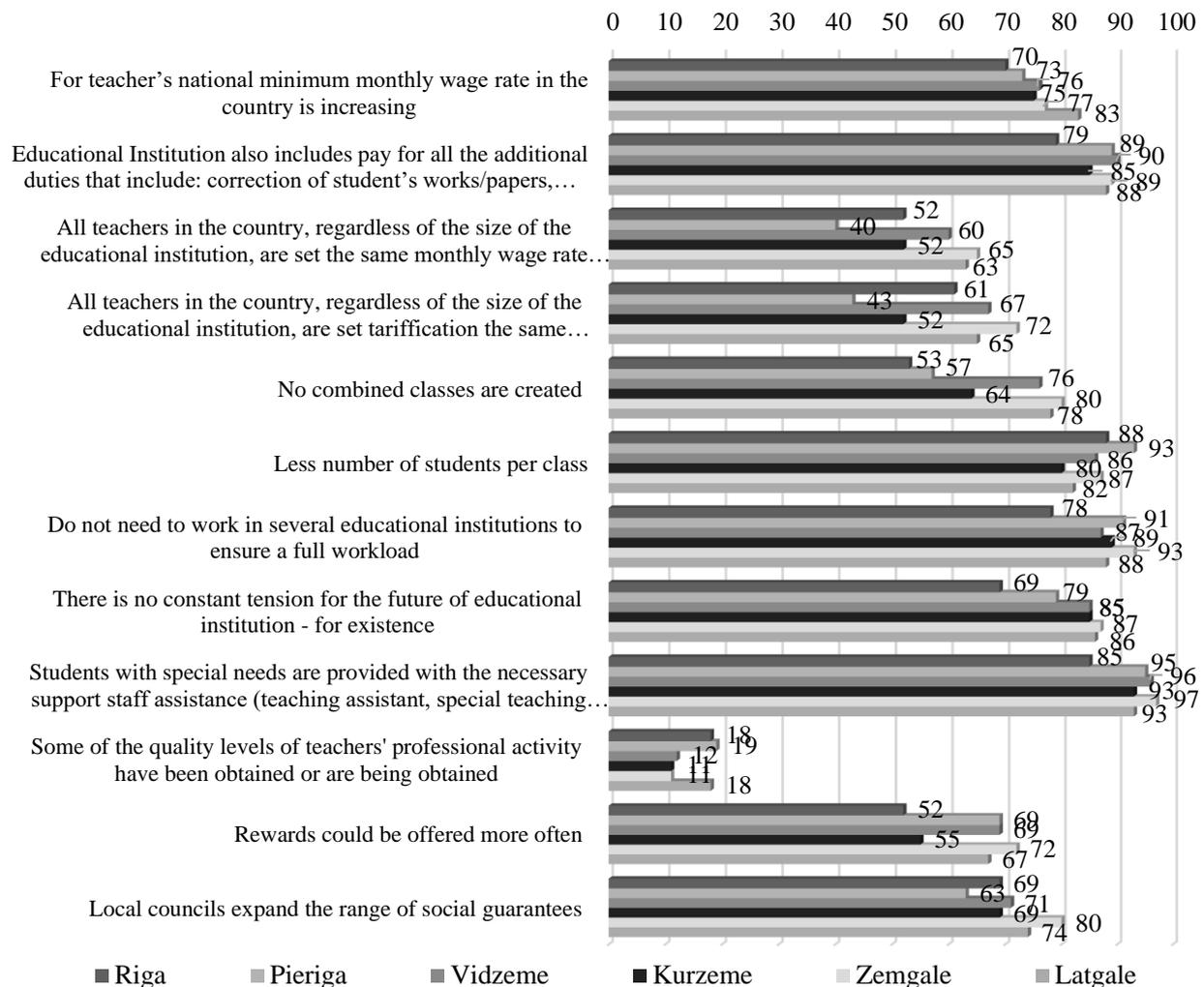
The sample of the study consisted of 603 respondents. Among the respondents, 91.5 % were women and 8.5 % were men. The surveyed teachers represented all statistical regions of Latvia: Vidzeme (21.8 %), Kurzeme (17.6 %), Zemgale (12.3 %), Latgale (21 %), Pieriga (12.5 %) and Riga region (14.8 %). Respondents represented primary, secondary and secondary schools, and their job position was "a teacher"; they were of different ages, thus representing different age groups.

Research results and discussion

1. Financial remuneration

Based on the research of the authors' scientific literature, the financial remuneration consists of 4 aspects: basic wage, allowances, bonuses, relief/benefits. In Latvia, a teacher's salary is determined according to the principle "Money follows the student" (in Latvian – "Nauda seko skolenam"). Regulations of the Cabinet of Ministers No. 445 "Regulations on Teachers' Salary" determines the procedure for determining teachers' salary, the amount of salary and the amount of teachers' workload (Pedagogu darba samaksas noteikumi, 2016), while Cabinet of Ministers No. 447 "Regulations on State Budget Targeted Grants for Teachers' Salaries in Local Government General Education Institutions and General Secondary Education Institutions of State Higher Education Institutions" determines the procedure by which the Ministry of Education and Science distributes the state budget for teachers' salaries (Par valsts budzeta..., 2016). Analyzing these two regulatory enactments, it can be concluded that the basic wage for teachers, despite the fact that the regulatory enactments set the minimum monthly wage rate for teachers - EUR 790 per 30-hour workload in 2020/2021, differs both in the statistical regions and counties of Latvia. As per funding model "Money follows the student", the number of additional paid duties (correction of student's works/papers, preparation for lessons, individual work with students, class education) also differs. Latvia has a relatively large number of educational institutions with a small number of students (less than 100 students), where teachers receive the minimum monthly wage rate and many educational institutions do not have enough funding to pay for all the additional duties for teachers, as funding is only enough for teachers to be paid for contact hours. There are various other factors that affect a teacher's basic wage due to the funding model. In Latvia, teachers have the opportunity to receive an allowance every month if, based on the Cabinet of Ministers No. 501 "Regulations on the Arrangements for the Organization of the Evaluation of Teachers' Professional Activities" has obtained one of the three possible quality levels. The quality level is the result of the evaluation of the teacher's professional activity, and it is valid only in the educational institution where the teacher's evaluation was performed (Pedagogu profesionalas darbibas..., 2017). Bonuses for teachers can be awarded by the director of an educational institution within the framework of the state budget paid teachers' salary fund or by the local government from its own budget. Relief, on the other hand, is designed to make work easier for employees and benefits to make work enjoyable and comfortable, support employees in important life events and promote employee motivation and loyalty to the employer.

Figure 1 shows teachers' views on whether performance would improve if any of these aspects of financial remuneration were provided.



Source: author's calculations based on research data

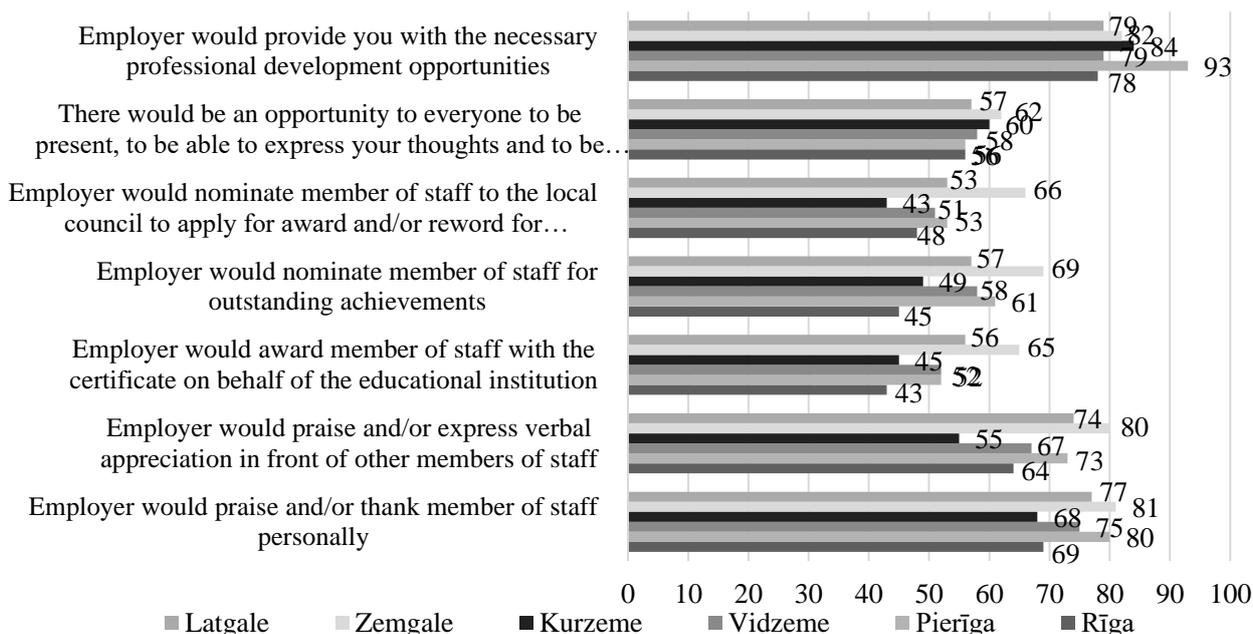
Fig. 1. Teachers' opinion on financial remuneration factors that would improve work performance (optional set "yes" and "more yes than no", %, n = 603)

According to the data of Figure 1, it can be concluded that teachers' performance would be most improved or 93 % of the surveyed teachers believe that their performance would improve if students with special needs were provided with the necessary support staff assistance (teaching assistant, special teaching assistant, speech therapist, psychologist). The fact that this aspect of financial remuneration would improve the performance of teachers the most is considered by 95 % of the surveyed teachers in Pieriga, Vidzeme – 96 %, Kurzeme – 93 %, Zemgale – 97 % and Latgale – 93 %. For teachers in Riga, a smaller number of students per class would improve their work performance the most – 88 % of the surveyed teachers. The authors would like to note that teachers working in all statistical regions of Latvia also believe that their work performance would improve if all additional duties to be performed in the educational institution were paid (correction of student's works/papers, preparation for lessons, individual work with students, class education) - especially in Latgale – 88 % of the surveyed teachers, in Vidzeme – 90 %, in Zemgale – 89 % and if teachers did not have to work in several educational institutions to ensure a full workload - especially in Zemgale – 93 % of the surveyed teachers, in Kurzeme – 89 % and in Latgale – 88 %. In all statistical regions of Latvia, the performance of teachers would be least affected by the possibility to obtain some of the quality levels of teachers' professional activity. It is important to note that

raising the minimum monthly wage rate of teachers in the country would increase the performance of teachers, but according to the data of the teacher survey, it can be concluded that this is not the determining factor.

2. Non-financial remuneration

Based on the research of the authors' scientific literature, non-financial remuneration consists of 3 aspects: appreciation, responsibility/participation, development/ growth. Figure 2 shows the teachers' views on the question: "Would your performance improve if any of the above aspects of non-financial remuneration were provided?"



Source: author's calculations based on research data

Fig. 2. Teachers' opinion on non-financial remuneration factors that would improve work performance (optional set "yes" and "more yes than no", %), n = 603

In all regions of Latvia, teachers believe that among the non-financial remuneration factors, their work performance would improve the most if the employer provided the necessary professional development opportunities. The second factor that would improve the performance of teachers in all regions was recognized approach when the employer praised or thanked them personally. On the other hand, teachers' performance would be least affected or not affected at all: in Riga (43 %) and Pierīga (52 %) regions, if the employer awarded a certificate of thanks from an educational institution, Vidzeme (51 %), Kurzeme (43 %) and Latgale (53 %) in the region, if the employer invited the municipality to apply for a letter of appreciation or gratitude from the Ministry of Education and Science, but in Zemgale (62 %) region, if teachers had the opportunity to be present, freely express their thoughts and participate in important decisions.

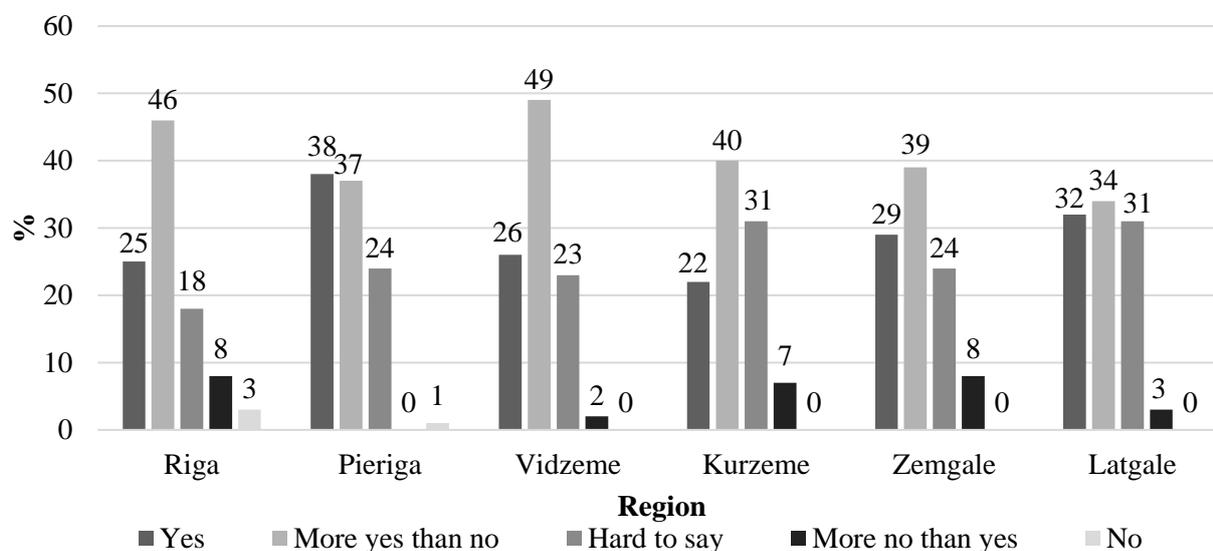
3. Organizational culture

Organizational culture is what unites the people working in the organization, unites the team, greatly contributes to the effective operation of the organization. Features of organizational culture such as cohesion, unity in the organization are possible due to a stable system of norms and values.

Organizational culture is an important prerequisite, which in various studies has demonstrated important connections for organizations:

- it affects productivity (Gregory B. T., Harris S. G., Armenakis A. A., Shook C. L., 2009);
- culture more than the organization's strategy or structure influences the quality of information flow in the organization and the understanding of the need for cooperation (Zheng W., Yang B., McLean G., 2010);
- it influences the orientation of employees towards the achievement of goals, as well as the achievement of financial goals (Homburg C., Pflesser C., 2000);
- organizational culture significantly influences employees' readiness for change and ability to accept it (Pennington G., 2003);
- it also affects the number of accidents at work (O' Toole M., 2002).

Teachers' opinion on whether work performance would improve if the head of the educational institution paid more attention to the organizational culture is shown in Figure 3.



Source: author's calculations based on research data

Fig. 3. Teachers' opinion on the work performance improvement if the head of the educational institution paid increased attention to the organizational culture, %, n = 603

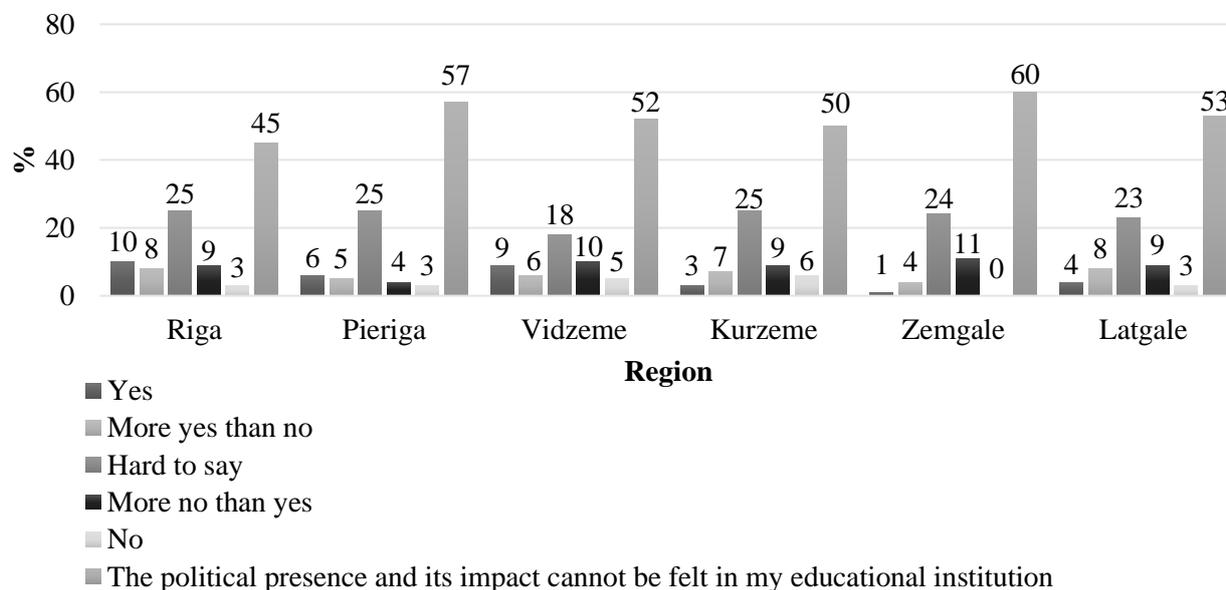
In all the regions of Latvia, the performance of teachers would improve if the head of the educational institution paid increased attention to the organizational culture: in Pieriga and Vidzeme 75 % of teachers believe that their performance would improve, in Riga – 71 %, Zemgale – 68 %, Latgale – 66 % and Kurzeme region 62 % of teachers.

4. Politics

The behaviour of political leaders or leaders is related to "activities that are not necessary as part of a formal role in the organization, but that affect or attempt to influence the distribution of strengths and weaknesses in the organization" (Robbins SP, Judge TA, Millett B., Jones M., 2010). Although political behaviour is not a formal job requirement, it is nevertheless a way of life in all organizations and its performance has a significant impact on organizational performance (Robbins S.P., Judge T.A., Millett B., Jones M., 2010). Moreover, especially in the public sector, politicians are important actors in the political arena of organizations, as they have "the opportunity and ability to penetrate deeply into the internal workings of public organizations" (Pandey S., Moynihan D., 2006). In essence, they have power and are able to use their powers to influence their own or the group's interests, without regard to professionalism or the responsibility of bureaucrats in the performance of their work. Thus, J.A. Wagner III and J. R.

Hollenbeck (2010) argued that politicians use power in public sector bureaucracy; they use their "ability to influence other people's behaviour and persuade them to do things they would not otherwise do ... and resist unwanted influences".

Figure 4 shows the data in which teachers were asked to answer the question: "Would your performance improve if there were no political presence and influence in the educational institution?"



Source: author's calculations based on research data

Fig. 4. Teachers' opinion on work performance improvement if there was no political presence or its influence in the educational institution, %, n = 603

Based on the data in Figure 4, it can be concluded that a pronounced political presence and its impact are not observed in any of the regions of Latvia. Political influence is felt most by teachers in Riga region, as 18 % of teachers believe that their performance would improve if there were no political presence and influence in the educational institution, while in Zemgale – 5 % of teachers.

Conclusions, proposals, recommendations

- 1) Among the factors influencing teachers' performance - financial remuneration, non-financial remuneration, organizational culture and policy, the most significant influence on teachers' performance is financial remuneration. The performance of teachers in all the regions of Latvia would be most improved if students with special needs were provided with the necessary support staff assistance (teaching assistant, special teaching assistant, speech therapist, psychologist). In Latgale, 88 % of the surveyed teachers, in Vidzeme – 90 %, in Zemgale – 89 %, as an important determining factor of performance is also acknowledged - if all additional duties to be performed in the educational institution (correction of student's works/papers, preparation for lessons, individual work with students, class education) and in Zemgale 93 % of the surveyed teachers, in Kurzeme – 89 % and in Latgale – 88 % admit that their performance would increase if teachers did not have to work in several educational institutions to ensure full workload. 88% of the surveyed teachers in the Riga region admit that performance would increase if there was a smaller number of students in the classrooms.
- 2) In all statistical regions of Latvia, the performance of teachers would be least affected by the possibility to obtain some of the quality levels of teachers' professional activity.
- 3) Increasing the minimum monthly wage rate of teachers or the wage is not the determining factor that would increase the performance of teachers.

- 4) In all the regions of Latvia, an important factor of non-financial remuneration for teachers is the approach according to which the employer provides the necessary professional development opportunities and employer praises or expresses gratitude personally.
- 5) Organizational culture was recognized in all the regions as an important determinant of teachers' performance, while a strong political presence and impact was not observed in any region of Latvia.
- 6) In order to further explore the factors influencing teachers' performance, the authors' future research will be related to the opinion of the directors and experts of the educational institution on the factors influencing teachers' performance in order to make proposals to the Ministry of Education and Science for future policy.

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SOCIAL ENTREPRENEURSHIP AND SOCIAL INEQUALITY: A CASE STUDY OF LATVIA

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Abstract. The present research analyses the theoretical and practical aspects of interaction between social entrepreneurship and socio-economic processes, thereby building up scientific experience in analyses of social entrepreneurship processes. The authors, based on a theoretical literature review and an examination of social entrepreneurship in Latvia, analysed the elements of the social entrepreneurship ecosystem, the impacts of social entrepreneurship and statistical data on social inequality in Latvia. The research concluded that social development in Latvia was at the initial stage, yet it provided support to people at risk of social exclusion and poverty. The development of social entrepreneurship in the regions of Latvia was uneven.

Key words: income inequality, social entrepreneurship, region, poverty

JEL code: L31, R58, I32, C31

Introduction

Although social entrepreneurship is a widely known kind of entrepreneurship in the world, in Latvia its development has been seen only for the third year, as the Social Enterprise Law became effective on 1 April 2018. The **problem** is that the aspects of social entrepreneurship have so far been little researched in Latvia. A **hypothesis** put forward by the authors is as follows: social entrepreneurship makes a positive qualitative effect on the reduction of regional disparities in poverty and social exclusion in Latvia, yet the effect is not the same across the regions. The research **aims** to analyse the role of social entrepreneurship in Latvia in reducing poverty and social exclusion. The specific **tasks** of the research are as follows: 1) to analyse changes in the foundation of social enterprises and the areas of their social impacts in Latvia; 2) to analyse the aspects of disparities in poverty and social exclusion and the relevant data on Latvia.

Limitations of the research: the areas of social impacts made by social enterprises in Latvia were identified analysing relevant documents –the information specified in the applications for social enterprise status. The research did not analyse the business aspects of social enterprise development. **Research methods:** theoretical literature review, documentary analysis to identify social enterprises in Latvia in the period 2018-2021, statistical analysis to perform the specific research tasks.

Research results and discussion

Role of social entrepreneurship in society

Social justice forms the basis of social policy, and its main objective is to maintain the standard of living and reduce inequalities (Rajevska, 2014). Social entrepreneurship could be defined as an innovative social value-generating activity that is performed in the non-profit, business or government sectors (Austin, Stevenson, Wei-Skillern, 2006). In Latvia in accordance with the relevant regulatory framework, social enterprises are limited liability companies (Saeima, 2017). Social enterprises are the driver of change (Lukjanska, Kuznecova, Cirule, 2017). However, the problem is that there is a lack of convincing evidence that the role of social enterprises in dealing with global challenges is crucial; on the contrary, there is some evidence that the problems identified diminish if multiple agents are involved, such as NGOs, municipalities, public-private partnership agents (Kirsch, 2011).

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Combining the logic of classical business with social impacts is one of the features of social entrepreneurship and an important instrument for the socio-economic development of the region. The role of social enterprises in the development of regions could be examined from various perspectives (Light, 2010; Social Entrepreneurship Association of Latvia, 2019a; Arhipova, 2020; Haues, Boyle, 2021), yet social entrepreneurship as part of the single social ecosystem makes a direct and indirect contribution to dealing with factors hindering the development of society, e.g. poverty reduction (Chee, 2004). Each ecosystem entity influences the others by establishing ever-changing relationships in which each entity should be flexible and adaptable.

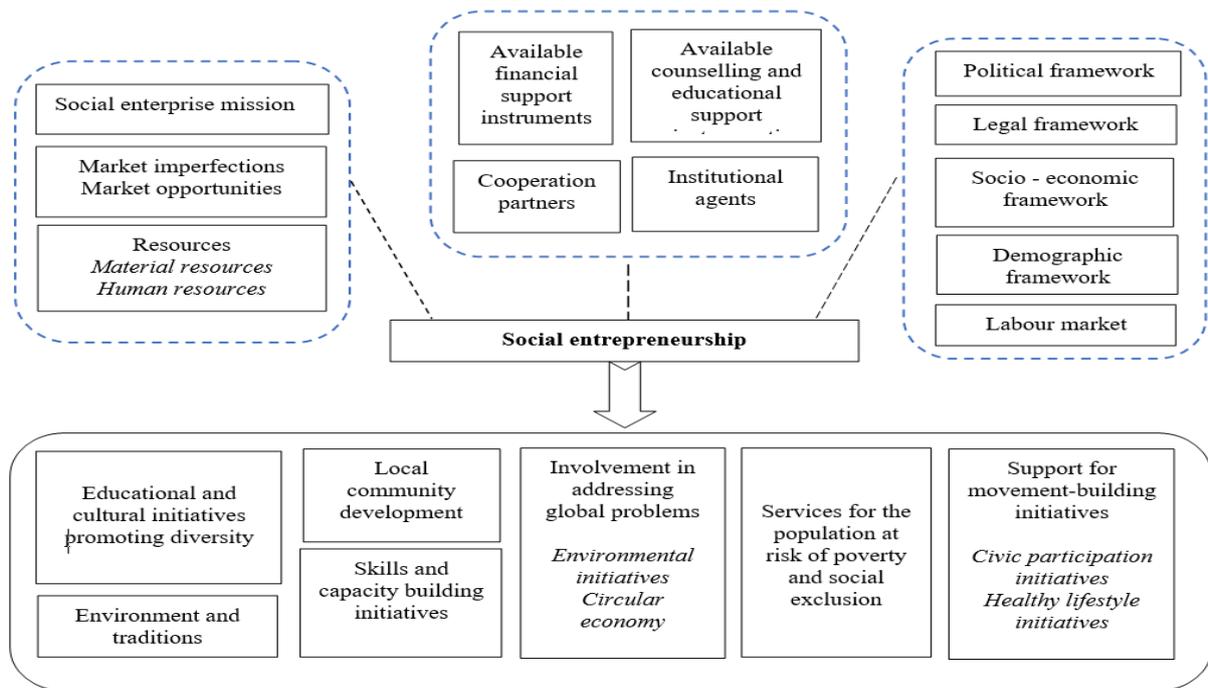
Social entrepreneurship as a new economic category finds its opportunities for development between market imperfections and available resources (Dees, 1998). Social enterprises participate in generating social value and regard it as their mission, therefore, the multifaceted nature of their activities and socio-economic impacts should be assessed (Alvord, Brown, Letts, 2003, 2004). However, in economic reality, social enterprises often focus too much on reducing social problems (Dees, 1998; Austin, Stevenson, Wei-Skillern, 2006), which makes a negative effect on the capability of social enterprises to attract competitive human resources or to mobilize resources.

Social entrepreneurship choices could be affected by market imperfections and exogenous and endogenous factors (European Union/OECD, 2016). The endogenous factors include an enterprise's management's experience and ability to understand socio-economic processes, networking and resource acquisition skills, the desire to make a creative social impact on change in the region. The European Union (European Union, 2020) points out that it is very important for social entrepreneurs to learn and develop their own skills. However, the exogenous factors, such as public contract availability, special marks or labels, public support – campaigns, recognition, awards – can promote and popularize the mission of social enterprises.

Social entrepreneurship ecosystem and activities in Latvia

It is widely acknowledged that social entrepreneurship transforms society and promotes positive changes in regions, yet it is difficult to assess the individual role of a particular factor or intervention agent in the processes, especially because geographically regions are usually open spatial units in contrast to countries (Nijkamp, Abreu, 2009). Therefore, the activities of social enterprises within their ecosystems are often a focus for researchers.

The authors, based on a theoretical literature review (European Union, 2020; Pratono, Sutanti, 2016; Kim, Lee, Roh, Son, 2020; Social Entrepreneurship Association of Latvia, 2019b; Penwick, 2011; Babson Global, 2017; Saeima of the Republic of Latvia, 2017; Cabinet of the Republic of Latvia, 2018a, 2018b; Ministry of Welfare of the Republic of Latvia, 2020a, 2020b; Bærenholdt, 2009) and research studies on social entrepreneurship in Latvia, concluded that social entrepreneurship was carried out in a complex ecosystem, and it depended on each country's regulatory framework, political support, socio-economic situation in the regions and demographic trends as well as other exogenous factors. However, the development of social entrepreneurship was affected by available resources, which were exploited within the strategy chosen and components promoting socio-economic development by employing market imperfections (Figure 1).

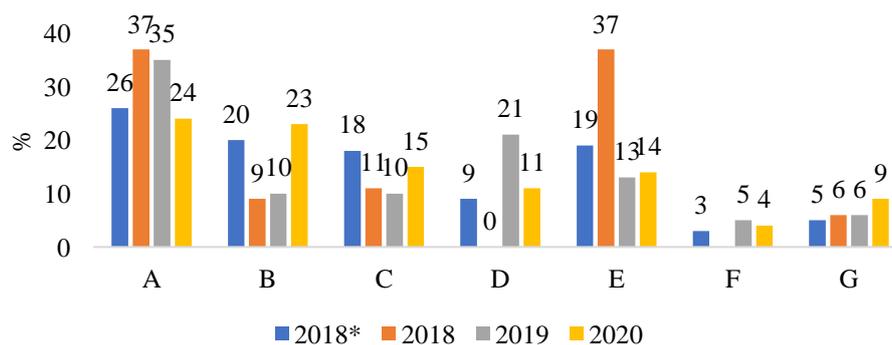


Source: authors' construction

Fig. 1. Social entrepreneurship ecosystem and the impacts

In Latvia, ESF funding could be used to prepare economic entities for obtaining social enterprise status, and ESF project No. 9.1.1.3/15/I/001 "Support for social entrepreneurship" (Ministry of Welfare of the Republic of Latvia, 2020b) was launched and support for the introduction of social measures and the transition to social enterprise status was provided. Initially, the enterprises involved in the preparatory process were called measure participants. At the end of 2018, 98 enterprises or measure participants and 28 social enterprises were registered with the Ministry of Welfare of the Republic of Latvia.

The authors' analysis revealed that from the very beginning, the dominant field of impacts of social enterprises was support for persons at risk of social exclusion and poverty – in 2018, 26 % participants and 37 % social enterprises provided such direct employment support (Figure 2).



Notes: data at the end of the calendar year; 2018* - participants - NGOs and enterprises that were registered before the adoption of the Social Enterprise Law; 2018 - enterprises registered in accordance with the Social Enterprise Law (Saeima of the Republic of Latvia a, 2017), A- work integration; B- education; C- sports and health promotion; D- civic society and cultural diversity; E- social services and support for people at risk of poverty and social exclusion, F- environmental protection; G- other services

Source: authors' construction based on social entrepreneurship research documents in Latvia

Fig. 2. Fields for social entrepreneurship in Latvia in the period 2018-2020

Over the next years in Latvia, the main target groups for social entrepreneurship were vulnerable groups (Cabinet of the Republic of Latvia, 2018b) – persons with disabilities, the unemployed and persons at risk

of poverty. The authors concluded that socially vulnerable groups were provided with employment support and free services or services at a reduced price (Figure 2). However, also indirect support was provided, for example, through involving the target groups in educational activities, sporting events or community service activities in order to reduce their social exclusion.

The social and economic significance of the social entrepreneurship mission in Latvia is indicated by the fact that the number of social enterprises increased – at the end of 2019, 81 economically active social enterprises were registered in Latvia, while in February 2021 their number increased to 161 (Ministry of Welfare, 2021). However, there were also some problems, as not all the social enterprises were able to combine business expansion with social impact. This is evidenced by the fact that: 1) in the period 2018-2021, 56 enterprises were not granted social enterprise status because the enterprises were not able to prove the sustainability of their activity and the significance of their social impact; 2) 8.5 % enterprises were deprived of social enterprise status or they renounced it – the reason was the inability to carry out commercial activities under the current socio-economic conditions.

The regional impacts of social enterprises are difficult to identify, as often the enterprises' business and social impacts are made within several regions. Therefore, the place of registration of social enterprise activities was analysed at this stage of the research. The authors concluded that in 2019, there were 49 economically active enterprises in Riga region, 14 in Pieriga region, 8 in Kurzeme region, 6 in Zemgale region, 3 in Vidzeme region and one in Latgale region. To identify whether there was a difference between the total number of economically active enterprises (CSB, 2020a) and the number of social enterprises in the regions of Latvia in 2019, a Wilcoxon signed ranks test was performed by the authors. The results showed (Figure 3) that one could reject the H0 hypothesis at the 95 % confidence level: economic activity was the same for both groups and accept the H1 hypothesis: economic activity was different. This indicated that social entrepreneurship was carried out in an ecosystem where there were also factors that significantly affected the development of social entrepreneurship.

		Ranks			Test Statistics*	
		N	Mean Rank	Sum of Ranks	SR - AR	
SR - AR	Negative Ranks	6 ^a	3,50	21,00	Z	-2,201 ^b
	Positive Ranks	0 ^b	,00	,00	Asymp. Sig. (2-tailed)	,028
	Ties	0 ^c			a. Wilcoxon Signed Ranks Test	
	Total	6			b. Based on positive ranks.	

a. SR < AR
 b. SR > AR
 c. SR = AR

Notes: SR- active social enterprises in the regions, AR- all active economic enterprises in the regions

Source: authors' calculation using SPSS 26

Fig. 3. Wilcoxon signed ranks test results on the comparison of economic activity across the regions of Latvia in 2019

The minimum income level (MIL) is the income a person needs to be able to live physically and is equal to 40 percent of the median household disposable income. The largest proportion of the population whose income was below the minimum income level was the non-working age population – in 2019, such persons aged 18-64 accounted for 23.6 % of the total group.

Table 1

Population below the guaranteed minimum income level and changes in the population in 2010 and 2019 in Latvia nationally and regionally

No	Region	Population below the guaranteed minimum income level						Population change, 2019/2010, %
		2010		2019		2019/2010		
		Number, thou.	%	Number, thou.	%	Number, thou.	Percentage points	
1.	Latvia	207.8	9.8	149.7	7.8	-58.1	-2.0	-10.0
2.	Riga region	37.6	5.6	26.0	4.1	-11.6	-1.5	-6.1
3.	Pieriga region	26.8	7.2	20.9	5.6	-5.9	-1.6	-0.9
4.	Vidzeme region	31.0	14.2	20.3	10.9	-10.7	-3.3	-14.7
5.	Kurzeme region	30.4	10.9	22.4	9.3	-8.0	-1.6	-14.0
6.	Zemgale region	36.6	14.0	19.4	8.4	-17.2	-5.6	-11.9
7.	Latgale region	45.4	14.5	40.7	15.6	-4.7	1.1	-17.1

Notes: 2019/2010 - changes in 2019 compared with 2010

Source: author's calculations based on CSB, 2021a, 2021b

However, employment did not always provide enough income: in 2019, 2.4 % of total working-age employees and 0.2 % over working-age employees earned incomes below the minimum income level (CSB, 2020b; 2020c). In reality, however, the incomes of many households were much lower than the minimum income level, and it was even lower than the guaranteed minimum income level (GMI) (Table 1). Therefore, the government sets the guaranteed minimum income level, which is to be provided to every inhabitant of Latvia in accordance with the procedures specified in the relevant regulatory enactments (Darzina, 2019; Cabinet of the Republic of Latvia 2020). The amount of GMI increased over time: in 2020 it was EUR 64 per person per month, yet from 2021 the minimum income threshold for the first (or main) person in the family was EUR 109, while for each subsequent family member – EUR 76 (Ministry of Welfare of the Republic of Latvia, 2021).

The data analysis showed that in 2019, 149.7 thousand people (7.8 % of the total population) in Latvia earned below the GMI. The largest number of people exposed to deep poverty was in Latgale region – 40.7 thousand inhabitants (15.6 % of the region's population), whereas the smallest number was reported in Riga region with 26.0 thousand inhabitants (4.1 %). Although the number of people earning below the guaranteed minimum income level in all the regions of Latvia in 2019 was lower than in 2010, it is not only the result of social policies, and it was also influenced by negative demographic changes – the population decline and an increase in old-age pension recipients (CSB, 2020d). However, social inequality can also be a stimulus, as income inequality in the regions increases the opportunity for individuals to engage in social entrepreneurship, incl. to establish social enterprises (Pathak, Muralidharan, 2017) or respond to the offer of social enterprises to become participants in specific support measures.

Conclusions, proposals, recommendations

- 1) In Latvia, social entrepreneurship develops within a complex ecosystem, and in the regions of Latvia in the period 2018-2020 its development was uneven – the largest number of social enterprises was registered in Riga region, whereas the smallest number – in Latgale region. The study proves that social entrepreneurship makes a positive qualitative effect on the reduction of regional disparities in poverty and social exclusion in Latvia, yet the effect is not the same across the regions.

- 2) In Latvia, the reduction of social inequality could be achieved through complex business solutions – locally and regionally innovative solutions for ensuring employment and access to services for groups at risk of social exclusion and poverty. The analysis showed that the measures were aimed at the education of the target groups, their involvement in sports activities and a healthy lifestyle, as well as the support provided in the field of health promotion.
- 3) Social enterprises in Latvia should perform a dual activity – business activities that yield a profit and activities making a social impact. Both the relevant theoretical literature and practices recognize that this is one of the most significant challenges to the long-term existence of social enterprises.
- 4) The number of population at risk of social exclusion and poverty in a region makes a little effect on the development of social entrepreneurship, and the proof of this fact was that in Latgale region with the largest population earning below the GMI, the number of social enterprises was the smallest. Therefore, future research studies should identify the factors influencing the development of social entrepreneurship in the regions.

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ENTREPRENEURSHIP IN CULTURAL AND CREATIVE INDUSTRIES AS A FACTOR PROMOTING REGIONAL DEVELOPMENT

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Abstract. The term creative industries began to be used in the second half of the nineties of last century, and since then it has started to appear in scientific research as well in the policy planning documents and processes in Latvia.

For example, The Sustainable Development Strategy of Latvia until 2030 emphasizes both the importance of creative industries and the connection with the formation of a creative urban environment. The National Development Plan of Latvia for 2021-2027 highlights the importance of development of small businesses, including in creative industries and tourism in economically weaker regions.

However, the development of creative industries entrepreneurship in the regions of Latvia is a little-studied topic so far. Previous studies on creative industries focus on their development in Riga, on their role in economic development and on general conceptual ideas. Aim of this study is to analyse activities set in the municipal planning documents to promote the development of creative industries and to assess the impact of creative industries entrepreneurship on regional development. The research is based on the analysis of the regional policy planning documents and on interviews with representatives of creative industries and with regional development planners.

Research results showed that, while national policy planning documents stress that creative industries have an important role in the regional development, only a small number of local development plans highlight this role. Moreover, these documents are not always properly and effectively implemented. On the other hand, case studies showed that appropriate initiatives foster entrepreneurship in creative industries and they can play a key role in regional development.

Key words: creative industries, planning documents, regional development.

JEL code: R58, R11, O25

Introduction

The term *creative industries* and its concept has evolved since the 1990s – first in the UK and then globally (Kong L., 2020; Banks M. and O' Connor J., 2009; Flew, T. and Cunningham S., 2010) including Latvia (Moore I., 2014; Daubaraitė U. and Startiene G, 2017). Initially, the concept developed in policy planning, then in research and later in educational programs (Flew T., 2011; Flew T., 2019; Galloway S. and Dunlop S., 2007). For example, in policy planning, the creative industries were mentioned in Latvia already in 2005, when the new cultural policy guidelines were developed. (Study "Creative industry sector development", 2012). As the term *cultural industries* was used same time, joint term *cultural and creative industries* (or CCI) has been used internationally and also in Latvia (for the sake of convenience, the term *creative industries* will be used in this article).

At present, in Latvia, creative industries are understood as "those cultural industries and related industries that primarily use business models in their activities, creating a significant economic contribution to the national economy in parallel with a cultural capital" (Cultural policy guideline 2021-2027). Such an approach means a greater focus on the economic potential of the cultural sector and from the cultural economy viewpoint. Thus, the approach of "competition model" by Potts and Cunningham is used as the concept of creative industries in Latvia. Within this approach companies of creative industries use same business models as in other industries. With such an approach, the development of creative industries can be fostered through similar support instruments as in other industries (Potts J. and Cunningham S., 2008).

At the national level, the development of creative industries is, first of all, related to the provisions of the Latvian Sustainable Development Strategy for 2030. The focus of the strategy is on creativity as the most important factor in the development of the state and society and the competitiveness of companies.

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The development of such creative industries as design, advertising and tourism is associated with the competitiveness of national identity, but the products of creative industries such as festivals, film production, computer games, music recordings are assessed as with a high export potential. In addition, this document emphasizes factors that are important for the development of creative industries: cultural education, creative urban environment (especially creation of contemporary cultural centres and creative clusters), creative tourism. The strategy recognizes that entrepreneurship in the creative industries is essential for development of both cities and regions. One indicator is set to assess the development of creative industries – the share of creative industries export in the total export of the country, which should be 3 % in year 2030 (base value – 0.73%).

One of the action directions of the National Development Plan of Latvia for 2014-2021 – a medium-term national planning document – is high-productivity and export-oriented production and internationally competitive services, incl. "commercial creative industries". The indicators to be achieved in 2020 are also determined: the share of export of creative industries – 1.6 %, and the share of companies working in the cultural and creative industries – 7.5 %. To achieve this, the following support activities are identified: a support instrument for the development of creative industries; promoting the export capacity of the companies, and support for "creative industries design activities". It is planned to apply all activities to the entire territory of Latvia.

In order to evaluate the achievements of the planning documents, progress of set goals and indicators is regularly evaluated. In 2015, the indicators set in the Sustainable Development Strategy were monitored, concluding, among other things, that the share of export of creative industries cannot be calculated because there is no clear definition of "so-called creative industries". The share of creative industries companies is not calculated, because "existing classifiers do not allow to distinguish companies of this profile". The report on the achieved results of the strategy and development plan in 2015 states that the creative industries are not developing fast enough due to the lack of state support for both the creative industries and innovation. It has also been pointed out that the creative industries are too focused on the local market. Overall, this leads to the conclusion that "(...) all parties involved lack an understanding of the potential of the creative industries".

In fact, it is acknowledged that there are no statistics and other quantitative indicators that would allow to assess results of development priorities and actions for creative industries that are set in the national planning documents, like progress towards the set goals and indicators. In addition, the low level of implementation of the planned activities is also pointed out. At the regional level, data are not available at all and no evaluation is carried out.

However, priorities set out in the national planning documents should be assessed at the regional level. The emphasis of local planning documents and their support measures should be identified. At the local level development of the creative industries are influenced by cultural and business infrastructure, local government awareness and priorities, the development of related industries and the activity of the local community. For creative industries development planning and support activities at the local level are as important as in national level (Fleischmann K. et al., 2017; Cerneviciute J. et al., 2019; Sternberg R., 2012; Rivas M., 2011).

Research **hypotheses is**: entrepreneurship of creative industries in the regions promotes the attraction of intellectual capital, the development of social infrastructure and the diversification of economic activities. The **aim of this article** is to analyse activities set in the municipal planning documents to promote the development of creative industries and to assess the impact of creative industries entrepreneurship on regional development. The **research tasks** are: 1) to assess the sustainable development strategies and

development programs of the planning regions and municipalities for the period from 2014 to 2020; 2) to interview representatives of creative industry companies, municipalities, as well as experts in these subjects; 3) to assess the impact of planned activities on the development of creative industries and the role of their entrepreneurship in regional development.

Qualitative research methods were chosen because of the absence of quantitative indicators at either national or regional level.

Such an analysis is essential as new support instruments are currently being planned at national level, as well as new development strategies and programs are being developed in the new municipalities.

At the level of academic discourse, creative industries in Latvia have not been studied at the regional and municipal level so far. Existing research focuses on general business management issues in the creative industries (Kuttim M. et al., 2011; Dunska M. and Marcinkevica A., 2018; Berzins G., 2011) development of entrepreneurship in creative industries (Muradli, R. and Volkova, T., 2015; Dunska M. and Marcinkevica A., 2017) and case studies (Rozenale I., 2014).

Research results and discussion

1. Analysis of planning region documents

The development priorities of Latvia's planning regions are included in their sustainable development strategies for 2030 and in their development programs for 2020. Clearly, the development of all planning regions is linked to the creative and cultural industries, but the scope and emphasis are different. Great importance of the creative industries can be identified in the documents of the Riga Planning region, which states that "*the preconditions for the development of the Riga Planning region, in the context of the Baltic Sea region, are the green environment, creative industries, information technology development, foreign language skills*". The development of creative industries in the Riga Planning region has played an important role in positioning them as globally competitive industries in the region. The planning documents in order to promote their development, plan the formation of clusters, the implementation of regional cultural policy, the establishment of new companies, the development of cultural infrastructure and the organization of festivals of cultural and historical traditions. Design and fashion are mentioned as the most important creative industries in the region.

Creative industries as one of the perspective development sectors of the region are also mentioned in the documents of Vidzeme Planning region. This is due to "the high share of the creative class in the region", especially in craft and printing professions, developed cultural infrastructure, and the rapid growth of turnover and employment of creative industries. In the regional planning documents, the development of creative industries is viewed together with the tourism and cultural heritage.

The documents of Latgale Planning region place more emphasis on creativity, cultural heritage, traditions. They point out the role of cities of Daugavpils and Rezekne in the development of creative industries.

One of the development priorities for the Kurzeme Planning region is "Creative Kurzeme 2020", which also includes the development of cultural education and creative industries in the region, with special focus on the potential for creative industries in Kuldīga and Liepāja.

The development of creative industries in Zemgale Planning region is related to the cultural environment and identity of the region, especially supporting the development of crafts, home production and cultural and creative industries.

2. Analysis of planning documents of local municipalities

The role of creative industries at the local level was analysed by studying the municipal development planning documents. Municipal planning documents from the State Unified Geospatial Information Portal, as well as additional sectoral planning documents available on municipal websites were used for the analysis. This analysis was performed for all 110 of the one-level municipalities (counties) and 8 republican cities (except Riga), and documents adopted in the period from 2014 to 2020 were analysed. Such a period corresponds to the medium-term planning in Latvia, as well as 2020 marked the beginning of the administrative-territorial reform.

In general, local government development is defined in two types of documents: the sustainable development strategy, which is a long-term planning document of local governments, and the development program, which is a medium-term document with short-term action plans and investment programs. Some municipalities have also developed sectoral strategies for example, in culture or education. Data and information on the development of creative industries were studied in all planning documents. In total, the development of creative industries was mentioned in 36 municipal documents, which is approximately 30.5 % of all municipalities (including all republican cities, except Jekabpils). Other documents addressed relevant topics, such as cultural infrastructure development, business support, sectoral policies, but these topics were not related to the creative industries. The distribution of these 36 municipalities by Latvia's Planning regions is shown in Table 1.

Table 1

Number of municipalities whose planning documents mentioned the development of creative industries (amount, %)

Planning Region	Kurzeme	Zemgale	Riga	Vidzeme	Latgale
Amount	7	6	7	10	6
In % on all municipalities of the planning region	35%	27%	24%	38,5%	29%

Source: authors' compilation

Both in general and as a percentage, in Vidzeme Planning region, the importance of creative industries is emphasized in the planning documents the most, but the least – in Riga and Zemgale regions. This could be related to other sectors traditionally developed in these regions.

Municipalities whose planning documents emphasize the importance of creative industries differ not only in their geographical location, but also in other indicators, such as population density or level of development (Table 2).

Table 2

Municipality distribution by population density, by actual place of residence in 2020 (population per km²)

Population density	<10	10-100	100-1000	1000>
Number of municipalities	11	15	6	4

Source: authors' compilation based on data by the Central Statistical Bureau of Latvia

These data confirm that the development of creative industries can be determined to be significant both in municipalities with a high population density, such as republican cities and in sparsely populated counties, such as Dundaga and Naukseni.

In addition to population density, other indicators characterizing the development of the municipality are also important, which have been included in the territorial development index in Latvia since 2013. The

territorial development index characterizes the level of development of each administrative territory. The rankings of the mentioned 36 municipalities in the development index in 2019 are shown in Table 3.

Table 3

Distribution of municipalities by territorial development index in 2019³

Rating place	1.-10.	11.-50.	51.-100.	101.+
Number	12	7	16	1

Source: authors' compilation based on data by the State Regional Development Agency

The importance of creative industries is emphasized both in the planning documents of highly developed municipalities (republican cities and counties nearby Riga) and less developed local governments, for example, in Zilupe and Riebiņi municipalities in Latgale. This generally confirms that very different municipalities see the importance of creative industries. However, in order to analyse whether the development of creative industries has any impact on the overall development of the municipality, it is necessary to take into account the changes in this index in the long run. In general, comparing the ranking of selected municipalities in 2014 and 2019, it can be seen that the positions of 20 local governments have increased (ten municipalities have increased by five or more places), six municipalities have not changed their positions, ten municipalities have decreased their positions (six municipalities have decreased for five or more places). The fastest growth in this period has been in counties of Dundaga, Jelgava, Rundale and Valka, but the fastest decline – in counties of Preiļi and Talsi. Analysing the indicators that make up the index, it can be concluded that the most significant increase or decrease in the rating has been influenced by changes in the number of companies and the balance of natural movement per 1000 inhabitants. It should be noted that purposeful actions of municipalities in promoting the creative industries also promotes the formation of micro and small enterprises.

Analysis of the planning documents focused on two issues: what is mentioned in the documents about creative industries, and what is the role of creative industries in the development of the municipality. During the thematic analysis of the planning documents, it was identified which sectors are being discussed in the context of the creative and cultural industries. The craft sector was mentioned most often – in planning documents of 12 municipalities. It was mentioned as one of the creative industries and as well as a related sector. Other industries were mentioned as well – the design sector and the visual arts were pointed out in the development plans of more than three municipalities. Tourism, and in particular cultural tourism, was mentioned as a sector linked to the development of creative industries, promoting synergies. The preservation and development of cultural heritage was also mentioned very often in connection with the creative industries.

In planning documents specific tasks, development activities for the development of creative industries were mentioned. The need for various support instruments, programs, grants, establishment of business support centres were mentioned the most. An important factor in the development of creative industries is the creation of appropriate infrastructure – such as a rebuilding or creation of cultural objects, the creation of infrastructure necessary for the work of creative professionals. Equally important place in planning documents is given to the promotion of new products and companies in the creative industries. Several planning documents emphasize the importance of educational institutions both in higher education, for example, in Liepāja and Rezekne, and in the secondary and vocational education. Equally often, the focus is on the creation or promotion of creative quarters, thus creating an environment for the development of

³ Note: separate ratings are used for county municipalities and republican city municipalities, thus all republican cities will be ranked from place 1-9.

new companies, cooperation and the development of a creative environment. An important role is also given to the creation and promotion of creative incubators, co-creation spaces.

In general, all analysed municipal planning documents, can be divided into three groups according to the importance of creative industries in them. The first group consists of planning documents in which the creative industries are mentioned without specific actions, planned activities or other details. That is situation in 17 municipal planning documents. This shows that in large part of planning documents the development of creative industries is just mentioned, as it is emphasized in the state level or planning region documents, but they do not indicate specific actions to be performed. Similar number (15) of municipal planning documents propose specific tasks and activities for the development of creative industries, and list priority creative industries. In some municipalities, such activities have been developed in great detail – separate cultural policy planning documents have been approved, for example, in the city of Jurmala and counties of Valka and Gulbene. Finally, in the planning documents of four municipalities, creative industries are identified as an important factor promoting the development of the municipality, namely, in counties of Cesis, Kuldiga, Riebini and city of Rezekne. In all four municipalities, the creative industries are part of their development visions. For example, the county of Kuldiga positions itself as follows: *"Kuldiga – a unique, internationally recognized place of cultural and natural heritage, a city of tourism and creative industries and a centre of regional significance"*. The development documents of Cesis municipality declare that *"Cesis municipality has a strong and competitive identity. It is an economically active centre of creative, digital and cultural industries of national significance"*. The following development vision is set for the city of Rezekne: *"Rezekne is an important centre of economy, culture, creative industries, education, research and sports in Eastern Latvia"*. The development documents of the small county of Riebini points out that "in the future it is not "one of" but "the well-known county of Riebini, which stands out with its non-traditional thinking and actions (homeland of R. Muks), traditions of craft masters (Ceramics school of Silajani), and creativity; the use of creative industries in the growth of the region (the legacy of J. Pigoznis, J. Ivanovs, J. Streics)". The planning documents of these municipalities mention creative industries as one of the most important sectors of their economy; specific and various instruments are provided for their development; but most importantly – creative industries occupy a strategically important place in the development of these municipalities.

However, the analysis of changes of the municipal territorial development index from 2014 to 2019 does not allow to draw unambiguous conclusions to what degree planned activities have been successful, including activities for the development of creative industries and their impact on the development of the municipality in general. For example, the territorial development index for county of Cesis has slightly increased during this period, while for county of Kuldiga it has significantly decreased. Consequently, it is necessary to assess not only what is set in the planning documents, but also what has actually been achieved.

3. Interviews with experts, representatives of creative industries companies and municipalities

In order to investigate the feelings of the entrepreneurs of cultural and creative industries in the regions, what their contribution to the development of the various regions of Latvia is, and how it correlates with what has been stated in the planning documents, the qualitative research method interview was used. Ten structured and semi-structured interviews were conducted with representatives of four audiences. Six interviews were conducted by telephone, four interviewees answered questions in writing.

Table 4

Qualitative research interview respondents

Nr.	Name	Status
1.	Atis Eglins-Eglitis	Head of Cesis Municipality Administration, previously Member of the Board at Liepaja Creative Industry Cluster
2.	Dita Trapenciere	Chairperson of the board of Cesis Creative Industries Center – co-creation house "Skola6"
3.	Inga Berzina	Chairperson of Kuldiga District Council, Chairperson of the Development Council of Kurzeme Planning District, Member of the EU Committee of Regions Latvian Delegation
4.	Skaidrite Baltace	Head of Rezekne Business Incubator (Investment and Development Agency of Latvia)
5.	Kristine Klane	Owner and manager of the digital advertising company SIA KADD, Aizpute, Kurzeme region
6.	Sandra Balode	Founder of the screen printing workshop Aizpute and the brand Aizputes krekli, Aizpute, Kurzeme region
7.	Velga Krukovska	Fashion artist Velga Krukovska, developer of the VelgaCode brand, performer of economic activity, Rezekne, Latgale region
8.	Zelma Pigozna	Owner and manager of the creative industry company SIA Zel&K (brand Zelma Kraft), Lejas Anchupani, Veremu parish, Rezekne county, Latgale region
9.	Lilita Sparane	Head of the Creative Industries Division, Ministry of Culture, Republic of Latvia (2017-2018); Advisor, Founder & Facilitator of Demola Latvia (part of Demola Network)
10.	Aris Adlers	Representative of the Council of Cooperation Memorandum between NGOs and the Cabinet of Ministers, Member of the council of the association Latvian Rural Forum, President of the Alliance for Sustainable Cross-Sectoral Development (APIA)

The selection of respondents was performed in such a way as to comprehensively cover the range of issues to be considered, as well as the situation in different regions of Latvia:

- The heads of two (out of a total of four) municipalities whose planning documents identify creative industries as an important factor in promoting the development of the municipality, namely – from Cesis and Kuldiga municipalities, were asked to answer questions about the role of municipalities in emerging industries. and the region benefits from these companies;
- The head of the Rezekne business incubator of the Latvian Investment and Development Agency was interviewed to describe the situation in Latgale and the possibilities of state support for cultural and creative industries companies;
- Four creative entrepreneurs from rural areas representing the fashion, souvenir and advertising industries were interviewed. They were asked what support they have received so far from the various institutions, as well as what other support they would like to receive;
- Two experts from regional development and creative industries were interviewed, who outlined the overall picture, the conditions affecting the activities of creative industries companies in the regions and the future perspectives of the field.
- The interview data were categorized according to these four main topics and interpreted accordingly. The conclusions of the interviews were correlated with the main findings from the document analysis performed earlier in this study.

Evaluating the opportunities of local governments in the development of creative industries entrepreneurship, Head of Cesis Municipality Administration admits that there must be not only a document-based approach, but also the right attitude and concrete action on the part of the local government. Cesis municipality has several successful examples that confirm that the potential of creative industries has been assessed and developed. Several long-term initiatives of non-governmental organizations have been supported – the Rucka Art Foundation successfully develops an international art residency center in Rucka Manor, the World Latvian Art Center in Cesis has opened a permanent exhibition hall, the Skola6 creative house encourages the development of creative industries and is developing a co-working platform, the association Art Cesis annually organizes a painting plain air, ensuring the presence of professional visual art in the city. There are several reasons why Cesis municipality has chosen such a direction. First of all, Cesis and a large part of the territory of Cesis region are located in the territory of the Gauja National Park, which imposes significant restrictions on the use of the territory, and thus it is not possible to talk about massive industrial development. Another important factor is that in Cesis, as a city and also in the county, there are many historical objects owned by the municipality, the maintenance and use of which is regulated by regulatory enactments for the protection of cultural monuments, and their management would require large resources. Thus, Cesis municipality has chosen the cultural sector and creative economy as an alternative and logical direction of strategic development, and the Cesis Region Cultural Development Strategy 2030 has been created for its development.

One of the most important factors for the implementation of the strategy is to have the appropriate human resources: *"We understand that the population is the currency and source of income of any municipality, therefore the municipalities have an interest in attracting the population. We have decided that the development of Cesis requires comprehensively educated intellectuals who have a good income."* There is one positive factor in attracting such people to Cesis – it is the proximity of Riga (only 90 km to the capital). In recent years, there has been a stable tendency for young people to move to Cesis from Riga, and many of them are representatives of the creative industries. Cesis has managed to stop internal migration – in 2018, 566 residents came to live in Cesis, but 550 left.

The business areas of creative industries in Cesis are various, and most often they are also interconnected and complement each other. For example, the tourism business is closely connected with the development of historical heritage, designers are involved in the production of furniture, and food tourism has developed in the catering business as a direction. And most importantly, as Head of Cesis Municipality Administration admits, this common synergy creates a transfer effect – such business activities have a significant impact on the urban environment, and the so-called 'vibration' occurs – city and county infrastructure changes, active business environment and nightlife emerge (relatively a rare phenomenon outside the capital), all of which inspires the local community, as well as magnetizing and attracting talent and young creative residents. Currently, Cesis is one of the few places in the country with the largest share of highly educated people.

One of the success stories of Cesis municipality, from which other municipalities can also be inspired in the development of the creative environment, is Cesis Creative Industries Center-co-creation house School 6. When Cesis Vocational Secondary School moved to new premises in the summer of 2015, the historic building in the centre of the Old Town remained empty. It was expensive to continue to manage it without a specific goal, and the municipality of Cesis decided to look for a solution on how to adapt these premises to new functions, while removing the financial burden from the municipality. Exploring experiences elsewhere in Europe led to the initiative to set up a centre for the creative industries, which became a municipal foundation. In this project, the municipality initially invested tens of thousands of euros

in the form of a grant for the maintenance of a 600 m² historic building. Starting from the third year of operation, this centre has become economically independent, but the municipality still supports the centre's programs or creative activities in the form of grants and in other ways. Head of the centre, admits that such a project would not be possible with private funds alone, and the current model has achieved very good results: the centre has 45 residents, 36 lease and cooperation agreements (14 product workshops and 22 office tenants), the represented business lines are designers, graphic designers, clothing sewing, video and photo services, etc. In general, the majority of residents are entrepreneurs in the creative industries.

A similar view as in Cesis is also in Kuldīga municipality. Chairperson of Kuldīga District Council also emphasizes the great importance of creative industries in the development of the region and increase of intellectual potential, but the region has gone a little different, supporting cultural and creative industries, and making significant investments in restoration of Kuldīga historical buildings objects. For example, in 2013, the Artists' Residence of Kuldīga Municipality was established, the aim of which is to develop new talents and energetically strong ideas. Every year, the residence receives artists from both Latvia and abroad, and it is planned to transform this historic Kuldīga building. Since 2019, an art and creative quarter has also been established in Kuldīga, where it is planned to implement international artist programs, organize master classes, creative workshops, seminars, exhibitions and restoration demonstrations. In January 2021, a new innovative project was launched for a relatively small city such as Kuldīga, which combines culture, creative environment and education. The agreement on the establishment of a new international master's program in service design was signed by the Latvian Academy of Arts, Kuldīga Municipality, Kuldīga Artists' Residence and the University of Lapland in Finland, Riga School of Economics, as well as the Estonian Academy of Arts. The international master's level study program "Service Design Strategies and Innovations" in Kuldīga will start already in the autumn of 2021, and it will be a very important, fundamentally new step in the development of the creative environment of the city and region.

Significant contribution to the development of cultural and creative industry business in the regions is provided by the regional business incubators of the Latvian Investment and Development Agency, whose functions are to provide support for business start-up and development for individuals and start-ups. There are 12 regional business incubators throughout Latvia, as well as a Creative Industries Incubator in Riga, which specializes in providing support to creative industries companies. The operation of incubators covers the entire territory of Latvia. There are three business incubators in Latgale – Madona, Daugavpils and Rezekne incubators. Asking to describe cultural and creative entrepreneurship in Latgale, the head of Rezekne Business Incubator, points to two main directions – one of them is the development of large objects (eg Rotko Center or Fortress in Daugavpils, Latgale Embassy GORS, etc.). The second direction is small and even very small companies in the creative industry, which often employ only one entrepreneur. Large objects are created at the expense of the state budget, EU funds and local governments. In turn, small entrepreneurs can receive support both in business incubators (start-up period) and by participating in various project competitions to receive municipal grants. Currently, 60 incubation agreements have been concluded in the Rezekne Business Incubator, and about a third of them are companies operating directly in the creative industries, mainly in the field of design – probably due to the fact that Rezekne Academy of Technology has opportunities to study design in various fields, and former students often start their own businesses.

However, the most important thing that the head of Rezekne business incubator emphasizes is that not only in Rezekne, but also in Latvia as a whole, the so-called 'thistle' or 'snowball' effect works consistently – the strongest objects gather others, including smaller companies, and such operating area in Latgale is

even 30-50 kilometres. For example, the renovation of the Luznava manor required restoration work, new furniture and other furnishings, gardening services etc., and these services were mostly provided by local entrepreneurs. Even now, when receiving guests at the manor, you can receive meals or listen to the guide's narration. In this way, by supporting different business lines, a multidisciplinary approach is maintained in the region and the dominance of one sector, such as industrial production, is not promoted.

Within the framework of the research, it was also important to understand the opinion of the business representatives of the creative industries on whether sufficient support is received from various institutions, as well as what other support they would like to receive. All four interviewed entrepreneurs (two from Kurzeme, two from Latgale) gave very similar answers and positively assessed the cooperation with local governments, both receiving informative support, including advertising in local media, and receiving financial support (grant) for starting a business within the project competition and development. Two respondents had gone through the incubation process in business incubators, which they very much welcomed. All entrepreneurs also agreed on the issue that the state does not pay enough attention to these areas – "Culture, however, more, but the representatives of the creative industry are stalking themselves as they know (or don't know). Probably because there is no impressive economic contribution from them. There is also a public perception that intellectual work is not worth paying for, as consumers are very spoiled for choice in the market. And right now it's very saturated." However, the most important thing is that all four entrepreneurs, asked to assess their role in local and regional development, were very patriotic: The economic contribution is also important, I pay taxes and I can also support the family budget. And I would like to think that my work also has an intellectual contribution"; "You could definitely contribute to the development of the city and county, and would like to cooperate with the municipality as a company participating in some projects. Ideally, the municipality should first identify and involve local businesses in the development of various projects or, for example, in promoting the city, but only then, if it does not achieve the desired result, look for businesses outside its county."

The main benefits of cultural and creative industries in the business regions were formulated by the two interviewed experts. Like Head of Cesis Municipality Administration, they acknowledged that one of the most important aspects is that the representatives of creative industries in the counties maintain a positive, modern creative atmosphere and create an intellectual environment. Equally important are the diversification of business areas and the creation of new jobs. The contribution to community relations was also emphasized, and in particular to the upbringing of young people, as creative fields often attract and engage young people. There are several municipalities in Latvia that understand that the quality of life is related to the opportunity to live in a place where culture and creativity are of great importance. This awareness gives advantages to local government competition for the population, and smart local governments are able to use it. However, in general, experts acknowledged that the further process of developing the creative industries business will vary from county to county, and much will also depend on the people who will be elected to the new councils after the administrative-territorial reform – their understanding of creative industries entrepreneurship.

Conclusions, proposals, recommendations

- 1) The analysis of planning documents showed that at the local municipality level there is not enough understanding of creative industries and promotion of their development, thus most of these documents pay less attention to creative industries than in national or planning region documents.
- 2) The main benefits of creative industries in business regions are the use or attraction of the intellectual potential of the population, the creation of social infrastructure and an active business

environment, as well as the development of a multidisciplinary economy – thus confirming our research hypothesis.

3) At the regional level, the interaction of the cultural sector with a business in the creative industries is very important in following areas: crafts, cultural tourism and design. Their development can be facilitated by cultural infrastructure, support for entrepreneurship and a clear vision and priorities of municipal management.

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MUNICIPAL COASTAL GOVERNANCE SYSTEM DEVELOPMENT: TRIPLE GOVERNANCE DIMENSIONS PRINCIPLE

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Abstract. Integrated coastal governance (ICG) is becoming increasingly important nowadays, since the problems at coastal territories are continuously growing. The coastal zone, however, is a complex socio-ecological system which is extremely difficult to govern because it is very dynamic territory that is also very sensitive to various anthropogenic influences, as well as a lot of conflicts of interest occur there. Coastal area is characterized by a unique and diverse natural and cultural heritage as is the case with Jurmala municipality in Latvia. An integrated approach is important in the governance of such a complex socio-ecological system, but disciplinary/branch approaches are also necessary. The aim of the research was to study and evaluate the complex situation of the coastal governance at the local level, as well as to develop policy proposals for the chosen target territory – Jurmala municipality – and its main target groups. These studies included the analysis of the legislative acts and planning documents, interviews with all the main target groups in the municipality, observation studies, as well as the initial assessment of the coastal governance situation in the Jurmala municipality by using the model of three environmental governance dimensions: (1) coastal governance sectors; (2) coastal governance segments (stakeholders); and (3) coastal governance instruments.

Key words: integrated coastal management, governance dimensions, socio-ecological system, coastal sectors, coastal stakeholders, coastal governance instruments.

JEL codes: Q20, Q57, Q58

1. Introduction

Latvian coastal municipalities have a special and important responsibility – they should manage one of the largest values of Latvia – the **coastal area** of the Baltic Sea. The coastal territory of Latvia is defined as an area of national interest where the preservation of **natural and cultural heritage** should be balanced with the promotion of **economic development** (Sustainable Development Strategy of Latvia, 2010). Nowadays, however, a lot of contradictions and conflicts of interest develop in many parts of the coastal area. These conflicts arise for objective reasons and occur mainly between the economic development interests and the natural and cultural heritage preservation interests (Ernsteins, Jurmalietis, 2008). The coastal zone is considered to be among the most complicated **socio-ecological systems** (SES). In order to successfully govern such a complex system, a special and cross-sectoral approach is needed (Ernsteins et al., 2015). As the main and most important approach for the coastal governance is considered to be the **integrated coastal management** (ICM). ICM is a dynamic, multi-disciplinary and iterative process in order to promote sustainable governance of coastal areas (European Commission, 2000). One of the advantages of the ICM approach is that it does not highlight the importance of a single sector in coastal governance, but offers a holistic view of the coastal zone (Clark, 1996; Ernoul, Wardell-Johnson, 2013).

The **basic problem** of the coastal governance in Latvia is the lack of all kinds of capacity at the local (municipal) level in coastal assessment, policy, planning, monitoring and management. Thus, it leads to the situation that the coastal socio-ecological resources in Latvia are not sufficiently identified and evaluated. So, it can be assumed that at the moment the coastal zone in Latvia is not sustainably governed, as well as that the ICM approach is not being applied entirely. **The aim** of the study is to investigate the existing coastal governance situation in the municipality of Jurmala, as well as to develop the recommendations for the coastal governance development for this municipality. The **tasks** of the study

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are: (1) to analyse the coastal governance sectors and the mutual complementarity between them; (2) to analyse the coastal governance segments and their role in the governance processes; (3) to analyse the coastal governance instruments and to assess whether they are applied complementary; (4) to assess the daily practices of the ICM of the coastal governance in Latvia; and (5) to prepare the recommendations for the development of the coastal governance in the chosen municipality and in Latvia in general.

2. International and local practice in coastal governance

In 2000, the European Commission adopted a document called "Integrated Coastal Zone Management: A Strategy for Europe" (European Commission, 2000), but in 2002 the Commission adopted "A proposal for a European Parliament and Council Recommendation concerning the implementation of Integrated Coastal Zone Management in Europe" (European Commission, 2002). ICM practices can be found in most regions of the world, however the success of ICM implementation among different coastal countries is very variable (Forrest, 2006). For example, there are different opinions among European countries regarding the legislation of ICM. Quite a lot of countries have no specific legislation relating to ICM because the existing laws and regulation are being used to support ICM. The positive thing, however, is that in many coastal countries the ICM strategies are currently being prepared (Burbridge, 2004; Thetis, 2011).

Furthermore, it has been shown that ICM works best where a broad body of public participates in the ICM process. Nevertheless, in a lot of coastal countries very low attention has been given to effective stakeholder involvement at regional and local levels (Thetis, 2011). Another point is that the experience of many Baltic Sea Region EU countries with ICM is often limited to small-scale projects with a nature conservation focus – for example, the basis of an ICM is usually formed by habitat and species protection while other issues (e.g., human health, employment, restructuring of agriculture) are neglected. So overall, the problem is that ICM is being seen as a green initiative that fails to take adequate account of socio-economic conditions (Burbridge, 2004; O'Hagan, 2009).

There are two main problems in the development of ICM in Latvia – the lack of understanding and the lack of cooperation. Local interest groups are insufficiently informed about the overall coastal situation, as well as about the possibilities of solving coastal problems (Kudrenickis et al. 2016; Ernsteins et al., 2017b). For the full development of ICM it would require an interdisciplinary understanding of sustainable coastal governance for all key stakeholders (Ernsteins et al., 2015). In addition, the principles of mutual cooperation and communication also play an important role here – research shows that, in fact, one of the most important instruments for the development of ICM is coastal communication and cooperation (Ernsteins et al., 2017a).

3. Research methodology

Within the present study the coastal governance in the target municipality was assessed through three basic environmental governance dimensions: (1) Coastal governance sectors (resources); (2) Coastal governance segments (stakeholders); (3) Coastal governance process and instruments (Ernsteins, 2017c). The main reason why this three-dimension approach of the coastal governance was used, is because such a system is easy-to-use and very easy-to-understand, since it answers to the three key questions of the coastal governance in the particular local municipality, namely: (1) What exactly the municipality needs to govern (i.e., which sectors?); (2) Who will govern all these environmental resources that are available to the municipality (i.e., which departments and stakeholders?); (3) How exactly will the local municipality govern all the available resources (i.e., by which instruments does the coastal governance function in the municipality?).

The main study method within the present investigation was the case study research of the municipality of Jurmala. The case study included several complementary methods: (1) municipal document studies; (2) stakeholder interviews; and (3) observational field studies. In addition, we also conducted interviews with experts (i.e., specialists in coastal/environmental governance issues).

Document studies. During these studies, a very large variety of different municipal documents were investigated, including the following ones: all three mandatory planning documents, the annual public report, municipal regulations, the voluntary thematic planning documents, as well as various other documents (including some unpublished materials of Jurmala municipality).

Interviews. In addition to document studies, 25 interviews were conducted with the main local stakeholder groups which are more or less involved in the coastal governance in the Jurmala city. Also, seven interviews in a selective manner were conducted with inhabitants of the municipality. Therefore, overall, we interviewed the representatives of all five main governance segments: (1) Municipality / City council; (2) State administration; (3) Mediators; (4) Corporative (business) segment; and (5) Households. In addition, five experts were interviewed during the study.

Observational studies. Observations in the municipality were conducted during the summer season and they included: (1) a visit to seven different beaches of Jurmala and their visual assessment; (2) the study and comparison of two specially protected nature territories in Jurmala; (3) the inspection of two museums of Jurmala and the assessment of their exhibitions.

4. Research results: three governance dimensions

The target territory of the present study was the municipality of Jurmala. Jurmala by its area as well as by the number of its inhabitants is the largest resort city on the coast of the Baltic Sea. The Jurmala city is visited by more than a hundred thousand tourists every year (Development Program of Jurmala, 2013). The city of Jurmala is characterized by a long (25 km) and wide beach, which is famous because of the fact that it is one of the few white sand beaches in Europe (Spatial Plan of Jurmala, 2012). Unique resources of Jurmala are also the sulphide-containing mineral waters and sludge, which is one of the few deposits of these resources in the temperate zone (Development Program of Jurmala, 2013). However, the problem is that in the course of time the large inflow of tourists in the Jurmala city may lead to depletion or even to the loss of natural diversity and cultural-historical resources of the coastal zone of Jurmala. Nevertheless, despite of all the above-mentioned facts, the municipality of Jurmala has not yet prepared neither any thematic coastal planning document, which could serve as guidelines for coastal governance, management and protection, nor it has adequately integrated the coastal issues into its mandatory or voluntary planning documents. Moreover, there are no any employee in the municipality of Jurmala which could be called an expert of the coast and which would be fully responsible for the coastal zone of Jurmala (Ernststeins et al., 2020). Since the Jurmala city is one of the most popular destinations for tourists in Latvia, the municipality of Jurmala must very seriously consider and promote the appropriate and adequate governance of its coastal territory.

4.1. Coastal governance in Jurmala: thematic governance sectors

Nature environment. The total area of Jurmala city is 100 km². The major part of the territory of Jurmala is located on a narrow stretch of land between the river Lielupe and the Gulf of Riga, and as a result the city has a distinctly elongated shape. In the narrowest place of the city (in Dubulti), the distance between the sea and the river Lielupe is only 300 m. The length of the sea border is 25 km. The city is also

characterized by a relatively wide beach – at the mouth of the river Lielupe and in the middle of the city the beach is 25-50 m wide.

Nature territories in Jurmala occupy almost 64 % of the total area. The nature territories consist mainly of forests (48 %), inland waters (10 %) and floodplain meadows (5.6 %). Six specially protected nature territories have been established in the territory of Jurmala city, which in total occupy about 38 % or 37.5 km² of the total area of the city. The largest area is occupied by Kemeru National Park – it occupies 32.6 km² of the territory of Jurmala, which is about one third of the total area of Jurmala city. This park, however, is much larger – only about 8 % of the park is located in Jurmala. Kemeru National Park was established to preserve natural, cultural-historical and curortological resources, to protect the mineral water and medicinal sludge formation processes, as well as to promote nature tourism and ecological education. Others specially protected nature territories in the city of Jurmala include: (1) the nature park "Ragakapa", which was established to preserve dunes overgrown with old pine forests; (2) nature reserve "Lielupe estuary meadows", which was established to protect the most biologically valuable floodplain meadows of the river Lielupe; (3) nature reserve "Darmstate pine grove", which was established in a unique pine grove on the bank of the river Lielupe; (4) specially protected geological-morphological object "White dune"; as well as (5) one micro-reserve. In addition to the mentioned terrestrial areas, there is also one marine protected area in Jurmala – the "Western Coast of the Gulf of Riga", which has been established for the protection of underwater reefs and habitats, protection of bird species.

The municipality of Jurmala has described and evaluated their nature environment and resources quite satisfactorily. In the planning documents the special emphasis has been put on those resources which are unique in the municipality – mineral waters, sludge etc. At the same time, however, there are also some problems in the context of preserving the nature environment in this particular municipality. The most important problem is considered to be the house-building in the coastal dunes. This is the main reason why the natural values in Jurmala are increasingly being destroyed and nature environment becomes more and more damaged. Another problem is that the green areas in Jurmala are decreasing every year, and that all plans intended to protect natural resources are formal. Unfortunately, the existence of the protected habitat "Wooded coastal dunes" is not always taken into account. In some cases, the risks of erosion and flooding are also a problem in Jurmala. Furthermore, in summer season there is a problem with excessive beach area rent in Majori, Dzintari and Bulduri, because then the beach is crowded with various infrastructure objects (such as tents), and thus the beach loses its aesthetics. Besides, this also creates a significant anthropogenic pressure on nature, especially on dunes which are located next to the most popular beaches. Another problem in Jurmala is the spread of invasive plant species on the coastal area. The most widespread invasive plant on the beach of Jurmala is the dwarf serviceberry (*Amelanchier spicata*). Some other invasive species that are also found along the coast of Jurmala include: the beach rose (*Rosa rugosa*), the silverberry (*Elaeagnus commutata*), the sycamore maple (*Acer pseudoplatanus*) and the blue lettuce (*Lactuca tatarica*), but luckily these plants do not form large areas and do not take over the coastal area. Overall, this problem with invasive plants is not being solved, because the municipality does not have the financial resources to cut out these plants.

Despite the mentioned shortcomings, in general it must be concluded that Jurmala municipality copes quite well with the protection of the nature environment and Jurmala is a relatively good example in the context of nature and beach protection compare even with many European coasts. More than a half of the territory of Jurmala is occupied by the protected nature territories. There are also many valuable and unique cultural and historical heritage elements in Jurmala. The municipality has relatively well appreciated these natural and cultural values in its territory and deals with their management quite satisfactory, even some

disagreement between the natural environment preservation goals and the economic development in the municipality could be seen.

4.2. Coastal governance in Jurmala: governance segments (stakeholders)

To evaluate the target groups in Jurmala municipality, we used a model where four basic segments (target groups) plus fifth mediator group are distinguished, namely: (1) State administration; (2) Municipality (city council); (3) Households/Inhabitants; (4) Corporative (business) segment; and (5) Mediative segment.

State administration. There are quite a lot of regional state administration structural units located in the municipality of Jurmala, including services that are related with: (1) nature protection; (2) environment protection; (3) forest protection; (4) land resources; (5) firefighting etc. Of all the state administration institutions, the municipality of Jurmala collaborates mainly with the Ministry of Environmental Protection and Regional Development. Cooperation with this ministry is related to binding regulations, the use of public waters, and the regulation of algae in the urban environment. It can be concluded that Jurmala is very rich in various state-level services that are related to environment which means that it is a serious capacity and these are serious resources that the municipality could use for the protection of its territory, but unfortunately the municipality does not use this opportunity.

Municipality / City council. The municipality as a target group is not homogeneous – it consists of four governance levels: (1) Legislative institutions (committees, commissions, advisory councils); (2) Executive institutions (divisions, boards, departments etc.); (3) Subordinate institutions (museums, libraries, information centres etc.); (4) Capital companies (municipal enterprises). Within the municipality a relatively successful cooperation exists between the structural units of different sectors that are on the same governance level. Moreover, if, for example, there are issues that affect several different departments, then the working groups are being formed and people from several departments come together and work in these groups. For instance, the Environmental Department works mainly with the Urban Planning Department, the Urban Economy and Improvement Department, the Property Board, the Municipal police and with a few others. At the same time, however, the situation is much worse with cooperation between structures of different governance levels – the problem is that the lower governance levels have difficulties in communicating with the higher levels, because in most cases it is restricted or even not allowed. Overall, it can be concluded that there is relatively good horizontal cooperation in the municipality, as each structure has its own competencies and they regularly and successfully cooperate with each other, but at the same time the situation with vertical cooperation is much worse, since the communication between different municipal levels is quite limited.

Households / Inhabitants. Jurmala is a very diverse area with various types of buildings – from old private houses to modern villas. There are also apartment buildings in the city, besides in some city residential territories the only buildings are the block of flats (such as in Kauguri and Sloka). In addition, households are located in a narrow land band, because the city of Jurmala has an elongated shape, and in the middle of the city there is a railroad. Thus, most of the houses are located nearby water – either sea or river – and because of that there are also flood risks (especially from the river Lielupe). The inhabitants are the most diverse target group in Jurmala, because very different social and age groups live here, who have very different income levels. However, this target group is quite inactive and is not very interested to get involved in municipal processes, i.e., the inhabitants do not read the planning documents, do not come to public consultations, do not participate in municipal events etc. Considering that household forms are so different in Jurmala, it can be concluded that inhabitants need very different services. Besides, the resource

provision of the inhabitants of Jurmala is also very different. Thus, the municipality must be very selectively adapted to such a diverse building style and households.

Corporative (business) segment. The leading business sector in Jurmala is the provision of different services. Since Jurmala is the resort city, the main service companies that are available here are hotels, sanatoriums, catering companies etc. The vast majority of these companies are closely related with tourism. It should be emphasized that Jurmala has the widest offer of SPA hotels in Latvia. Besides, within Jurmala we can also find one of the largest water parks in the Northern Europe – "Livu Aquapark", which is also the most visited object in Jurmala. Furthermore, Jurmala municipality wish to attract to the city some of the most famous world brands of resort hotels and SPAs which are the global market leaders. The support from the municipality for entrepreneurs is not sufficient and entrepreneurs wish this to be more beyond the tourism information and rights to rent space for the coastal cafes on the beach etc. and, particularly, to be heard more.

Mediative segment. Within the mediative segment four different mediator groups were analysed: (1) mass media; (2) public organizations; (3) educational organizations; (4) science/technologies.

Mass media. An important medium in the city of Jurmala is the informative newspaper "Jurmala Avize", which is published by the Jurmala city council. The municipality also provides information to its inhabitants through its official website as well as through the Jurmala tourism website, which contains information that is mainly important for tourists. In addition, municipality also maintains the city profiles on social networks – Facebook and Twitter. A very positive aspect is that the inhabitants of Jurmala also have an access to a newspaper which is independent of the city council – "Jurmala Vards". Overall, the cooperation between the Jurmala municipality and the mass media occurs through the Public Relations Department. We can conclude that Jurmala municipality has a wide range of different mass media available in the city to inform their residents about everything, including newspapers, websites and social networks. It is important to mention that one of the two newspapers that are available to inhabitants, is independent of the municipality.

Public organizations. Public organizations are an important mediator between the local administration and the inhabitants, and represent various interest groups. There is a Public Council in Jurmala municipality, in which 44 non-governmental organizations (NGOs) are represented. This council includes NGOs that have expressed a voluntary desire to submit proposals to the municipality on important issues of the city. The two most active environmental NGOs in Jurmala are the "Jurmala Protection Society" (JPS) and the "Environmental Protection Club" (EPC). Especially active is JPS – it participates in all public consultations, including the discussions of local plans, detailed spatial plans and all other municipal planning documents, and offers concrete suggestions to both the city council and the inhabitants of the municipality. Overall, it can be concluded that there are many different non-governmental organizations (NGOs) in Jurmala, including both environmental and other types of NGOs, however in reality only one is active – the Jurmala Protection Society which intensively fights with the problems of the natural environment.

Educational organizations. It is important to mention that an important instrument for environmental/coastal education at the local level is the Eco-School program, which is one of the most popular models of environmental education in the world. Overall, there are eight eco-schools in Jurmala. Eco-schools are those that provide the formal coastal education. However, the municipality neither control the eco-schools nor it involves in their work, so the school are free to decide on their own activities. In addition, there are also a couple of important educational organizations that provide non-formal coastal education in Jurmala. Overall, the main non-formal educators that directly or indirectly educate inhabitants and visitors about coastal issues, are two museums – Jurmala City Museum and Jurmala Open-Air Museum.

This education is more about the coastal cultural heritage and less about the natural environment. It can be concluded that in Jurmala we can find both types of educators – formal educators (i.e., eco-schools), as well as some non-formal educators (i.e., museums) that educate people about the coastal natural or cultural heritage, respectively. Our study also revealed that eco-schools and museums would like to have more support from the municipality, because at the moment the municipality does not really cooperate neither with one nor the other. Therefore, it can be concluded that currently the potential of the educational organizations is not fully utilized in Jurmala.

Science and technologies. The number of higher education institutions in Jurmala is relatively small – there are only three of them. Sometimes the municipality collaborates with scientists to carry out some research – for example, from time to time, some kind of monitoring is being carried out in the coastal area that is ordered by the municipality, including the research on coastal erosion and the mapping of coastal habitats. In addition, a description of recommended measures to stabilize the dunes and increase the recreational potential of the coastal zone was also prepared. Overall, however, the collaboration between the municipality and scientists is not performed too regularly, but rather in some exceptional cases. Furthermore, it should also be emphasized that one of the most significant and ambitious education/science projects that is currently being implemented in the city of Jurmala is the creation of the Kemeru Nature Education Centre, which is currently under construction and is expected to be completed by the end of 2022. It is planned to be an educational, interactive and multifunctional nature tourism centre, where students will be able to learn natural sciences in an innovative way, and which will serve as a scientific base for students and nature researchers. In general, however, the potential of this target group – science and technologies – is not used fully at the moment, because the local government uses scientists and university specialists relatively little.

In summary, the study revealed that not all target groups are involved in the municipal processes and coastal governance in Jurmala. Besides, there are problems in both directions – in the Top-down involvement, as well as in the Bottom-up involvement. The main problem with the Top-down approach is that although the municipality ensures the public involvement required by law, this involvement is quite formal and even if the municipality listens to the public opinion, it does not take it into consideration. Meanwhile, the most important problem with the Bottom-up approach is the inertness of the society – people do not want to involve in the governance processes. In Jurmala, the Bottom-up governance is provided mainly only by the NGOs.

4.3. Coastal governance in Jurmala: governance instruments

To describe how the municipality governs its coastal resources, we chose a model with six instrument groups: (1) Political and legislative instruments; (2) Planning instruments; (3) Administrative and institutional instruments; (4) Economic and financial instruments; (5) Infrastructural instruments; and (6) Communication instruments.

Political and legislative instruments. One of the basic instruments in the municipality is the binding regulations. The municipality accurately follows to all requirements of the normative acts, and the coastal area is appropriately maintained. The binding regulations that are mostly related with the coastal zone is regulations No. 3 "On the use of Jurmala city beach and swimming areas". The municipality also has binding regulations No. 27 "On the use of the river Lielupe in the administrative territory of the city of Jurmala". It should be emphasized that Jurmala is one of the few municipalities in Latvia that has such specific regulations. The municipality also takes into account the law "On specially protected nature territories", "Law of protection of species and habitats", as well as some other laws. Overall, however, the most

important legislative instrument in the context of the coastal zone is the Protection Zone Law, which stands above everything and is carefully fulfilled. Although the legislative instrument is important in Jurmala, there are also some shortcomings in the daily work of the municipality. Using the existing laws, the municipality tries to justify everything that is being done in the city, but it is not always aimed of preserving the natural and cultural values in the coastal zone.

Planning instruments. There is no a separate planning document in Jurmala that is dedicated to the coast. However, the coastal zone is indirectly covered in a number of tourism planning documents developed by the municipality, such as the "Tourism Development Strategy" and the "Resort Concept". In general, these documents are tended to business development in the resort sector in Jurmala. The coast is also partially covered in the voluntary planning document "Water Resources Protection Action Plan of the Jurmala City" in which one section is devoted specifically to coastal waters and their quality. However, the most important planning document, by which the municipality guides in the context of coastal governance, is the Spatial (territorial) Plan of the city of Jurmala. In addition, it should be emphasized that one good initiative has been implemented in the municipality, namely, a "work plan" for each department, which is developed regardless of employee job descriptions and department regulations. This "work plan" is developed by taking into account the budget and the Action Plan of the Development Program, as well as various other documents, for example, Ministerial regulations, normative acts, instructions etc. There are a large number of thematic planning documents in Jurmala, and a large part of them is dedicated to tourism and resort. Overall, the most important planning instrument for the coastal zone governance is the Spatial Plan of Jurmala.

Administrative and institutional instruments. In general, there are three city council committees that deal with the coastal issues most of all, namely: (1) the Committee on Development and Environmental issues; (2) the Committee on Urban Economy and Security; and (3) the Committee on Tourism and Resortology. The first committee addresses issues on building and its impact on the coastal environment; the second committee looks at everything related to beach cleaning and similar works; while the third committee examines issues and draft decisions on tourism and resortology infrastructure in the city of Jurmala and provides opinions on them. Of all municipality commissions, only two are mostly related with the coast: (1) the Administrative Commission; and (2) the Real estate renting and leasing commission. The first one examines and makes decisions on administrative violation cases on the beaches, while the second one organizes auctions of lease rights for beach areas in the city of Jurmala, thus it has a direct relation with the development of cafes and everything else on the beach area. With coastal issues mostly work the following executive institutions of the municipality: (1) Urban Planning Department – works with coastal planning; (2) Urban Economy and Improvement Department – works with coastal infrastructure, improvement and management; (3) Environmental Department – works with environmental protection issues on the coast; (4) Municipal Property Department – works with properties and rents on the coastal zone; (5) Municipal Police – works with the control of fulfilment of the binding regulations on the coast.

An important administrative instrument in the context of coastal management in Jurmala is the Beach Management Commission. This commission was created because the Blue Flag program determined that there should be such a commission. The commission is made up of representatives of various departments, which carry out off-site meetings at least once a month, inspecting the entire beach, including all official bathing zones, and identifying specific actions to prevent problems, improve the situation, etc. This commission still exists, although starting from 2020 the Blue Flags are no longer present in Jurmala beaches. There are also several municipal capital companies that operate on the coastal zone. For example, the water and domestic sewerage services are provided by the limited liability company (Ltd.)

"Jurmala water" while lighting on the beach is provided by Ltd. "Jurmala light". In turn, the waste management in Jurmala is provided by the private company "Clean R".

The city of Jurmala is also a member of the Association of Latvian Coastal Municipalities (ALCM). This association brings together all coastal municipalities to address common coastal problems and promote coastal development. Once a month all the heads of coastal municipalities meet up and solve the coastal problems. This association is considered to be a good instrument for the coastal municipalities so they can defend their interests more effectively at the national level.

Economic and financial instruments. This group of instruments includes, for example, the municipal budget of Jurmala and the natural resources tax. Expenses of the basic budget of Jurmala municipality are summarized by functional categories, among which the section "Environmental protection" is divided separately. Beach management and improvement is allocated as a separate budget position, and more financial and labour resources are spent for this purpose than for the management of other areas. Taking into account the length of the Jurmala beachline, the amount of work is quite large and all this requires significant financial resources, so the municipality regularly participates in various project competitions, thus attracting various external financial resources. Overall, however, the two most important financial instruments on the coastal zone are: (1) the penalties for beach violations; and (2) the auctions by which the business organizations are regulated in the coastal zone.

Infrastructural instruments. The resort infrastructure is especially important in Jurmala, including the resort objects in the coastal zone – rehabilitation centres, resort hotels, swimming institutions, resort clinics, healthy catering companies, camping areas, etc. The most important coastal infrastructure elements in Jurmala are the following ones: pathway to beach, rescue service, rubbish bins, information stands, health trails as well as educational nature trails within the specially protected nature territories. All beaches are very rich in different infrastructure objects, and in some cases it feels like there are even too many of them. Also, an important element of environmentally friendly infrastructure on the coast is the bicycle paths – in Jurmala there is 25.5 km long bicycle path that stretches along the entire beach. In general, however, the bicycle route infrastructure is still poorly developed in Jurmala because the city does not have a unified network of bicycle routes, as well as these routes are not marked. Overall, it can be concluded that the coastal zone in Jurmala is very rich in different kinds of infrastructure elements which are very diverse and in a good condition. Only the cycling infrastructure could be improved within the city.

Communication instruments. Information instruments. Jurmala municipality has a rather wide and diverse range of information channels, including planning documents, official website of the municipality, informative publications, environmental information stands, etc. The information about the coastal zone, however, in the public media is not highlighted among other information, besides it is irregular and superficial. The information that is found on environmental stands that are located in the coastal zone (i.e., beaches) is insufficient because it does not describe what prohibitions exist on the beach. Visitors that come to the Jurmala tourism information centre are mostly interested in beaches and the Kemeru National Park. The main conclusion is that there could be much more information about the coastal zone in the municipal documents, newspapers, environmental information stands etc.

Education instruments. Among the most important educational instruments in Jurmala it could be mentioned schools, eco-schools, museums, libraries and similar institutions. The positive thing is that in Jurmala you can get a unique education – it is possible to acquire such knowledge that is not available elsewhere in Latvia, including hospitality, resort resource management, health promotion, recreation and similar type of knowledge. However, the negative aspect is that the municipality cooperates neither with formal educational institutions (schools, eco-schools) nor with the non-formal educators (museums).

However, it was concluded that in general the environmental education in Jurmala is still underdeveloped, and the knowledge about the coast is not emphasized.

Public participation instruments. Public involvement in Jurmala municipality occurs in accordance with normative acts. The municipality occasionally organizes inhabitant surveys on various topical issues, though the surveys do not address topics related to coastal issues. The municipality also supports many initiatives (cultural and artistic, environmental, health and healthy lifestyle, social integration, infrastructure development and rehabilitation activities) that are encouraged by NGOs and are open for everyone free of charge. Also, inhabitants theoretically have the opportunity to take part in public consultations, but in general it happens not often and citizens only participate in those cases when it affects their property or them personally.

Environmentally friendly behaviour instruments. Among this instrument group, the measures of protection and stabilization of beach dunes should be mentioned. Besides, the municipality has introduced a number of "green solutions" in order to reduce coastal erosion and protect dunes. In the context of environmentally and coastal-friendly behaviour in Jurmala, the waste management system should also be emphasized because Jurmala is the first municipality in Latvia where waste is weighed, and since then waste sorting has greatly improved, as additional sorted waste bins have been created. Overall, however, the Jurmala municipality does not particularly promote environmentally friendly behaviour in the coastal zone, as well as does not show initiative to organize events related to this topic. This kind of events is usually organized by other institutions, for example, the NGO "Foundation for Environmental Education". But generally, the green lifestyle in the municipality is not sufficiently promoted. In addition, it should be also emphasized that since 1998 Jurmala has participated in the Blue Flag program. In 2019 the Blue Flag was awarded to seven Jurmala beaches, which meant high water quality, high security and management standards as well as the realization of environmental education. Until now, Jurmala had more Blue Flags received than the other two Baltic states (Lithuania and Estonia) taken together. Unfortunately, in 2020 Jurmala withdrew from the Blue Flag program.

In summary, the Jurmala municipality possess a rather rich spectrum of different governance instruments that could be used to solve the coastal governance issues, these instruments are not always fully and complementarily used. Particularly serious problems exist with the communication instruments which are used very minimally by the municipality (e.g., public participation instrument, involvement of formal/non-formal educators, popularization of environmentally friendly practices, etc.). Moreover, the coastal governance instruments are distributed among different municipal departments and governance levels, which indicates the problem of fragmentation and non-systemic manner. However, there are also some positive things, for example, the infrastructure instruments have been used very successfully within the municipality – the beach/dunes are extremely rich in various infrastructure elements.

5. Discussion and conclusions

An integrated coastal management approach is an important concept in sustainable coastal governance, as it takes into account all the sectors that may affect the coast and its resources. However, the integrated approach is much more complicated than the traditional single sector approach (sectoral/disciplinary approach) and Latvia has not yet fully mastered the integrated approach, so in practice it is not really happening yet. The disciplinary approach still prevails, when each specialist plans issues that affect his narrow field, and thus there is no one who would see the coast as a single and indivisible socio-ecological system. The municipality of Jurmala has a similar problem – each municipal employee has a narrow specialization and no one knows or is particularly interested in what happens in other fields. Overall, in the

present study the four main conclusions emerged about the coastal governance situation in the municipality of Jurmala:

Governance sectors. Jurmala municipality is very rich in various rare and unique natural and cultural-historical resources. In order to protect the natural environment in Jurmala, several specially protected nature territories have been established in the municipality. At the same time, however, the municipality also has a number of relatively serious problems in the context of nature environment protection, of which the most serious one is the house-building in the coastal dunes.

Governance segments. Within the Jurmala municipality there are a large number of different segments (target groups) that could potentially help to govern the coastal zone in Jurmala. Particularly numerous are regional public administration institutions, households and NGOs in Jurmala. The municipality, however, lacks information on all the target groups in Jurmala, moreover, the known target groups are not particularly involved in the governance processes. The largest segment is households, but this target group is inactive because inhabitants are not interested to get involved in the municipal governance. The most active segment in Jurmala is NGOs, but this activity is mainly based on only one NGO, which actively defends the natural environment in Jurmala – the "Jurmala Protection Society".

Governance instruments. Jurmala municipality has an extremely rich range of various governance instruments. Particularly plentiful are the planning instruments (municipality has developed a lot of different voluntary thematic planning documents), institutional instruments (the municipality has many institutions at all levels of government that successfully complement each other), and infrastructure instruments (there are a large number of very diverse and specific infrastructure elements located on the coastal zone in Jurmala). On the other hand, Jurmala municipality uses certain instruments very minimally – this is especially true for communication instruments, which Jurmala either does not use at all or even abandons them (e.g., the Blue Flag).

When putting all three governance dimensions complementary together we are getting **triple governance dimensions' principle for coastal governance**. Jurmala municipality has many different instruments with the help of which it could successfully manage the unique natural and cultural heritage of the coastal zone of Jurmala, but they are not fully used in a complementary way yet. There are also potential with different target groups in the city of Jurmala, which could contribute to the governance and protection of the coastal resources, but unfortunately, the target groups are not fully and successfully involved in management processes and *Bottom-up* approach potential to govern the coastal zone could be actively promoted.

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MUNICIPAL INTEGRATED COASTAL GOVERNANCE APPROACH: COMPLIMENTARY DISCIPLINARY INSTRUMENTS AND COLLABORATION PRE-CONDITIONS

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Abstract. Municipal coastal governance practice also in Latvia has various limitations, and taking into account growing climate change adaptation challenges, new understanding and new approaches are to be studied and tested. Overall study frame is based on research-and-development approach. The aim of the research was to study how municipal coastal governance is functioning in practice, particularly, in the relation to the coastal dune protection zones (150/300 m) and further coastal territory behind that, applying whole list of governance instrument groups – political/legal, planning, and especially institutional instruments, also financial, infrastructure and, last but not least, coastal communication instruments. This was done via research-and-governance frame of the three coastal governance dimensions – governance content, stakeholders (governance segments) and governance instruments, realized in Jurmala municipality as especially nature-culture rich and due to tourist attraction also sensitive coastal pilot territory at the Latvia coast. Case study research methodology applied (document studies, observation and stakeholder's interviews) were approving pre-study understanding, based on previous coastal governance studies, that also this territory with international coastal resort status and well developed municipal administration capacities have limited success on integrated coastal management (ICM) approach implementation and, subsequently, there are requirements on further development of disciplinary instruments and also collaboration governance as ICM preconditions. An integrated ICM approach was internationally designed and approved also for EU coastal countries, since comprehensive requirement to manage the adequate governance of the coast as complex socio-ecological system, but old shaped long existing traditional disciplinary/branch approaches of former and formal municipal planning and management does not really permit necessary innovations with cross-sectorial and cross-level integration perspectives. However, also orientation towards re-use and/or re-development of disciplinary ICM instruments, especially, to be designed and realized as complementary as possible and collaboration governance developments shall be seen as necessary pre-conditions for ICM adequate development.

Key words: Jurmala municipality; socio-ecological system; integrated coastal management; environmental governance dimensions; coastal governance review.

JEL codes: Q20, Q57, Q58

1. Integrated versus disciplinary approaches for municipal coastal governance

Integrated coastal management (ICM) practices are known around the world starting from 1970-ties, however the process done so far and success reached in ICM implementation among different coastal countries is very variable (Forrest, 2006). Within the present study we examined the coastal governance practices and ICM problems in the European countries.

ICM legislation and strategies. There are different opinions among European countries regarding the legislation of ICM. Many countries have no specific legislation relating to ICM, and the existing laws and regulation are being used to support ICM (Burbridge, 2004). For example, the Netherlands has concluded that no new system for ICM is needed for them but that it will form part of a national spatial planning strategy (Portman et al., 2012). Also, in Germany many of the ICM principles have already been implemented through existing legal instruments, and those instruments have already imposed "good management" of the German coastal zone (O' Hagan, Ballinger, 2009). On the contrary, however, France emphasizes the importance of intensifying the ICM implementation at the local level, including local capacity building, and the establishment of a national council for implementing ICM (Portman et al., 2012). The

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positive thing is that in many coastal countries the ICM strategies are currently being prepared. It has been shown that ICM principle implementation is more successful in those countries which have ICM strategy (Thetis, 2011).

Stakeholder involvement. ICM works best where a broad body of public participates in the ICM process, so it is very important to enable stakeholders to take an active part in the coastal management (Burbridge, 2004). Nevertheless, in a lot of coastal countries very low attention has been given to effective stakeholder involvement at regional and local levels. Also, there is need for actions to support institutional coordination among levels and sectors (Thetis, 2011). However, one of the positive examples comes from Norway. The coastal zone management in Norway is formally structured in a way that involves a wide range of different user groups and stakeholders in the planning processes which not only improves the public participation and makes this process more democratic but also helps to collect the knowledge about the coastal territory which can be later used by the coastal zone planner (Buanes et al., 2004).

Science and policy integration. There are several types of integration that can be achieved by the ICM process. However, one of the most neglected dimensions of integration is the crossing of coastal science and policy, because there still exists a gap between these two (Thetis, 2011; Portman et al., 2012). The problem is that scientists conduct their research without considering the needs of decision-makers but the decision-makers make their decisions on political premises (Thetis, 2011). Unfortunately, there seem to be very few opportunities how to enhance the integration between science and policy. One of the potential mechanisms that can bring scientific study and evidence into decision-making process is the environmental impact assessment (EIA). But that is not enough, and some new mechanisms would be really necessary (Portman et al., 2012).

Coastal monitoring. One of the factors that hinder the establishment of ICM practices, is the shortage of data on coastal systems and how they function (Burbridge, 2004). But the lack of coastal information exists because of the absence of monitoring in the coastal countries (examples: France, Italy) (Deboudt, 2012; Buono et al., 2015). In contrast, however, some countries have established a very successful monitoring system. Perhaps one of the best examples of ICM monitoring at the municipal level comes from Greece. The Kavala Municipality of Greece has developed a new instrument for the coastal governance – the so-called ICM Observatory. This Observatory collects, analyses and processes past, present and forecasted ICM-datasets collected from a variety of sources. The user can access to a huge amount of information about the coastal zone through this system plus actively take part in the information exchange. This coastal Observatory highly enhances stakeholders' collaboration, promotes public participation, promotes the distribution of information among stakeholders, and provides reliable datasets to scientists (Kalpakis et al., 2018).

Much focus on nature dimension. Another point is that the experience of many Baltic Sea Region EU countries with ICM is often limited to small-scale projects with a nature conservation focus – for example, the basis of an ICM is usually formed by habitat and species protection while other issues (e.g. human health, employment, restructuring of agriculture) are neglected (Burbridge, 2004). So, also at the later stage, the problem is that ICM is still often being seen as a green initiative that fails to take adequate account of socio-economic conditions (O' Hagan, Ballinger, 2009) and the whole socio-ecological systems approach (Hopkins, 2012, Ernsteins, 2017bc).

National framework of coastal governance in Latvia. At the national level, several principal documents should be mentioned regarding the coastal area of Latvia: "Sustainable Development Strategy of Latvia until 2030"; "National Development Plan for 2014-2020"; "Environmental Policy Guidelines for 2014-2020" and different other documents in which the coastal issues have been partly integrated. It is

also important to mention that contrary to the European Union's asking for the development of national ICM strategies, Latvian government stated that ICM should be integrated into the mandatory plans of the coastal municipalities. However, this approach was difficult to implement due to various objective and subjective reasons (Ernsteins et al., 2015). Then, after the long-lasting and active calls from the academic environment, local governments and other interest groups, the national position was finally changed and, instead of the theoretically correct coastal integration approach, it was decided to develop also the coastal sectorial planning. As a result, the following two documents have been prepared: (1) "Strategy for Coastal Spatial Development for 2011–2017"; and later on (2) "National Long-Term Thematic Plan for the Coastal Area of the Baltic Sea" (or Coastal plan, 2016). Latvia now has also a separate national level long-term spatial development planning document of the sea waters – the Maritime Spatial Plan (2019).

Local/municipal framework of coastal governance. Overall, there are four municipalities in Latvia out of 17 in total that have prepared some kind of local coastal area development plans, so called, thematic plans. One thematic plan – "Development of the beach and the coast of the city of Liepaja" (2015) – has been fully dedicated to the sea coast, while the rest of the plans – "Jurmala City Water Resources Protection Action Plan (2016)", "Public Water and Maritime Coastal Zone Management Plan (2017)" approved by Carnikava rural municipality, and "Thematic plan of water areas and embankments of Riga (2017)" – are plans on public waters and their coastal infrastructure, having only some enclosure of coastal territories/waters too. In addition, within the framework of the Pan Baltic Scope project, a pilot thematic planning project has been developed for Salacgriva municipality with the aim to provide proposals for integrated planning and development of the coastal waters (2 km zone seawards), coordinating the coexistence of sea-land use interests.

Jurmala municipality is coastal city, spread along Riga Bay of the Baltic Sea, being semi-urban area (100 km²) with almost 60 000 inhabitants, conveniently located 25 km from Riga, the capital city of Latvia, and geographically looking as stretched peninsula with about 30 km of the river Lielupe coast from south and about 25 km sandy coastal beach from north. The whole territory is rich with many natural resources, besides coastal dune pine forests having sulphide-containing mineral waters and mud used already since early 19th century and creating background for largest **health and recreation resort city** on the Baltic coast (more than a hundred thousand tourists per year). Having growing anthropological pressure, Jurmala has to be seen as coastal and environmentally sensitive municipality, stressing importance of environmental protection and adequate development management.

2. Methodological framing for Jurmala municipality case study research

Study area included the whole territory of this peninsula shape (between sea and the river Lielupe) municipality, starting from 150/300 m coastal dune protection belt up to 5 km limited economic activity belt (both belts according to the national coastal protection legislation) and beyond this, even peninsula is rather narrow (incl. area of just 300 m distance between sea and river). The **Case Study Research methodology** was applied in Jurmala coastal city, being framed via Research-and-Development approach, subsequently including complementary set of research methods – document studies, stakeholder interviews, coastal site observations.

Document studies included inspection and analysis of all the range of municipal statutory, voluntary planning as well as all local legislation/regulations and everyday management documents, related to sustainability/environmental/coastal (cross-sectorial) issues, but also covering issues of all main stakeholder groups and their activities. Further on, **observation studies** were organized along the coast approaching main institutional, infrastructure and utilities and services management related territories,

objects. To complement mentioned studies done, there were realized 5 **semi-structured interviews** with experts on ICM in Latvia in general and Jurmala case especially, but the main emphasis was laid on altogether 37 deep semi-structured interviews being conducted with representatives of all main local interest groups and locally-based national/regional stakeholders, which were grouped and studied also by five governance segments (Ernsteins et al., 2017a), including:

- Municipal administration segment (elected councillors, all administration level employees);
- National/regional level segment institutions (Environmental Ministry and their subordinate services/agencies, particularly, Kemer National Park, partially covering also Jurmala municipality);
- Business segment (locally based producing/services entrepreneurs);
- Mediator segment (media, formal/non-formal education, NGO, science-based representatives);
- Inhabitants/local householders' views were studied via several secondary sources, e.g. bi-annual municipal questionnaires, but also several randomly chosen inhabitants were interviewed by the same semi-structured questioner format as other stakeholders.

During the study, these complementary used methods application was based on the semi-structured questioner content and so the coastal governance issues in Jurmala municipality were analysed within designed **research-and-governance framework** of the three environmental/coastal/development governance dimensions (Ernsteins, 2017c): **governance sectors; governance segments (stakeholders); governance instruments**. This complementary three-dimension approach was giving answers to the three key questions of the coastal governance, namely: **what** to govern in which horizontal content sectors; **who** are/will be governing this as which departments/sectors and other stakeholders' groups are/might be involved; **how** this governing could be done as which instruments are/would be applied and eventually combined, complemented.

3. Case study research in Jurmala municipality

3.1. Coastal dune protection belt: legal and planning frame

Since the acceptance of the Land Management Law in Latvia (in 2014), there has a new responsibility emerged for the Latvian coastal municipalities – now they must also govern the marine coastal waters (up to 2 km in the sea from the coast), as well as the land part of the coastal area (a territory between the marine coastal line and the place which is reached by the highest waves of the sea). In order to better understand the new responsibilities of the coastal municipalities, during this particular study a scheme of the coastal zone was prepared, in which there has been simply demonstrated the expressions and the mutual interactions between the three laws of Latvia which somehow define the coastal zone of the country, namely the Land Management Law, the Protection Zone Law and the Fishery Law (Fig. 1).

The Land Management Law determines several important things about the coast of the Baltic Sea, including that: (1) it lists the principles and requirements of the land use and its protection within the coastal zone; (2) it prescribes the ownership rights of the coastal zone; and also (3) it defines the spatial structure of the coast. The Protection Zone Law, in turn, represents the nature protection interests in the coastal zone – this law lists all the restrictions that exist on the coast of the Baltic Sea and the Gulf of Riga, and it specifies different types of protection zones in the coastal area. Finally, the Fishery Law determines the specific zone (called the towpath) in the coastal area which is a strip of land along the coastline intended for pedestrians, and according to this law, pedestrians have rights to access and use the towpath freely and without any charge.

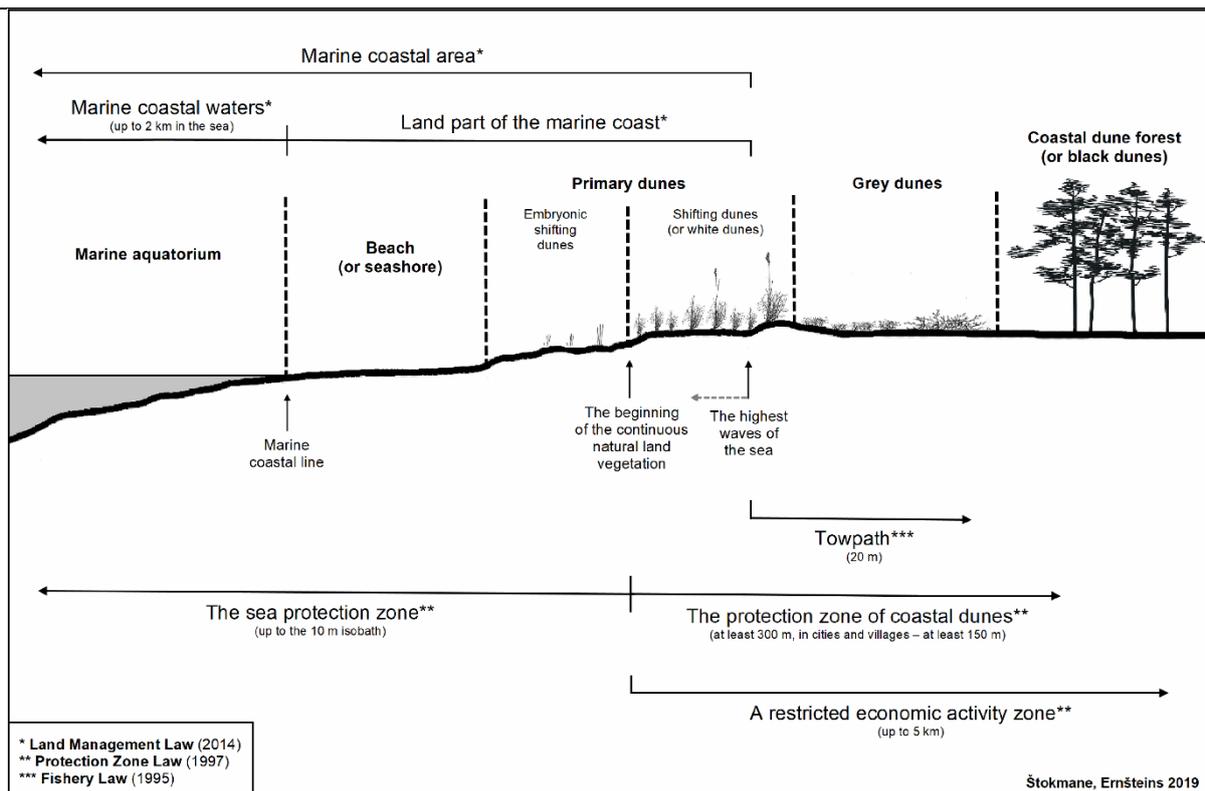


Fig. 1. A simplified scheme about the coastal zone definition and the local municipality's ownership rights of the coast according to the following laws of Latvia: The Land Management Law; the Protection Zone Law; the Fishery Law

It should be emphasized, however, that the prepared coastal zone scheme is a simplified version of the coastal structure, which mainly highlights all the zoning parameters (e.g. specific distances and boundaries) of the coastal territory which are defined by the mentioned laws. The scheme only qualitatively demonstrates the aspects of the natural environment in the coastal area, but it obviously does not show the socio-economic factors which also take place in the coastal area. Nevertheless, the complex nature of the coastal zone and, consequently, the problems of managing such a socio-ecological system (SES) are evident in this particular scheme.

3.2. Main coastal problem-orientation: the coastal protection belt and beyond

Within the "Strategy for Coastal Spatial Development 2011-2017" the following coastal definition can be found – the coast is the **contact zone of the Baltic Sea and the inland** where: geological processes of the seashore take place (erosion and accumulation), where there is a unique marine and coastal landscape constituted by the beach, steep shores, estuaries, sand meadows, dunes, lagoon lakes, lighthouses, piers, ports, port cities, villages and individual farms, where the lifestyle (fishing at sea, fish processing, gathering of seaweed) and the cultural heritage (buildings, dialects, traditions etc.) differ from those of the inland.

In this definition, like in the real life, no concrete boundaries can be drawn on how far from the coastal line we can think we need to perform coastal planning and management, so there are different assessments and approaches in international practice, based on the principle of bio-geographical ecosystems that the coastal area is as large as the inland influences the sea and its coast. But in local planning practice, two basic approaches in coastal planning and management are established – the nationally determined **strictly protected coastal dune zone (150 or 300 m)**, and the administrative territory of the local municipality

as a coastal territory with its own administrative government that can organize coastal protection and management.

However, in practice, in the simplified case of coastal zone/area we mean at least the Coastal dune protection zone (Protection Zone Law, 1997), i.e., the zone from the marine coastal line, including the beach, dunes, area behind the dunes (including forest, meadows, nature areas) and the first part of the populated area in total at least **300 m inland from the first sea wave** (but in cities/villages up to 150 m in the sense of the law, but in development planning practice, basically, to the first street that is parallel to the sea); however, depending on the terrain and the impact on the marine environment, the coastal zone could be viewed more widely, including the territory up to 5000 m landwards which is the **restricted economic activity zone**.

In the municipality this means that all this is examined in detail and integrated into the statutory territory plan, which is approved in public consultation and by the Ministry of Environmental Protection and Regional Development of the Republic of Latvia, and the law strictly requires and the State Environmental Service inspectors also regularly control the legal compliance. Therefore, in general the protection of these 150/300 m coastal dune protection zones is ensured at the national level, however the public participation is also important here, including the public environmental inspectors who are active in some Latvian municipalities to prevent the dune riding, etc. Also, in order to additionally protect this coastal dune zone and reduce the anthropogenic pressure (especially in popular tourist destinations, etc.), the state developed a Coastal Thematic Plan (2016) which is based **on public infrastructure development** as a basic tool for coastal governance, and in cooperation with municipalities is developing and providing the improvement and reconstruction of coastal infrastructure within 60 selected territories and 25 priority territories.

It is also important to mention the development of **voluntary local planning instruments**, namely, the EU 2002 setting of National ICM Strategies was gradually managed to achieve (under the stakeholder pressure) at the national level by the development of coastal cross-sectoral coastal infrastructure (partially alike ICM-type) planning documents at the national level (2011 and then 2016 Coastal National Plans), but also to actualize this issue at the local municipality level too. Here are to be mentioned those four from 17 coastal municipalities in Latvia having prepared **the local coastal issues related development plans**: Liepaja city municipality with full scope coastal thematic development plan, Jurmala and Riga cities with their water resource and coastal infrastructure plans, as well as, the same for Carnikava rural municipality.

But coastal governance is not limited to 150/300 m, because it is necessary to assess the whole coastal municipality and its development from the basic principle of coastal governance, ICM requirement: the horizontal integration of thematic sectors/fields and their vertical inter-level integration, based on the cooperation of all key stakeholders and the integration of governance instruments, culminating in the ICM as an inter-sectoral planning document or the integration of this ICM approach into municipal statutory development planning documents. And in Latvia they are – the strategic planning up to 25 years (Sustainable Development Strategy), and medium-term 7-year planning (Development Programme and Spatial Plan).

Finally concluding, the problems described are related first of all to the two main issues: (1) the legal instrument further developments and enforcement dependent on both, the national level and the local level administrations; and (2) coordinated managerial municipal efforts of many and various departments in eventual partnership with other main stakeholders and general public.

3.3. Coastal governance instruments: six instrument groups in Jurmala

In addition to discussed institutional instruments, five other instrument groups (Tab. 1) are distinguished, namely: (1) Political and legislative instruments (for example, different normative acts); (2) Planning instruments (mandatory and voluntary planning documents); (3) Economic and financial instruments (money-related tools, e.g. municipal budget, taxes); (4) Infrastructural instruments (different infrastructure objects on the coastal zone); and (5) Communication instruments (information, education, public participation, coastal-friendly behavior). In the Tab. 1 there is presented this whole list of the most typical/related instrument examples of each of six instrument groups.

Table 1

The list of coastal governance instruments in Jurmala, divided in six groups

Instrument groups	Examples	List of instruments in Jurmala municipality
Political and legislative instruments	Normative acts, binding regulations	<ul style="list-style-type: none"> • Binding regulations No. 3 "On the use of Jurmala city beach and swimming areas" • Binding regulations No. 20 "Jurmala port regulations" • Binding regulations No. 27 "On the use of the river Lielupe in the administrative territory of the city of Jurmala"
Planning instruments	Development planning documents (mandatory + voluntary)	<ul style="list-style-type: none"> • Sustainable Development Strategy 2010–2030 • Development Program 2014–2020 • Spatial (territorial) Plan 2009–2022 • Municipal annual public report • Tourism Development Strategy 2007–2018 • Tourism Development Action Plan 2018–2020 • Resort Concept 2009–2018 • Water Resources Protection Action Plan 2016–2020
Administrative and institutional instruments	Commissions, committees, boards, departments, capital companies	<ul style="list-style-type: none"> • Beach Management Commission • Committee on Development and Environmental issues • Committee on Tourism and Resortology • Urban Planning Department • Urban Economy and Improvement Department • Environmental Department • Municipal Property Department • Municipal Police • Jurmala City Museum + its branch – Open Air Museum • Jurmala port (or Lielupe port)
Economic and financial instruments	Budget, taxes, fines	<ul style="list-style-type: none"> • Municipal basic budget • Natural resources tax • Initiative projects • Attraction of European funds
Infrastructural instruments	Infrastructure elements	<ul style="list-style-type: none"> • Pathways to beach • Toilets, rubbish bins • Benches, changing cabins • Playgrounds and sports fields • Rescue service • Information signs and information stands • Educational nature trails • Bicycle paths
Communication instruments	Information sources, educational institutions	<ul style="list-style-type: none"> • The website of the municipality • Newspapers ("Jurmals Avize", "Jurmals Vards") • Municipal social network accounts (Facebook, Twitter) • Tourism information centre • Outdoor information stands • Jurmala eco-schools • Inhabitant surveys and public consultations • Beach clean-ups • Dune stabilization measures • Blue Flag programme (from 1998 till 2019)

3.4. Coastal governance in Jurmala: Institutional structure and cooperation

Jurmala, as any other Latvian local municipality, has management structure, which could be divided between four vertical levels of governance:

- 1) Municipal legislative institutions;
- 2) Municipal executive institutions;
- 3) Institutions subordinated to the municipality;
- 4) Municipal capital companies.

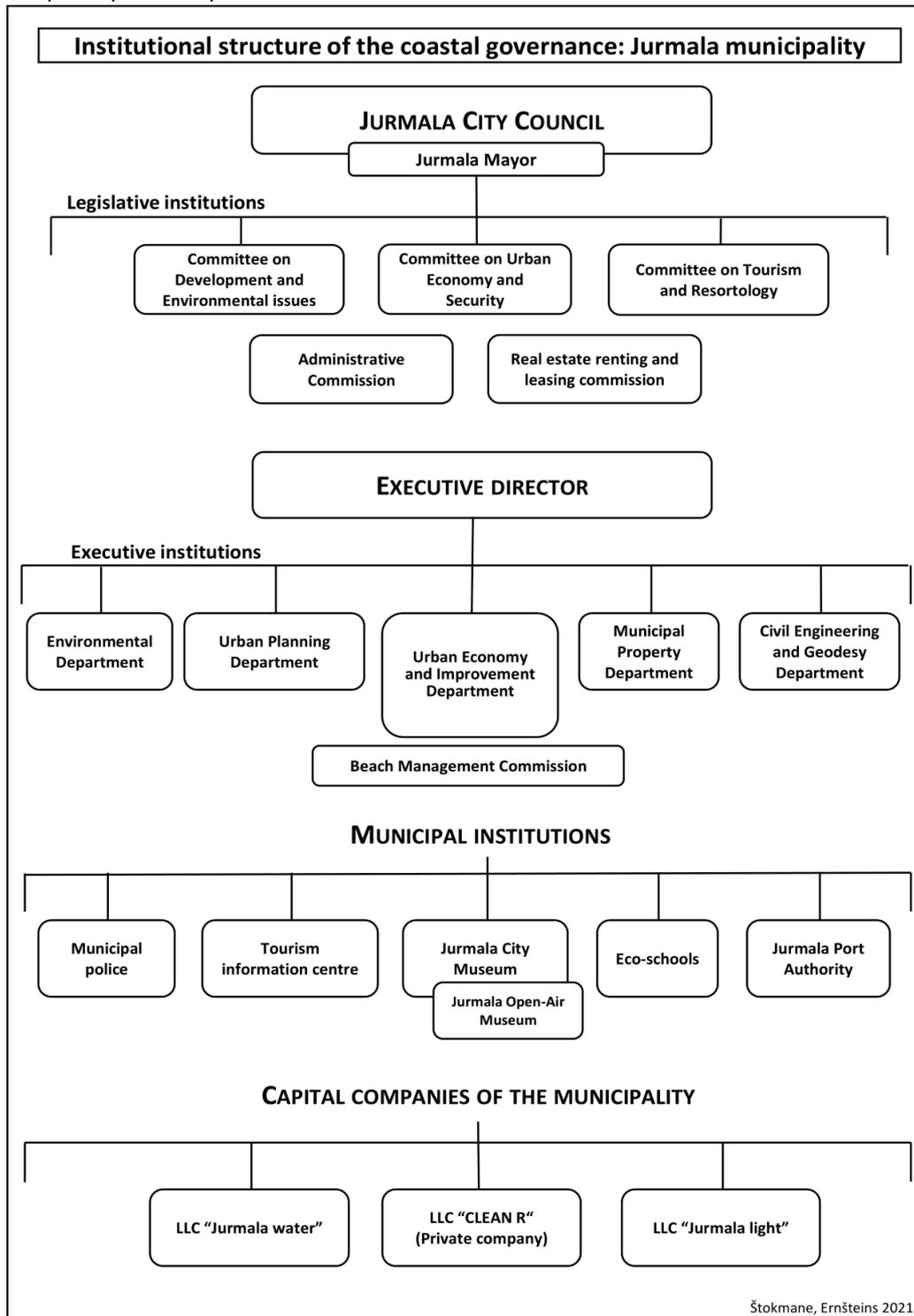


Fig. 2. Jurmala municipality institutional instruments for coastal governance

The municipal institutional structures that all are at least involved into the work on coastal issues, are shown in Fig. 2. Vertical coordination or integration as well as horizontal integration between the structural units of each level and in eventual partnership with outside stakeholders are very important to successfully govern the coastal area.

There are many institutions to be seen involved, but the structure can be recognized as fragmented in the Jurmala municipality and vertical and horizontal collaboration importance could not be underestimated. Within municipal structures there are to be seen also the public and stakeholder participations from outside, but in this relation there shall be necessary to study also the whole list of all other coastal governance instruments and their eventual complementarity.

4. Discussion on innovation complementary/disciplinary instruments

The Jurmala case was compared to other coastal municipalities in Latvia, where similar studies have been conducted. Jurmala was compared with two other coastal cities (Liepaja and Ventspils) as well as with one rural municipality (Salacgriva).

Liepaja city is the most progressive coastal municipality in Latvia, which is one step ahead of all the other coastal municipalities. One of the main reasons for this is that the Liepaja municipality has developed a unique thematic plan for the coast – "Development of the beach and the coast of the city of Liepaja", which serves as a multi-functional and complementary instrument that allows for a more successful governance of the coastal territory. This plan is the first of its kind in Latvia, which is a very important instrument for the further development of integrated coastal management. It should also be emphasized that Liepaja municipality has the first beach in Latvia, as well as the only beach in the Baltics, which is fully-fledged for people with special needs (Lerhs, 2017).

Ventspils city is one of the best municipalities on coastal governance in Latvia too. Ventspils municipality has a well-equipped and successful Environmental Department, which has a relatively large capacity, so the coastal problems are solved in a complex manner. Although separate coastal planning documents have not been prepared in the municipality, all information and development perspectives related to the coast are included in the three mandatory planning documents. In addition, another positive aspect is that Ventspils municipality put emphasis on the involvement of all target groups and the development of communication between them (Lerhs, 2017).

A similar study to the present one was conducted also in **Salacgriva municipality** where governance sectors, segments and instruments were analysed. The obtained results in Salacgriva were quite similar to those for Jurmala municipality, and they were as follows: (1) The normative and other planning and management documents in Salacgriva municipality do not fully reflect coastal issues and do not conceptualize the development of the coastal system; (2) Target groups have a limited understanding of the coast as a socio-ecological system and make little contribution to municipal coastal governance; and (3) The wide range of municipal instruments does not fully cover all the coastal governance issues (Ernststeins et al., 2020a). The results of mentioned project were also partially adapted in the Jurmala ICM case studies and there was seen clear confirmation.

Recommendations for coastal governance in Latvia. In order to better address current and future challenges in the coastal zone, it would be necessary to gain a much better understanding of the specifics and characteristic features of the coastal territory – it would be important to monitor the coastal zone and carry out different long-term scientific studies, in order to find out how the coastal ecosystem functions, how economic activities interact with the various components of the coastal ecosystem etc. Therefore, the establishment of scientifically substantiated and at the same time easy-to-apply and easy-to-interpret

municipal coastal monitoring as well as the preparation and implementation of coastal indicator system. Ideally, the monitoring should, at least partly, take the form of public monitoring ("*Citizen science*" approach), since this would not only allow the explore the coastal situation in the given territory, but it would also create greater opportunities for citizens to involve in the governance processes.

Successful and progressive development of coastal governance can only be provided if there is **cooperation with all the main target groups**. Therefore, it would be important to make a greater use of public participation instruments. Besides, it would be important to develop both types of target group involvement – the *Top-down* involvement as well as the *Bottom-up* involvement. It would be especially important if the municipality supported the *Bottom-up* approach initiatives and encouraged the public to become much more involved in the municipal processes. It would also be crucial for the municipality to cooperate more actively with various environmental NGOs when solving coastal problems, since in this way the municipality could fully delegate certain coastal issues to an NGO, thus facilitating its own work. At the same time, it would also create more trust in the municipality.

Taking into account the growing environmental problems in coastal areas, special emphasis should be placed on the crucial role of coastal communication in the coastal governance. Communication is considered to be one of the preconditions, principles and instruments of good governance. The great advantage of coastal communication is that it is the cheapest and easiest way for a municipality to think about the sustainability of its coastal resources, and in which various target groups can also be successfully involved, thus facilitating the work of the municipality itself. In order to provide the successful coastal communication, as well as to achieve the highest communication efficiency, it would be important for the municipality to fully and complementarily apply all four components of **coastal communication – information, education, public participation, as well as environmentally friendly behavior**.

During this comprehensive study of coastal governance in Jurmala municipality, the first version of an innovative and comprehensive coastal planning document – Coastal Governance Outlook (CGO) – was also developed (Ernsteins et al., 2020b). Jurmala CGO is a development planning document of disciplinary approach, based on monitoring overview of the three coastal governance dimensions (governance content, segments and instruments) including both environmental and socio-economic aspects, representing so the overall situation with coastal governance in the corresponding coastal municipality. Although additional research is still needed, it seems that the already-developed first version of the "Jurmala CGO" provides a new systematic overview and cumulative information on the coastal governance situation in Jurmala, so it is thought that Jurmala CGO would be that missing one instrument for integrating coastal issues into all other Jurmala municipal planning documents (Ernsteins et al., 2020b).

5. Conclusions

National as well as municipality-based integrated coastal governance approach as internationally widely recommended for its application practice into traditional municipal branch/sector-oriented management, unfortunately could not alone fulfil all those necessarily coastal governance functions, particularly, for its horizontal and vertical integration, and stakeholders participation integration, due to various existing **administrative structural and processual limitations**, and, subsequently, there is to be seen requirements for additional and innovative instruments and processes. This could be viewed as **pre-conditional requirements for implementation of integrated coastal governance approach**.

Subsequently, first pre-condition to be mentioned are to be oriented towards re-use and/or re-development of **disciplinary ICM instruments**, especially, to be designed and realized as complementary as possible. And for the second main pre-condition is to be mentioned **collaboration governance**

development, focusing on all three governance dimensions – content/governance sectors collaboration, collaboration between instruments available or to be designed, and, obviously, stakeholders' real collaboration development.

Taking into account that the coastal municipalities are having limited success with coastal integration into their development planning documents and institutional management practice –there is space for some instruments to make this integration easier. One of such instruments could be the **Coastal Governance Outlook** (CGO). The CGO would be a pre-planning document which systemically and systematically summarizes all the important information about the three complementary coastal governance dimensions in the municipality. Such material might be used in both ways – by its own (as a separate planning/management document) or as a tool for the development of other coastal friendly planning documents, since it would facilitate the integration of coastal issues into all other future and to-be-renewed documents.

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A NEW APPROACH TO THE APPLICATION OF THE PRINCIPLES OF SUSTAINABLE DEVELOPMENT

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Abstract. Most of the environmental, economic, social and political problems that have given rise to the global crisis continue to grow negatively and rapidly. It is with this situation that the world community has faced, feeling the consequences of earlier decisions. It is natural to raise the question: why, despite enormous efforts, it is not possible to reverse the negative trends and ensure the transition to sustainable development of the world community. In order for the criteria of sustainable development to meet these requirements, it is necessary to determine the main governing laws and find a way to measure different quality social, natural processes and resource flows in stable and universal units of measurement (measures). The article presents the basic definitions for the development of a formalized description of the tasks of monitoring sustainable development that meets the principles and requirements of sustainable development. It provides examples of calculating the parameters of sustainable development of Latvia and their primary interpretation. To formalize the tasks of sustainable development, the authors considered the methodology of systems analysis, methods of managing sustainable development projects using the concept of flows of full and useful power in open non-equilibrium stable systems, flows model of interactions in the system 'man - society - nature', as well as the theory of a unified system of space-time measurements. The main conclusions are: the system of four universal indicators of sustainable development shows that by 2019 the system of Latvia had a trend towards non-sustainable development. A decrease in consumption indicates an extensive development and is the result of a decrease in population, and is not associated with improving the structure of resource consumption and their efficient use.

Key words: sustainable development, sustainable development goals, spatial-temporal approach, indicators.

JEL code: E19, F69, Q59, R10

Introduction

The International Conference held in 2012 in Rio de Janeiro reaffirmed that the world is in a systemic crisis (Rio+20, 2012). Most of the environmental, economic, social and political problems that have given rise to the global crisis continue to grow negatively and rapidly. If there is no natural-scientific solution to this problem, then there can be no adequate political solution. The world community has faced with this situation, feeling the consequences of earlier decisions. It is obvious that over 40 years, especially at the beginning of the 21st century, world development has become more unstable, chaotic, turbulent, bringing suffering to billions of people.

Most of the problems that the world community has faced are associated not only with a lack of resources, but with a violation of fundamental laws. World Business Council for Sustainable Development (WBSCD, 2010) experts have shown that society is forced to make decisions based on biased information. The bias is due to the lack of adequate methodology and technology for measuring sustainable development. This is confirmed by analysing the list of criteria to estimate sustainable development (Hak, T. et al., 2016):

- 1) increase the ability to meet the needs of present and future generations;
- 2) preserve the natural resource potential;
- 3) increase the level of integration the economy and the environment;
- 4) preserve the biosphere and the survival of the human race;
- 5) enhance the growth the productive forces and an increase the level of well-being of the population;
- 6) preserve the balance of social justice, environmental safety and economic efficiency;
- 7) preserve the balance of consumption and reproduction of natural resources;

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- 8) reduce of anthropogenic impact on the biosphere;
- 9) enhance the development of the spiritual principle in every person.

The WBSCD (WBSCD, 2010) experts have shown that all the above criteria for sustainable development do not meet the general system requirements as well as SMART parameters of goals (Specific, Measurable, Achievable, Realistic, and Timely).

In September 2015 in New York the United Nations (UN) meeting adopted the Sustainable Development Goals (SDGs), officially known as Transforming our world: the 2030 Agenda for Sustainable Development - a set of goals for future international cooperation that replaced the Millennium Development Goals at the end 2015 year. These goals are planned to be achieved from 2015 to 2030. The final document contains 17 global goals and 169 corresponding targets and 265 indicators (Agenda 2030, 2015).

It should be noted that this document states that the Concept of Sustainable Development emerged in the process of combining three main points of view: economic, social and environmental. This implies the adoption of measures aimed at the optimal use of limited resources and the use of environmentally friendly - nature, energy, and material-saving technologies, to maintain the stability of social and cultural systems, to ensure the integrity of biological and physical natural systems. It is assumed that the achievement of the SDGs will be carried out in accordance with the following provisions:

- 1) countries will independently develop their own strategies of sustainable development. The SDGs will act as a benchmark;
- 2) achievement of the SDGs will be monitored and tracked using the Global Indicator Set;
- 3) monitoring and review the results and means of SDG implementation will be organized.

The UN and the countries of the world are actively promoting the ideas of sustainable development. And, nevertheless, the problem is not dying out, but on the contrary it is getting worse. Decisions are not aligned with the laws of nature and cannot be controlled. All this indicates that the problem cannot be solved by the means used (Lele, S., 1991, Pogge, T., 2015). By 2021, humanity has not managed to eliminate any of the global dangers. Declaring its commitment to the principles of sustainable development, it has acquired a set of new risks and challenges. The question arises: why, despite enormous efforts, it is impossible to change negative trends and ensure the transition of the world community to sustainable development.

The purpose of the article is to review new approaches and methodologies the concept of sustainable development that could meet the new requirements of society, be able to determine the main regulatory laws and find ways to measure various qualitative socio-economic and natural processes in stable and universal units of measurement (measures).

1. Theoretical findings

1.1. New philosophy of sustainable development

Humanity has come to a point where special responsibility, rationality in decisions and actions, considering national interests and the needs of the world community are required. It is necessary to get rid of the causes that give rise to conflicts, wars, hunger, poverty, disease, illiteracy, destruction of the natural environment. It is necessary to create conditions that ensure the sustainability of the development of the world on a scientific, reasonable basis. Society has entered an era when knowledge of these laws and their skilful use have become a necessity. As the power of humanity grows, its responsibility for each step taken must increase. Humanity has become a powerful global geological force. Domination over nature should consist in the ability to cognize its laws and use them for the good, to be able to use these laws as

an objective criterion for collective reason and the effectiveness of one's practical activity. A direct continuation of this classical thought is the teaching of Vernadsky V. (2006) about the restructuring of the biosphere into the noosphere - a qualitatively new state, which is a historically inevitable process.

On a planetary scale, the noosphere means social and natural integrity, the defining link of which is the human mind, which cognizes and correctly applies the general laws of nature in order to ensure sustainable development in the "nature-society-human" system. The main function of the noospheres' world is to ensure such a course of the world historical process that guarantees the stability of its development on the basis of the implementation of general laws in their mutual internal connection. Due to this, the rate of formation of the noospheres' world entirely depends on scientific knowledge and the ability to correctly apply general laws in social practice, and the time of its formation is determined by the period of mankind's mastery of these laws.

The social-economy system is a subsystem and embedded in nature system, and economic processes are natural processes as biological, physical and chemical processes and transformations. Therefore, the economy ought to be studied also, but not only, as a natural object, as well as economic processes should also be conceptualized in terms usually used to describe processes in nature (Ropke, I., 2004).

1.2. Live open non-equilibrium systems

One of the reasons for the slowdown in the transition to sustainable development is sought in technological imperfection and possible technological deadlock. It should be noted that most of the technologies of the 20th century is based on laws that are valid for energy-closed systems. Naturally, the 'waste' generated as a result of the use of such technologies turns out to be, as it were, 'outlawed' and for this reason they turn out to be unaccounted for in the technological design - they require additional costs to increase the efficiency of technologies.

It should be noted, that in accordance with the definitions of the natural sciences, all living things - nature and society - are open stable non-equilibrium systems. And therefore, it is natural to use the laws of living systems for the creation of technologies for sustainable development. There is not a single closed living system in Nature, which has no inflows and outflows of energy, and the power (changes in the amount of energy or flow) would be equal to zero. The law of conservation of energy is valid only for systems closed in energy flows and cannot serve as an adequate measure of open - living systems.

Economic and ecological systems are conceptualized in the same language of energy and matter flows, and this confirms that the human economy is embedded in the Earth's biosphere (Ropke, I., 2004). This means what Daly H. E. calls the preanalytical vision of ecological economics: the human economy is an open system within the structure of a closed system in the thermodynamic sense (Daly, H., 1980). The human economy exchanges matter and energy with the larger system of the Earth. The earth receives solar energy from the outside and emits heat, and this energy flow supports the processes in the system.

Currently, inconsistency or incoherence of measures of heterogeneous (social, economic, ecological, etc.) systems is the reason for the rupture of ties, the reason leading to the fact that social systems are controlled in isolation from the general laws of living systems, which ultimately leads to a global systemic crisis. It is possible to eliminate this gap by establishing a measure that expresses the essence of living systems. According to Bauer E. S. (2002), it is characteristic of living systems that they, due to their free energy, perform work against the expected equilibrium. Based on the principle of stable non-equilibrium, the main property of energy flows circulating in living systems is their ability to perform external useful work or working capacity or to have the useful power.

1.3. Human role and impact

What is the cause and driving force of the non-decreasing growth of human capabilities Podolinsky S. (2004) showed that man is the only known force of nature in science, which, by certain volitional acts, is capable of: 1. increasing the share of the Sun's energy accumulated on the Earth's surface; 2. to reduce the amount of energy dissipated into world space. Plants that accumulate radiant energy into the substance of their own body cannot convert it into movement, and animals, from the simplest to the highest (not including humans), cannot spend it in such a way as to increase the amount of accumulated energy. Only a human with his labour, applying new machines and technologies, achieves this goal (Aleksejeva, L. et al., 2020). Thus, through labour and scientific thought, a person is included in the biospheres' circulation of matter and energy. This determines the place of labour and reason in the natural-historical process of the evolution of the biosphere. This determines the mission of Human on planet Earth.

2. Methodology

2.1. New old definition of sustainable development

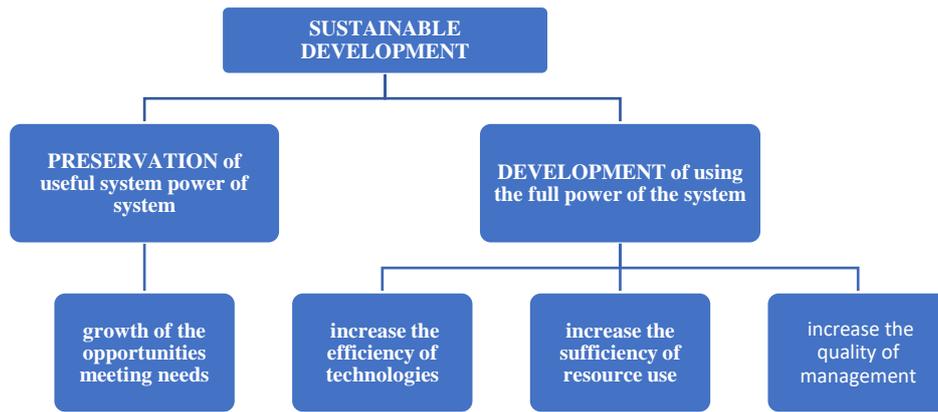
Based on the previously formulated provisions of the concept 'sustainable development', it can be determined that "Sustainable development is a continuous process of preserving the increasing of opportunities to meet the constant existing needs of the system, expressed in units of power. The goal - sustainability- are achieved by development the quality of planning and introducing innovations that ensure a steady growth in the efficiency of resource use, as well as an increase in income without an increase in the rate of their consumption, as well as a decrease in losses in conditions of negative external and internal influences (Bolshakov, B. et al., 2019).

Power is a scalar physical quantity that is generally equal to the rate of change, conversion, transmission or consumption of energy in the system. More specifically, the power is equal to the ratio of the work done in a given period of time to that period of time. The definition of 'sustainable development' includes two aspects (Fig. 1):

- 1) preservation - increasing opportunities to meet needs both today and in the future;
- 2) development - changes due to the state of technology and organization of society, the imposed ability to meet needs.

The sustainable development of social-economic system is supported by the following main factors (Shamaeva, E., 2019): 1) increasing the efficiency of technologies; 2) increasing the efficiency of resource use; 3) increasing the efficiency of flow management.

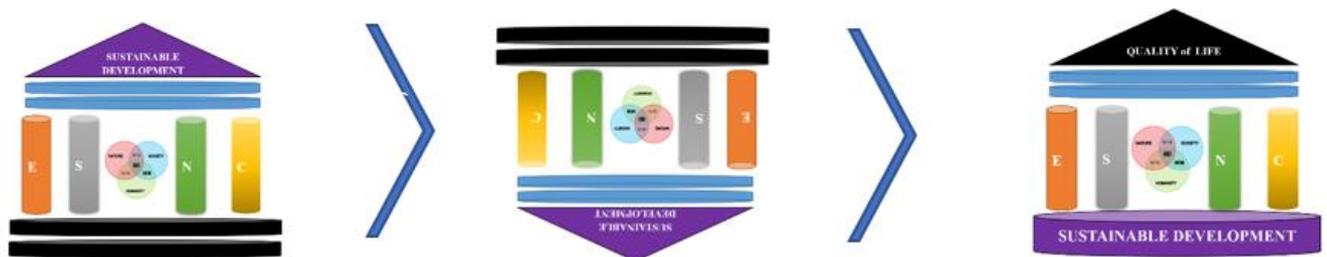
If the growth of the power of the system (the growth of the flow of free energy) is provided not due to the indicated factors but due to the growth of total energy consumption, then there is not the development of the system of social production, and there is extensive growth.



Source: author's construction based on literature review

Fig. 1. Sustainable development definition

Further development of the concept of sustainable development followed the path of combining three main points of view: economic, social and environmental. Reconciling these different perspectives and translating them into concrete interventions as means of achieving sustainable development is a daunting task, since all three elements of sustainable development must be considered in a balanced way. The considered spatial-temporal power flows approach suggests at the first stage, based on the results of the analysis of power flows, to formulate the level, degree and tendencies of sustainable development of the system. The authors attempted to turn the famous 'temple' of sustainable development 180 degrees.



Source: author's construction based on literature review

Fig. 2. Transition of sustainable development 'temple' with pillars

Thus, the foundation of the 'temple' of sustainable development has transformed into a base for a systematic analysis of the pillars of sustainable development - economy, society and nature. The pinnacle of this temple is the goal of sustainable development of the system - the quality of life (Fig. 2).

2.2. New approach and research methodology

Based on the above formulated concepts, the spatial-temporal approach to the analysis of powers and energy flows of the life open systems is based on three main laws (invariants):

1. The law of conservation the power (energy flow) (Kuznetsov, P., 2015), underlying the sustainable development of socio-economic systems (as a life open system). This is the statement that in the system open for energy flows, in time (t) the total power $N(t)$ is equal to the sum of the useful power $P(t)$ and the power losses $G(t)$, equations (1). (Fig. 3.):

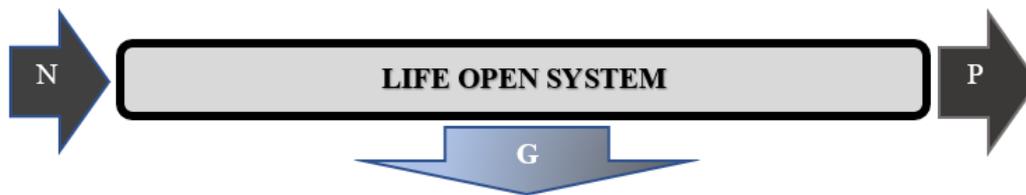
$$N(t) = P(t) + G(t) = const \quad (1)$$

Where:

$N(t)$ – total power of the system as a result of consumption, in power units Watt;

$P(t)$ - useful power of the system as results of activities, in power units Watt;

$G(t)$ - power of losses, in power units Watt.



Source: author's construction based on Bolshakov, B. et al, 2019

Fig. 3. The power and flows of energy for life open system

2. The principle of preserve the development (Podolinsky, S., 2004, Vernadsky, V., 2006).

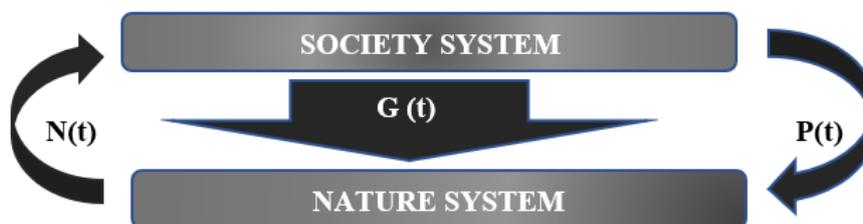
The development of the socio-economic system is preserved, if takes place: if preserving the system quality in spatial-temporal dimension of power and if preserving the continuous increase in the efficiency $\varphi(t)$ of using full power, equations (2):

$$\Delta\varphi(t) = \frac{d\varphi(t)}{dt} > 0, \text{ where } \varphi(t) = N(t)/P(t) \quad (2)$$

3. The principle of sustainable development (in units of power) (Bolshakov, B. et. al., 2019).

Sustainable development is the continuous process of increasing the opportunities to meet the existing constant needs of the system by to the increasing in the efficiency of using the full power of the system reducing losses and without increasing of power consumption in conditions of negative external and internal influences. The introduction of the invariant measure 'power' in the management of sustainable development makes it possible to establish a measurable relationship between needs and opportunities, to build a system of indicators and criteria for sustainable development in accordance with the invariant of the projected class of systems 'man - societies - nature'.

There is a causal relationship between the law of the development of life and the principle of sustainable development of society. This connection is determined by the concept of 'life process' in the system society-nature. The society-nature system combines two coupled processes: a) active impact on the environment and b) the use of the flow of resources by society as a result of this impact. These processes are the essence of the life of society (Bolshakov, B. et. al., 2019) (Fig. 4).



Source: author's construction based on Bolshakov, B. et. al. (2019)

Fig. 4. The society system interaction with the natural environment system

The flow of energy consumed by society $N(t)$ includes all types of fuel and energy-containing resources for machines, mechanisms and technological processes. At the same time, the full power can be used with different efficiency, affecting the real capabilities of the social system. Spending power $P(t)$ (a measure of labour), after the lapse of time t (averaged characteristic time spent on resource extraction), society gets at its disposal a flow of fuel, energy and food resources, measured by the value $N(t)$ - the total power released at the time of primary consumption of energy resources (combustion, eating, etc.). The value of $N(t)$, of course, is many times greater than the value of $P(t)$. The amount of capacity at the disposal of the company is a measure the ability of the system to affect the environment. Demand is the required

capabilities (capacities) of the system, which are not currently available, but which you need to have in order to maintain development in the future. The problem is the difference between the required and available system capacities. Thus, a system of indicators of sustainable development with an invariant capacity is determined, which characterizes the technological, economic, environmental, social and other capabilities and needs of a complex system. From a methodological point of view, the system is an effective tool for the design of sustainable development in the "man - society - nature" system. The principle (criterion) of sustainable development is the statement that development is supported in the long term, subject to the following conditions, which can be formalized in the form of a system of equations (3), (4), (5), (6):

$$P = P_0 + \frac{dP}{dt}t + \frac{d^2P}{dt^2}t^2 + \frac{d^3P}{dt^3}t^3 \geq 0, \text{ and } \Delta P \geq 0 \quad (3)$$

$$\varphi = \varphi_0 + \frac{d\varphi}{dt}t + \frac{d^2\varphi}{dt^2}t^2 + \frac{d^3\varphi}{dt^3}t^3 \geq 0, \text{ and } \Delta\varphi \geq 0 \quad (4)$$

$$G = G_0 + \frac{dG}{dt}t + \frac{d^2G}{dt^2}t^2 + \frac{d^3G}{dt^3}t^3 < 0, \text{ and } \Delta G < 0 \quad (5)$$

$$N = N_0 + \frac{dN}{dt}t + \frac{d^2N}{dt^2}t^2 + \frac{d^3N}{dt^3}t^3 \leq 0, \text{ and } \Delta N \leq 0 \quad (6)$$

During the research the authors tried to create and use a new system of universal indicators of sustainable development. Under the terms of indicators of sustainable development, the following indicators were taken (Table 1): total consumption of natural resources for a certain time (full capacity), total product (useful capacity), production losses (power losses), quality of human life. This is due to fact that they most fully reflect the dynamics of the socio-economic development of society.

Table 1

Framework of universal indicators of sustainable development

Definition	Designation	Unit	Formulae
Needs or opportunities (potential) (total consumption of resources)	$N(t)$	Watt	$N(t) = \sum_j^k \sum_{i=1}^3 N_{ij}$
Opportunities real (useful power of system or gross product produced)	$P(t)$	Watt	$P(t) = \sum_{i=1}^3 N_i(t) \varphi_i(t)$
Opportunities lost (power losses)	$G(t)$	Watt	$G(t) = N(t) - P(t)$
Opportunities integrated – quality of life	$QL(t)$	Watt/people	$QL(t) = TA(t)U(t)q(t)$
Gross domestic product	GDP	Euro	
Population	$M(t)$	People	
Full power efficiency	$\varphi(t)$	x	$\varphi(t) = P(t)/N(t)$
Additional indicators			
The standard of living	$U(t)$	Watt/people	$U(t) = P(t)/M(t)$
Normalized time of active life	$TA(t)$	Year	$TA(t) = (\text{time of active life})/100$
Quality of environment	$q(t)$	x	$q(t) = G(t)/G(t-1)$

Source: author's construction based on Bolshakov, B. et. al. (2019)

3. Results and discussion

In context of spatial-temporal power flows approach, universal sustainable development indicators were calculated for Latvia. The calculation of the indicators was carried out, using data of Latvian Central

Statistical Bureau for the period from 2014 to 2019 according formulae in Table 1. The calculation results are presented in the form of table (Table 2 and Table 3) and graphs (Fig. 5, 6, 7, 8).

Integrated changes of needs ΔN or potential opportunities (total consumption of resources) for Latvia by 2019 have a trend of a negative decrease and the value is below zero (Fig. 5). Integrated changes of real opportunities ΔP (useful power of system or Gross product produced) for Latvia, by 2019 have a trend of a negative decrease and the value is below zero (Fig. 6). Integrated changes of lost opportunities ΔG (power losses) for Latvia by 2019 have a trend of a negative decrease and the value is below zero (Fig. 7). Integrated changes of full power efficiency $\Delta \varphi$ for Latvia by 2019 have a trend of a negative decrease and the value is below zero (Fig. 8).

Table 2

Universal indicators of sustainable development

	Unit	2015	2016	2017	2018	2019	2020
$N(t)$	Watt x 109	7.77	7.81	8.06	8.48	8.29	x
$P(t)$	Watt x 109	2.27	2.20	2.20	2.32	2.35	2.29
$G(t)$	Watt x 109	5.60	5.58	5.62	5.74	6.14	5.99
$QL(t)$	Watt x 103/p.	x	0.85	0.85	0.89	0.87	0.94
GDP	Euro x 106	23 614	24 561	25 360	26 962	29 143	x
$M(t)$	People	1 969 800	1 952 000	1 935 600	1 921 400	1 908 600	x

Source: Author's calculation based on the data of Central Statistical Bureau of Latvia

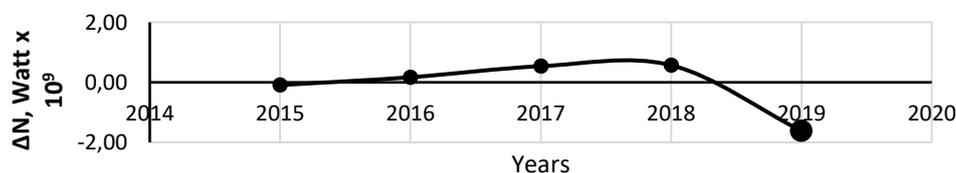
The system of four indicators in accordance with the requirements of sustainable development (equations 3, 4, 5, 6) shows that by 2019 the system of Latvia has a trend towards non-sustainable development (Table 3). A decrease in consumption ($\Delta N < 0$) indicates an extensive development and is the result of a decrease in population, and is not associated with improving the structure of resource consumption and their efficient use.

Table 3

Sustainable development parameters of Latvia in 2019

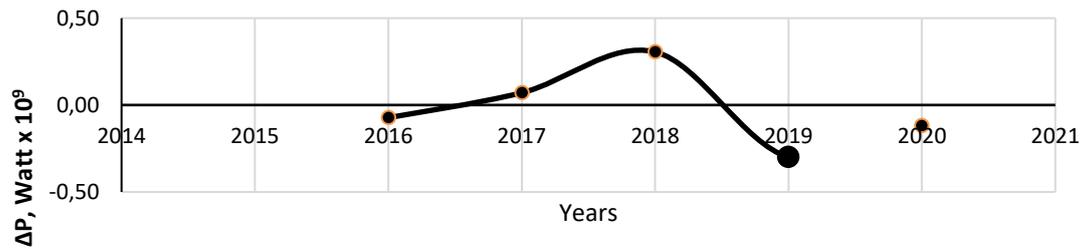
Sustainable development parameters	ΔN	ΔP	ΔG	$\Delta \varphi$
The requirement of sustainable development, equations	≤ 0	≥ 0	< 0	≥ 0
The sustainable development parameters for Latvia in 2019	< 0	< 0	> 0	< 0

Source: author's construction



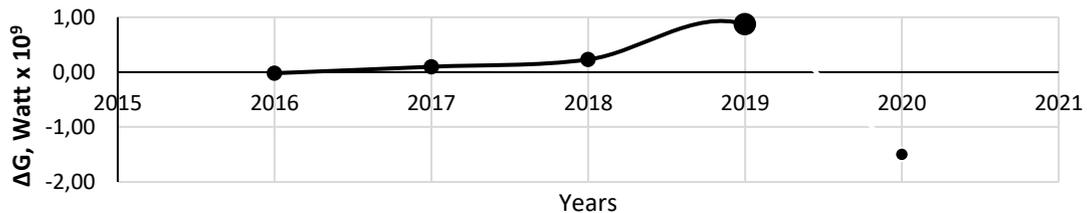
Source: Author's calculation based on Latvian Central Statistical Bureau data

Fig. 5. Integrated changes of needs (ΔN) or potential opportunities (total consumption of resources) in Latvia for period 2015-2019, in Watt x 10⁹



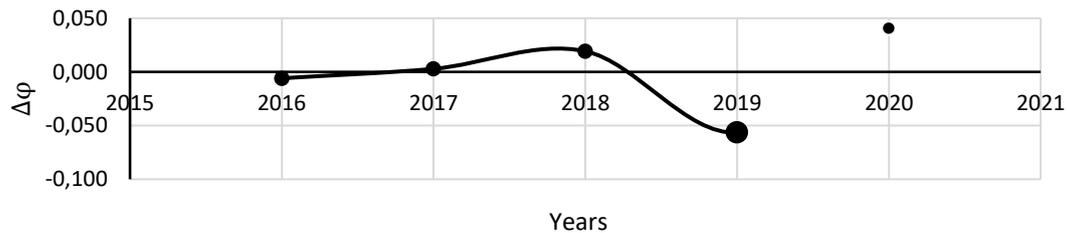
Source: Author's calculation based on Latvian Central Statistical Bureau data

Fig. 6. Integrated changes of real opportunities (ΔP) (useful power of system or Gross product produced) in Latvia, for period 2016-2019, in Watt x 10^9



Source: Author's calculation based on Latvian Central Statistical Bureau data

Fig. 7. Integrated changes of lost opportunities (ΔG) (power losses) in Latvia for period 2016-2019, in Watt x 10^9



Source: Author's calculation based on Latvian Central Statistical Bureau data

Fig. 8. Integrated changes of full power efficiency ($\Delta \varphi$) in Latvia for period 2016-2019

4. Conclusions, proposals, recommendations

- 1) The modern requirements related with the development of civilization bring humanity closer to understanding that the socio-economic system is a subsystem and is integrated into the system of nature, and economic processes are natural processes such as biological, physical and chemical processes and transformations.
- 2) In accordance with the definitions of the natural sciences, all living systems - nature and society - are open stable non-equilibrium systems. The main property of energy flows circulating in living systems is their ability to perform external useful work or working capacity.
- 3) Through labour and scientific thought, a person is included in the biospheres' circulation of matter and energy. This determines the place of labour and reason in the natural-historical process of the evolution of the biosphere. This determines the mission of Human on planet Earth.
- 4) Sustainable development is a continuous process of preserving the increasing of opportunities to meet the continuous existing needs of the system, expressed in universal units of power. It is transformed the sustainable development into a base for a systematic analysis of the pillars - economy, society and nature. The pinnacle of this temple is the goal of sustainable development of the system - the quality of life.

- 5) In accordance with the proposed approach, the heterogeneous resources of Latvia were reduced to universal power units, summarized and expressed as a single number. The performed calculations served as the basis for comparing dissimilar indicators, the numerical values of which are not subject to direct summation operations.
- 6) The values of universal indicators of sustainable development for Latvia for the period from 2015 to 2019 were obtained.
- 7) The system of four indicators in accordance with the requirements of sustainable development shows that by 2019 the system of Latvia had a trend towards non-sustainable development. A decrease in consumption ($\Delta N < 0$) indicates an extensive development and is the result of a decrease in population, and is not associated with improving the structure of resource consumption and their efficient use.

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REGIONAL SUSTAINABLE DEVELOPMENT THROUGH ENHANCING THE REGIONAL GRADUATES EMPLOYABILITY; CASE OF GEORGIA

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Abstract. Education, in general, creates strong basics of sustainable development. Higher education is one of the important settings for accomplishing better education and quality of human life. Region based higher educational institutions (*HEIs*) have high input in regional economic development through traditional functions of teaching and research. Educational institutions acquiring graduates with relevant knowledge and skills for the labour market. The given paper examines: How Georgian regional universities enhance the graduates' employability and workforce formation? Do the institutions encouraging university-business interactions? What are the main challenges and optimal ways of improvement? The article is using a qualitative research method with a combination of mixed research techniques by collecting and analysing other qualitative and quantitative information from national governmental reports, scientific articles, and annual statistical data.

The paper draws the background information, that enhances the bed climate for recent graduates on the labour market, the unemployment and employment rate, proportion of horizontal mismatch, fields or groups of studies that students are most likely to be mismatched, its cause and effects relationship.

Results show that institutions have weak interaction with regional enterprises and SMEs: HEIs do not have skills anticipation strategy based on the regional business sector to avoid potential misbalance in the labour market. HEIs instead of showing initiative often take a proactive position and are looking at interactions between labour market stakeholders; they have weak interaction with public and private enterprises. Regional SMEs' participation in creating curriculums is uncommon.

Key words: regional sustainable development; higher education; labour force; employment; Georgia.

JEL: R23; J21; I23

Introduction

Scholars and academics have broadly discussed the sustainable development concept. The United Nations Decade of Education for Sustainable development (2005-2014) mobilizes educational resources for a sustainable prospect. According to UNESCO "education alone cannot achieve a more sustainable future; however, without education and learning for sustainable development, we will not be able to reach other sustainable goals" (2005).

Higher education keeps the central position for sustainable development, as it is one of the main pillars of delivering advanced knowledge, skills, and appropriate values for the local community, to address the suitable behaviour, which is necessary for sustainable development. HEIs have the primary goal of acquiring graduates with new knowledge, prepare leaders, managers, teachers, and other professionals for the future. Sufficient education will help them to take action considering sustainable development goals. Therefore, the quality of education and well-planned education-job transition process creates good bases for employment and enhances the better quality of life.

In Georgia, graduates' employability issues and occupation by profession are getting more and more attention. Questions raise on addressing Authorities and Higher educational institutions. There is a debate, discussion, and arguments among politicians, education authorities, labour market stakeholders, and experts regarding the qualifications and skills of recently graduated students. Since 2005, the Bologna Process has been announced and a three-cycle HE system has been implemented. In the last 20 years, the higher education sector created a high number of graduates in a variety of disciplines. However, individuals

experience difficulties in finding appropriate jobs. Numbers of graduates are occupying positions that do not apply to their background education, experience, and expectation.

With the radical changes in the sector and expansion of higher educational institutions, today, Georgia experiences a greater imbalance between higher education graduates and labour market demands. The main concerns arise regarding graduates' unemployment, hard transitions from education to occupation, mismatch with the profession, and securing the job for lifelong. The process is even longer for women compared to men. As women take more responsibilities for family duties and enter at labour market later rather than men.

After graduating from HEIs individuals often face two main obstacles: Professions they have obtained are not in demand in the labour market and/or their skills and qualifications do not meet the labour market requirements.

Conceptual framework

The role of the higher educational institutions in preparing graduates for the labour market is a long-lasting and debating subject (Barnett, 2000). Several studies argue that entrant students, their families, and employers have the expectations that simply graduating from university will acquire them with all necessary labour required skills (Crebert, Bates, Bell, Patrick, & Cragnolini, 2004; Bannett, Dunne, & Carre, 2002; Atkins, 1999). Perceptions and responses regarding the needs and expectations of employers differ across universities. However, two individuals graduating from the same major field will not essentially find the same job opportunities, hence, returns from education may also diverse (Carnevale & Cheah, 2013a; Carnevale et al., 2013b). Therefore, fresh graduates leading complicated decision-making processes, that are influenced by market conditions, labour demand, employable skills, abilities, and their perspectives in this regard (Hwang, 2017). At this time, when a mismatch between the major field of education and the main skills required for job unsuits, is stated as a horizontal mismatch. According to Robst (2006), a horizontal mismatch is referred to as job-education mismatch or education-occupation mismatch. Labour market imbalance by nature is usually connected with the differentiation among labour supply and demand, "skills mismatch can occur when total supply meets total demand with numbers, however not with skills or/and qualification" (Badurashvili, 2019). Horizontal mismatch approaches the relationship between graduates' specific field of study and knowledge and labour market demand in the context of human capital, transferable and professional skills (Robst, 2007; Beduwe & Giret, 2010). According to Rudakov et al., 2019, labour market develops more frequently rather than the educational system, therefore the educational system cannot react immediately to certain professions. Mismatch on the labour market might link the risk of unemployment, job dissatisfaction, bed quality life, etc. (Bender & Roche, 2013; Boudarbat & Chernoff, 2012; Cosser, 2010). On the other hand, the mass labour market cannot create a sufficient amount of job places, while HEIs provide an oversupply of graduate students for some particular fields. Negative consequences of horizontal mismatch have been studied by a number of authors Nordin, Persson, & Rooth, 2010; Robst, 2007 etc.

Research method

The purpose of the given work is to investigate the main challenges that exist between Higher education graduates and labour market stakeholders. Particularly, the authors examined: 1) how regional-based HEIs enhance the fresh graduates' employability, and how it helps regional sustainability; 2) what are the factors of unemployment and reasons for a horizontal mismatch; 3) what are the main challenges and optimal ways of improvement.

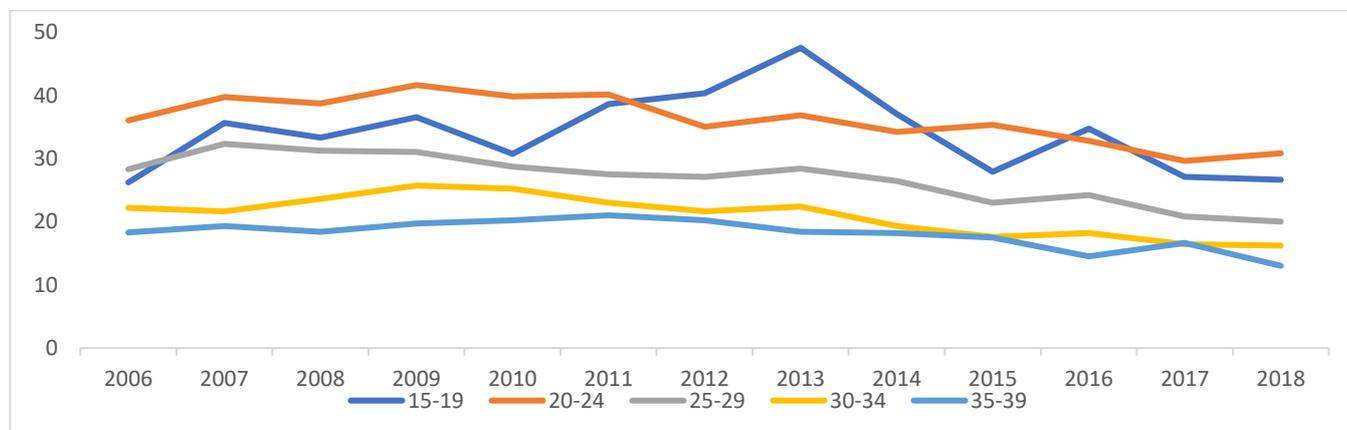
Qualitative research has been done among all Georgian higher educational institutions and teaching institutes located at the regional based in Georgia. Two educational institutions refuse to participate in the research due to internal politics. As a result, 10 institutions have been involved in the study. Participants of the in-depth interview from each university were vice-rectors or head of the quality assurance services or head of the career centres and other competent persons depending on the structure of the HEIs. The total majority of HEIs participating in the study have undergone authorization and program accreditation, as they have the right to implement BA, MA, Ph.D. programs, according to the type of institution.

To address the research problem, we chose the mixed research method, as one of the complex research techniques. We used secondary data analysis that had been collected previously and tabulated by other sources. The data were reliable and professionally gathered. Practically it is the utilization of existing records (Johnston, 2014; Bhattacharjee, 2012; Andrews, Higgins, Andrews, & Lalor, 2012). Also, methods of analysis and synthesis were used to formulate conclusions and final recommendations.

Research Results and Discussion

- *A general overview of youth unemployment in Georgia*

Research participants' approach that general unemployment in the country have high impact on regional unemployment trend. The labour market in Georgian had trouble alongside governmental and economic changes. Unemployment rates are permanently high with the young generation. It reached the highest peak in 2009 that were caused by the August conflict between Russia and Georgian, which were ongoing at the same time as the world financial crises. Since 2010, the trend keeps declining. According to the National Statistical Office, the overall unemployment rate with the population above 15+ age for 2020 is 18.5 %.



Source: author's calculations based on National Statistics Office of Georgia, 2020

Fig. 1. **Distribution of Unemployment rate (percentage) by age groups 2006-2018**

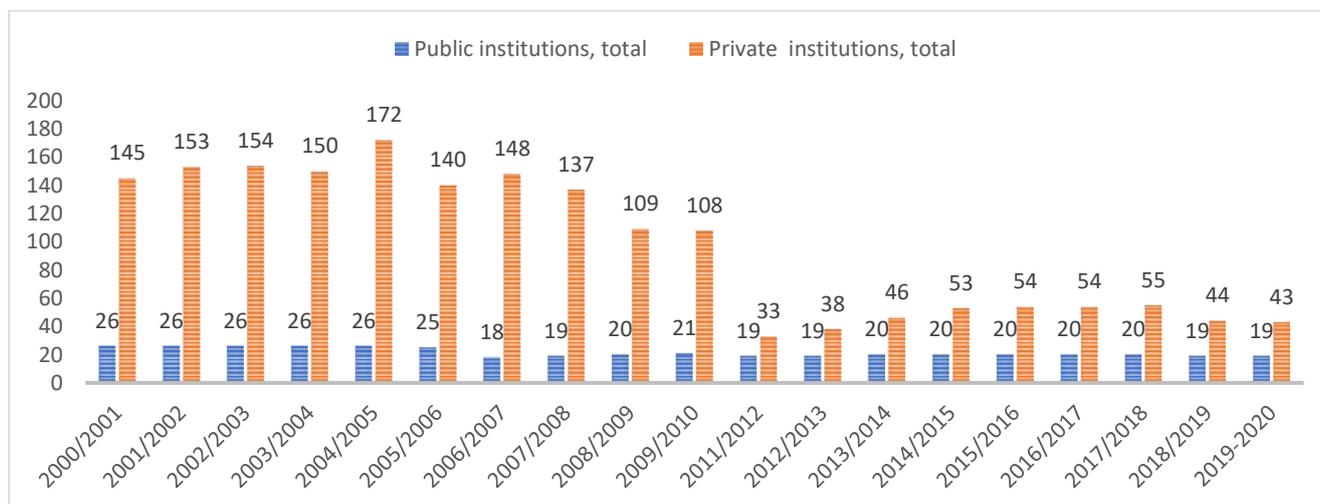
Individuals aged 15-19 are usually at school or in the first year of vocational/tertiary education and they usually do not work, as families support them. More than 80 % of the total population with the age of 20-24 are at the vocational/tertiary education or graduated Bachelor Degree. Therefore, the individuals are skilled enough to get into the labour market; however, the number of unemployment is at a pick with this age group rather, than any other cluster. Meaning that fresh graduates experience a very low rate of employment (Fig. 1). The unemployment trend significantly decreases for the people the age of 25-29, as it is mostly because of several reasons:

- At this age, most of the individuals are Master graduate, which increase the chances of employment.
- Individuals have to take any offered job to maintain themselves.

Overall, the labour force unemployment rate is rather high, which influences fresh graduates' employability possibilities and decreases chances for individuals to recruit (Fig. 1).

- *How the HEIs' market condition influence graduates' unemployment?*

Georgia traditional had very high-level participation in higher education that were caused mainly by family traditions and educational approaches from the post-Soviet era. With a gross tertiary enrolment ratio of 30 %, country were ranked as one of the highest participation rates among the Soviet countries (Chakhaia & Bregvadze, 2018). At this time, all HEIs were owned by the state, and all levels of education were subsidized by the state to reach ideal equality for all citizens. Since the country got independence, higher educational institutions start privatization. At the beginning of 2000-2005, there was an increasing trend and kind of massification of private higher education institutions (Shervashidze, 2005). At that, time the country did not have any experience in establishing and managing private institutions, as there were no regulations and/or procedures for founding new HEIs. Consequently, for the end of 2005, the number of universities reached 172 which was an absolute record for such a small country as Georgia with 172 461 students enrolled in, with a large proportion still coming on public Schools – 137 021. Private universities mainly had part-time programs, with the major fields on Law, Humanities, and Medicine. A relatively small proportion of students was coming to private institutions that's because there were not enough infrastructure and academic resources. As an entrance exam, the programs had basic requirements for enrolment, low quality of teaching, and therefore basic outcomes after graduation. Studying at the university were considered as the way of obtaining an HE Diploma, which becomes a reason to increase numbers of unemployed young's (Fig. 2).



Source: author's calculations based on National Statistics Office of Georgia, 2020

Fig. 2. Number of State and Private Higher Educational Institutions 2000-2020

Another important feature was corruption in the higher education system. There are several studies, which offer reviews and cases of particular bribes at leading higher educational institutions (Heyneman, 2004; 2008; Karosanidze & Christensen, 2005). As a result, it affected access to education, equity, and the quality of it. Uncertainties, corruption, easy access to education, create a sum of graduates with Higher education Diplomas and without certain skills.

In 2003 new government in Georgia started comprehensive reforms. The progressions that happened in the Higher education system were very important. The system were completely patched up by entwined sets of changes. Most remarkably, they improve efficiency, eliminate corruption, and increase education quality assurance standards.

In following years, particularly in 2011-2012 the number of Universities were declined dramatically. The process was connected with the implementation of new regulations of HE and quality assurance standards. The number of universities accounted for only 52 both in the public and private sector with 95 110 enrolled students. For the present moment, there are 19 state and 42 private higher educational establishments with 148 803 registered students.

- *Higher education policy planning problems; mismatching demand and supply at the national and regional level*

The changing environment in the system of higher education and some major policy planning problems affect the demand and supply of the labour market. First of all, there is limited information on the relationship between higher education and the labour market conditions, although accreditation standards oblige educational institutions to create annual reports with employment statistics, data about the student or/and alumni employment are not collected on a systematic basis (Glonti, Lortkipanidze, & Urushadze, 2017). Also, institutions have to adjust learning programs to the labour market demand, however, the indicators and verification sources are unclear. Neither, self-evaluation and external evaluation reports are comprehensive, consequently, do not exist objective evaluation reports.

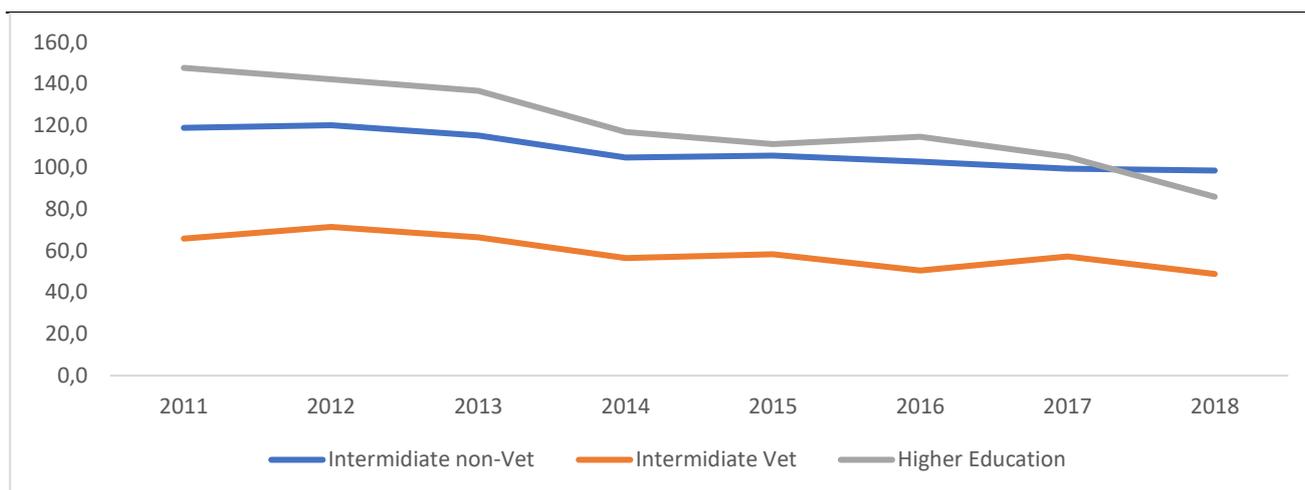
According to the State Audit Office (2019), which contacts higher education programs and market compatibility efficiency audit, there are some major concerns:

- 1) Ministry of Education, Science, culture and sport of Georgia, annually subsidized some programs across the public institutions. Nonetheless, no suitable studies have been performed to determine priority directions or/and required professions in the labour market. Consequently, it has not been researched on how compatible are selected programs for the needs of the country.
- 2) There are cases when the priority studying programs are the fields that usually have high demand from the entrance students, while other fields of studies (such as: agronomy, agrarian technologies, architecture, food technology and etc.) have less attractiveness, but exactly those fields are considered as urgent for the country and demanded at the labour market. So, we receive a high supply in some professions and a deficit in another.
- 3) There is no research paper evaluating certain professions and needs for the labour market, which is caused by insufficient communication between responsible ministers and other stakeholders. As a result, we cannot analyse the compatibility between financed students and the real needs of the market.

According to the Ministry of education, science, culture, and sport of Georgia, an absolute majority of graduates comes on the field of Social sciences, Business, and Law. The trend is similar in public and private universities on a national and regional basis. In other words, the labour market receives oversupply graduates from Social sciences, Business, and Law, whereas there is a qualified workers deficit in the fields of Engineering, manufacturing, and construction; agriculture sciences, etc. The policy problems concerns to both national and regional settings.

Analysing the unemployment rate by educational attainment shows that most unemployed population comes particularly from higher education. Fortunately, the trend is declining, and first, in the last 8 years, it is less than the unemployed population at intermediate non-vet education.

At the national level there is no statistics comparing unemployment trends based on qualification, specialization, and graduated university.



Source: author's calculations based on National Statistics Office of Georgia, 2018

Fig. 3. Unemployment rate by Education attainment

- *Graduates Skills mismatch analyses*

There is a lack of fruitful research literature in regards to graduates' skills mismatch in Georgia. A few studies argue as follows: According to the International Organization of Migration conduct a comprehensive study regarding unemployment and skilful unemployment (IOM, 2010). Research results show that even there is mass unemployment in the country, most employers have difficulties finding appropriate staff with relevant qualifications and experience.

One of the first representative surveys of enterprises was organized by the Ministry of Economy and Sustainable Development of Georgia (2017) researching the workforce, employment structure, assessments of vocational skills of employees employed by enterprises, and others. The research includes 19 000 job vacancies in 5 651 business organizations. Results show that almost half of the business organizations (45 %) recruit new employees among friends, relatives, or/and other contacts. Also, they are looking for staff with the qualification of 3-5 years, so recent graduates face the problem of finding a relevant occupation. There was a significant lack of finding employees in the fields of science, service, office work, trade, art, STEM sciences, and others.

Unfortunately, there is not any direct measurement or research between skills demand and supply in Georgia. Only, education and occupation are considered campus-based skills (Badurashvili, 2019).

As employees raise the sounds, graduates' skills and abilities that individuals earn at campus-based are not sufficient for the labour market. Important indicators related to education-occupation mismatch analysis can be found at the Georgian Labour Market Demand Survey (Ministry of Labour, Health and Social Affairs of Georgia, 2015). The research sampling includes 63 387 entities located at the capital and regional level, with over 908 374 employed workers. Over 42 % of companies reported that they usually need to employ foreign workers because there are no domestic workers with the required skills. Over 72 % of companies also have difficulties in hiring applicants due to applicants' level of qualification and skills shortage. On the one hand, there are numbers of unemployed graduates and on the other hand, there is a specific professions deficit, like sheet metal workers, veterinarians, agronomists etc.

The authors conducted analysis of the yearly statistics of a private employment agency (HR.GE). The company is one of the leading organizations in posted vacancies and links labour market stakeholders and the unemployed population. The first five groups of posted vacancies come services and sales workers (31.5 %); technicians and associate professionals (22.2 %); professionals (15.4 %); clerical support workers (13.9 %); crafts and related trades workers (5.2 %). Major vacancies related to those five groups

include the sales assistants, waiters, security guards, sales representatives, bartenders, domestic helpers etc. As a fact, the qualification requirement for the previously mentioned groups, in most cases is associated with vocational education rather than higher education.

- *How regional-based HEIs can enhance the fresh graduates' employability and how does it help regional sustainability?*

There is no preliminary research or correspondence between the educational institutions and the needs of labour market stakeholders in regards to graduates' qualifications and skills. Enterprises need to spend some amount of time and money to retrain graduates and prepare them for particular work. Due to that, enterprises mostly avoid recruiting fresh graduates. The educational mismatch is rather high among bachelor graduate women. Even if they get some particular positions, women are 10 % less paid rather than men. Overall, graduates experience disappointment at the beginning of their careers.

As a result, major numbers of graduates are forced to take irrelevant jobs, comparing to their studying program, meaning that the skills and abilities that they develop during the educational process are limited to apply.

Research participants realizing that region-based HEIs have the huge role in the process of enhancement graduates' employability. To overcome the obstacle, institutions mention that they need financial resources from the state to increase academic staff, invite professionals from different fields, make the relevant public relations and start working in the parts of innovations. It will help them to empower graduates and create a soft and smooth transition from education to employment.

Unfortunately, today HEIs are passive receivers of political or economic changes in the country. We don't expect and they may not affect the overall unemployment tendency in the country but they can change future trends at regional bases. Well-planned educational process can decrease horizontal mismatch in the labour market and enhance regional sustainability by encouraging youth employment.

Based on in depth interviews and research results, we have defined several endorsements for improving the employment settings for recent graduates.

Initiate and implementing different learning courses. Students should have opportunities to develop self-employment and entrepreneur skills during their studying period.

- Strengthen the links with public and private enterprises, involve them in creating curriculums
- Set up and store annual records about graduates' employability and investigate horizontal mismatch problems.
- Create a supportive educational process for women and ensure their professional employability after graduation.
- Develop clear strategies and ensure higher education system compatibility with labour market requirements.
- Higher educational institutions should establish structural units for supporting the graduates' employability (such as: Technology transfer offices; start-up incubator etc.).

Regional sustainability can be enhanced by the following aspects:

- examine the regional challenges and enhance regional innovation to address the problems;
- encouraging enterprising, entrepreneurship, and economic growth;
- by developing new generations, promoting regional human capital;
- cooperation with regional authorities and linking universities with regional development.

Conclusions and recommendations

The given paper aimed to analyse role of the region-based HEIs in regards of labour market formation at regional and national level. Study graduates' unemployment tendency, its causes and effects. Explore relationship between Georgian HEIs based in regions and SME's. Investigate the main challenges between these two sectors and define the optimization ways. The results were obtained from different sources, qualitative research with HEIs, exploring descriptive and analytical databases, as well as diverse national and international documents/reports. General results and recommendations are drawn bellow:

The tendency of unemployment in the country affects the graduates' employability possibilities in Georgia.

- 1) To a certain extent graduates' unemployment is encouraged by educational institutions, because they dramatically increase and recruit students in some particular fields (such es: Economics and Business, International Relations, Law, Humanities etc.) whereas a significant proportion of the workforce in that segment is self-employed (under the shadow economy) mismatched by occupation or/and unemployed. As a result, most of future graduates will be just additional oversupply on the labour market.
- 2) Majority of region based HEIs do not research labour require skills and qualifications yearly, institutions do not collect annual databases about graduates' employability, neither professional employability records.
- 3) Region based HEIs have very week connection with SMEs and they are partly involved in the educational/training process.
- 4) Higher educational institutions should establish structural units for supporting the graduates' employability.
- 5) With the intention of increasing the role of the HEIs' in regional sustainable development by forming qualitative labour force, universities should use all advantages that they have, create strong ties with SMEs, attract various stakeholders from different transdisciplinary, set and ensure continuous process of discourse.
- 6) In order to expand the findings and deepen research results, we recommend further research by combining qualitative and quantitative research in the future, involving not only HEIs and SMEs, but including the alumni and current students of HEIs.

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ANALYSIS OF THE FINANCIAL MARKET AS A DRIVING FORCE OF THE REGIONAL ECONOMY IN THE CONDITIONS OF PRE- AND POST – PANDEMIC

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Abstract .The pandemic has negatively affected the financial sector, as well as the real sector of the economy, both losses and credit risks in the financial market have increased on the background of the economic activity slowed-down. In 2019, the credit activity was high, however after the spread of the virus the activity slowed down significantly. This is natural, as due to the suspension of production –organizing, the unemployment has increased. Volume of the direct foreign investments has decreased by 42 %. Government of Georgia has developed an anti-crisis plan, important part of which is about the mitigation of deteriorated living conditions caused by the unemployment, whereas the National Bank of Georgia has pursued monetary and fiscal policies for the purpose of mitigation of negative influence of COVID-19 on the country's financial sector and for the stimulation of the country's economy. In general, saving the business is considered as a priority. The current situation in the banking, insurance and stock markets and their role in the fight for maintaining the economic stability are analysed in the present article. It is important to note that, the insurance sector is the part of the economic, which did not need financial assistance in a difficult situation, but due to the common socio-economic situation, diseases caused by the stressful conditions of the population, it was necessary to make significant changes in the list of the insurance services. This, to the extent had led to some unforeseen costs, which had affected the financial conditions of the companies. According to the evaluation of the credit rating company -Fitch, the trustworthy policy implemented by the National Bank of Georgia, had played an important role in the maintenance of the financial stability and Georgian sovereign rating remained unchanged, at BB level, however, what parameters and in what area was the rating maintained and how the positions of the main players in the financial market have been changed, are the main directions of the article's research.

Key words: pandemic, financial market, credit risk, investments, insurance, unemployment, rating, stock exchange.

JEL code: G21; G22

Introduction

The concern of the governments in developing countries is to find the ways to develop the economy. Since 1990, many mistakes were made in the post-Soviet countries by stereotyping the experience of other countries, which slowed down the pace of economic development. While developed countries focused on strengthening the financial sector, the financial institutions in Georgia were newly formed in Georgia, perfection of which was hindered by the crises arising at different times.

The right way of economic development goes through the financial market, the participating financial institutions will redistribute free cash flows of economic entities between the economic sectors and will ensure the supply of additional financial resources for the reproduction, which is the necessary condition for maintaining the continuity of the production process. The crucial role in the development of the financial market belongs to the stock market, which promotes the investment activity both by the existing domestic capital as well as by the inflow of foreign investment. Well-regulated financial market must already exist in the country for the foreign investors, which is the "Trustworthy way for the Development of Economy". According to the "Theory of Financial Markets' Development", the stock markets stimulate the economic growth, to the extent that they are integrated into the "Institutional Matrix", which means the functioning of developed, sustainable market financial institutions in such political, economic and ideological environment, where the relationships are built on the market principles and the State becomes the party

of the Agreement (Klaus Weber Gerald F. Davis and Michael Lounsbury, Financial market theory of development, Wikipedia, the free encyclopedia).

The goal of the present article is to analyse the role of the financial market in the economy of a developing country, sustainability of the financial institutions functioning in the institutional matrix during the pre-and-post pandemic period. The main players of the financial market -banking institutions, insurance institutions and securities markets as the mechanisms for development of above listed institutions and vice versa, are selected as the study objects.

The level of financial market's development is determined by the effective performance of financial institutions' functional purpose. The main player in this system is the banking sector, which serves to provide additional recourses for the reproduction. If it is achieved, the field of production expands, gross domestic product grows in the country and the living standards of the population rise. The free cash flows with the participation of financial institutions move between the economic entities, as a result, domestic and foreign economic activities are activated. Activity of each financial institution is oriented to obtain the maximal profit, the strategic plan of the banking sector itself is built on the accumulation of a large amount of cash resources for the purpose of achievement its own goal.

Research Findings and Discussion

The National Bank of Georgia had pursued monetary and fiscal policies for the mitigation of the negative influence of COVID-19 on the country's financial sector and for the stimulation of the country's economy; in particular

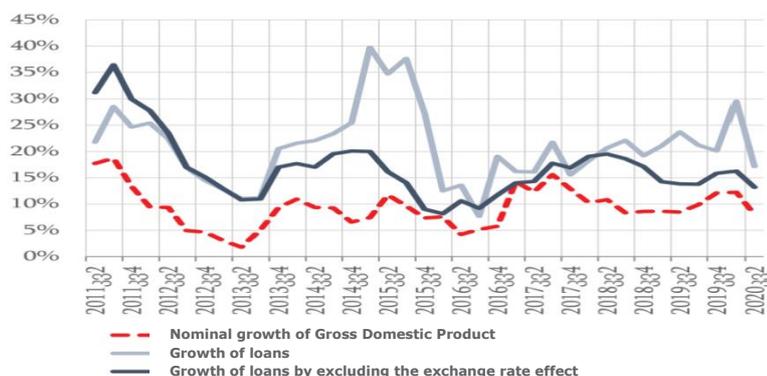
- 1) uninterrupted supply of liquid cash resources to various sectors;
- 2) development of the temporary supervision plan;
- 3) expansion of the program supported by the International Monetary Fund.

As a result of the financial stability, policy was pursued during the recent years, Georgia's financial system faced the shocks caused by COVID-19 pandemic, prepared and maintained its sustainability. In the recent years, the requirement of the additional capital imposed by the National Bank and the profit obtained by the commercial banks allowed banks to accumulate sufficient capital buffers to deal with the stressful situations. Herewith, during the pre-crisis period, the National Bank took a number of macro prudential measures in order to reduce excess debts of the households and loans dollarization. This had promoted the decrease of vulnerability existing in the nonfinancial sectors and increased the sustainability of the financial sectors towards the shocks. As a result of the pandemic, it was expected to increase the share of inactive loans, however, the commercial banks created the reserves for possible losses in advance. Correspondingly, the financial sector had enough resource to uninterruptedly continue lending to the economy.

However, it should be noted that the pandemic, along with the real sector of the economic, had also a negative impact on the financial sector, both losses and credit risks in the financial market had been increased on the background of the economic activity slowed-down. The recession caused by the pandemic is different from the global financial crisis of the years 2008-2009 by its nature. In this case the source of the recession is not the real and financial sector of the economic, but the restrictions introduced in order to avoid the rapid spread of the virus. The banking system accounts for over 90 percent of Georgia's financial sector. FSI's (Financial Stress Index) index basically combines the indicators of profitability of banking sector, interest spread, capital and assets. Despite the measures taken by the National Bank of Georgia, during the crisis, the banking system's liquidity needs could not be delivered, which had increased the risk of liquidity in the bank system and forced the banks to reduce crediting even more sharply.

All of this, in the end, was reflected in a significant decline in lending to the economy. Unlike 2008, in 2019, the annual growth of loans was on average within 20 percent. After the start of the pandemic, the growth of loans slowed down to 3 percent.

The crisis of the year 2020 once more clearly shows the importance of the country's economic stability against the shocks. In 2019, the credit activity was high and by the end of the year the tempo of the annual growth of loans (by excluding exchange rate effect) amounted to 16 percent (Figure 1).



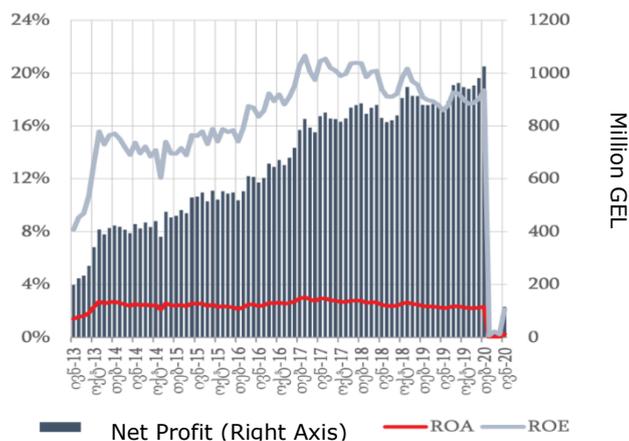
Source: National Bank of Georgia

Figure 1. Annual growth rate of loans

15 commercial banks operating in Georgia received a total loss in the amount of GEL 747 million in the first quarter of 2020. The main determinant of the loss was the reservation of 1.2 billion GEL for possible losses by the side of banks. Totally, Georgian commercial banks had reserved 1.22 billion GEL in the buffers of "Assets' Possible Losses", which due to the expected crisis reflects the number of possible losses on the loans. This is the amount which the banks reflected as the possible losses due to the crisis arisen from the COVID-19 pandemic, however, directly their operative activity by the first quarter of 2020 was still profitable and 14 banks from those 15 obtained the net profit before making reservations.

Banks are reducing the issue of loans due to the expectation of potential loss. This, in turn, further slows down the economic activity and the negative spiral will be repeated.

In 2020, the profitability of commercial banks will be close to zero. The banks' sectors were characterized with high profitability before the pandemic, in 2019 the average return on equity (ROE) was within 18 percent (Figure 2). As a result of pandemic, the net profit became negative and it amounted minus 747 million GEL in the first quarter of the current year, which is 1.5 percent of total assets.



Source: National Bank of Georgia (annual financial stability report 2020)

Figure 2. Profitability of the bank sector

It should be noted that, the negative profit during COVID-19 pandemic is conditioned by the reserves created for balancing the arisen negative expectations. Thanks to the high operating income, it is expected that, after the completion of pandemic, the banks will be able to make a profit by promoting the healthy and sustainable development of financial sector.

Influential rating Agency-Fitch, had left Georgia's sovereign credit rating and rating outlook unchanged - at a "BB" level with a negative perspective. It should be noted that in April, after Agency's previous assessment regarding Georgia's economic condition, Fitch decreased rating prospects or sovereign ratings for many countries. For example: rating company had worsened the rating for the US, Japan, Iceland, Macedonia, France, Austria, and reduced Canada's sovereign rating from AAA to AA +.

Fitch's Report in August 2020, on Georgia's sovereign rating, clearly reflects the Rating Company's positive assessment towards Georgia's economic policy, business environment, institutional strength and quality of governance.

Georgia's sovereign credit rating is supported by an attractive investment and business environment and a high degree of governance in comparison to the median indicators of BB category countries. A sequential and reliable policy framework promotes the country's stability against the external shocks. According to the Rating Agency's Report, a reliable and consistent policy framework had facilitated the stability of the Georgian economy against the shocks, maintained the macroeconomic stability and reduced the risks of current account deficit. The macro prudential measures taken by the National Bank contributed to the stability of the financial sector, whereas the limited foreign exchange interventions softened the exchange of currency fluctuations.

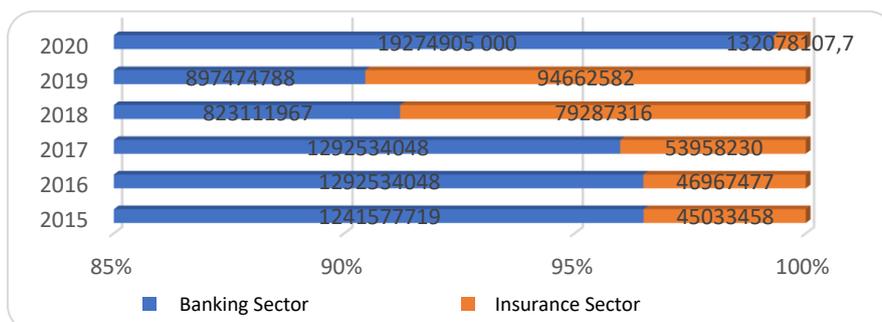
The insurance sector, differs from all other financial institutions by the specifics of its activities and its historical function is the protection from risks. In the modern period, it is not only limited to the function of population's insurance protection. Nowadays, the insurance companies are the owners of huge capitals and by placing them in the financial market, both the financial market as well as economics of the country will be developed.

It is represented in this way in the financial market of developed countries, however in the developing countries the use the investment portfolio of insurance sectors for the purpose of stability of financial market still remains the problem.

Two issues are revealed here: the first one is the stability of insurance business development in the country and the second one is the possibility of placing insurance capital in such financial instruments that will expand the economic capabilities of other business entities and increase the sustainability of insurance finances. Based on theoretical concepts and analysis of the insurance market, the article answers the hypothesis "A developed insurance market means a developed financial market." Penetration is one of the indicators of market development assessment "by the variety of products Georgian insurance market is still far away from European market, the reason of it is the low income of the population, the low level of risks awareness and insurance culture. Correspondingly, the share of insurance field in Gross Domestic Income in comparison to the European countries is very low (1.18 %), which is confirmed by the size of insurance penetration", the second indicator, which is directly defined by the insurance premium per capita, is the solidity of insurance. The indicator of insurance premium per capita in Georgia is the lowest among the European countries (Tsintsadze, Vashakmadze, Tavadze, Meloyan-Phutkaradze, 2020). In the current reporting year, the changes in the indicators cannot be made due to the spread of pandemic throughout the world and the attitude of population towards the insurance has deteriorated due to reduced incomes. Hence, for the determination of the role of the insurance industry in the capital of the financial market, the article has studied the investment activities of the insurance companies in the assets specified in the

regulatory documents and problems have been identified by comparing the financial condition of companies before the pandemic with the results of operating under pandemic conditions.

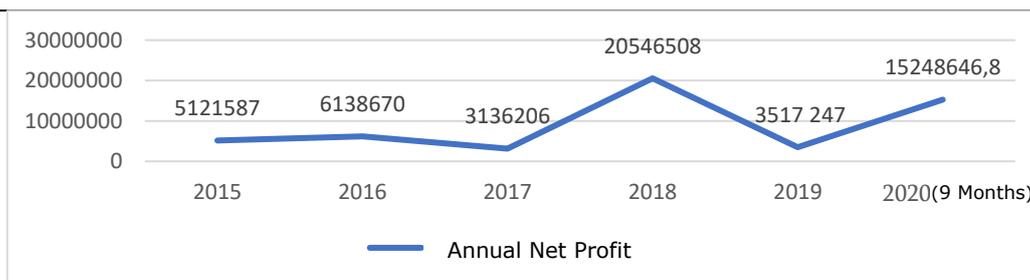
For the analyses of investment activity, deposits of ten large banks and cash placed by the insurance companies have been used, by which the share of the insurance companies in the bank capital was determined. Data of 2015-2019 have been analysed and parallel to this, the amount of investment capital of the insurance sector before the pandemic was compared to the amount of capital in the conditions of the pandemic (2020).



Source: National Bank of Georgia, Insurance Supervision Service

Figure 3. The share of insurance capital in bank deposits

The Figure 3 demonstrates that the share of insurance companies' deposits is very small in bank deposits (2015-2016- 4 %; 2017-5.3 %; 2018-9 %; 2019 -9.8 %; 2010-1 %). Before the pandemic in 2018-2019, the investment potential of the insurance companies is within the 9-19 % (Figure 3). But in the pandemic condition it dropped to 1 %, however in the absolute value, the investment capital in 2020 has been increased 1.4 times, according to which the percentage indicator of the bank deposits have been decreased. Explanation of this phenomenon in our opinion is the following: the capital in the ownership of the legal entities was transferred from the stock market to the less risky banking sector, the growth of the insurance sector's investment potential in the pandemic year is due to the increase in demand of health and life risk insurance products. In particular: in 2020, compared to the previous year, the number of policies and correspondingly premiums attracted on the health insurance products during 9 months of the year 2020 had been increased 1.4 times compared to the data of 9 months of 201-1019. This was caused by the growth of pandemic risks. Due to the risky nature of insurance business, investing in highly capitalized financial instruments is important, such as „loan securities“ (bonds) and privileged shares, flows of those had been carried out in the organized securities market of Georgia, OECD member countries and/or developed countries, but no more than 15 % of the "amount of insurance reserves for investment", and also no more than -10 % in the non-organized market (The Order No 51/01 of the President of National Bank of Georgia "On approving the rules for determining the eligible assets and their structure to cover insurance reserves"). However, the reality is different, in particular, the insurance companies, due to the weak financial base, are not able to position themselves as the sellers and buyers of the securities in the securities market. Attraction of the additional financial recourses by issued stocks are risky for the insurance sector, as the sales problem will arise, in other words no one wants to invest their capital in high-risky enterprise securities. Figure 4 shows the profitability of the insurance market, which is not desirable. They cannot act as buyers of securities because they do not have the motivation to invest in long-term financial instruments due to the underdevelopment of accumulative life insurance.



Source: Insurance Supervision Service of Georgia

Figure 4. Financial indicators of insurers

Hypothesis: "Developed insurance market-developed financial market" means the investment of the insurance capital in the domestic and foreign financial market. For the evaluation of Georgian market in this direction, let's see the example of the state of investment of the insurance industry in the developed countries, in various assets

Table 1

The state of investments of the insurance industry in developed countries in various activities

Countries	Cash and Deposit (Million USD)	Plot and Building (Million USD)	Own capital (Million USD)	Promissory notes and Bonds issued by the State and private sectors (Million USD)	The rating of the share of the life insurance premium in Gross Domestic Product	Rating of financial market Fitch
Australia	5 904	3 248	7 601	50 436	18	AAA
Belgium	8 723	10 423	19 321	225 757	16	AA
Denmark	12 215	1 643	149 180	120 153	6	AAA
Germany	15 986	35 732	162 106	912 979	25	AAA
Italy	8 604	6 429	69 022	565 366	8	BBB-
United Kingdom	94 573	4 911	19 324	368 602	4	AA
Sweden	10 511	12 774	152 763	145 404	10	AAA
Switzerland	19 884	47 866	21 560	197 350	13	AAA
Spain	20 020	13 003	18 252	257 081	31	A-
Latvia	117	21	10	664	82	A-
Lithuania	59	8	16	765	64	A
Georgia	59	6	71	0	118	BB-

Source: 1. ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT; LEPL Insurance State Supervision Service of Georgia 2019

2. The World Bank, TCdata360.

https://tcdata360.worldbank.org/indicators/hbae5670f?country=BRA&indicator=41585&viz=line_chart&years=2017

3. Fitch Ratings: Credit Ratings & Analysis For Financial Markets, <https://www.fitchratings.com/>

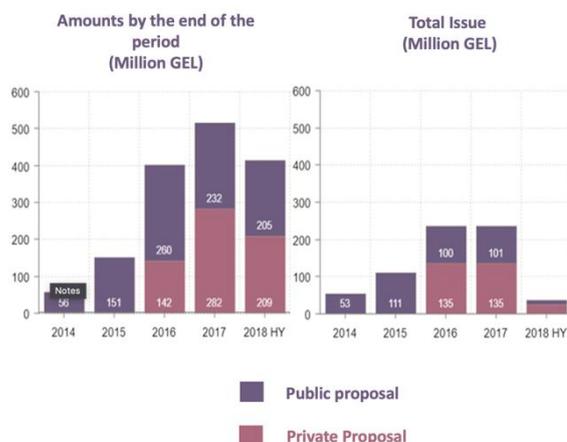
The statistics in the table shows, that the country that has a developed insurance market, volume of investing in the securities market is high (Belgium, Denmark, Germany, Italy, the United Kingdom, etc.), which is in compliance with the rating of the life accumulative insurance and is confirmed by the ratings given by the rating company- Fitch to the financial markets of these countries in 2020. Maintaining the BB-rating of Georgia's financial market is not conditioned by increasing the capitalization of financial institutions, but by the developing and implementing a corporative governance code in the banking sector. The conducted research showed that the hypothesis "A developed insurance market-a developed financial

market" has been justified. The situation of Georgia's financial institutions confirms it, which enables the reveal of existing problems and formulates proposals to improve the financial situation.

In order to have a complete picture of the impact of the financial market on the development of the regional economy, we have analysed the situation in the Georgian Stock market. Despite the fact that the global stock exchanges had collapsed under the influence of COVID-19 in March 2020, the rapid and coordinated action of the monetary and fiscal policies by the side of the developed countries reduced the impact of the pandemic on the economy. In response to the pandemic, the majority of the central banks had reduced their interest rates. Besides, the fiscal expenditures made in order to support the households and companies, amounted 12 trillion US dollars. The devaluation of currencies caused by the capital outflows in our region, had decreased the ability of central banks to reduce their interest rates. As a result of the unprecedented monetary and fiscal stimulations carried out by the leading economics, the index of global capital (including the best outcomes was demonstrated by stocks of the technology companies) was increased since May 2020 and later, parallel to the increased capital flows the income on the bonds of the developed countries had been decreased.

Some stock markets stand even on the higher benchmark compared to the last year and the Swiss Stock Exchange is among them, which was awarded by AAA rating by the rating company Fitch. The US stock markets ended 2020 with the positive results at the expenses of shares of companies operating in the field of technology, telecommunications and the Internet. Indexes of NASDAQ which are formed by the shares of Facebook, Amazon and Netflix companies were increased by 40 % during one year. Japanese index on the Asian market Nikkei was increased by 20 %, Stock exchange market of Shanghai was risen by -15 %. It is true that the European index is also rising, however, they have not reached the level of the pre-crisis period yet. The German DAX index rose by 4 %, while the French CAC 40 is 6 % lower than it was in the last year, and UK FTSE100 index is 9 % lower than it was in January 2020. The media reported as if the correlation connection between the real economics and the financial markets had been violated. Why has the situation on the stock exchanges normalized when the pandemic is having a strong impact on the economies of the leading countries? Since the first panic caused by the pandemic had calmed-down, the investors observed that a significant portion of the economics was in a good shape, which explains the rise of securities markets. An important role in this was played, of course, by the State, which had provided a significant assistance to the private sector, as well as large central banks with their expansionist monetary policy. As a result, despite the uncertain state of the economy, the basic financial and macroeconomic indicators are not so bad. As for the current events in Georgian stock market, the encouraging policy implemented by the National Bank of Georgia and the Government, the development of the government's debt securities market and the seek for the alternative financing by the side of the businesses, facilitated the development of debt securities. As the conducted research showed, the role of the banking sector in the development of the financial market is high, but the role of insurance companies is low, especially in the development of securities, which is reflected in the above indicated table. The local stock market is inactive, in developing countries like Georgia, it is more interesting for private company owners to seek financial resources through the debt instruments than to issue shares and, consequently, to relinquish control / governance. Therefore, development of this market may be considered as an intermediate circle between the traditional crediting and the use of other capital market instruments. However, in recent years, the market of the securities has increased significantly, these are the securities which enable the owner to receive a fixed interest rate (income) and return the borrowed amount, within a certain/specified period. It includes: State Treasury liabilities; Savings certificates; Bill (promissory note); Bond. From 31 December

2014 to 31 October 2019, their volume had been increased from 56 million GEL to 500 million dollar's equivalents in GEL (Figure 5).



Source: Georgian Stock Exchange and the National Bank of Georgia

Figure 5. **Corporate debt securities issued in the local market**

The issuance of GEL-denominated debt securities by international financial institutions had been also increased and by the state of June 30, 2018, and it amounted to 717 million GEL. Nevertheless, the share of the Georgian capital market is about 10 % of the financial sector's assets. It should be noted that, during the recent years the rise of demand of bonds in Georgia was promoted by different features of Georgian business environment. First of all, it should be noted that the profitability of Georgian State Eurobond GEORGIA 21, in the beginning of the year 2020, amounted 2.4 % and the existing spread (difference) in comparison to the other instruments with comparable rating (BB) was quite low. Against the background of the financial crisis caused by the pandemic, in March 2020, the profitability of GEORGIA 21 increased sharply and amounted 6.2 % at the end of March. However, due to the reduced risk in the region during the summer months, GEORGIA 21's profit began to decline and the spread with comparable countries also decreased significantly. It is also noteworthy, that despite the political uncertainty regarding Georgia's parliamentary elections (October 2020), the income of GEORGIA 21 was not changed significantly. By the end of 2020, the income on the sovereign Eurobond had dropped significantly- to 0.8 %. It should also be noted, that the Eurobond expires in April 2021 and according to the 2021 budget document, refinancing of Eurobond is being planned. Georgia had placed \$ 500 million ten-year Eurobonds on the London Stock Exchange in 2011, the principal repayment date of which is April 2011. As for the **treasury bonds**, it is true that the size of the local bond market in Georgia is quite small and illiquid, compared to other local markets in the region, despite this, it is trying to occupy an important place in the stock market. Its profitability is closely linked to the monetary policy rate, which amounts 8 % from August 2020. Commercial banks remain its largest owners with -71 %. The local **corporate bonds** occupy the important place in Georgian stock market. In 2020 three bonds were placed in the local market:

- 1) TBC Leasing - In March 2020, TBC issued a 3-year bond worth GEL 54 million, with a floating coupon rate TIBR3 + 3.25 % (which is 11.35 % as of January 2021);
- 2) Georgian Leasing Company (GLC) refinanced its existing 10 million bonds in August with a new, 2-year, 7.5 % bond;

3) Kakhetian Traditional Winery (KTW) - one of the largest representatives of wine and spirits in Georgia - placed the first \$ 10 million bond on the Georgian Stock Exchange in December 2020, the bond coupon rate is 9.0 %, the term is 3 years.

Conclusions and recommendations

Although the pandemic is not over yet and determination of the volume of its influence on the stock market, the state of which despite the measures taken by the National bank, is not still in a good condition and is not able to compete with other sectors of financial market, it could be said, that it is not possible yet, however it does not show the sharply negative directions.

1) For the further development of the capital market, the role of the National bank and government of Georgia in the development of securities market is important. Along with the growth of the economics, it is important to create the relevant supportive environment, for which the consequential implementation of a long-term strategy is important, which requires active actions.

2) Despite the measures taken by the National Bank, the liquidity needed for the banking system was not provided during the crisis, which increased the liquidity risk in the banking system and forced the banks to reduce lending even more sharply. All of this, in the end, is reflected in a significant decline of lending economy. As the analysis showed, banks are reducing to give loans due to the expectation of receiving potential losses. This, in turn, further slows-down economic activity and the negative spiral will be repeated. Accordingly, it is necessary to be aware of the following:

- appropriate supportive environment means a stable macroeconomic environment, sustainable, transparent and efficient functioning of the financial sector and legislative and regulatory framework, which ensures the protection of investor's rights and market's credibility;
- existence of various stimulating (tax) policies;
- developed government bond market, coherence and compliance with international standards of the Georgian capital market;
- existence of a variety of financial instruments, raising the level of financial education and so on.

3) Quality assessment in the development of regional economies of financial institutions gives a pessimistic picture on bases of the conducted research. Foreign experiences of economic development are based on the use of effective mechanisms of financial market development, among them, the American and Western European approaches are considered as the successful models, so-called institutional matrix. In Georgia, despite its orientation to the West course, an approach towards the financial institutions as the independent business entities has not been implemented yet, which is evident in the degree of competition. As the study shows, individual insurance companies perform profitably in the reporting year, but their role in the development of the financial market and consequently in the growth of the economy is insignificant. In our opinion, this is not a problem created by one company, it is based on the socio-economic situation, which occupies the first place in the development of the insurance sector. Accordingly, the authors believe that:

- the problem of unemployment should be solved first, the average salary should correspond to the average standard of living;
- the introduction of accumulative life insurance should become a priority of the Government, which will be achieved by compulsory insurance of employed citizens, otherwise the insurance sector will remain only an individual protection mechanism and will not fulfil the role of supplying free capital market.

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RURAL DEVELOPMENT AND ENTREPRENEURSHIP

EMPIRICAL ANALYSIS OF AGRICULTURAL DEVELOPMENT FINANCING AND THE WAYS TO IMPROVE AGRIBUSINESS MANAGEMENT

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Abstract. Uncertain future under the conditions of COVID-19 has changed population`s behaviour, views, daily rhythm without coercion in real practice. Global world suddenly found himself in the midst of an economic recession. All branches of sectoral structure of economy have actually become a hostage of the healthcare. It`s begun not only the strengthen of population`s interests on the development of the domestic economy, but it`s begun the reverse migration of the village immigrated population from town to the village too. In such conditions, the introduction of integrated management practice of agribusiness plays a great role in the country, which should ensure the effectiveness of the natural resources management. In the article, it`s been reviewed one of the priority branch in the sectoral structure of Georgian economy - problems and perspectives of rural and agricultural development, the effectiveness of sector funding has been assessed. In particular, what kind of influence international and state projects, funded in agro-sphere, have on rural development, raising the level of welfare, growth the volume of products, produced in agriculture and at the development level of the national economy of the country. The goal of the research is to learn, analyse and evaluate the effectiveness of the state programs, funded and implemented for the development of agribusiness, features of project management. According to economic and statistical analysis and synthesis methods of the research, it`s been determined how was able the projects, funded for the development of rural entrepreneurship to develop the sector, also how personal and public welfare was created by them. The results of the research have revealed the influence of COVID-19 on the development of family farming and new strategies for the development of agribusiness have been set. In the near future, this process can be used as a basis of maximum utilization and use the agricultural potential.

Key words: agribusiness, agricultural finance, agricultural policy, finance in rural economies, investments.

JEL code: Q13, Q14, Q18, R51

Introduction

One of the challenges of 21st century is environmental protection, which is considered as a contributing factor of human`s living environment and there`s no prospect for the development of the world without it. In order to create favourable environment and improve it, scientists have been conducting different kinds of researches, new fields are being created, which are mainly directed to the improvement of both, environmental conditions and climate and to the raising of people`s standard of living as well. Accordingly, it can be said that the development of agriculture irreversible character. Under the market relations, where scientific and technological progress is going, the restriction problem of the natural resources is growing. In such conditions, the actuality of the role of rural economy and agriculture increases and it gets a great importance, which can be shown by creating new workplaces (jobs) and by achieving socio-economic efficiency.

At modern stage, the countries around the world have to carry out such complex problem as the improvement of food system is, due to the global challenges, existing in the world: the growth population of the planet, scarcity of the resources and COVID-19. Accordingly, the maximum utilization of agricultural potential of Georgia and using it for special purpose has a great importance. It`s vital for country`s economy to ensure food security problems. The practice of the countries shows that 70-80 % of the world food is produced by family farming, 40 % of the world`s population is involved in it. And they are the ones, who manage 70-80% of agricultural lands (Agroface, 2020). Due to the actuality of the work, the purpose

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of the research envisages to determine that finances for development of agribusiness, got from the state budget by the entities and finances, attracted with the international programs, was practically used in economic terms or it was limited to eradicate short-term social problems.

Based on the purpose of the research, the following tasks were identified: to determine the effectiveness of the expenditure of financial resources allocated from the state budget for agricultural development on the basis of empirical research; To determine the productivity of EU-funded rural and agricultural development programs based on empirical and systematic analysis.

Literature review

Georgian scientists and economists, who were interested in agricultural sector and farming over the years: O. Vashakidze (1996), N. Chitanava (1993), Z. Elizbarashvili (1993), D. Katamadze (2020) and others recognize that the improvement and development of family farming (peasant farming) is one of the strategic direction of our country`s agricultural development, what will promote not only the rational use of the land, but the growth of productivity of the family members and hired labor as well as the continuity of the reproduction process. Also, it should be noted of both, Georgian and foreign scientists and economists: A. Favareto (2016), L. S. Grossman (1998), P. O' Hara (1998), Angus et al., (2009), D. Glover, K. Kusterer (2016), C. Schader et al., (2013), M. Schneider (2015), Lai et al., (2018), Richards and Arima (2018) – controversial opinion about separation of peasant, farming, family farming, that was the reason, why they could not reach a single scientific agreement. For example, O. Vashakidze and L. Khaburdzania (1996) thought that: peasant farming is the simplest form, mainly, natural type of farming, which is characterized with low production (marketability), it`s based on scientific-technical progress and requires manual work.

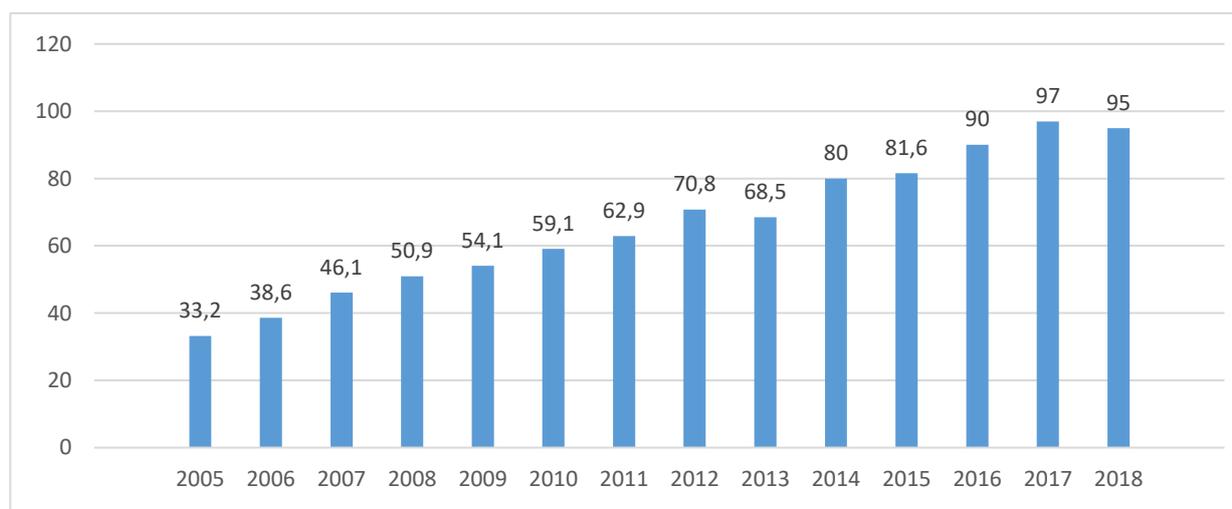
N. Chitanava (1993) and Z. Elizbarishvili (1993) think that, peasant and farming should be considered as a single form of peasant farming and household is considered as homestead farming. Also, it`s noted that peasant farming, as a more intensive form of farming, preferably produces commodity products. i.e. products are mainly created for the market, unlike homestead farming, the product of which is mainly consumed by the family and only the surplus products run to the market . If we take into account the dynamism of Georgia`s agriculture and its hard prediction, the formation of a strategic model of agricultural enterprises is connected with difficulty. That`s why, it should be based on the concept of strategic management of agribusiness. According to Katamadze et al., (2020), Barnard et al., (2016), Polakovic et al., (2018), Mariyono (2019), Yami et al., (2019), N. M. Dennis (2019), Dentoni et al., (2020), R. Griffin (2021), and others, the level of agribusiness management is reflected in management skills of generating and realizing competitive advantages of agrarian enterprises.

Except for theoretical and methodological basis of the work, the scientific works of Georgian and foreign scientists are: data of the National Statistics Office of Georgia (2020), Ministry of Environmental Protection and agriculture of Georgia (2021), Ministry of Economy and Sustainable Development of Georgia (2020), legislative and sub-legislative acts, resolutions, decrees and etc., researches of governmental and non-governmental international organizations, acting in the country, studies - conducted by the authors. Economic-statistical, analysis and synthesis methods are used in the work to conduct the research process properly.

Research results and discussion

Not only natural, but non-common and inefficient realization of acquired and relative advantages can be named as a hindering factor of agriculture, one of the priority fields of sectoral structure of Georgian

economy. The issue is still actual, when the object of the research and review is to reveal the problems, existing in family farming, to determine their underlying causes and to identify the possibilities for self-development. The development of agriculture is mainly connected to the green economy and accordingly, it ensures the improvement of social-economic situation. In this case, the attention can be focused on organic agriculture, which in accordance with Codex Alimentarius (international food standard) is such management system of unified production, which refuses to use such synthetic materials as toxic chemicals, pesticides, fertilizers and other substances are, which may have a negative influence on the environment and human`s health. Thus, development of organic agriculture and accordingly, the production made in such farm, which is recognized as an organic product, the demand on it is increasing rapidly worldwide (Figure 1).



Source: author's calculations based on Statista

Fig. 1. Worldwide sales of organic food (2005-2018)

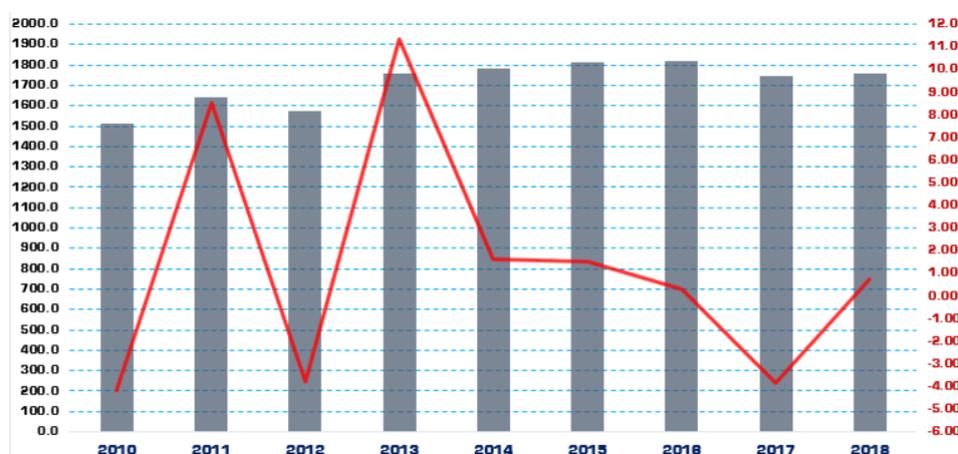
Due to its unique conditions, Georgia has a good prospect to become a producer and exporter of organic product. The main thing for this is the effective use of the amounts, allocated from state budget and effectiveness for implementation of state or international programs (Abuselidze, Mamuladze, 2020). Trends of agricultural financing (Figure 2) shows that its share in budget payment is average 2 % and budget of 2020 envisaged the financing of the sector with 293 million Gel, what is 2 % of the expenses.



Source: author's calculations based on Ministry of Environmental Protection and agriculture of Georgia

Fig. 2. Financing of agriculture (million GEL; %)

Despite of increasing the finances of agriculture, its real growth rate was decreasing every year, in 2017 – in spite of increase, it was decreased with 3.82 %. In 2018, it was increased with only 0.72 % (Figure 3). While the share of agriculture in word economy is: in China – 8.6 %, in Czech Republic – 2.5 %, in Denmark – 0.9 %, in Estonia – 2.6 %, in Finland – 2.7 %, in France – 1.6 %, in German – 0.6 %, in Ireland – 1 %, in Italy – 2.1 %, in Luxembourg – 0.3 %, in the Netherlands – 1.8 %, in Norway – 2.4 %, in Saudi Arabia – 2.7 %, in Spain – 2.8 %, in the United Kingdom – 0.6 %.



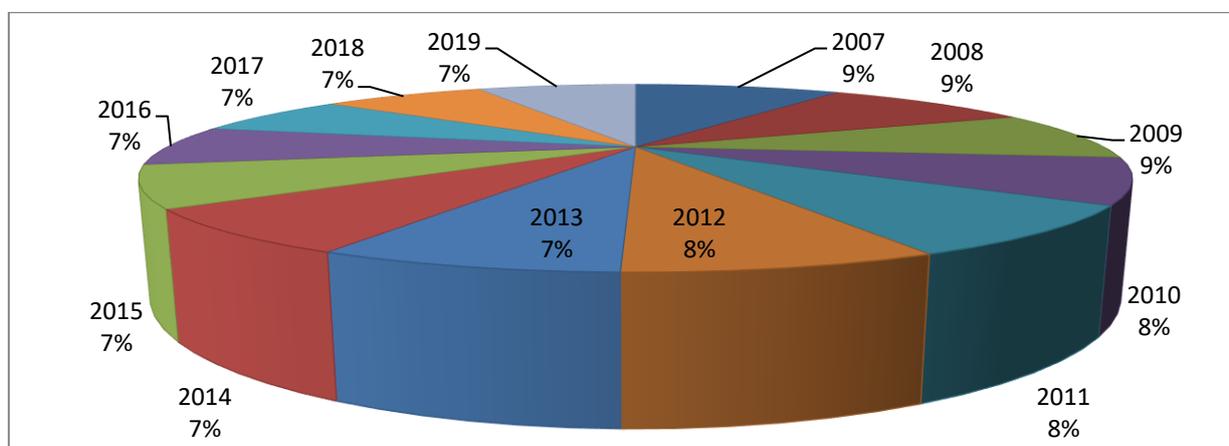
Source: author's calculations based on National statistics office of Georgia

Fig. 3. Real growth of agriculture and GDP sector (million GEL; %)

Analysis of current practical processes has shown that the development level of agriculture, the increase of the volume of the produced products and raising of the quality level of the service is impossible by self-development of 98 % family farming, existing in Georgia and by the utilization on average 1.14 hectares of land, existing in their ownership, which shows the land shortage and hinders the ability to develop large-scale agricultural production and take advantage of the scale effect (Business Media, 2020; Transparency International – Georgia, 2020). While the average value of the agricultural land (cropland) used by one farming is: in the United States – 190.2 ha., in Germany – 30.3 ha., in the countries of European Union – 17.4 ha., on average, in Russia – 42 ha., in Ukraine – 22 ha., in Kyrgyzstan – 22 ha., in Kazakhstan – 44.4 ha., in Belarus – 20 ha., in Uzbekistan – 10 ha., in Armenia – 1.5 ha., in Azerbaijan – 4 ha., in Tajikistan – 45 ha., in Turkmenistan – 1 ha., in Moldova – 3 ha., in the Baltic countries – 24.5 ha. And the

dimensions of agricultural lands (cropland), used by farming are as follows: 0.2 % of farming uses from 1 to 5 hectares agricultural land (cropland) in the United States, in Germany - 31.7 %, in the countries of European Union - 56.4 %, in Georgia - 98 %. 60.4 % of farming uses from 5 to 50 hectares agricultural land (cropland) in the United States, in Germany - 55.7%, in the countries of European Union - 35.7%, in Georgia - 1.5%. More than 50 hectares of agricultural land is used by 39.4% farms in the USA, in Germany - 12.6%, in the countries of European Union - on average 7.9% and in Georgia - only 0.1% (Jakhaia, 2018).

Analysis of the results of the research revealed that the food, produced in family farming, is mainly used to meet the basic needs of the family. This can be based on the data of National Statistics office regarding the years 2007-2019, according to which, the share of food expenditures in the total consumer expenses of household in 2007, 2008, 2009 consisted of 55.9 %, 54.3 %, 51.3 %, in 2010 it decreased with 9.3 % compared with 2007 and it was 46.6 %; in 2017 it decreased by 7.2 % compared with 2011 and it consisted of 41.5 % and in 2019, it increased by 1.6 % compared with 2017 and it was 43.0 % (Figure 4).



Source: author's calculations based on National statistics office of Georgia

Fig. 4. The share of expenditure of food

Since 2013, a strategic document for agricultural development has been developed in Georgia and about 500 projects in the direction of development/rehabilitation of agriculture, environmental protection, tourism, education and rural infrastructure have been carried out, which were funded by European Union (it was used by approximately more than 300 000 beneficiaries), with the business initiative of rural development, funded under these projects, more than 1000 local family were employed and living conditions for more than 10 000 rural population were improved. Despite of the fact that, since 2013 the state has set goals in the development of agriculture by implementing the mentioned project, global pandemic announced worldwide in 2020 has had the greatest impact on the country's economy (Abuselidze, Mamaladze, 2020) and it has had some negative influence on agriculture as well.

The current situation in Georgia shows that, due to this situation, the development of agriculture has become more priority for the state and the government makes a number of recommendations to support it, as in the current period under the COVID-19 crisis, the economic activity has been slowed down around the world and including in Georgia except for agriculture and food, which creates the products, required for living in the current conditions. The above-mentioned support means to allocate 2-billion Gel to stimulate the economy, including agribusiness sector and farmers, in order farmers will be able to buy the equipment with cheap and interest-free loans, tax benefits and special projects. One of such support is full co-financing of 6-month interest rate by the state on loans from 5000 to 100 000 GEL in order to increase assess to

finance for the farmers, what is free one-year money for farmers to grow one-year products. The given support will somehow eliminate many problems, caused by pandemic (Rural Development Agency, 2021).

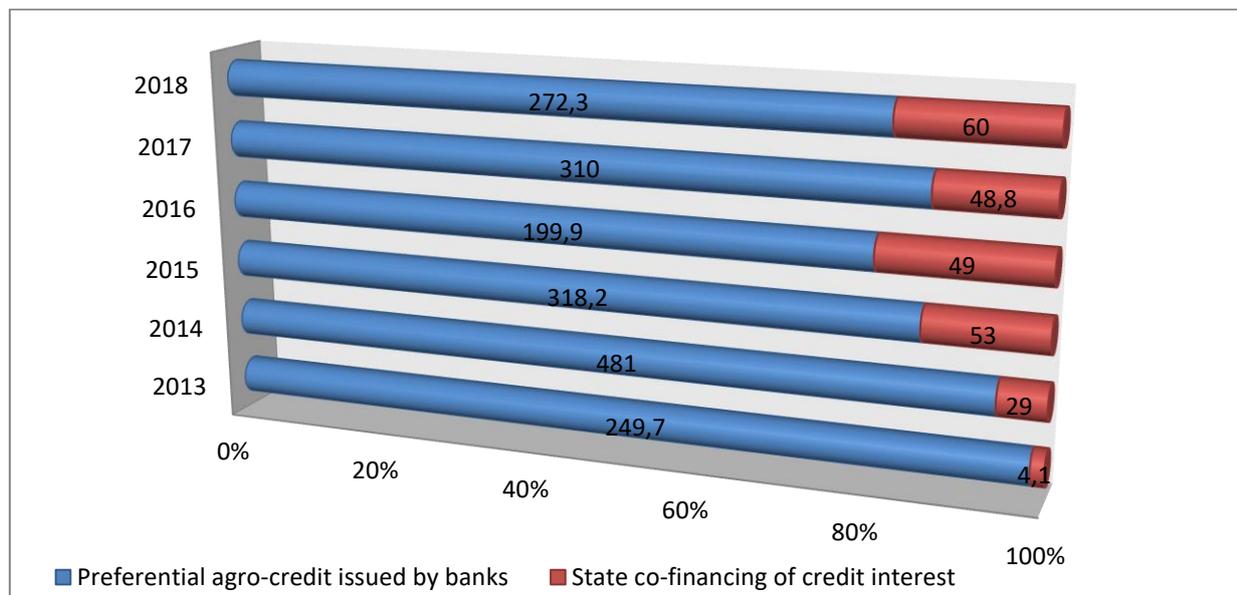
The European Union (EU), the Ministry of Environmental protection and Agriculture of Georgia and the Food and Agriculture Organization of the United Nations (FAO) have awarded 2.2 million GEL to 50 beneficiaries for agricultural grants⁴ under ENPARD III in Georgia for uninterrupted development of agricultural activity and for supporting food production and food security under the pandemic conditions, which will be used to buy agricultural equipment (machinery) and to arrange the greenhouse (hothouse). ENPARD program (the volume of its initiative exceeds 5 million GEL in total), which provides 40-60 % co-financing of the total value of the investments, gives even more farmers the opportunity to benefit from this financial support on the next stage. In response to COVID-19, another 9 million grant program was announced by European Union and United Nations Development Program, which will help non-farm start-ups and growing enterprises. Under the current epidemiological situation, when the current crisis in the country hinders the development of the agriculture even more, a number of activities, carried out within ENPARD are the most timely step for supporting the agriculture at present. Among them, there`s new grant competition, announced within the framework of one of the project "This is Tsalka": "New challenges – new opportunities" with the grant amount – 3.000 Euro and 3 projects were chosen, which will promote effective management of the crisis, caused as a result of coronavirus and it`ll make a quick reaction on these new challenges, before which is faced Georgia as a result of pandemic, caused by the spread of corona virus (European Union for Georgia, 2020).

As it seems, the role and support of the program was revealed even more on the background of epidemiological situation, when the development of agriculture required additional funds in the form of grants most of all. Since 2013, ENPARD program together with the government, ensured to solve the basic problems, which were related to the financial resources and hindered the mobilization of adequate funds for agricultural development, which will ultimately become the basis for promoting the introduction of a green economy. Finally, we conclude that ENPARD is one of the most important programs in terms of supporting the rural and agriculture development, which allows the state to develop such priority sector for the government as agriculture is, by sharing international and European practices and to ensure the reduction of economic inequality, existing between urban and rural areas. Accordingly, implementation of the mentioned program, which includes the implementation of various projects under ENPARD-3, it can be considered as a step forward for the development of green economy by the state. At the same time, its implementation will increase the rural employment and accordingly, it will improve the living standards, develop and strengthen of the rural economy, increase the competitiveness of agriculture, improve environmental protection and take appropriate steps in order to achieve sustainable management of natural resources, which is the main tool for achieving the sustainable development and a prerequisite for the introduction of a green economy.

International cooperation and financial measures, carried out by the country, plays a great role in the implementation of green economy in financing. In this regard, in terms of allocating of so called "green finances", is important to develop such instruments as they`re: Green Investment Fund, Green Bonds, as well as Green Credits, which will be directed to the purpose of green financing and etc., which provides the allocation of some funds to finance relevant technology projects and fields in the sectors of green economy (Abuselidze, Beridze, 2018; Abuselidze, Slobodanyk, 2019; Davydenko et al., 2017; 2019).

⁴ from the state and international projects, funded in agrarian sector, European Neighborhood Programme - ENPARD was has been carried out in Georgia since 2013 year. The aim of it is the rural development of Georgia and the revitalization of the agricultural sector. For 2013-2022 years, the budget of ENPARD in Georgia is 179.5 million Euro, (I phase – € 52 million, 2014-2017; II phase – € 50 million, 2016-2019; III phase – 77.5 million Euro 2018-2022).

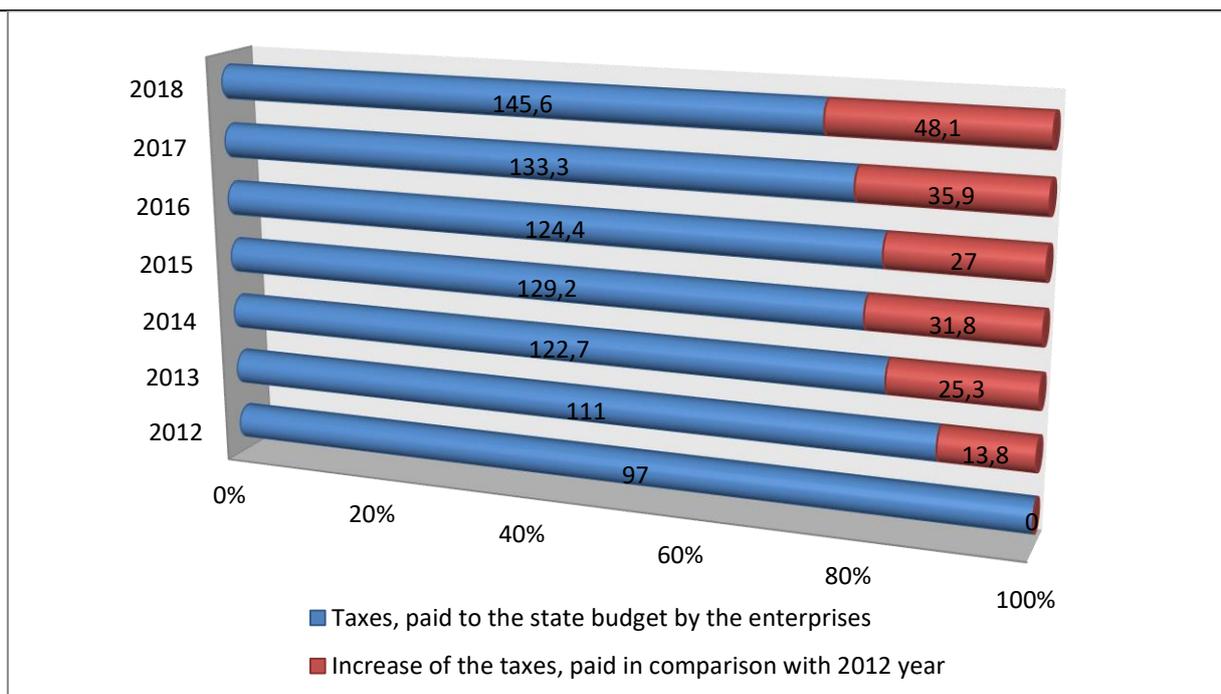
Under the green finances, state project "Preferential Agro Credit", which implies the issuance of low-interest loan on persons, involved in agriculture by the commercial banks and financial institutions (Abuselidze, 2021), participating in the project. On the one hand, the implementation of the mentioned project helps the country to develop such priority direction as agriculture is and on the other hand, it ensures to develop and implement a supporting project for the development of green economy by the state. The growth of the total portfolio of agro credits can be considered as an indicator of the success of the preferential agro-credit project (Figure 5).



Source: author's calculations based on Ministry of Environmental Protection and agriculture of Georgia

Fig. 5. The value of credits, issued in accordance with 2013-2018 years (million GEL)

As diagram shows, 1.8 billion Gel agro-credit was issued from 2013 year to 2018 year, which was used for working capital and fixed assets and 20 million GEL for leasing. For beneficiaries, who wanted credit for leasing, for working capital or fixed assets, from their fixed interest rate, which is from 12 % to 21 % and depending on the amount of loan, they had to pay from 3 % to 9 % of the loan interest rate. As we see, the role of co-financing in agro-preferential credit is great, which stimulates and promotes the development of existing sector even more.



Source: author's calculations based on Ministry of Environmental Protection and agriculture of Georgia

Fig. 6. Taxes, paid to the state budget by the beneficiary enterprises of preferential agro-credit project (2010-2018. Beneficiaries registered as taxpayers only)

In order to measure project effectiveness, it would be appropriate to compare the cost of products, created by the beneficiary companies of the project in relation to the total added value created by the country, which would give us a more accurate picture of the project's effectiveness. However, the project is not analysed in this regard and the only data, that's counted and summarized by the beneficiary enterprises of "preferential agro-credit" project are the taxes, paid to the state budget (Figure 6).

In order to measure the effectiveness of the program, the annual taxes, paid by the beneficiaries was compared to the period, when the program was not launched or 2012 year. according to the statistics, in 2012 year, the taxes, paid by the enterprises, registered as a tax payer in 2012 year was 97 420 387 GEL. In 2013-2018 years, the taxes paid by the beneficiaries of the "Preferential Agro Credit" project exceeded with 181 935 303 GEL to the data of 2012 year. At the same period, 244 445 796 GEL was spent for co-financing of the loan interest of the program beneficiaries by the state. Therefore, the amount, spent by the state is more than the surplus of the taxes, paid by the beneficiary companies in the mentioned years, which was spend in favour of farmers.

The research, conducted for assessment of preferential agro-credit project proves the effectiveness of the state program. From 2013 year to 2018 year, 12 600 new workplaces are created (the number of employees is actually higher, as given data are obtained only according to the indicators of the beneficiaries registered as taxpayers), whose gross income in 2018 year 2.36 times exceeds to the gross income of agricultural enterprises of 2012 year (it's increased with 136 %). The rural population is depended on the income, got from agribusiness (Katamadze et al., 2020). Economic benefit, got through the mentioned project, contributed the development of agriculture and promotional conditions for the given sector were introduced, which responds to the practice of introducing a green economy.

Research was also focused on finding ways of additional income for family farming and determining the directions of effectiveness of spending (Abuselidze, Surmanidze, 2020). The analysis of the research results showed that family farming will develop their defined field in agriculture on the basis of natural and acquired

(acquired through financing or own funds) advantages and receive small economic benefits from the sale of the produced crop / product.

The rural and agricultural development in Georgia provides the sustainable development of the country, which is revealed with economic, social and ecological benefit. Economic benefit can be: growth of the gross domestic product (GDP), caused due to increased production of ecological products, diversification of the product or service, improvement of economic risks management and reduction of the risks, innovative growth by using modern ecological technologies and others. The effectiveness of using the natural resources is reviewed as an ecological benefit and increased living conditions, improvement of incomes and/or quality of life, especially for poor population, creation of additional workplaces, equalization of living standards inequality, protection of the green policy and environment - is reviewed as a social benefit.

Conclusions

The existence of a deep and comprehensive free trade area with the European Union has a positive effect on the prospects of world market integration, on the existence of a global supply network and it creates a significant basis for the growth of direct foreign investments (Abuselidze, 2019). All the above mentioned promotes the introduction of new technologies and know-how, stimulates the production of competitive local organic products and creates work places, forms trading system, compatible with the market of European Union and stimulates the economic growth. However, it`s also necessary to activate an effective financial and economic mechanism for agribusiness management, which contributes the growth of the production of organic products; The formation of a multi-sectoral economy should establish market relations, characterized for agribusiness; A state strategy for the consolidation of agricultural lands should be developed. Targeted budget funding should be increased for the development of agrarian sector, which will firstly be used to increase land productivity, land-reclamation and for the construction of the relevant agro-industrial infrastructure.

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CHALLENGES ON ACCESSING FINANCE FOR MICRO-ENTERPRISES IN LATVIA

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Abstract. Financial support of companies for their development is considered and realised by many countries worldwide, also in Latvia. Latvia has been receiving critical remarks from entrepreneurs in regard to high level of refuse for financing from the financing institution ALTUM which is the principal intermediary of EU funds and provides resources to support entrepreneurship in Latvia. Statistical data indicate that there are significant reductions of micro-enterprises during recent years. The survey data showed that ALTUM rejected 39 % of the surveyed micro-enterprises from those who had submitted applications within three years. In turn, only 6 % of micro-enterprises have received full financing from banks or leasing companies. Funders rejected applications from 9 % of micro-enterprises while another 5 % themselves withdrew funding due to unacceptable conditions. Latvia has to address serious challenges in entrepreneurship development in regions in particular with a lower economic activity. The aim of the paper is to analyse situation of micro-enterprises for receiving funding. Research methods: analysis of scientific publications and results of previous conducted research, analysis of data obtained in survey of enterprises on questions of financing refuse and on evaluations related to financing conditions in recent years. For a more thorough data analysis (used evaluation scale 1-5) indicators of descriptive statistics are applied: indicators of central tendency or location – arithmetic means, mode, median; indicators of variability or dispersion – range, standard deviation, standard error of mean; cross – tabulations; testing of statistical hypotheses using t-test and analysis of variance – ANOVA; correlation analysis. Research results indicate that the use of more precise requirements of financing for micro-enterprises by finance institution ALTUM could benefit in better development of entrepreneurship in regions of Latvia.

Key words: micro-enterprises, requirements for financing, financing refuse, ALTUM, survey.

JEL code: G21, G23, L25, O16, R51.

Introduction

Scientific research worldwide indicate that important aspect is entrepreneurship financing using different financing schemes to support entrepreneurship development. Authorities in the Republic of Latvia (Saeima, 2014) have decided that the JSC Development Financial Institution Altum (ALTUM) has to support entrepreneurship development in Latvia. But Latvia has been receiving critical remarks from entrepreneurs in regard to high level of refuse for financing from the financing institution ALTUM which is the principal intermediary of EU funds and provides resources to support entrepreneurship in Latvia (Ministry of Economics ..., 2017). Statistical data (Central Statistical Bureau..., 2020) indicate that there are significant reductions in number of micro-enterprises during recent years and the business survey data showed that ALTUM rejected 39 % of the surveyed micro-enterprises from those who had submitted applications within three years (Beizitere I, Brence I., 2020). In turn, only 6 % of micro-enterprises have received full financing from banks or leasing companies. Funders rejected applications from 9 % of micro-enterprises while another 5 % themselves withdrew funding due to unacceptable conditions (Beizitere I, Brence I., 2020). Latvia has to address serious challenges in entrepreneurship development in regions in particular with a lower economic activity.

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The slow growth in lending could be partly attributed to weak demand for bank loans from the corporate sector in Latvia. This suggests that the desire of Latvian companies to invest in general is still moderate, even if they could finance investments with internal funds. Although non-bank lending is growing faster than bank lending, its share is too small to support corporate demand growth (OECD, 2019). In turn, the Bank of Latvia (2020) stated that the demand for loans from non-financial corporations decreased already in the second half of 2019. Lending policies pursued by credit institutions remained prudent throughout 2019 and early 2020.

The COVID-19 pandemic has highlighted the urgent need to consider financial sustainability, both within the financial system itself and in the role of capital and investors, in order to make economic and social systems more dynamic and resilient to external shocks (OECD, 2020). There are differences between countries in the proportion of SMEs applying for bank loans. The survey (Kwaak T., et al., 2020) indicated that in the period from April to September 2020 the share of SMEs applying for bank loans in Latvia was 15 % or less. Moreover, many SMEs in Latvia (13 %) did not apply for bank loans due to the fear of rejection. In contrast, lending to SMEs by banks in other countries, even taking into account the constraints of COVID-19, such as Italy, Greece, France, Spain, Portugal and Lithuania, was higher than the EU-27 average of 35 %, well above the EU-27 average, and it was notably higher than the EU-27 average for 2019 (24%) (Kwaak T. et al., 2020).

The study was conducted to investigate the challenges of access to finance for Latvian micro-enterprises that correspond to the classification of micro-enterprises in accordance with the European classification system (European Commission, 2003). The aim of the paper is to propose possible solutions for improvement of analyse situation of micro-enterprises to receive funding taking into account experience in other countries and suggestions by entrepreneurs. To investigate this, research methods were used: analysis of scientific publications and results of previous conducted research, analysis of data obtained in the survey of enterprises on questions of the funding refusal and on evaluations related to financing conditions in recent years.

The results of an ad hoc online survey (WAPI) conducted in early 2018 among companies registered in Latvia were used for in-depth analysis, in which the main financial sources used by entrepreneurs for business were identified, as well as the reasons why their requests were rejected. A computer-assisted internet interview (CAWI) questionnaire was sent to companies with publicly available email addresses. The questionnaire was addressed to those companies in the territory of Latvia that operate in sectors registered in the Latvian Register of Enterprises with 11 defined NACE2 codes that are eligible for state aid. Questionnaires from 2511 companies were accepted as valid, but 1879 of them were from micro-enterprises. The preliminary results showed an alarming picture. Despite the fact that companies need financing for their further development, the possibility to obtain financing is quite limited. In order to perform a more thorough analysis of the data in the survey, the entrepreneurs included in the sample of the survey were asked to assess various important aspects that have a significant impact on the development of the company (used evaluation scale 1-5). For survey data analysis indicators of descriptive statistics are applied: indicators of central tendency or location – arithmetic means, mode, median; indicators of variability or dispersion – range, standard deviation, standard error of mean; cross-tabulations; testing of statistical hypotheses using t-test and analysis of variance – ANOVA; correlation analysis.

Theoretical findings

Having an adequate number of sources of finance and easier access to them can help improve the performance of both the enterprise and the country (Civelek M. et al., 2019). One of the most serious problems limiting the development of small and micro enterprises is the financing of small and micro enterprises (Yan B., 2018), access to finance is crucial for the SMEs' growth and development. Academic researchers often discuss the issue of distinguishing micro-businesses from SMEs in their scientific discussions. The researchers drew conclusions by a systematic review of growth constraints and found that many studies used various definitions of micro-enterprises, which varied depending on the country in which the research was conducted and the existing legal framework (Gherhes C. et al., 2016). However, the landscape for entrepreneurial finance has changed strongly over the last years. Many new players have entered the arena (Block J. H. et al., 2017). Small and micro-enterprises are most affected during the COVID-19 epidemic period. Despite the government introducing many preferential policies, financing for small and micro-enterprises is still difficult (Yan X., Quan L., 2021).

Definitions of micro, small and medium-sized enterprises (MSMEs) vary from country to country depending on their economic structures. The commonly used parameters to define MSMEs at international level are the number of employees, total net assets, sales, paid-up capital, investment level, and annual turnover (Katoch G., 2020). Financing needs of micro-enterprises along their evolution are evaluated and discussed including aspects of using of non-formal sources as often formal financing sources are not available, indicating in the lack of knowledge for loan application preparation to be the main reason (Prijadi R. et al., 2020). For the last decade economists have been preoccupied with the decline in bank financing to small businesses and entrepreneurs (Fenwick M. et al., 2018), the SME financing types can not only be profiled according to their firm-, product-, industry- and country-specific characteristics but also to macroeconomic variables (Masiak C. et al., 2020). Alternative financing is an important type of financing for small and medium-sized innovative enterprises, as currently there are difficulties in obtaining financing from traditional sources (Chebukhanova L., Blokhina T., 2020). Once micro-enterprises can benefit from state aid only when they demonstrate that, at the time of the on-line completion of the business plan, they meet cumulatively the eligibility criteria imposed by the funding authority (Tirlea R. T., 2016). From other side, researchers ask also questions, like - if Business Administration degrees to encourage entrepreneurship and strengthen connection with business incubators (Alonso-Conde A. B. et al., 2020).

Several researchers state solid arguments on supporting entrepreneurs when it matters: optimising capital allocation for impact (Burton J., 2020; Okello Candiya Bongomin G., Ntayi J. M., 2020), thus concluding that needs for external financing are diverse and as well as diverse ways of obtaining this financing. Different sectors of the economy have different impacts of procurement strategies, for example, on construction SMEs' growth and have suggested that policy makers have to take into account needs and specific needs of different sectors of economy (Windapo A. O. et al., 2020).

Mobile money usage is becoming more and more often used world-wide as well as discussed and evaluated in the scientific publications by many researchers (Odoom R., Kosiba J.P., 2020). Researchers have underlined that there are differences of company financing by their size taking into account various types of risks and requiring needs for additional education to manage the companies (Md Husin M., Haron R., 2020). The research findings confirm that there is a correlation between the regions and the use of earnings to finance innovations by small and medium-sized enterprises. Thus, there are regions that differ greatly in whether SMEs finance innovations from their own sources. Moreover, a correlation between

the regions and the use of the EU funds to finance innovation in small and medium-sized enterprises was confirmed (Koisova E. et al., 2018).

Research from China states that domestic and foreign small and micro enterprises have encountered great problems in financing, which caused by external and internal reasons. The most common internal reasons are mentioned: the majority of small and micro enterprises have small scale assets, fixed funds are not sufficient, financial aspects of the system is not perfect, the financial information is not true and transparent enough, the human resources are also very short, the management level is also low, and so on (An D. et al., 2018). Every market economy relies on the function of a financial intermediary to transfer resources from savers to investors (Zapalska A. M. et al., 2007). These types of aspects are becoming more and more important. The report of the European Commission (2017) states that taxes are one of the main tools available to the government to influence business to maximize its benefits. This study also indicates that there is a link between taxation and business. A number of relevant business choices that may be affected by the tax system are highlighted. Namely, taxes can influence not only the choice to become an entrepreneur, but also to invest and use internal or external financing in the company's operations.

A World Bank study (Jacobs B. et al., 2017) found that the tax regime for micro-enterprises in Latvia, adopted in 2010, provides strong incentives for companies to stay small to avoid financial indicators rising above the eligibility threshold. The Latvian government was advised to phase out the micro-enterprise tax regime, given its potentially negative impact on productivity growth. The regime could be replaced, for example, by a tax credit for new companies that reimburse corporate income tax payments or social security contributions for a certain period after their birth.

In addition, the OECD (2019) found that the proportion of companies subject to credit restrictions in Latvia is well above the EU average and also above the level seen in neighbouring countries (including Estonia and Lithuania). As in most OECD countries, access to credit for small businesses in Latvia was hampered by factors such as insufficient collateral and inadequate business history. Other indicators also point to the concerns of small businesses when applying for debt and using banking services. The proportion of Latvian companies that do not request bank financing due to a possible rejection or do not feel confident when it comes to bank financing is one of the highest in the EU (OECD, 2019).

Empirical research results and discussion

A survey of the company was conducted to find out the possibilities of companies in Latvia for the availability of financing and possible obstacles to obtaining external financing. Among the diverse obstacles to access to finance, in the questionnaire many entrepreneurs noted the tax burden. Thus, the task was to examine the relationship between the availability of financing and the tax burden according to the views of entrepreneurs, and the dependence on the size of companies, taking into account the number of employees. The main results of the survey of Latvian companies on the evaluations of entrepreneurs on the one hand about the level of availability of financing and on the other hand, the evaluations on tax burden by size of company depending on the number of employees are included in Table 1.

Table 1

The main statistical indicators of entrepreneurs' evaluations of the availability of financing and the tax burden by the number of employees in the company

Number of employees in the company	Availability of financing	Tax burden	
1-4 employees	Mean	2.89	3.93
	N	1413	1413
	Standard Deviation	1.426	1.198
	Standard Error of Mean	0.038	0.032
	Median	3	4
	Range	4	4
5-9 employees	Mean	3.07	4.16
	N	466	466
	Standard Deviation	1.337	1.067
	Standard Error of Mean	0.062	0.049
	Median	3	5
	Range	4	4
10-49 employees	Mean	2.98	3.95
	N	477	477
	Standard Deviation	1.319	1.113
	Standard Error of Mean	0.060	0.051
	Median	3	4
	Range	4	4
50-249 employees	Mean	2.80	3.74
	N	136	136
	Standard Deviation	1.281	1.102
	Standard Error of Mean	0.110	0.095
	Median	3	4
	Range	4	4
Total	Mean	2.94	3.97
	N	2492	2492
	Standard Deviation	1.383	1.157
	Standard Error of Mean	0.028	0.023
	Median	3	4
	Range	4	4

Source: author's calculations based on the survey of entrepreneurs, n=2493, evaluation scale 1-5, where 1- not limiting, 5 – limiting

In order to find out and estimate the differences in the assessments, a distribution of entrepreneurs' evaluations of the availability of financing by the number of employees in the company has been prepared and included in Table 2.

Table 2

Distribution of entrepreneurs' evaluations of the availability of financing by the number of employees in the company

Evaluations	Number of employees in the company				Total
	1-4	5-9	10-49	50-249	
1- not limiting	338	81	81	27	527
(2)	236	71	96	28	431
(3)	350	136	134	44	664
(4)	219	91	85	19	414
5 - limiting	270	87	81	18	456
Total	1413	466	477	136	2492

Source: author's calculations based on the survey of entrepreneurs, n=2493, evaluation scale 1-5, where 1- not limiting, 5 - limiting

Analysis of variance (ANOVA) was used to evaluate the significance of differences in entrepreneurs' estimates depend on company size in terms of the availability of financing and tax burden, and the main results are presented in Table 3.

Table 3

The main statistical indicators of testing statistical hypothesis with analysis of variance (ANOVA) on difference of entrepreneurs' evaluations by the number of employees in the company

Analysed aspect	Sum of Squares	Sum of Squares (values)	df	Mean Square	F	Sig.
Availability of financing	Between Groups	14.233	3	4.744	2.484	0.059
	Within Groups	4752.622	2488	1.910		
	Total	4766.855	2491			
Tax burden	Between Groups	26.061	3	8.687	6.533	0.000
	Within Groups	3308.559	2488	1.330		
	Total	3334.621	2491			

Source: author's calculations based on the survey of entrepreneurs, n=2493, evaluation scale 1-5, where 1- not limiting, 5 - limiting

The results of analysis of variance have indicated that there is not a statistically significant difference in the evaluations of entrepreneurs by the size of the company on the tax burden (sig. 0.00). However, there is noticeable difference in entrepreneurs' assessments by company size regarding the availability of financing (sig. 0.059). Therefore, an additional correlation analysis was performed and the results are presented in Table 4.

Table 4

The main statistical indicators of correlations of entrepreneurs' evaluations of the availability of financing and the tax burden and the number of employees in the company

Analysed aspect	Statistical indicators	Availability of financing	Tax burden	Number of employees in the company
Availability of financing	Pearson Correlation	1	0.209**	0.014
	Sig. (2-tailed)		0.000	0.488
	N	2492	2492	2492
Tax burden	Pearson Correlation	0.209**	1	-0.007
	Sig. (2-tailed)	0.000		0.723
	N	2492	2492	2492
Number of employees in the company	Pearson Correlation	0.014	-0.007	1
	Sig. (2-tailed)	0.488	0.723	
	N	2492	2492	2492

** Correlation is significant at the 0.01 level (2-tailed).

Source: author's calculations based on the survey of entrepreneurs, n=2493, evaluation scale 1-5, where 1- not limiting, 5 – limiting

We were particularly interested in an in-depth analysis of the evaluations of entrepreneurs attributable to a micro-enterprise, i.e. with 9 employees or less. In order to find out whether there are differences in the evaluations of entrepreneurs between the size of micro-enterprises, depending on the number of employees, an additional analysis was performed.

To evaluate the significance of differences in evaluations by the company size in terms of the financing availability and the tax burden, it was applied an analysis of statistical hypotheses using t-test to evaluate the significance of those evaluations and the main results are included in Table 5.

Table 5

The main statistical indicators of testing statistical hypothesis with t-test on difference of entrepreneurs' evaluations of the availability of financing and the tax burden by the number of employees in the company

Analysed aspect	Number of employees in the company	N	Mean	Standard Deviation	Standard Error of Mean			
Availability of financing	1-4 employees	1413	2.89	1.426	0.038			
	5-9 employees	466	3.07	1.337	0.062			
Tax burden	1-4 employees	1413	3.93	1.198	0.032			
	5-9 employees	466	4.16	1.067	0.049			
Analysed aspect	Variances	Levene's Test for Equality of Variances			t-test for Equality of Means			
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Standard Error Difference
Availability of financing	Equal variances assumed	8.259	0.004	-2.359	1877	0.018	-0.177	0.075
	Equal variances not assumed			-2.436	840.015	0.015	-0.177	0.073
Tax burden	Equal variances assumed	8.177	0.004	-3.650	1877	0.000	-0.227	0.062
	Equal variances not assumed			-3.869	882.038	0.000	-0.227	0.059

Source: author's calculations based on the survey of entrepreneurs, n=2493, evaluation scale 1-5, where 1- not limiting, 5 – limiting

The results of the survey data analysis indicate that the differences in entrepreneur's evaluations by the company size do not differ statistically significant with significance level (sig. 0,018 and sig. 0,015) for entrepreneur's evaluations of the availability financing and with significance level (sig. 0,000) for entrepreneur's evaluations of the tax burden.

In addition, the answers of entrepreneurs to the question of what were the unreasonable conditions for a company to acquire banks are considered. The main reasons mentioned by entrepreneurs for refusal of financing for SME and micro-enterprises are included in table 6.

Table 6.

The main reasons for refusal of financing for SMEs and micro-enterprises in Latvia

Reasons for refusal of financing	Number of companies received the respective refusal of financing	Share of companies received the respective refusal of financing (in %)	Share of enterprises in the survey received the respective refusal of financing from all companies with not more than 9 employees (in %)
Bank required additional security	69	3.7	70.4
Bank required guaranties by owners	52	2.8	53.1
Bank required to subordinate owner's loan	5	0.3	5.1
Bank required to increase own capital	8	0.4	8.2
Bank required to increase own contribution in the project	19	1.0	19.4
Bank restricts dividends	7	0.4	7.1
Other reason (please, indicate)	14	0.7	14.3
Hard to say	9	0.5	9
Total number of refuses	183		

Source: author's calculations based on the survey of entrepreneurs, n=1879

Most of the reasons given in the Table 6 show that banks with such conditions in order to provide financing to companies were trying to significantly reduce their level of credit risk.

Other unfulfillable and unacceptable conditions required by banks from the point of view of entrepreneurs representing micro-enterprises are summarized in Table 7.

Table 7

Other reasons for refusal of financing mentioned by entrepreneurs, by the number of employees of the company

Responses	Number of employees in the company	
	1-4	5-9
High interest rate	3	1
Requested too much data, too many different statements and reports that we couldn't complete	2	
The bank's offer was expensive and unprofitable for the company, I provided the financing myself!	1	
Tax debt, notwithstanding the existence of an agreement with the tax authorities on the gradual repayment of the debt	1	
It was necessary to indicate the exact future cash flow and positive income now!	1	
The valuation of the pledge was too different from its price	1	
Banks believe that the countryside is not worth to finance		1
Various expensive activities		1
The money received against the pledge or security is disproportionately expensive, unprofitable		1
Due to the bank's poor customer service, we turned to another bank		1
Total number of responses from entrepreneurs of micro-enterprises	9	5

Source: author's calculations based on the survey of entrepreneurs, n=1879

The various reasons given in Table 7 also suggest that banks are overly cautious about possible future losses when lending to micro-enterprises. In our point of view, this demonstrates the mistrust of banks in the business of micro-enterprises.

Acknowledgements

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Conclusions, proposals, recommendations

- 1) Entrepreneurs of micro-enterprises consider that in many cases financing availability and tax burden are limiting factors for their company development.
- 2) The entrepreneurs who consider financing availability and tax burden as limiting factors for their company development does not differ statistically by number of employees employed in the company.
- 3) For support from financing institution refusal reasons were that bank required additional security and bank required security by owners.
- 4) Aspects on refuse could be useful for practical studies by acting enterprises which will apply for financing support in future.
- 5) The government should carefully assess the impact of tax reform on the performance of enterprises, in particular micro-enterprises, in order to assess their ability to attract finance and invest in enterprises. It should be monitored whether this reform gives the expected benefits.
- 6) Given the prudence of banks in lending to companies and comparing the small share of non-banks in their financing, alternative channels for raising capital should be developed to support the demand of micro-enterprises and the possibilities for companies to receive public support should be expanded.

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ANALYSIS OF THE INTRODUCTION OF BUSINESS INTELLIGENCE AND DATA WAREHOUSING INTO BUSINESSES IN LATVIA

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Abstract. The market of global business intelligence technologies reached EUR 18.3 billion in 2017 and is expected to reach EUR 22.8 billion in the near future, as such technologies provide companies with a number of benefits: new information for business decision-making, real-time financial reporting and manual work automation. Nevertheless, many companies around the world do not achieve the desired results of applying business intelligence and data warehousing technologies. The research aims to develop scenarios for applying business intelligence and data warehousing tools in entrepreneurship in Latvia based on an examination of the tools. The research has found that the companies examined in the case study have introduced business intelligence along with data warehousing; however, there are differences in applying the business intelligence and the level of its advancement. Overall, a business intelligence system makes core and support operations and processes faster, as well as reduces costs and requires less human resources. However, problems were identified concerning a lack of motivation in employees to learn new technologies. The scenario analysis concluded that large companies should perform as many administrative and technological processes related to the mentioned technologies as possible themselves rather than outsource them, which allows them to save funds on the development of such technologies and improve the company's data culture.

Keywords: business intelligence, data warehouse, IT architecture.

JEL code: C8, O33, O3

Introduction

Information technology and data availability become increasingly important for successful business. Business intelligence is a term that refers to technologies and processes for effective data collection, storage and analysis (Presthus W., Stian S., 2015). International experience shows that introducing and applying effective business intelligence also requires a data warehouse – an aggregated database containing data from several external and internal data sources. Such technological solutions provide companies with several benefits: new information for business decision making, real-time company financial reporting (Bach M. P. et al., 2016), as well as manual work automation, thereby releasing human resources for more important analytical work (Kimball R. et al., 2006., Larson D., Chang V., 2016).

The market of global business intelligence technologies reached EUR 18.3 billion in 2017 and is expected to reach EUR 22.8 billion in the near future (Ain N. et al., 2019). Nevertheless, many companies in the world do not achieve the desired results of applying business intelligence and data warehousing technologies, and there are conflicting views on this problem in the industry examined. A number of scientific research studies have been conducted worldwide on the effects of data analytics and information systems on business. Ain et al. (2019) have identified various challenges for the introduction of such technologies, as well as the areas where more research is needed. K. Bozic and V. Dimovski (2019) have found a positive link between business intelligence application by a company and the performance of the company. In Latvia few researchers focus on business intelligence (Disteina I., 2019; Ezerins I., 2009; Peskops M., 2017). However, there is a general lack of research on the willingness of end users of such technologies to use the tools on a daily basis, as well as on the users' knowledge of the information technologies required for the tools to be used. Most of the research studies focus on the technological aspects of business intelligence and data warehousing, yet it is important to examine how the technologies are applied by the end user and what factors affect the applications (Ain N. et al., 2019). Given the

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relevance of the topic, the research did an assessment of the introduction of business intelligence and data warehousing by businesses in Latvia.

Research **hypothesis**: introducing a business intelligence information system and data warehousing into a company is more economically advantageous if using only human resources available in the company.

Research aim: to develop scenarios for applying business intelligence and data warehousing tools in business in Latvia based on an examination of the tools. The following specific research tasks were set to achieve the aim: 1) to give insight into the theoretical aspects of business intelligence and data warehousing; 2) to perform a case study on the experience of companies in their introduction and application of business intelligence and data warehousing; 3) to develop scenarios for the introduction and implementation of business intelligence and data warehousing in companies.

A number of **research methods** were employed to do the research: monographic and descriptive for theoretical discussion and interpretation of the research results based on scientific findings and theories; analysis and synthesis for examination of problem elements and identification of regularities; induction for making assumptions based on individual elements or facts; deduction for logical systematization and interpretation of empirical data. To gain an in-depth understanding of the application of business intelligence and data warehousing in business in Latvia, a case study was performed on the SJSC Real Estate and the JSC Latvian State Forests. The scenario method was used to identify scenarios for the introduction and implementation of business intelligence and data warehousing, highlighting the benefits and challenges of each scenario. Expert interviews were conducted to determine the most appropriate scenario.

The present research used the following **information sources**: research papers of international scientific journals, electronically available national and foreign periodicals focusing on business intelligence and data warehousing.

1. The essence and role of business intelligence

The concept of business intelligence refers to strategies and technologies for storing, managing and analysing various company data (Harrison R. et al., 2015). According to W. Presthus and S. Stian (2015), business intelligence is a generic term that refers to technologies and processes related to data collection, storage and analysis with the aim of helping a company to make right business decisions. B. Raza et al. (2020) regards a data warehouse as a database containing historical information about the organization that serves as a central place to store data for analysis and processing purposes.

Most often, business intelligence technologies perform the following functions: company financial performance analysis and business process management, data mining, predictive analysis of various indicators and reporting on core business and support processes (Bozic K., Dimovski V., 2019). However, there are other ways whereby business intelligence reporting can help a company: descriptive analytics (data analysis that can explain a particular phenomenon), data query generation, statistical analysis, data visualization, visual analysis, and data preparation for other purposes.

Business intelligence could be used also for creating non-standard applications and solutions. Most business intelligence solutions provide interactive visualizations that allow the user to view the data they want broken down by a variety of dimensions. However, if some user or business intelligence specialist has a good knowledge of a particular solution, s/he can program a solution needed, e.g. for pay or bonus calculations, instead of doing regular reporting, thereby gaining a new knowledge (Wieder B., Ossimitz M. L., 2015) and projecting the development of a specific area (Grubljesic T., Jaklic J., 2015). W. Presthus and S. Stian (2015) emphasize in their research that business intelligence is useful in various

industries, incl. health, entertainment, nature protection and manufacturing. In addition, a business intelligence solution or application is not just a tool for the company's business analysts or IT specialists, and it could also be used by other employees of the company for their daily work. Of course, the employee needs knowledge of the specific solution to make full use of the opportunities provided by this solution.

A business intelligence system can help a business to gain the upper hand over its competitors in terms of information. It can help a company to generate and gather new information needed for making business decisions (Bozic K., Dimovski V., 2019). However, for a company to successfully use the advantages, it needs a range of specialized knowledge and technology that is not available to all companies (Larson D., Chang V., 2016). To make full use of business intelligence, a company needs data to analyse. For companies that do not have such data or the data are of poor quality, value added from business intelligence might be insignificant (Kimball R. et al., 2006). However, the introduction of such technologies could be a good motivator to structure the available data in the company or develop current information system projects, considering the introduction of business intelligence and data warehousing technologies in the future.

To successfully introduce business intelligence together with data warehousing into a company, it is required to effectively combine the understanding of business processes with information technologies. Business experts need to understand what business intelligence can do, while IT professionals need to understand what the needs of business experts are and how to meet them. The costs of introducing new information systems should also be taken into account. It is important for company managers to assess whether the company is capable of introducing such complex systems. Large-scale information system projects often spend 45 % more funds, 7 % more time and generate up to 56% less end value than initially planned (Bloch M. et al., 2012). There are also research studies that have found that the ability of a company to introduce its own specialized information systems might not positively correlate with the company's performance, as many standardized information system solutions are available today (Aydiner S. et al., 2019). It could be concluded that company managers take risks in introducing new information systems, including business intelligence and data warehousing. Managers need to assess in detail all potential risks and examine potential scenarios.

Another research study (Ain N. et al., 2019) emphasizes that the successful introduction of business intelligence into companies is hindered by the mismatch between the results desired and the funds invested. Namely, the results do not meet the desired results if the system is not used to the full extent, or the users do not want to use the system, or if the business intelligence system has been introduced improperly or inefficiently. When assessing and introducing a business intelligence system into a company, the challenges that the user might face in exploiting the system should be taken into account. It could be concluded that the introduction of business intelligence and data warehousing provides benefits, as well as poses various risks.

2. An examination of data warehousing and business intelligence implemented by the SJSC State Real Estate and the JSC Latvian State Forests

To examine the benefits and challenges of applying data warehousing and business intelligence by a business, the research performed a case study on two companies: the SJSC "State Real Estate" and JSC "Latvian State Forests". At the beginning of the case study, the following aim of the study was defined: to examine the practices, benefits and challenges of data warehousing and business intelligence in Latvia. At the next stage of the case study, an interview protocol was developed, which included questions for company representatives in relation to data warehousing and business intelligence practices in their

companies. Subsequently, semi-structured interviews with the company representatives were conducted. An analysis of secondary data was also performed as well as information available in the public space of Latvia and company annual reports were used to obtain information on the selected companies. As a result, the research analysed and interpreted the data obtained, as well as compared the experience of the companies in relation to data warehousing and business intelligence practices.

SJSC State Real Estate. The company is the largest land and building manager in Latvia, engaged in the management, alienation, leasing, administration and development of new nationally significant construction projects and the implementation of various real estate target projects. An analysis of the company's IT infrastructure reveals that the company constantly develops its internal information system architecture; besides, it uses information and data from data sources belonging to third parties, e.g. the State Land Service.

The company began considering introducing data warehousing together with business intelligence in 2018, as there was a need for an electronic data analysis and reporting solution. Before the business intelligence was introduced, the company did not have a unified reporting tool. Mostly MS Excel was used to process and connect data from various systems manually, perform calculations and other data analytics. The results obtained were exported to a final report, which could represent both a specially formatted MS Excel final document and an MS PowerPoint presentation. The company had and still has information systems with their own built-in reporting solutions. For example, the real estate management information system has been designed as a special data export tool by means of which the user can create a desired report in MS Excel format. A feasibility study of the company's information systems for the introduction of a reporting tool and business intelligence in 2018 found that the amount and complexity of data in the company's current information systems were large and high, and more attention should be paid to data quality assurance problems. Attention should also be paid to data integrity between systems, as well as ways should be sought to normalize data so that the data from several information systems are interoperable. As a result of the feasibility study, several business intelligence solutions were analysed and prototypes were developed: SAP BusinessObjects, Microsoft PowerBI and Qlik Sense. After assessing their advantages and disadvantages, Microsoft PowerBI was chosen by the company.

The company's data warehouse has been built according to the industry standard, i.e. from several data sources, using the ETL process; the data are loaded into a separate, permanent database, from which business intelligence reports are created afterwards. As prescribed by the industry standard, ordinary users are not expected to work with data warehousing technologies daily. This is the responsibility of the IT Department, project managers and an outsourced contractor. In the company, the business information system development department is responsible for business intelligence and data warehousing, yet not all employees of this department are constantly involved in business intelligence projects. Two information system project managers are most often involved in business intelligence and data warehousing projects – system analysts and one information systems administrator. It should be considered that the employees are not only involved in business intelligence and data warehousing projects but are also busy dealing with other IT projects. If necessary, other employees from the IT Department or employees from other departments are involved in dealing with specialized reports or solutions relating to a specific business process.

In the company, reports are mostly produced through outsourced services. For this purpose, the company has hired two partners who work with both data warehousing and business intelligence reports. Among the company's organisational units, only the IT Department produces its own reports for its own

needs. Reports for the company are produced by the outsourced partners in cooperation with the company's project managers by employing Agile Project Management Methodology.

Since the company is a state joint stock company and the Ministry of Finance is a 100 % shareholder, which means that if business intelligence solutions need to be outsourced, the company needs to invite tenders for a contract with a developer or buy working hours in the Electronic Procurement System (EIS).

The company supports sending employees to Microsoft PowerBI training, yet in practice only five employees from the IT and Financial Analysis Departments have been trained. The training is likely not popular due to the low popularity of the business intelligence tool used in the company, yet the employees do not want to undergo such training on their own initiative. However, any training request that the company has received from their employees regarding PowerBI have been approved by the company. In practice, to work with reports daily, no special training is required, and basic instructions of the IT Department are sufficient. However, detailed training is almost obligatory for independent reporting. The company has 75 PowerBI licenses that allow it to continuously produce reports and other business intelligence solutions, and the company's long-term plan is to provide PowerBI licenses to all its employees over time.

The company is still at the early stages of business intelligence. The first report using a data warehouse was prepared in the summer of 2018, which, according to an expert, was relatively recently. Preparing the report took less than two months from the start of the project to the delivery of the final product. The company has already developed over 20 various business intelligence reports or business intelligence solutions. Overall, the expert rated the business intelligence tool used in the company as quite unpopular because there was a certain reluctance to develop in the information technology industry, especially among the employees. The users of the tool also often do not understand the nature of business intelligence and the results to be achieved and often use business intelligence solutions as an additional tool. Instead of taking full advantage of all the features available in the business intelligence tool, its users export any report to an MS Excel file and work with it in MS Excel. This is one of the most serious problems that hinder the development of business intelligence in the company.

JSC Latvian State Forests. The core business of the company is forestry, and it is also the company's main source of revenue. The company is also engaged in hunting and supplying recreation services, produces selected seeds and seedlings, as well as offers underground resources in the market: sand, gravel and peat. The company has ~ 1200 employees. The company spends a lot of funds on maintaining its information systems and subscribing to databases, and in 2018 the total expenditure reached EUR 1.83 million.

The company actively applies business intelligence together with data warehousing. The company began introducing business intelligence in 2012 because of the need for an electronic, automated reporting tool. Until then, no basic and support process reporting solution was available in the company, and everything was done manually by using MS Excel. Given the company's information system infrastructure at the time, based on a feasibility study the company chose a Microstrategy business intelligence solution, which was launched in 2012. Today too Microstrategy is the company's main and only business intelligence solution.

The data warehouse of the JSC Latvian State Forests has been created according to the industry standard, i.e. from several data sources, using the ETL process; the data are loaded into a separate, permanent database, from which business intelligence reports are created afterwards. The company's employees are not expected to work with data warehousing technologies daily, as this is the responsibility of the respective project management team and outsourced contractors.

The company has a separate project team for business intelligence, which consists of three employees: a business intelligence project manager, a systems analyst and an IT administrator. All the employees work on only business intelligence and data warehousing solutions. Reports for the company are produced by both outsourced developers and the company's own employees. The outsourced developers usually produce the most complex reports, which require more complex visualizations or more complex data sources, while the company's employees produce reports from one data source, which require simpler visualizations. For this purpose, the project management team answers questions and offers help on applying Microstrategy. The company has distributed a total of 260 Microstrategy licenses to the users.

The project management team for business intelligence also helps the users with reporting technologically (in relation to data warehousing). If a user wants to produce a new report or other solution, s/he turns to a project manager or the responsible employee with a request to provide the data to the user. The responsible employee examines the request and gives the user access to the data. This means that the responsible employee connects the data warehouse with the business intelligence application (Microstrategy) so that the user can successfully produce a report. If the data needed by the user are not available, the responsible employee offers other data or other ways to achieve the result needed. Agile Project Management Methodology is used for reports and solutions that require outsourcing. The project manager submits the technical and functional requirements to an outsourced developer, and after each iteration of the business intelligence solution, the project manager provides feedback until the result is achieved. A contract with developers is concluded in accordance with the provisions of the Public Procurement Law.

Users independently develop reports and other solutions based on data from various data sources. In the company, the main data sources are the geospatial information system as well as the accounting information system. In addition, reports are produced based on data from the information systems of personnel management and cooperation partners. Namely, all the above systems are loaded into the data warehouse. In some cases, users use their personal data sources (such as XLS files), yet the company seeks to train the users for the best practices of data warehousing and business intelligence to produce reports, if possible, based on data from the data warehouse.

Although any employee of the company who is provided with a license and training theoretically has an opportunity to produce business intelligence reports, the company has departments that produce relatively more reports. Most reports are produced by the departments related to production, logging, planning and timber supply. The company's Financial Management Department with its business intelligence reports related to finance are also among the leaders.

The company provides its employees with training in applying the business intelligence application Microstrategy. All the employees who are supposed to work with Microstrategy and related systems daily are sent to training. In the company, however, the users do not have complete confidence in new IT solutions, including data warehousing and business intelligence. The company's employees needed to be actively convinced of the value added of business intelligence and its opportunities, yet overall, according to the expert, there was a tendency for the employees to develop and learn. Often the other extreme was that the results expected by the users from the business intelligence application were too high. The company's management actively supported business intelligence projects.

The expert admitted that the company also had a data quality problem – due to data imperfections, the company had problems with introducing and maintaining data warehousing and business intelligence solutions. This was due to the shortcomings of previously introduced information systems, as well as a lack of user training in using the systems. However, the company actively works on it, and the overall data

quality situation improves. The company develops specific data warehousing solutions that help to eliminate the problems in real time or notify those responsible of an existing or potential problem.

Table 1

Characteristics of applying data warehousing and business intelligence by the SJSC State Real Estate and the JSC Latvian State Forests

Indicator	SJSC State Real Estate	JSC Latvian State Forests
Data warehousing and business intelligence implemented	Since 2018	Since 2012
Reason for introducing data warehousing and business intelligence	Need for an electronic reporting tool	
Solution used before business intelligence and data warehousing have been introduced	No, standard office applications	
Responsible employees working with data warehousing and business intelligence	Two information system project managers, systems analysts; information systems administrator; Business Reporting and Analysis Department	Project management team (a business intelligence project manager, a systems analyst, an IT administrator) and outsourced contractors
Employees who produce reports for the company	Outsourcing, less often – company employees	Company employees, for complex reports – outsourcing
Business intelligence tool	Microsoft PowerBI	Microstrategy
Data warehouse architecture	Standard	
Business intelligence tool licenses	75	260
Number of licenses versus the number of employees	(523 vs 75) 6.97	(1200 vs 260) 4.61
Departments that use data warehousing and business intelligence	Finance Department, Real Estate Management and Maintenance Department, Real Estate Leasing and Sales Department	All company departments
Data quality problems identified in the company	Significant data quality problems	Insignificant data quality problems
Employees' desire to learn new information technologies	Moderate - low	
Company management support for business intelligence and data warehousing projects	Significant	
Methodology applied to managing business intelligence and data warehousing projects	Agile	

Source: authors' own compilation based on expert interview results

It could be concluded that in the JSC Latvian State Forests, business intelligence and data warehousing are relatively advanced, as well as both technologies are used in accordance with the principles of good practice. The users of the technologies generally understand how the tools work and how to use them. The

application of business intelligence in the company expands, yet it is somewhat hampered by shortcomings in data quality.

It could be concluded that the experience of the companies in implementing the systems is different, yet it should be considered that the companies are engaged in different kinds of economic activity. The JSC Latvian State Forests can develop various, relatively simple business intelligence reports on and solutions to its core business, retrieving data only from its own information systems. However, in order to produce a high-quality report, the SJSC State Real Estate needs data from several cooperation partners, e.g. the State Land Service, the Ministry of Finance etc.

Overall, the experts rated the implementation of business intelligence and data warehousing in both companies positively, as it provided several benefits. For example, in the case of the SJSC State Real Estate, the automated reporting process replaces a personnel member and speeds up the flows of information between the organizational units from a few days to a few minutes. The expert of the JSC Latvian State Forests also acknowledged the value added of the technologies, as the employees are able to optimize their work through producing no MS Excel reports, and since manual work is excluded, they can go into the details of the reports.

Before business intelligence and data warehousing were introduced, both companies did not have a specific system for reporting from other information systems. The largest difference lies in the fact that the JSC Latvian State Forests introduced business intelligence together with data warehousing six years earlier than the SJSC State Real Estate did. This is also the main reason why both systems are more advanced at the JSC Latvian State Forests. The companies have also introduced various business intelligence solutions. Microstrategy was one of the most popular solutions in 2012, as well as it fully supported the infrastructure of the JSC Latvian State Forests. PowerBI, however, appeared in the market only in 2015. PowerBI is a Microsoft product and at the time of introducing business intelligence, the information system architecture of the SJSC State Real Estate was based on Microsoft products; therefore, the company's choice to introduce PowerBI was logical.

The companies have similar business intelligence and data warehousing teams, yet it should be mentioned that the team of the JSC Latvian State Forests deals only with business intelligence projects, while the respective team of the SJSC State Real Estate also deals with other IT projects and does not spend as much time on business intelligence and data warehousing as it should, which has significantly affected the development of business intelligence and data warehousing at the company.

A significant difference between the companies lies in the application of business intelligence among the company's employees. The JSC Latvian State Forests' business intelligence tool is very popular, as well as the users are able to use this tool independently. In contrast, the majority of reports in the SJSC State Real Estate are produced with the help of its cooperation partners – after submitting the specifications, the outsourced programmer produces a report.

3. Scenarios for applying data warehousing and business intelligence by companies

The scenarios were designed after examining the relevant literature and consulting with experts in the companies. It should be noted that the scenarios were mainly focused on the company profile described – large companies (250+ employees) having information systems, their own IT specialists, financial analysts and business intelligence together with data warehousing introduced. The scenarios were based on two main criteria: control of technological and administrative processes (implemented by the company itself or outsourced, respectively).

Scenario 1: Replacing data warehousing and business intelligence with standardized information system solutions. This scenario requires the company not to introduce any business intelligence and data warehousing technologies, instead the company need to replace the features provided by the technologies with standard office software, such as Microsoft Office or LibreOffice. Microsoft Office is the most popular office software package in the world, it contains all the programs necessary for office work, incl. MS Excel, which is also designed for various kinds of data analysis. Employing the software's built-in features, the users are able to produce various kinds of reports, make data visualizations, as well as retrieve data from external data sources. Accordingly, if this scenario is implemented, the company would not have to spend financial resources on introducing and maintaining business intelligence and data warehousing solutions, as largest companies already use an office software package. Applying business intelligence tools would not require additional training for the company's employees, and the company's IT Department would not have additional work responsibilities to maintain or introduce the technologies.

Scenario 2: Business intelligence and data warehousing as an outsourced service. According to this scenario, the company outsources all technological and project management work related to business intelligence and data warehousing. In this way, the company does not have to worry about the technological aspects of business intelligence and data warehousing, as all project management work and business intelligence reporting and application development work for the company are performed by one or more outsourced service providers.

According to the scenario, the company would entrust its business intelligence and data warehousing solutions to professionals who would introduce the technology according to the principles of good practice, as well as it would relieve the current IT personnel. The company should only consider creating and promoting the demand for new reports and solutions in the company. Accordingly, all technological and administrative processes would be almost entirely outsourced. The scenario assumes that the company purchases outsourced working hours over a one-year period, which is equivalent to one full-time business intelligence solution developer. Accordingly, the company can purchase more working hours if needed. To calculate the cost of implementing the scenario, it was assumed that the company would outsource one full-time business intelligence and data warehousing specialist. This assumption was based on the intensity of using business intelligence and data warehousing outsourcing by the SJSC State Real Estate. In addition, the calculation assumed the use of Microsoft PowerBI, the market leader in business intelligence tools, with a monthly license of EUR 8.40 per user and a license for all 250 employees. The total cost of implementing the scenario equals EUR 146 321 (including EUR 121 121 per year for a full-time developer and EUR 25 200 per year for the provision of business intelligence tools to 250 employees). The costs could increase if the company chooses to purchase more developer working hours, or purchase more business intelligence tool licenses.

Scenario 3: Adapting personnel positions to business intelligence and data warehousing. This scenario involves creating new or reorganizing current jobs in the company to include specially trained data analytics specialists whose main task is to produce business intelligence reports. This scenario also involves creating new or reorganizing current jobs to have additional IT specialists whose main task would be to create integrations (creation of a new data area) for analysts, as well as perform other business intelligence and data warehouse maintenance work.

One of the easiest ways for a company to ensure the implementation of this scenario is to train the current employees for business intelligence and data warehousing technologies. For example, in the case of the SJSC State Real Estate, a current financial analyst needs to go on a course on professional business intelligence tools a current IT specialist needs to go on a course on database technologies. Accordingly, the

employees would need to cooperate with each other to develop new business intelligence reports and solutions daily. The company should consider relieving the employees of other work tasks not related to business intelligence or data warehousing, thereby keeping at least two employees who work exclusively with these technologies.

To implement this scenario, the company should spend additional resources on hiring new employees or training the current employees. If the employees are also relieved of other job responsibilities, the company need to redistribute the jobs. The scenario assumes that the company provides a separate job position for producing business intelligence reports and maintaining the database. If necessary, the company can assign more employees to the tasks.

To calculate the costs of implementing the scenario, it was assumed that the company would hire a data analytics specialist with a gross wage of EUR 1224 per month. The wage was determined taking into account the average wage of a business analyst paid in several national companies. The calculation assumed the use of Microsoft PowerBI – the market leader in business intelligence tools –, a monthly license of which costs EUR 8.40 per user, and the license is provided to all 250 employees. Accordingly, the total cost of the third scenario amounts to EUR 43 430.64 (EUR 18 230.64 per year for a full-time business intelligence specialist and EUR 25 200 per year for the provision of business intelligence tools to 250 employees). The costs could increase if the company chooses to hire more business intelligence professionals or purchase more business intelligence tool licenses. Other additional costs related to the recruitment of employees should also be taken into account, e.g. holidays, bonuses, office expenses etc.

During the interviews with experts from the companies included in the case study, it was established that the SJSC State Real Estate viewed this scenario as its primary one, as well as it could be concluded that the company was partially in the process of implementing this scenario. As found in the case study, one of the peculiarities of the SJSC State Real Estate regarding data warehousing and business intelligence was that most of its reports were outsourced, which required significant financial resources for the company. This scenario would allow the company to develop its data culture, as well as save on the development of business intelligence reports and solutions. One aspect that hindered the implementation of this scenario is that the company's specialists were burdened with other daily tasks or projects, and the company had no plans to hire additional personnel. This means that in fact the workload for the specialists and the respective departments would only increase. In addition, this scenario would not solve the problem of poor e-skills in the company.

In the case of the JSC Latvian State Forests, this scenario has already been implemented. The company's IT specialists, at the request of other employees, already create specialized data sets that may be used by the company's employees. The company's Data and Financial Analysis Department is a user of high-level business intelligence. From a business intelligence technology management perspective, this is the most convenient option because centralized reporting control is assigned to one or a few employees. Another way to adapt this scenario to the needs of the JSC Latvian State Forests is to establish a special separate organisational unit that deals only with reporting requests made by employees, enabling any employee to produce business intelligence reports. However, in the foreseeable future, the company is not considering completely abandoning outsourcing.

Conclusions and proposals

- 1) Business intelligence and data warehousing are a set of technologies that, in parallel with other information systems used by the company, perform analytics of the company's internal data and automation of various work tasks in the company. The most significant benefits of introducing business

intelligence and data warehousing are automatic reporting using the company's internal data, automation of various core business and support processes, as well as acquisition of new information for business decision making. The most significant challenges are as follows: employees with advanced e-skills are needed, employees need to be motivated to use the technologies, as well as the quality of data in the company.

2) The case study on the JSC Latvian State Forests and the SJSC State Real Estate allowed concluding that the companies had a relatively complex IT architecture with many information systems. Both companies had implemented business intelligence together with data warehousing in accordance with the industry standard; however, there were differences in applying business intelligence between the companies. First of all, the business intelligence of the JSC Latvian State Forests was more advanced than that of the SJSC State Real Estate, as the company had several users of business intelligence and more successful business intelligence solutions. In addition, the JSC Latvian State Forests had more business intelligence solutions related to its core business, as well as the company invested more in employee training in applying business intelligence.

3) The case study found that in a company, the business intelligence system can make its core business and support processes faster and cheaper or require less human resources. However, challenges were identified regarding a lack of motivation in employees to learn new technologies. The companies that control their technological and administrative processes related to business intelligence and data warehousing as much as possible can more successfully apply the mentioned technologies. The most important factor affecting the application of the technologies is the willingness of employees to use and learn how to use such technologies.

4) The scenario analysis revealed that large companies should perform as many administrative and technological processes related to the mentioned technologies as possible themselves rather than outsource them. This allows a company to save funds on the development of such technologies and improve the company's data culture. Outsourcing the service for one year would cost a company EUR 146 321 per year. However, if a company has its own specialist, it would cost EUR 43 430.64 per year. Accordingly, the hypothesis put forward in the research proved to be true, i.e. introducing a business intelligence information system and data warehousing into a company is more economically advantageous if using only the human resources available in the company.

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SOCIAL ENTERPRISE PROFILE IN THE LATVIA REGIONS

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Abstract. As social entrepreneurs address various socio-economic problems in society, there has also been an increased interest in how social enterprises can support specific regions. In Latvia, social enterprises have been operating for a long time, but only recently the Social Enterprise Law was adopted, which regulates the tasks of social entrepreneurship and the support possibilities. This study highlights the level of entrepreneurship activity in the country as a whole (the number of enterprises and the number of newly established enterprises) and within individual statistical regions in the period from 2018 till 2020, analysing the structure of enterprises and indicators representative of entrepreneurship in Latvia and its regions: the dynamics of the number of enterprises per 100 000 inhabitants. The following hypothesis was made: Social entrepreneurship in the regions of Latvia has a disproportionate impact on socio-economic problems. It was found that social enterprises operate twice as much in Riga region as in any other region of Latvia, which has the lowest poverty index. However, the highest poverty index is found in Latgale region, where proportionally the lowest number of social enterprises operates. Social entrepreneurship can be a successful tool for addressing socio-economic problems in the regions and for regional development. For this development to take place, it would be necessary to develop instruments to support social entrepreneurship with the aim of improving the well-being of all regions, not only the region where the social enterprise operates.

Key words: social entrepreneurship, social enterprise, poverty, regions.

JEL code: L31

Introduction

The concept of social entrepreneurship as a business model is quite new. The first traits of social entrepreneurship can be seen in the 18th century in philanthropic and religious movements, but the manifestations of modern social entrepreneurship began in the 20th century. In the 1990s, social entrepreneurship gained relevance in other fields scientific research, public policy, education and the commercial sector. The founder of social entrepreneurship is considered to be M. Yunus (Yunus M., 2003, 2007, 2010). He defined seven principles of social entrepreneurship which form the basis for the definition of social entrepreneurship (Hoogendoorn B. et al., 2010). The activity of social entrepreneurship is determined by the growing socio-economic problems that the government alone cannot solve, but in the non-governmental sector, competition for funding is increasing (Dobele L., 2013). C. Beugre (2016) points out that social entrepreneurship activities are taking place in developed places such as Africa, Asia, Middle East and Latin America. In these parts of the world, social entrepreneurship develops under the influence of various factors – historical colonisation, cultural and social values, ethnicity and religion, and government support or lack of support (Beugre C., 2016). Each region has its own reason for the development of social entrepreneurship, based on existing social problems.

In Europe, the model of social entrepreneurship has developed faster according to a statement of the Commission European Commission: 'Social Business Initiative – creating a favourable climate for social enterprises, key players in the social economy and innovation'. After that, the concept of social entrepreneurship appeared also in Latvia. It was included in the strategic planning documents – 'Sustainable Development Strategy of Latvia until 2030' and 'The National Development Plan of Latvia 2014-2020', where it is defined as one of the 98 ways to implement the activity 'decent work' (Dobele L., 2013). The development of social entrepreneurship has continued through various initiatives and in 2018 the Social Enterprise Law was adopted, which regulates social entrepreneurship in Latvia. 'The National

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Development Plan of Latvia 2021-2027' social entrepreneurship is defined separately as a tool for action in the direction of work and income, and support for the development of social entrepreneurship is planned.

The European Commission has defined social enterprises as business model that combines entrepreneurial activity with a social purpose. Its main objective is to achieve a social impact rather than maximising profit for owners or shareholders. Enterprises providing social services and/or goods and services to vulnerable people are a typical example of social enterprises.

The number of publications on social entrepreneurship is growing, they currently deal with national situations to promote social entrepreneurship and with existing social entrepreneurs. In Latvia, social entrepreneurship has been researched by a number of scholars, including L. Dobele (2013), S. Kumaceva (2018), L. Perkune and L. Licite (2019), D. Gintere (2020). Recent research in Latvia's context are about role of social entrepreneurship in environmental context and analysis of specific companies. The research objective is to analyse the scope of social entrepreneurial activity in Latvia and its regions. The following hypothesis was made: Social entrepreneurship in the regions of Latvia has a disproportionate impact on socio-economic problems. In order to achieve the goal, the following specific research tasks are set 1) analyse social enterprise support instruments in Latvia 2) analysis of the number of social enterprises in Latvia in general and in its regions in 2018–2020; 3) analysis of the poverty and social exclusion in regions.

The following methods were used: monographic, graphic, logically constructive, analysis and synthesis, deduction and induction, analysis of documents, grouping of information, structuring and time series analysis. The information was analysed according to the NUTS III classification applied by the Central Statistical Bureau (CSB), which divides Latvia into 6 statistical areas: Riga, Pieriga, Vidzeme, Zemgale, Kurzeme, Latgale. In the framework of the study, the data from the classification of the Ministry of Welfare (MoW) was analysed. Other aspects and characteristics about social entrepreneurship were taken from the data of NGO 'Social Entrepreneurship Association of Latvia' (SEAL). SEAL is a membership organisation promoting the development of social entrepreneurship in Latvia.

Research results and discussion

In Latvia, there are various forms of enterprises that exist. The statistical data characterize them as statistical units of the trade sector. Outside the trade sector there are such statistical units as various foundations, institutions and societies, government bodies and local government bodies (CSB, 2021). Social entrepreneurship is one of the statistical units of the trade sector.

Although the first social enterprises in the world appeared before the Second World War, enterprises that consciously called themselves social enterprises and were ready to work according to the principles of social entrepreneurship appeared in the public space of Latvia only about 10 years ago (Social Entrepreneurship ..., 2020). According to the report of European Commission on the promotion and development of social entrepreneurship as a form of business to solve social problems, Latvia was also involved in the mediation of social entrepreneurship. The first data on social entrepreneurship activities in Latvia are summarized in the Latvian report 'Global Entrepreneurship Monitor' (GEM) from 2009, according to which social entrepreneurship activities in the country are set at 1.9 %, while the average for 49 GEM countries is 1.94 % (Feifa I. et al., 2014). The indicators used to determine the GEM activity were – entrepreneurial activity in the initial stage and the reasons for starting. In addition to the Social Enterprise Law and the Cabinet of Ministers regulations, the social enterprises have other ways of obtaining specific support from the state, local governments and individuals to regulate the amount of this support, and there are also limitations.

The factors of benefits and limitations were evaluated numerically, where 1 – the greatest benefit of social entrepreneurship, but 6 – the least benefit, and for constraints the numerical evaluation is 1 – the greatest constraint and 6 – the least constraint. The significance was evaluated based on the author's experience and participation in the information session on social entrepreneurship. According to the author's, the most significant benefit, rated 1, in doing business is the financial support (grant) from the joint stock company 'Development Financial Institution Altum' program 'Support for Social Entrepreneurship' where social entrepreneurs have relief in support, and this support program is aimed at the development of social enterprises. The least significant benefit, rated 6, are various other government and community business support instruments, such as Investment and Development Agency of Latvia (LIAA) business incubator support, government loan programs, business grant tenders, etc., this is less significant because traditional commercial enterprises also have such an opportunity provided and therefore benefits all enterprises.

Table 1

Evaluation of social enterprise benefits and limitations

Benefits	Significance	Limitations	Significance
Incentives (reduction in corporate tax base) for certain categories of non-business expenses.	2	To make dividend payments or disbursements on reduction of share capital, and other cash disbursements or distribution of assets among shareholders, to the extent permitted by the Commercial Law (in Latvia - Commercial Law, 2002).	2
The municipality is authorized to grant property tax relief to the social enterprise.	3	Conduct systematic transactions in securities or real estate, other than renting or leasing premises.	5
A public person may gratuitous transfer movable property to the ownership of a social enterprise.	4		
A social enterprise has the right to involve volunteers in activities that are not related to the administration and accounting of the enterprise and the basic functions of the enterprise.	5	Engage in activities such as the manufacture and sale of explosives, weapons and ammunition, the manufacture of alcoholic beverages (except small distilleries), the manufacture and sale of tobacco products, gambling and betting, financial and insurance activities, or areas that pose a threat to public safety and health.	6
Financial support (grant) of the program 'Support for Social Entrepreneurship' of the joint stock company 'Development Financial Institution Altum'.	1		
Other state and local business support instruments, such as LIAA support for business incubators, state loan programs, business grant solicitations, etc.	6	The granting of loans, with the exception of loans to target groups, if provided for in the articles of association of a social enterprise.	4
Preferred contract options in public procurement.	5	The property and financial resources of a social enterprise may only be used for the purposes specified in the articles of association.	1
		The social enterprise builds up a reserve capital in which the entire profit of the reporting year is included.	3

Source: Created by the author's using SEAL, 2020; Social Enterprise Law, 2018

The greatest restriction in social entrepreneurship, rated 1, according to the author's, is the use of the property and financial resources of the social enterprise only for the purposes specified in the statutes, because the moment the enterprise wants to expand its activities and target group, this is not possible,

and as a result the possibility of helping a larger social risk group is denied, the way to reduce this restriction is to include in the statutes the largest possible target group that the enterprise intends to help. The least restrictive, with a score of 6, is activity in areas such as the manufacture and sale of explosives, arms and ammunition, the manufacture of alcoholic beverages (excluding small distilleries), the manufacture and sale of tobacco products, gambling and betting, financial and insurance activities, or threats to public safety and health, since social enterprises aim to improve the existing social environment, not make it worse.

To compare a social enterprise with a commercial enterprise, both have support from the joint-stock company 'Development Finance Institution Altum' and state and municipal business support instruments – LIAA business incubator support, government loan programs, business grant tenders, etc., the difference is that the social enterprise receives additional business support already provided. But compared to the traditional business type, the social entrepreneur and social entrepreneurship have stricter restrictions, and the violation of any of the restrictions has the possibility of losing the status of a social enterprise.

In MoW 'Social enterprise register' are only social enterprises, which have the status of social entrepreneurship. But SEAL includes various associations and organizations that carry out the model of social entrepreneurship, but have not decided to obtain the status of social enterprises. These organizations will not obtain the status of a social enterprises because they would then lose the status of a non-profit organization. The status of a non-profit organization is advantageous in order to receive donations in addition to doing business. The register of social enterprises collects information on limited liability companies that have had their social enterprise status withdrawn or revoked. The register contains data on associations, foundations and limited liability companies – participants in the measure, which have been granted financial support under this measure.

The data of the 'Social enterprise register' indicate that in 2018 with the implementation of the Social Entrepreneurship Law the total number of social enterprises granted social entrepreneurship status are 26. In the next year 2019 the number of social enterprises increased by 60, in 2020 the increase of social enterprises is 69 and already at the beginning of 2021, 9 companies have been granted the status of a social enterprise. In 2021 compared to 2018, the number of social enterprises has increased by 6.3 times or 138 social enterprises. Social entrepreneurship in Latvia has different types of support models from the EU, the government and local municipality, however, social enterprises have many requirements so that the company does not lose the status. From 164 social enterprises, the active status has 149 social enterprises and 15 companies have the inactive status of a social enterprise. For 10 inactive companies, the status of a social enterprises has been cancelled, but for five the social enterprises status been taken away.

Table 2

Statistics on social enterprises and their changes in 2018-2021 (number of social enterprises)

Indices	2018	2019	2020	2021 (January)
Total	26	86	155	164
Active social enterprises	21	71	139	149
Inactive social enterprises	6	15	15	15
Changes in active social enterprises compared to each previous year	+26	+60	+69	+9

Source: authors' calculations based on data from Ministry of Welfare 'Social enterprise register', 2021

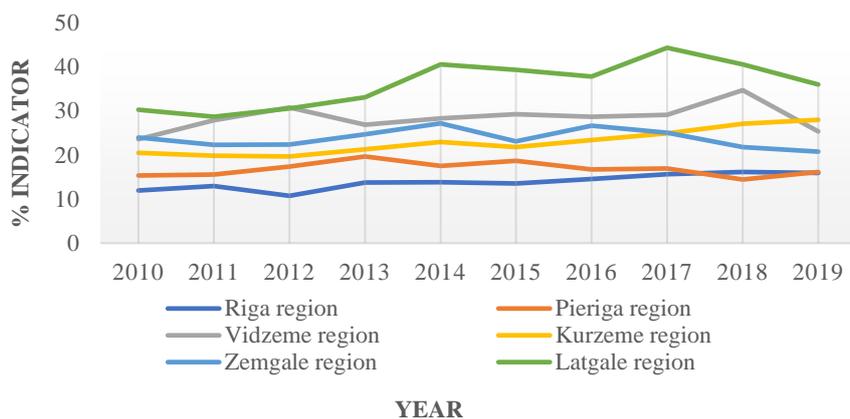
In the Baltic States, the legal frameworks for social entrepreneurship are at different stages of development. According to the latest data in 2019 there was about 100 social enterprises, and over 200 social businesses in Lithuania (Rusteikiene A., Pucetaite R., 2020), but in Estonia there are about 300 social enterprises. Even though the strategies of the EU Member States have been affected by the strategy Europe 2020, which contains important points about social entrepreneurship and how to foster it, the Social Enterprise Law has not been adopted in Estonia. In Latvia, the law became effective in 2018, while in Lithuania, which was one of the first countries to adopt the law, it has been in force since 2004 (Social Enterprise Law..., 2007) (Perkune L., Licite L., 2019).

Government and municipalities face the social problems of the population in the most direct way on a daily basis and are responsible for the performance and provision of various social tasks and functions in their territories. According to the law 'On Local Governments' the local government of each territory takes care of the social situation of the population. Law stipulates that one of the functions of a local government is to provide social assistance to the population. Social assistance and social services are part of the social security system, which provides assistance to members of society in difficulty. Local governments are the ones that can help develop social entrepreneurship. The goals of both local governments and social enterprises are related to solving social problems and creating social added value, but government and municipalities are unable to handle with all the socio-economic problems in the area. It is definitely in the interests of local governments to ensure the best possible living conditions for the inhabitants of their territories, and to do so as best and efficiently as possible, spending as little taxpayers' money as possible. It is in the interests of social enterprises, to create and market products and services that achieve certain social goals, and to do so through entrepreneurship.

Each region of Latvia has its own social problems. One of the most significant social problems is still being poor. According to Cabinet Regulation No. 809: 'Regulations regarding the Assessment of the Material Situation of a Household and the Receipt of Social Assistance' a person with an income level of 272 euro for three consecutive months is recognized as a poor person.

Latvia's objective under the Europe 2020 Strategy differed from the general EU objective of reducing poverty and social exclusion. Latvia's target was to reduce the number of people living in households at risk of poverty and in households with very low incomes. Reducing the population exposed to deep material deprivation, on the other hand, was not defined as a target. The target set out in the Latvian National Reform Program (NRP) was to reduce the number of people at risk of poverty and/or living in very low income households to 21 % of the total population by 2020. By 2013, there was steady progress towards this target, and in 2011 and 2012 it was almost achieved. However, as income inequality increased, the proportion of the population at risk of poverty increased between 2013 and 2017. This was due to a faster increase in income from paid work than an increase in social transfers (especially old-age pensions). However, from 2017 onwards, the role of social transfers in reducing the risk of poverty increased again, and in 2019 the proportion of people at risk of poverty or living in households with very low work intensity reached 433 thousand or 23 % of the population (CSB, 2021). According to the CSB, these data are the most recent available. Given the changes affected by the COVID-19 2020 pandemic, this number is increasing and more and more people are at risk of poverty and social exclusion.

The highest poverty risk index is found in Latgale region (Fig. 1), where an increase of 5.7 percentage points is observed when comparing the base year 2010 with 2019. This indicator has also increased by 7.5 percentage points in Kurzeme region, 1.8 percentage points in Vidzeme region and 0.8 percentage points in Pieriga region. The only region where the at-risk-of-poverty rate has decreased is Zemgale, with a decrease of 3.2 percentage points.



Source: CBS data, 2021

Fig. 1. Poverty risk index in the regions of Latvia 2010-2019 (%)

According to the 'Social enterprise register', 149 social enterprises are actively operating in Latvia as of January 2021. More than half of the total number of active social enterprises operate in Riga region. Eighteen per cent social enterprises operate in Pieriga region, and 11% social enterprises in Kurzeme region. Less than 10 % of the total number of active social enterprises operate in Zemgale region (7 %), Vidzeme region (6 %) and Latgale region (5 %).

Table 2

Statistics on social enterprises by region in 2020

Statistical region of Latvia	Number of active social enterprises	Proportion of active social enterprises in the region from the total social enterprises, %	Number of social enterprises per 100 000 population
Riga region	79	53	13
Pieriga region	27	18	7
Vidzeme region	9	6	5
Kurzeme region	17	11	7
Zemgale region	10	7	4
Latgale region	7	5	3

Source: authors' calculations based on data from Ministry of Welfare 'Social enterprise register' and CBS data, 2021

Out of the 149 active social enterprises, 38 are operating as social enterprises in work integrations, employing one of the target groups of social entrepreneurship defined in the Social Enterprise Law. And the other 111 social enterprises are active in other areas, such as non-formal education, funeral services, various unskilled products and services (Social Enterprise Register , 2021).

An in-depth look at social entrepreneurship in the regions concludes that in a region with the highest risk of poverty and social exclusion there are only three social enterprises per 100 000 inhabitants. And in Riga region, where the risk of poverty and social exclusion is lowest, there are 13 social enterprises per 100 000 inhabitants. There are more social enterprises operating in Riga region because there are also more customers for potential services and goods. In Pieriga region and in Kurzeme region, there are seven social enterprises per 100 000 inhabitants. In Vidzeme region, there are five social enterprises operating per 100 000 inhabitants and in Zemgale there are four social enterprises. It is important that the government plans how to support social entrepreneurship so that their activities spread to regions where there is a higher risk of poverty and social exclusion than in Riga region.

In Riga and Pieriga regions, the at-risk-of-poverty rate is on average twice as high as in other statistical regions of Latvia. At the same time, the number of social enterprises per 100 000 inhabitants is twice as high in Riga region. It is concluded that the environment where there is a risk of rural poverty is more fertile for social entrepreneurship. This fertility interacts with the fact that a particular region has a larger population that can afford to buy a particular product or service, that the competition for a particular product or service is lower than in a region with a smaller population, and that the good example already exists that the environment is fertile for social entrepreneurship.

The Social Enterprise Law allows local governments to create and implement their own local support instruments – to reduce real estate tax, to allow social enterprises to use municipal property free of charge, to create special financial support schemes for social enterprises or privileged public procurement procedures (Lis A. et al., 2017). This support mechanism focuses only on a specific region and not on a region at higher risk of poverty and social exclusion. The business model of social entrepreneurship and the target group or the targeted support do not have to be in the same region. A company can do social entrepreneurship in one region and raise funds to support a region with a higher risk index for poverty and social exclusion. Such a variant would promote the development of different regions of Latvia. However, there is a problem with the possibilities of local and regional authorities to support social enterprises. Municipalities are not interested in supporting a social enterprise that would solve other socio-economic problems of the municipality or region. However, which social enterprises choose Riga region and support all Latvian initiatives that solve some kind of socio-economic problems in their region, municipality. This is an opportunity for companies that do not rely on municipal funding instruments. One such social enterprise is 'Second Breth'. The company 'Second Breth' operates mainly in Riga region and Liepaja municipality. But the projects that are financially supported and co-financed by the social enterprise come from different municipalities and different sizes, for example Liepaja, Grobina, Cesis, Saldus, Aluksne, Marupe, as well as Riga (OtraElpa, Gintere D., 2020). By developing social enterprise support programs with the aim of solving the socio-economic problems of each municipality, social entrepreneurship can be developed as a tool for regional development.

Conclusions

- 1) Social entrepreneurship in Latvia has developed rapidly since 2018 and the number of social enterprises has increased six times during this period. The largest concentration of social enterprises is in Riga region, which is twice as high as in other regions of Latvia, and the smallest number of social enterprises is in Latgale region.
- 2) The development of social enterprises is also related to the support instruments of the state and the respective municipality. While support instruments focus on a particular community, social enterprises have no interest in solving the socio-economic problems of another region. As a result, in a region with the highest risk of poverty and social exclusion – Latgale region – there are only three social enterprises per 100 000 inhabitants.
- 3) Latvia has a high poverty risk index, which can be addressed through the social entrepreneurship model to promote the growth and development of regions. In order to understand what kind of support system social entrepreneurs need to promote regional development, it is necessary to further study the business opportunities of the regions, the main socio-economic problems of the regions and the example of other countries, how social entrepreneurship is one of the support tools for regional development.

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MUNICIPAL ACTIVITIES IN LOCAL FOOD SYSTEMS: CASE STUDY OF ZEMGALE REGION

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Abstract. According to the Actor Network Theory, the local food system is a set of interconnected processes and social agents including municipalities as a business environment. In the context of rural studies, support for local food producers is important for local communities. By content analysis of the information available on the websites of Zemgale region's municipalities and the opinions of municipal specialists on local support measures for entrepreneurs, the aim of the paper was to identify the activities of municipalities in local food systems. Within a context of local food systems, the authors revealed that municipalities in Zemgale region provide support activities in two main directions: food businesses and tourism activities. The analysis of business support measures showed that local food producers in municipalities are promoted and supported in a number of ways through branding, special events and trade facilitation, seminars and annual awards. Activities in the field of tourism revealed cooperation, involving local food producers in the tourism system and ensuring the recognition of local food products to a wider group of consumers. Integrating local food businesses into tourism routes and thematic activities, in other words making locally produced food an integral part of the tourism product, develops small and medium-sized enterprises that contribute to the socio-economic resilience and environmental sustainability of rural communities, local innovations and creativity. In Zemgale, municipal activities for support of local food producers in the context of COVID-19 crisis are strengthening rural communities thus supporting and helping entrepreneurs to adapt to changes.

Key words: Actor Network Theory, rural community, local food systems, tourism, food producers.

JEL code: Q180, Z130, R580

Introduction

The European Economic and Social Committee's opinion on "More sustainable food systems" emphasizes that producer organizations have demonstrated their resilience to shocks in agricultural markets; they also help to avoid relocation of food production. Therefore, further, even greater, sectoral and regional support aimed at fostering cooperation between producers and cooperatives, especially small cooperatives, is essential. In particular, special attention should be paid to sectors and regions with a low level of cooperation (Official Journal of ..., 2016). Local food initiatives are promoted as opposition to the disempowering social and economic effects of globalization; thus, revitalisation of rural communities, benefits for local farmers and environment are expected outcomes of reduced physical distance between producers and consumers (Fonte M., 2008:203). In this regard, community resilience can be understood as the existence, development and engagement of community resources by community members who intentionally develop personal and collective capacity to respond to and influence change, to sustain and renew the community, and to develop new trajectories for the communities' future (Roberts E., Townsend L., 2016).

The local food system (LFS) is not limited to food production, processing and marketing. More broadly, the system involves actors representing food production, processing, consumption, marketing, advertising, branding, training and education, policy making, regulations and norms as well as other elements. According to the Actor Network Theory (ATR), the world is made of multiple networks of heterogeneous, complex and dynamic human and nonhuman actors (Lee K. C. L., Newell J. P., Wolch J., Schneider N.,

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Joassart-Marcelli P., 2014; Latour B., 1997; Chesterman A., 2006) from which all affect change. The human actors are living entities and the non-human actors represent technologies, institutions and corporations. The ATR highlights the characteristics of actors: the ability to trigger action and the ability to attract other actors to reach their goals (Devi W. P, Kumar H., 2017). In other words, anyone attracting, linking and combining other elements is considered as an actor, every element involving a space around itself makes other elements dependent on itself and treats another's will in its actions and rhetoric (Callon M., Latour B., 1981). Actors' behavior is treated as goals, involvement in reality-building, which in turn is the result of agent interaction (Bruun H., Hukkinen J., 2003). A network of actors is a set of socially important nodes (units) connected by one or more relationships in the models being studied. These units are usually persons or organisations that may be connected to other units (Marin A., Wellman B., 2009). The concept of a network of actors allows to eliminate the difference between micro and macro; the network is never larger another network, it is simply longer or more intensively connected. It is important to follow how a particular actor becomes strategic because of a number of connections it runs and how it loses its importance by losing connections. The purchase of local food increases the income for both the local producers and wider community, increases employment through the multiplier effect at the local level. The aim of the paper is to identify the activities of municipalities in local food systems. By analysing the websites of municipalities and the opinions of municipal specialists on support for entrepreneurs, the objective of the paper is to look at the main directions of municipal support for food producers.

Research results and discussion

1. Research methodology

Content analysis was carried out to investigate and describe municipal activities in LFS in rural communities. As shown in Figure 1, there are 20 rural municipalities in Zemgale region as well as two republican cities (Jelgava and Jekabpils) (Zemgale Planning..., 2017). As the study focuses on rural areas, the websites of 20 rural municipalities (Aizkraukle, Akniste, Auce, Bauska, Dobeles, Iecava, Jaunjelgava, Jelgava, Jekabpils, Koknese, Krustpils, Nereta, Ozolnieki, Plavinas, Rundales, Sala, Skriversi, Tervete, Vecumnieki, Viesite) were analysed from January to February 2021.



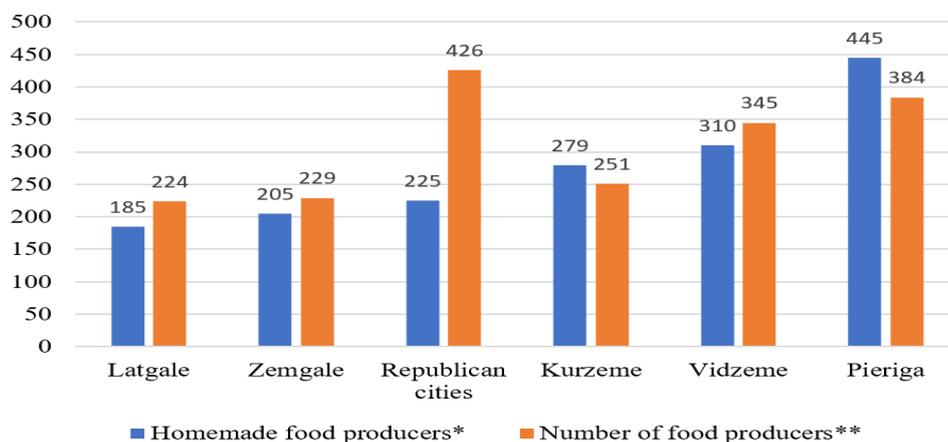
Source: <https://www.varam.gov.lv/lv/planosanas-regioni>

Fig. 1. Location of Zemgale region

From January to March 2021, a short online survey in all Latvian municipalities was conducted to clarify the views of local government specialists on the support of food producers and influencing factors. Of the 110 invitations sent, 32 replies were received.

2. Food producers in Zemgale region

The food sector is the largest in the EU in terms of both employment and impact on GDP thus the food is at the heart of the society: it depends on and affects natural resources, it has an impact on public health and it plays a key role in the European economy (Official Journal of the European Union, 2016). In Latvia, food production businesses are relatively evenly distributed and cover all regions and municipalities, including rural areas (Figure 2).



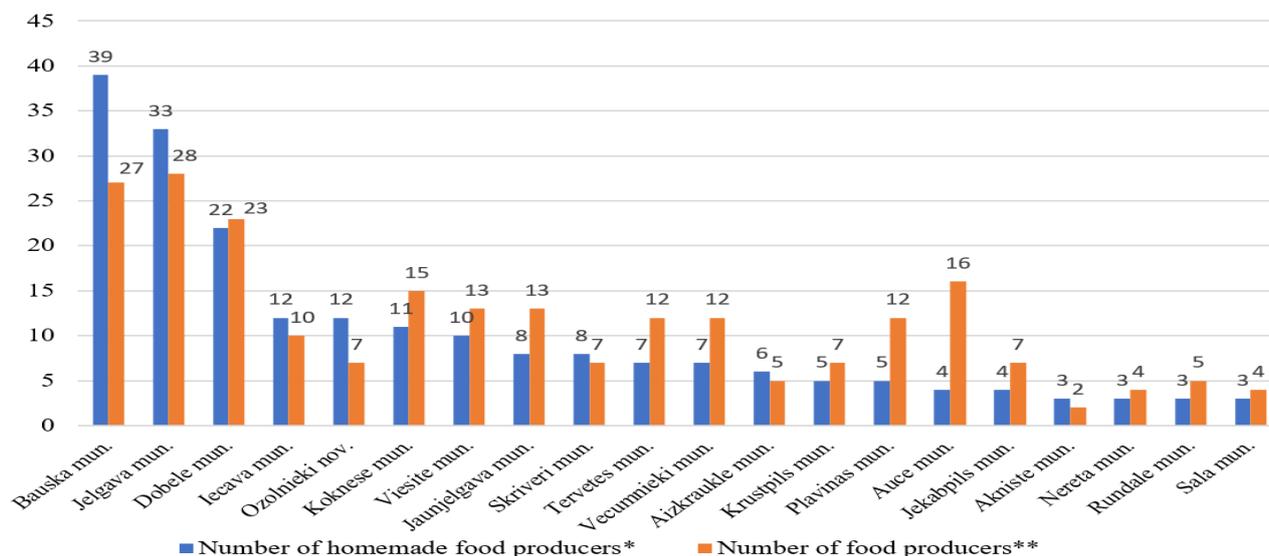
* The type of activity indicated in the register of the Food and Veterinary Service (FVS)

** The type of activity indicated in the register of the FVS - 02, 07, 08, 09, 10, 12, 13, 16, 18, 19, 20, 21, 22

Source: author's calculations based on the data of the FVS

Fig. 2. Number of food producers in Latvia, 2021

There are fewer producers in Latgale and Zemgale regions; most of them are concentrated in the capital city and its agglomeration as well as in the republican cities. More detailed information on the number of producers in Zemgale is shown in Figure 3.



* The type of activity indicated in the register of the Food and Veterinary Service (FVS)

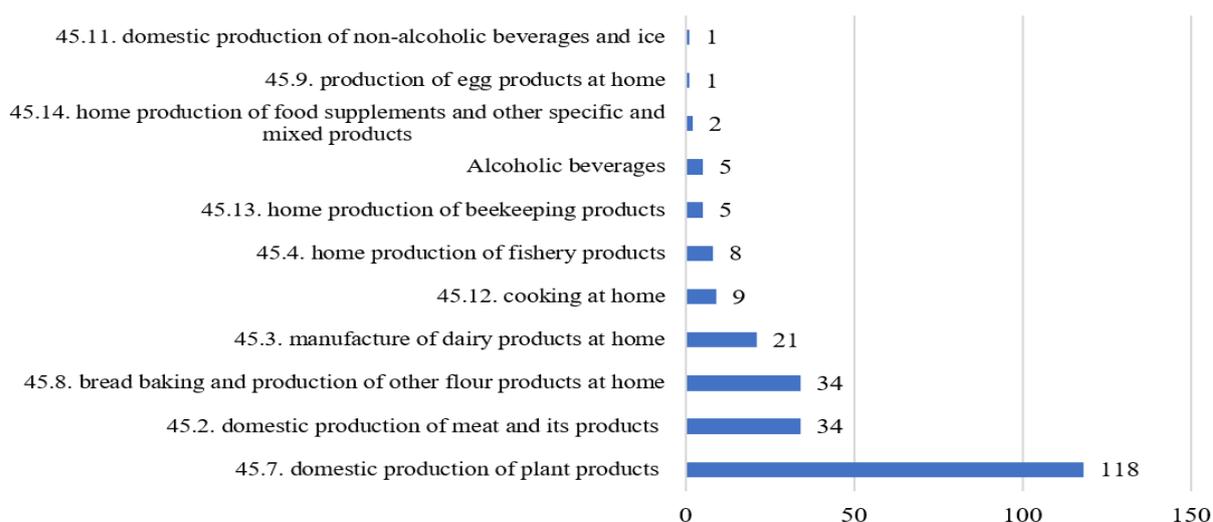
** The type of activity indicated in the register of the FVS - 02, 07, 08, 09, 10, 12, 13, 16, 18, 19, 20, 21, 22

Source: author's calculations based on the data of the FVS

Fig. 3. Number of food producers in rural municipalities in Zemgale region, 2021

In LFS the products are produced, processed, marketed and consumed over a relatively short geographical distance, thus having a number of economic benefits that have a significant positive effect on the local economy. The effects are related to diversification of the rural economy, promotion of greater

economic independence, boosting local potential and improvement of the area's image. The transition to more resilient and sustainable food systems therefore covers all interlinked activities involving food production, processing, transport, storage, trade and consumption. The preservation of the family farm model in Europe is also essential, and generational succession in farms should be promoted in this context in order to face the challenge of an ageing population. This would have a positive impact on job creation in rural areas. It is also important to ensure diverse agricultural production in all regions of the EU (Official Journal of ..., 2016). Great diversity in food production is represented in Zemgale region as both food producer businesses and home producers offer all product groups (see Figure 4); however, given the specificities of Zemgale as an agricultural region, home producers are more directed in their activities on flour, meat and herbal products.



Source: author's calculations based on the data of the FVS

Fig. 4. Number of homemade food producers in Zemgale region according to food groups, 2021

The analysis of the situation in Zemgale region shows that there are different types of farms and food producers, therefore it is useful to explore what support instruments municipalities provide for the businesses in their territories.

3. The role of municipalities in LFS

Concepts of business, food production, and homemade food producers were selected as units of initial analysis of the municipal websites. However, the information networks of the homepages related to the food businesses contained comprehensive information and were linked to tourism and public activities in the context of the local community. In most of the webpages, information on local food producers was found in the sections "Entrepreneurship" and "Tourism". Thus, the information network research revealed municipal activities in two directions: business-related and tourism. Further content analysis in the paper is organized coherently with those two directions. In some municipalities (e.g. Auce, Krustpils and Jekabpils) information on food producers was also included in the thematic sections such as *Society, Economy and Investments, Farmers and Entrepreneurs*. From the point of view of economic theory, entrepreneurship can be promoted by creating equal, fair conditions for all economic agents and also by promoting certain types of entrepreneurship and economic activities.

Data analysis of the business-related direction shows that entrepreneurs involved in food production are offered different types of support. In municipalities where the number of food producers is higher, also

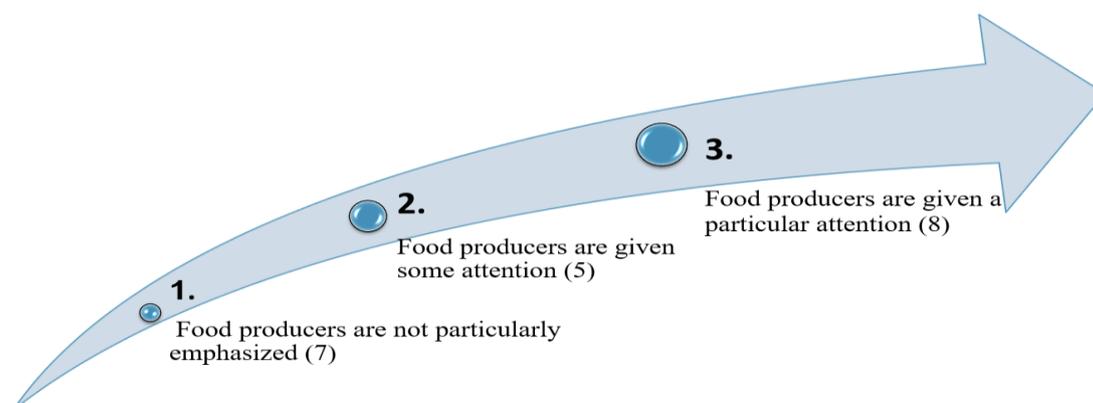
support intended directly to food producers is more intense; it should be emphasized, however, that general support measures for local entrepreneurs are important not necessarily focusing on specific economic activities. Data analysis of business support measures in Zemgale municipalities reveals that the main municipal activities are as follows: 1) marketing activities (local trade-marks, organization of a trade, interactive maps and apps, events); 2) relief, competitions and awards; 3) informational activities. Among the examples of marketing activities, the authors can emphasize trade-marks such as "Local producer – a pride of a county" (Jelgava municipality), "Produced in Jelgava county", "Produced in Jaunjelgava county", "Made in the Bauska county". Number of activities aiming to support a trade of homemade food products take place in most of the municipalities in Zemgale region, for example, there is a special shop "Zala Zeme" ("Green Land") in Jelgava county or a number of small local marketplaces across the municipalities. Another approach how to promote local products is interactive online maps and websites, for example www.dobeledara.lv provides information about small producers in Dobeles and Tervete municipalities. Very popular events are festivals of counties and "Uzņemeju dienas Zemgale" ("Business days in Zemgale") where local food producers are always invited to promote and sell their products. The research data revealed municipal support for food businesses also in the form of tax reliefs, *de minimis* support in Jelgava municipality and a number of grant programmes (competitions) for start-ups or awards such as "Piepildi telpu ar ideju", "Esi uzņemejs Jelgavas novada", "Bauskas novada uzņemeju Gada balva", and "Leciens biznesa" in Krustpils municipality which offered grant money up to 3000 EUR for the implementation of business idea. Municipalities support local business in terms of providing latest information about project schemes and grant programmes. For example, there is an information about discussion seminar on how to distribute local food on the Business-Business (B2B) network (organized by the Ministry of Agriculture), on the solutions found in the Baltic Sea Food project to support local food producers in the rural areas of the Baltic Sea region, information on the Gemoss grant competition for the development, production and development of healthy, innovative foods.

The promotion of local food producers in municipal websites was also identified in the tourism section, which is highlighted on homepages of all municipalities in Zemgale region. This direction can best be described by the local authorities as "information and promotion", which can be found in different information sections, such as sightseeing and farm visits, tourism routes and educational programmes, and other events. All offers are linked to interactive maps in specific areas. Local food producers are involved in tourism routes, for example, "Satiec saimniekus un izbaudi Bauskas gardumus!" ("Meet the hosts and enjoy the taste of Bauska!"), "Zemgales saimnieces aicina ciemos" ("Zemgale hostesses invite you"), "Uzzini, ka top!" ("Find out it!"), "Ceļo, iepazīsti, atbalsti!" ("Travel, learn about it, and support!"), "Ieaud Zemgales garšu simtgades josta" ("Weave the taste of Zemgale into a hundred-year belt"). The offer of more saturated routes, involving food producers, is in Bauska and Jelgava. Many of the offers are also related to websites at regional and national levels, which expand the agent network of LFS and also promote local products in a wider society. The concept of promotion does not have a specific definition, but its nature involves informing, raising awareness, organising events and attracting participants. Promotion can be defined as a creative process involving advertising, distribution and sales (Eglite A., Kaufmane D., 2019). Another way how to promote local food products is to include food producers in local educational programs, for example, a tour "Grauda cels" ("Grain Road") or tastings of sheep milk products in the farm "Krisjani". Before the COVID-19 pandemic, there was a growing number of farms such as cheese producers, bread bakers and many other opening their doors to visitors in order to introduce and educate people on food crafts. In most cases they were small farms and through the events of tourist attraction the farmers could both sell their products and advertise at relatively low costs. People enjoy observing the process of

producing products they consume, and visitors pay for both the product and authentic experience of participating, and this combination leads to increased local food awareness. Examples of events for tourists advertised on the websites of local municipalities are, for example, the Mikeldiena market in Jelgava, "Bauskas vecpilsetas pagalmu un Putras godesanas svetki" ("Old Town Courts of Bauska and the Festival of Porridge"), the market for craftsmen and homemade food producers during the festival of Zemgale. The information is focused on the development of local tourism, raising interest in visiting the countryside of Zemgale during the short holidays, while enjoying their culinary heritage, and on foreign tourists who are offered information about Latvian food and local products in an attractive way. Through these activities, the role of the municipal sector in promoting gastronomic tourism is evident, which also involves supporting food producers by providing information on their products and promoting local heritage through festivals, special food, participating in joint projects. Food supply is ensured by entrepreneurs, but the local government, state and non-governmental sector are also involved in cooperation.

Cooperation, as any relationship is not a formal structure, but should be seen as a process that forms and develops. The analysis of activities supporting food producers in the context of cooperation identified cooperation between local government's specialists, particularly between those who are responsible for business and tourism coordination. Municipalities as communities cooperate with each other as well as with other social agents at regional and national levels. Cooperation in projects and informative activities which is normally based on a particular need or on the motivation of participants between local governments and social agents at regional and national level was identified. The research findings revealed that in many cases local actors in rural communities felt responsible for the development of locality therefore implemented initiatives of pooling resources. Some examples are the business-created association "Tervete Home Producers and Craftsmen" ("Tervetes majrazotaji un amatnieki") and cooperation networks between food producers and LEADER partnerships (e.g. partnership "Lielupe" in Jelgava).

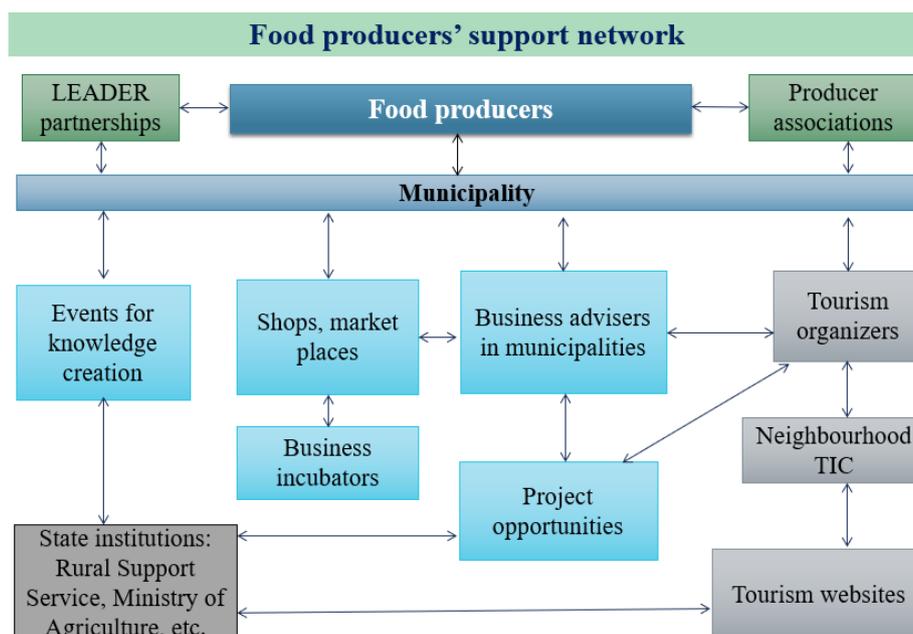
The analysis of municipal activities to support local food producers in the context of the COVID-19 pandemic showed that many municipalities in Zemgale have become unifying communities that support and help entrepreneurs to adapt to changing conditions. Examples include measures to trade online under the limited conditions in Ozolnieki municipality, special tourism routes in Bauska municipality named "Travel, learn it, support" and remote business meetings – platforms on cooperation opportunities and development after the pandemic. By comparing local municipal activities in promoting local food, local activities may be grouped in three levels.



Source: authors' research

Fig. 5. Levels of municipal activities in supporting food producers (number of municipalities)

At the first level (Figure 5), local food producers are not particularly emphasized by municipalities on their websites: seven municipal homepages provide little and very limited information on food businesses in the county, also little information is available on tourism offer. This is typical for small municipalities or in areas where food producers are few (municipalities of Sala, Ozolnieki, Akniste, Krustpils, Plavinas, Aizkraukle, Rundale). At the second level, food producers are given some attention by local municipalities; however, special measures and marketing activities in this direction are only episodic. The third level is what the researchers have labelled "good practices": in eight of the studied municipalities food producers are especially emphasized and supported. There is also extensive promotion in the tourism direction: special brands, shops and market places, interactive maps and usage of a special term "food craftsmen" to support small producers. The third level is more typical for Bauska, Jelgava Tervete and Dobele municipalities. The homepages of Auce and Iecava municipalities are connected to the interactive food craftsmen map, including offers from small neighbourhoods. In particular, an example of Jelgava municipality must be emphasized in terms of the organisation of business support, information, and activation. Small and medium-sized farms, which are generally more diversified, more innovative and very flexible in creating producer groups and cooperatives, benefit the communities in which they are located, thereby supporting the rural economy. When analysing support activities for food producers on municipal homepages, local networks may be identified (Figure 6) in which home producers, such as associations or rural partnerships, are linked.



Source: authors' research

Fig. 6. Food producers' support network in municipalities (based on the authors' research)

According to the ANT, the local government support networks include both human and non-human actors (Figure 6) such as trading sites and market places, events for new knowledge creation and experience exchange, courses, seminars, business support specialists, and tourism specialists. The analysis of hyperlinks in the homepages of the municipalities shows that the network exits beyond the local borders and incorporates some elements of the regional (tourism information centres, business incubators, project opportunities) and national level, by offering services and information from the Rural Support Service, Latvian Investment and Development Agency, the Ministry of Agriculture, and national tourism websites.

The data from survey of municipalities show that food producers as entrepreneurs have been spotted and supported by local authorities. As the main economic and social benefits of food producers directly to the county and residents, local government specialists highlighted promoted local patriotism, provided jobs, promotion of the county, and developed tourism. Homemade food production is an opportunity for people in rural areas to generate income from traditional activities, thereby maintaining rural population and promoting rural development. As one of the respondents mentioned: *"Personally, I believe that the availability and production of local, traditional food is important for the preservation of national identity, which was also indicated by the study of our municipality on the motivation for the purchase of local food products. As one of the most frequently mentioned reasons for the purchase of local food products, the population mentioned patriotism and the desire to support local producers."*

Some of the small producers are becoming successful tourism businesses. By selling their own products, they make their municipalities more visible and recognizable. Small producers also are good examples to local people that homemade food production can be an alternative income source increasing the well-being of their own and that of the county's. The infrastructure around the home production site is often arranged and improved in a way that is becomes a new tourism facility. In the context of sustainability, domestic raw materials grown responsibly and sparing the environment are mainly used in homemade food production.

Business advisers in the survey mentioned several hindering factors which affect the development of homemade food production. Most frequently mentioned factors are low purchasing power of Latvian society, limited market opportunities, reluctance to expand the business and hire employees, tax policy, lack of initiative for joint projects and cooperation on the part of the home producers themselves.

Conclusions, proposals, recommendations

- 1) According to the ANT, the local government support networks include both human and non-human actors such as trading sites and market places, events for new knowledge creation and experience exchange, courses, seminars, awards, institutions, business support specialists, and tourism specialists.
- 2) The content analysis of the information related to the business direction in municipal websites shows that local food producers are being promoted and supported more actively (branding, trademarks, events, seminars, annual awards) in the counties where food craftsmen are more active.
- 3) The activity levels of local municipalities vary; an experience and strategy identified in the good examples can be used in new municipalities after the administrative territorial reform in June 2021.
- 4) The analysis of the information related to the tourism direction reveals extended cooperation networks, including local food producers in the tourism system and ensuring the visibility of local food products to a wider consumer groups. The integration of local food into the tourism product develops small and medium-sized business, which contributes specifically to the socio-economic viability of rural communities and the sustainability of the environment, as well as promotes innovation and creativity.
- 5) According to the point of view of business support specialists in local municipalities, the initiative for joint projects and cooperation on the part of the homemade food producers and food craftsmen could increase the competitiveness of their businesses, but a rational review of production and marketing requirements on the part of the country could contribute to both an increase in the number of home producers and would motivate existing producers to extend their business activities thus leading to a positive impact on the economic and social environment of rural areas.

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PREREQUISITES FOR PROMOTING INNOVATION PROJECTS IN THE AGRICULTURAL SECTOR

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Abstract. According to the European Innovation Partnership for Agricultural productivity and Sustainability (EIP-AGRI) that started 2012, the Europe 2020 Flagship Initiative "Innovation Union" specifies European Innovation Partnerships (EIP) as a new tool for speeding up innovation through linking existing policies and instruments. Based on the report "Innovation, Agricultural Productivity and Sustainability in Latvia" prepared by the Organization for Economic Co-operation and Development (OECD) in 2019, it analyses innovations in agriculture in order to promote further development of the sector. The agricultural sector has progressed more slowly than the economic sector and slightly more needs to be invested in order to ensure a well-functioning innovation system and a policy environment that would increase agricultural productivity and improve sustainability.

The aim of paper is to reveal what prerequisites are necessary to promote the development of innovation projects in agricultural sector. The research based on analysis of documents exploring the views of European Innovation Partnership project managers on how the innovation process in European Innovation Partnership projects has taken place and what are the main preconditions for promoting the development of innovation projects, as well as observation and semi-structured interview, in turn, exploring, which can contribute to the development of innovation projects.

As a result of the research, 8 preconditions for the promoting development of innovation projects in agriculture were identified. The results of the research can have a significant impact on the development of innovation, identifying weaknesses, problems that need more attention and take specific activities to improve the current situation.

Key words: innovation projects, projects promoting prerequisites, agriculture.

JEL code: Q1, Q16.

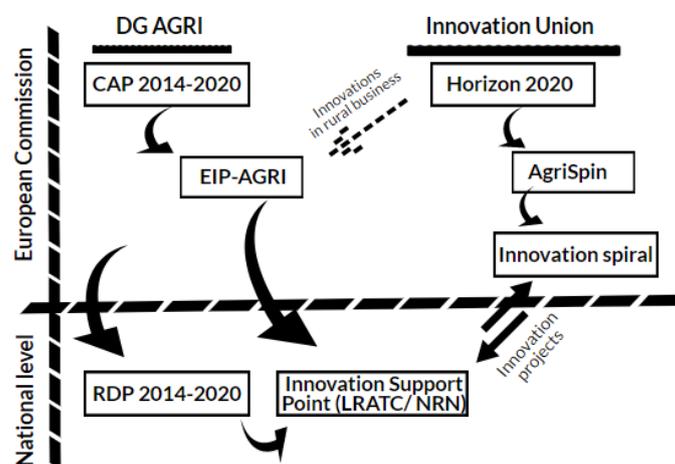
Introduction

The understanding of the concept of 'innovation' is very diverse. In Latvia, innovation is defined as "the process by which new scientific, technical, social, cultural or other ideas, developments and technologies are implemented in a marketable and competitive product or service." (Kas ir inovācija?, [s.a.]). According to the Organization for Economic Co-operation and Development (OECD), innovation is "a key driver of productivity, sustainable growth and prosperity." (Enhancing rural innovation, 2018). It has been debated for years whether the terms 'innovation' and 'project management' should be used in the same sentence. However, researchers do not agree on this issue either, as opinions are divided. As innovation means the process from idea to realization, in theory and practice, the focus is on what is considered a project. From a theoretical point of view, both innovation management and project management have developed over time as two independent disciplines. On the other hand, practice shows the opposite, namely that the most effective way to manage the life cycle of the innovation process is through project management. Respectively, innovations are mainly developed by applying project management principles. One of the definitions that explains the link between innovation and project management identifies innovation projects as system management to ensure that the project outcome is in line with its objectives (Key Issues to..., 2017). Innovation projects tend to start with freely defined, sometimes even ambiguous goals, which become clearer in the process of project continuation. The processes used are more experimental and exploratory and rarely use strict linear requirements (Project Management vs..., [s.a.]). Innovation projects refer to those projects that aim to innovate in an existing system or practice. Generally speaking, this is

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something new to replace an existing activity (Innovation Projects vs..., [s.a.]). Innovation projects can be divided into incremental and radical. Incremental innovation projects improve an existing product, service or process, while radical innovation projects find completely new, unprecedented ways to create / do something (How many types..., 2016).

There has been an increasing focus on innovation in agriculture and on how change in the agricultural sector can take place (Conceptualising the DAI..., 2019; Coutts, J. et al., 2017; Lambrecht, E. et al., 2014). According to the European Innovation Partnership for Agricultural productivity and Sustainability (EIP-AGRI) that started 2012, the Europe 2020 Flagship Initiative "Innovation Union" specifies European Innovation Partnerships (EIP) as a new tool for speeding up innovation through linking existing policies and instruments. Based on the report "Innovation, Agricultural Productivity and Sustainability in Latvia" prepared by the Organization for Economic Co-operation and Development (OECD) in 2019, it analyzes innovations in agriculture in order to promote further development of the sector (Inovācijas, lauksaimniecības produktivitāte..., 2019). The agricultural sector has progressed more slowly than the economic sector and slightly more needs to be invested in order to ensure a well-functioning innovation system and a policy environment that would increase agricultural productivity and improve sustainability. The main shortcoming identified is the lack of cooperation between research institutions and rural entrepreneurs - practitioners who put research results into practice (Inovācijas, lauksaimniecības produktivitāte..., 2019). The lack of innovation in agriculture has led to the search for new basic principles to improve the situation, for example, the innovation system helps to understand how the agricultural innovation process works, can improve its importance and quality, and weigh what is needed to develop innovation (Agricultural Innovation Systems, [s.a.]; Chesbrough, H. W., Bogers, M., 2014; Hargadon, A., 2014; Rost, K., 2011).



Source: created by authors, based on document analysis

Fig. 1. Political system of agricultural innovation projects

The Innovation Support Point is given a major role in promoting innovation. Innovation Support Points facilitate networking activities by improving communication, knowledge sharing and knowledge exchange in conferences, focus groups, seminars and publications. The main goal is to stimulate communication between all members of the EIP working group (Innovation support services, 2014). A new approach to promoting innovation in agriculture and forestry has been implemented in Europe. Namely, they are innovation brokers. The broker connects innovation actors (farmers, researchers, NGOs etc.) around an idea that can become an innovation. Brokers help to find and develop innovative ideas, find suitable partners and funding, as well as identify potential roles for each partner (Innovation support services,

2014). The political system of agricultural innovation projects consists of two levels - European and national (Fig. 1). The European Innovation Partnership Network at European Union level is the EIP-AGRI support point in Brussels. At the national level, the Latvian Rural Advisory and Education Centre is a support point or contact point, which in connection with the functions of the National Rural Network provides technical assistance for the development of creative project ideas, establishment of potential EIP working groups and attraction of potential partners (Valsts un Eiropas..., 2017). So far, 67 European Innovation Partnership projects have been launched in Latvia. In comparison with other countries, for example, 244 projects have been launched in the Netherlands and 404 - in Italy (Projects..., [s.a.]).

The aim of paper is to reveal what prerequisites are necessary to promote the development of innovation projects in agricultural sector. In order to achieve the goal of the study, the following tasks were set: 1. To study the theoretical characteristics of innovation projects and innovation project management; 2. To study the promotion of innovation projects in the agricultural sector; 3. To carry out research of preconditions for the development of innovation projects.

The research based on analysis of documents exploring the views of European Innovation Partnership project managers on how the innovation process in European Innovation Partnership projects has taken place and what are the main prerequisites for promoting the development of innovation projects, as well as observation and semi-structured interview, in turn, exploring, which can contribute to the development of innovation projects and which is already being done. A total of four interviews were conducted with European Innovation Partnership project managers and five events were observed. The aim of the observed and visited activities was to identify the preconditions that promote and hinder the development of innovation projects in agriculture.

The results of the research can have a significant impact on the development of innovation, identifying weaknesses, problems that need more attention and take specific activities to improve the current situation. Research questions are: 1. What is the need for innovation projects to be able to improve the current situation in the agricultural sector? 2. What are the most important prerequisites for the development of innovation?

Research results and discussion

The first part of the study covers the monitoring of measures to promote five innovation projects in agriculture: Administrative issues in European Innovation Partnership operational group projects (2 venue), Nordic-Baltic Rural Network Innovation seminar, Conference "Innovation for Development", Publicity of the final report of the European Innovation Partnership project (Table 1). All events are focused on the challenges and solutions for the development of innovation projects, they took place in the period from March 14, 2019 – March 4, 2020.

Table 1.

Observed Innovation Venues

No.	Name of the event	Target audience	Time	Venue
1., 2.	Administrative issues in European Innovation Partnership operational group projects I, II (2 working groups organized)	Project managers, coordinators, RSS, MA, NRN	14.03.2019. 15.10.2019.	LRATC, Ozolnieki, Latvia
3.	Nordic-Baltic Rural Network Innovation seminar	Nordic-Baltic Rural Network employees, EIP-AGRI contactpersons	21.01.2020.	Tallinn, Estonia
4.	Conference "Innovation for Development"	All those who are interested in innovation	27.02.2020.	Vidzeme Concert Hall, Cesis, Latvia
5.	Publicity of the final report of the European Innovation Partnership project	Project team, MA, RSS, NRN	04.03.2020.	Cesvaine dairy plant, Latvia

Source: created by authors

The aim of the observed and attended activities was to identify what may promote or hinder the development of innovation projects.

The first event observed was "**Administrative issues in European Innovation Partnership operational group projects - I**". The aim of this event was to understand and clarify the administrative difficulties faced by EIP project team project managers and what is planned to improve the overall implementation of EIP projects. As a feature of promoting innovation projects - the Rural Support Service is very much thinking about how the implementation of EIP projects can be improved, trying to address how the administrative burden for project managers and project coordinators can be eased. Referring to the fact that this was the first meeting for all - EIP project managers, the Ministry of Agriculture, the Rural Support Point and the National Rural Network, a number of issues faced by innovation participants were highlighted. One of the problems was the publicity of the results. As the project is funded by the European Agricultural Fund for Rural Development, this means that the results cannot be patented and these research projects must be reported. The lack of communication between all parties involved has created unresolved issues. In order to be able to contribute to the development of innovation projects in general, it is necessary to think about what events will be organized, what training will be needed for EIP project managers and what is related to reducing administrative burdens in general.

The second observed venue with the same title was working group about "**Administrative issues in European Innovation Partnership operational group projects - II**". The aim of this innovation measure was to find out the current issues that have hindered the administration of innovation projects so far. The first problem is that it turns out that EIP project managers did not know or were not aware of the need for regular publicity for these projects. Thus, one of the most important preconditions for the promotion of innovation projects is visible - publicity of projects. The second problem is the public procurement procedure. When administering EIP projects, it was not clear to many what could be considered as eligible costs and what could be considered as ineligible costs. Another problem faced by innovation actors, in this case innovation project managers, is the lack of mutual understanding of what each party - the Rural Support Service, the Ministry of Agriculture and the National Rural Network - wants to expect from project managers. Among other things, the project managers emphasized that a lot of problems are caused by quality implementation of the Minister Cabinet Regulation No. 222., as a number of rules do not seem logical and there is a need to think hard about how to change them. For example,

LRATC could organize preparatory training with its professional skills. The training would be designed to train potential EIP project managers, farmers, researchers etc. and tell what each institution expects from them, and possibly help prepare a project application. Pre-training courses would provide an opportunity to improve communication.

The third observed event was **Nordic-Baltic Rural Network Innovation seminar** in Tallinn, Estonia. The aim of the event was to prepare a presentation on the main activities of the innovation support point and how the development of innovation projects is promoted, and each Member State had to present how innovation projects are promoted. The Scottish Innovation Support Centre is working on a communication plan that can solve many problems, as problems often arise when there is uncertainty about how to do the thing correctly. Another characteristic of promoting innovation projects is that the Scottish Innovation Support Centre is working to train innovation brokers. They currently have 28 brokers, and the main thing they emphasized is that the work of an innovation broker requires very different methods from a consultant or researcher and that it is often difficult for those involved to change their work style and methods. In order to be able to solve the problems related to the promotion of innovation, a curriculum has been developed for this activity. As mentioned above, NRN's work plans include training LRATC regional office consultants to become innovation facilitators. However, this work requires resources, additional knowledge, as well as the willingness of the consultants themselves to learn and acquire new knowledge. Scottish Innovation Support brokers organize meetings with farmers (especially in the outermost regions that do not get involved in such projects) to try to identify problems and project ideas. Observing this event, for the most part, innovation participants face a problem such as uncertainty about what constitutes an innovation project, as for some it seemed a simple management practice. As explained above, innovation is a very broad concept and everyone can interpret it in a different way - the key is that the method, the technology etc. does not recur, it must be unique. And it is in this aspect that the responsible institutions have a very important role - to educate the participants of innovation, to tell a wider audience about what is innovation in agriculture or forestry. Participants shared their thoughts that it is not so easy to set up a European Innovation Partnership Task Force, that large resources need to be devoted to this purpose and that this event needs to be developed.

The next observed event is **Conference "Innovation for Development"**. The aim of this event was to present innovations in agriculture, gastronomy, IT etc. A characteristic feature of the promotion of innovation projects is the presence of various stakeholders at the event, as it shows that people are interested in hearing and listening to innovative methods that can develop their business. Specifically, in this event, everyone can be described as participants in innovation. In one of the event's thematic groups, the participant expressed his desire to develop his business, to do things differently, and pointed out that attracting a researcher who could help develop a product requires large financial resources, which he unfortunately does not have. It was in this respect that the responsible institutions, which also attended the event, had to react as to why this participant was not aware of the existence of such financial support for the European Innovation Partnership. Evaluating what needs to be improved in order to promote the development of innovation projects, it can be concluded that the responsible institutions must organize events that would promote people's awareness, education about the essence of the event itself.

The last observed event was **Publicity of the final report of the European Innovation Partnership project**. The aim of this event was to provide an opportunity for the EIP working group, which has implemented the first innovation project, to present the main results to the Rural Support Service, the Ministry of Agriculture and the National Rural Network. A characteristic feature of promoting an innovation project is the time invested by the EIP project team itself to be able to implement the project. Each project

participant told how specifically he/she progressed throughout the project, and it is very important to mention that one farmer was very grateful for the opportunity to participate in an innovation project and expressed his readiness to participate in this type of project if given the opportunity. The project team complemented each other during the presentations, which means that everyone has been aware of all the ongoing processes and has been able to express their views. Also, in this event, the EIP working group emphasized that there have been many problems encountered during the implementation of the project, including the qualitative implementation of Cabinet Regulation No. 222. The responsible authorities played an important role in this event, as it was important for the persons in charge to come and hear about the existing problems. In general, it can be concluded that there is enough work to promote the development of innovation projects, but by working together it will be possible to achieve the desired result and the development of innovation projects will be successfully completed.

Observing the events listed above, it can be concluded that innovation projects have attracted many interesting things. European Innovation Partnership projects are a relatively new support opportunity, so there are enough uncertainties about how to properly implement and enforce these projects. The Rural Support Service, together with the State Rural Network, is working to facilitate project implementation for project managers as soon as possible. One of the ways to find answers to the unclear questions is for the National Rural Network to organize seminars, conferences, working groups etc. types of events. It is one of the ways in which more active innovation projects can be promoted.

Through the interviews, the project managers of the European Innovation Partnership were interviewed in order to be able to find out how the innovation process in EIP projects has taken place and what are the main preconditions for the development of innovation projects. The interviewees were selected on the basis of an analysis of documents, which identified which innovation projects in agriculture have been launched in this programming period.

In general, the introduction of innovation projects in the agricultural sector can certainly contribute to the development of the sector. According to the described part of the theory and research, the essence of innovation projects is that it is a great daring to change something that has been traditionally accepted before. And by accepting something new, there is an opportunity to work differently, which can bring unprecedented success.

However, summarizing the results of the research, as well as the opinions of the innovation project managers themselves, the authors conclude that innovation projects have a future for the future growth of the agricultural sector. However, a lot of effort is needed to improve the overall Rural Development Program support measure Nr. 16 "Cooperation".

Table 2

Preconditions for the development of innovation projects

No.	Problems / weaknesses	Possible activities
1.	Low interest	Organization of informative, educational seminars throughout Latvia
2.	Explanation of innovation	Organization of informative, educational seminars
3.	Innovation-oriented environment	If possible, build a successful project team
4.	Communication	Create a feedback mechanism, develop a communication plan
5.	Lack of understanding in the implementation of the project	Organize pre-preparation courses to get acquainted with the main activities of the project
6.	Administrative burden of projects	The RSS reduces the administrative burden in project implementation as much as possible
7.	Publicity of projects	NRN has developed a specific action plan
8.	Promoting innovation	Curriculum development for potential innovation brokers

Source: created by the authors

One of the most important preconditions for the development of innovation is the desire of farmers, consultants, researchers and others themselves to accept new challenges and, most importantly, to accept innovation and start thinking about how to cooperate and find solutions for the development of the industry.

The study also revealed the essence of the concept of innovation. For some, this will be a known practice, for some it will be something new and unprecedented, so it is important that the public is informed about what innovation and innovation are in the sector. Because maybe someone is unfamiliar with the innovation and it automatically raises concerns about whether they will be able to implement the innovation project. That is why the role of the NRN is to educate and inform the general public about what innovation is.

An important precondition for being able to foster innovation is its environment. That is, if the innovative idea has no supporters, then the idea will not be advanced at all, although it is very likely that the idea could solve an industry problem. That's why the key is never to lose faith in an idea, and that's why innovation projects need leaders with strong leadership skills.

It is also important to mention that in order for innovation projects to be able to develop, the newly formed project team needs to establish strong communication both with each other and with the employees of the responsible institutions. There is a need for feedback, which is very much needed in these cooperation projects. Therefore, it is already being considered how to help project managers to establish successful communication with both the RSS and farmers etc. In order to be able to move forward, it is necessary to clearly define what each person involved expects in order to be able to resolve all issues as quickly as possible. One of the project managers mentioned that they want to understand what is planned in the project, to find out the understanding of each cooperation partner about their responsibilities and to coordinate the future practical activities of the team. In order for a project to be able to move forward, everyone's contribution to the project and effective communication is important.

In order for the RSS and the Ministry of Agriculture to receive high-quality project applications, one of the suggestions and preconditions was to organize pre-training. The training would be designed to train potential EIP project managers, farmers, researchers etc. They would set out what each institution expects of them and may be able to help prepare a project application. Thus, it would be an opportunity to receive immediate answers on unclear topics. One of the project managers made an important point: *"Innovative projects cannot be planned. There is a goal you are striving to achieve. It must be clear and there can be*

no deviation from it." However, the organization of such information and training exercises would provide an opportunity to attract new potential EIP project managers, stakeholders etc., which can lead to innovative ideas. In its turn, the RSS and the Ministry of Agriculture could tell and introduce potential participants in more detail about what is written in the Cabinet Regulation No. 222 and what is expected based on each of the points. As mentioned above, the Cabinet of Ministers regulations No. 222 still cause great misunderstanding and uncertainty about what to do and how to do it right. Because, as already mentioned by the project managers, it has been illogical and administratively difficult to comply with the rules. And so there are misunderstandings that are not pronounced, and in the end all this can lead to mistakes in the implementation of the project.

It follows from the above that project managers are keen to reduce the administrative burden, as farmers refuse to participate in the project due to these strict administrative requirements. Therefore, one of the preconditions for further improvement of the event could be that the RSS could reduce the administrative burden.

Another precondition for the development of innovation is the involvement of existing EIP project managers in the publicity of project results. Publicity is important precisely in order to inspire potential participants in EIP projects to further develop their idea. Publicity should also be given to the benefits of these projects for the development of the sector. And, as one of the project leaders mentioned, it is important that EIP projects are better promoted; this could be the task of the VLT innovation support point, which can be implemented by organizing information seminars, working groups, publishing articles in scientific journals etc.

An important precondition for the further development of innovation is the development of a training program for innovation brokers. An innovation broker would be the most direct facilitator and driver of innovation. As the study found, one of the project managers mentioned that such support in writing the project would have been very useful. At the time of writing, there were a lot of uncertainties about what and how should be done better. As mentioned above, VLT plans to train potential innovation brokers, but there is still a lot of work ahead, as not everyone is able to find an innovative method or technology in traditional practice.

Conclusions, proposals, recommendations

The interrelationship between innovation and project management identifies new innovation projects that can ensure that the project outcome is in line with its objectives. The theory of the analysis of the stages of the innovation spiral process is as an essential tool for the implementation of innovation projects in practice, because the stages of the innovation spiral can be compared with the traditional project life cycle. Innovation projects in the agricultural sector are needed to diversify and increase the development of the sector, thus facilitating the implementation of innovation projects. As a result of the study, 8 prerequisites for promoting innovation projects in the agricultural sector were identified:

- 1) The desire of farmers, consultants, researchers etc. to accept new challenges and, most importantly, to accept innovation;
- 2) Educating and informing the general public about what innovation is and about European Innovation Partnership projects;
- 3) Promoting the development of innovation requires an innovation-oriented environment as well as leaders with strong leadership skills;

- 4) The project team must establish strong communication both with each other and with the employees of the responsible institutions;
- 5) In order to prepare high-quality project applications, one of the preconditions is to organize pre-preparation training, introducing potential project managers to the main activities of the project;
- 6) Reducing the administrative burden of projects;
- 7) Involvement of European Innovation Partnership project managers in publicizing project results to the general public;
- 8) Training of innovation brokers, as brokers are the most direct promoters of innovation projects. As a result of the study, several recommendations were developed.
- 9) In order to promote the development of innovation projects, the authors recommend that the State Rural Network organize an innovation camp. This approach is already widely accepted and used in Europe. Organizing an innovation camp would be an opportunity for all potential European Innovation Partnership project promoters to meet and share their ideas and knowledge.
- 10) The authors recommend that the National Rural Network develop a communication plan aimed at improving mutual communication between all parties involved - the Rural Support Service, the Ministry of Agriculture, the National Rural Network, as well as with the European Innovation Partnership project managers.
- 11) In order to be able to develop innovation projects, the Ministry of Agriculture must improve the rules of the support measure, thus including all the above-mentioned aspects, which are necessary to facilitate the implementation and realization of the European Innovation Partnership project.

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DETERMINANTS OF THE ELDERLY EMPLOYMENT IN LATVIA

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Abstract. In Latvia, from 2011 to 2020 the number of people 65+ increased by 2.7 %, but the number of the employed people 65+ increased by 94.4 %. The aim of this research is to identify the determinants of the elderly employment in the context of active ageing. The author analysed secondary data collected by the international and Latvia's institutions as well as by Latvia's researchers who have studied the elderly. The results of these studies and the data of Latvia's statistics show that the rapid growth of the elderly employment in Latvia is more likely not an indicator of active ageing, but the elderly's attempt to overcome poverty. 60.3 % of the elderly in Latvia continue to work in order to increase their current income, and only 10.2 % – for non-financial reasons, which is one of the lowest values in the EU. The gap between the average income of Latvia's population and the income of people 65+ is increasing over the past 10 years. The elderly in Latvia work mainly in education and health care. These sectors have relatively lower average wages and are therefore less attractive to young people, so the elderly employment in them shows not only the importance of knowledge and experience, but also the difficulties in attracting new employees. The author concludes that Latvia is still far from real active ageing, which is typical for the most competitive EU countries. In order to move in this direction, it would be useful to use the experience of the EU's active ageing initiatives.

Key words: elderly employment, active ageing, poverty, Latvia.

JEL code: J14, J16, I38.

Introduction

Overview report "The Active Ageing Challenge for Longer Working Lives in Latvia" of the World Bank states that "significant challenges confront Latvia in ensuring that its ageing population achieve healthy, productive, and longer lives" (World Bank, 2021: 4). Healthy, productive, and longer lives of elderly people are elements of the concept of active ageing widely discussed in the modern political and scientific space (World Health Organization, 2002; Special Eurobarometer 378, 2012; Cabinet of Ministers of the Republic of Latvia, 2016; Liotta et al., 2018; AGE Platform Europe, 2021).

The results of the analysis of Latvia's official statistical data over the past 10 years show that in the period from 2011 to 2020 the number of people 65 years old and more (so called 65+) increased from 381 140 persons to 391 413 persons, i.e., by 2.7 %. In turn, the number of the employed people 65+ increased from 21 009 persons to 40 825 persons, i.e., by 94.4 % or almost 2 times. As a result, growth of the employment rate of people 65+ in Latvia was 4.9 % or almost 2 times for 10 years: from 5.5 % in 2011 to 10.4 % in 2020 (the author's calculations based on the Central Statistical Bureau of Latvia, 2021a, 2021b, for more details see Table 1 below). It would seem that such rapid growth of elderly employment in Latvia is a favorable trend, indicating an active ageing and corresponding to the government priority of the elderly employment (inclusive labour market). This priority is declared in the conceptual report of the Cabinet of Ministers "Active Ageing Strategy for Longer and Better Working Lives in Latvia" prepared after holding discussions with social partners and ministries involved (Cabinet of Ministers of the Republic of Latvia, 2016).

However, the analysis of scientific publications and analytical reports of the international organizations carried out by the author of the article made him doubt the unambiguous favorableness of the growing trend of the employment rate of people 65+ in Latvia. For instance, according to the information provided by OECD report "Pensions at a Glance 2019: How Does Latvia Compare?", in 2016, "people older than 65 in Latvia had low disposable income: 29 % lower on average than the total population while it is 13 % lower on average in the OECD" (OECD, 2019: 1). In turn, the above mentioned overview report of the

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World Bank states that "Latvia scores high on employment among older groups – partly due to relatively low pensions" (World Bank, 2021: 4). Moreover, there is a concern that the excessive protection of elderly employment may deprive the youth of employment opportunities (Kondo, 2016), although the socio-economic consequences of the growth of elderly employment will not be explored in this article.

Research aim, hypothesis and methods: The aim of this research is to identify the determinants of the elderly employment in the context of active ageing. The author supposes that among these determinants, the dominant is not the orientation of the elderly in Latvia towards active ageing, but, most likely, the challenge of poverty. In order to test this hypothesis, the author will use the monographic method as well as the analysis of empirical data. Empirical data for this research are the secondary data – both statistical and sociological – collected and published by international and Latvia's institutions and organizations (OECD, World Bank, World Economic Forum, World Health Organization, Eurobarometer, AGE Platform Europe, Central Statistical Bureau of Latvia) as well as Latvia's researchers who have studied different aspects of the elderly life in Latvia (Grinfelde, 2010; Opmane, 2018; Kudins, 2020).

Research objectives are the following:

- 1) to investigate the current trend of the elderly employment in Latvia in comparison with the general EU trend;
- 2) to analyse reasons for continuing to work of the elderly in Latvia in comparison with other EU countries;
- 3) to find the specific determinants of the elderly employment in Latvia;
- 4) to define, if the elderly employment in Latvia is in line with the concept of active ageing.

Research object is the elderly of Latvia. Within the framework of this study, elderly people are defined based on the following three criteria: 1) receiving an old-age pension; 2) the availability of statistical data for the selected age group; 3) the world practice in defining the elderly. Latvia is in the process of increasing the statutory retirement age. In Latvia, the standard (legal) retirement age for men and women, starting from 2014, increases gradually from 62 years by 3 months per year, until reaching 65 years in 2025 (Cabinet of Ministers of the Republic of Latvia, 2016). It is this age group – 65 years and older – that is also present in the official Latvia's statistics (Central Statistical Bureau of Latvia, 2021a, 2021b, 2021c). Most countries have accepted the chronological age of 65 years as a definition of the 'elderly' or older person (Orimo et al., 2006; Alpteker, 2012). Thus, the object of this study is the inhabitants of Latvia 65 years old and more (65+ age group) – in 2020 there were 391 413 people (Central Statistical Bureau of Latvia, 2021a). The period of this research is limited to the last 10 years – from 2011 to 2020, which is a sufficient time interval for understanding the current situation with elderly employment in Latvia.

Research novelty: The novelty of this research is the investigation of the reasons for the rapidly increasing the elderly employment in Latvia, looking at this process 'from the inside', i.e. from the country itself. This allows the author to take into account such factors that are not always clear and visible to representatives of international organizations who have studied the reasons for the elderly employment in the EU countries (for instance, European Commission, 2016).

Research methodology: Methodologically, the author is based on a position that casts doubt on the unequivocal favorableness of the growth of the elderly employment. The author's adherence to this methodological position is explained, firstly, by the decline in the role and subjective significance of work as a type of activity and as a life value in a modern world. This issue became the main theme of the book by the British economist and political analyst D. Susskind, "A World without Work: Technology, Automation and How We Should Respond" (Susskind, 2020). And, secondly, results of the study of Daugavpils

University's scientists show that "in the 21st century, the proportion of people working more than 40 hours per week has been rapidly decreasing in Latvia – from 33 % of all employees in 2002 to 5 % of all employees in 2019. There is a rather large proportion of Latvia inhabitants working part-time, who as a reason for underemployment indicate their unwillingness to work full-time. Over the past decade, the unwillingness to work full-time in Latvia has been growing. An analysis of the results of the World Values Survey also allows the authors to conclude that the perception of work as a significant life value in the modern world is gradually, but steadily decreasing" (Menshikov et al., 2020: 18). Taking into account the current trend of decreasing the value of work as an economic activity, the rapid growth of the elderly employment looks ambiguous. Thus, it would be advisable to comprehensively study its causes, relying on the scattered previous experience of studying this issue by international organizations and offering the author's vision 'from the inside', being a resident of Latvia.

Research results and discussion

The author begins presenting the results of this research with a more detailed analysis of statistical data confirming the existence of a trend of rapid growth of the elderly employment in Latvia over the past 10 years.

Table 1

Statistical trends of elderly* number and their employment in Latvia, 2011-2020

Year	Elderly number, Absolute meaning	Employed elderly number, absolute meaning	Elderly employment rate, %
2011	381 140	21 009	5.5
2012	379 546	23 847	6.3
2013	379 784	27 351	7.2
2014	381 615	26 013	6.8
2015	385 076	28 125	7.3
2016	386 585	30 947	8.0
2017	387 909	32 953	8.5
2018	388 856	36 025	9.3
2019	388 979	39 704	10.2
2020	391 413	40 825	10.4
Changes 2020/2011	+2.7%	+94.4%	+4.9%

* 'Elderly' in this study means people 65 years of age and older (Orimo et al., 2006; Alpteker, 2012)

Source: the author's calculations based on the Central Statistical Bureau of Latvia, 2021a, 2021b

As the data presented in Table 1 shows, over the past 10 years, the number of Latvia residents who have reached the age of 65 has increased by almost 3 %. At the same time, the employment of older people 65+ has almost doubled (Table 1). It is interesting that the trend of a rapid growth of the elderly employment is typical not only for Latvia, but also for the EU as a whole. The data by the report "Ageing Europe: Looking at the Lives of Older People in the EU" shows that during 2004-2019, "the number of people employed increased at its fastest pace among people aged 60-64 years, with the total number of employed people in this age group more than doubling (up 139 %); the number of people aged 65-69 years who were employed also increased at a rapid pace, rising by 99 %" (European Union, 2020: 91).

The question arises as to what are the determinants of such a rapid growth of the elderly employment in Latvia in comparison with other EU countries: the desire for active ageing, an attempt to overcome poverty, or something else?

According to the methodology applied in the research of the European Commission "Employment of Older Workers", the main reasons for staying in work are divided into two groups: financial – to increase entitlement to a larger pension by working more years or to supplement household income or both – and non-financial (European Commission, 2016). The data of the following table shows the proportion of people from different EU countries aged 65-69 receiving a pension and economically active reporting different reasons for continuing to work.

As the data presented in Table 2 shows, not only Latvia, but all three Baltic states have a relatively low proportion of the elderly who continue to work for non-financial reasons. The situation with non-financial motivation for the elderly employment is worse than in Latvia only in Estonia, Greece and Romania (see Table 2). In the following figure, the author visualized the reasons for the elderly employment in Latvia in comparison with the EU average values. The data shows the clear dominance of financial reasons for the elderly employment in Latvia, namely, the need to increase their current income (in Latvia, this is the main determinant for the elderly employment – 60.3 % (Table 2), which is per ~20 % higher than in the EU average (Figure 1)).

Table 2

Reasons for continuing to work of the elderly in the EU countries, 65-69 age group, %, 2012

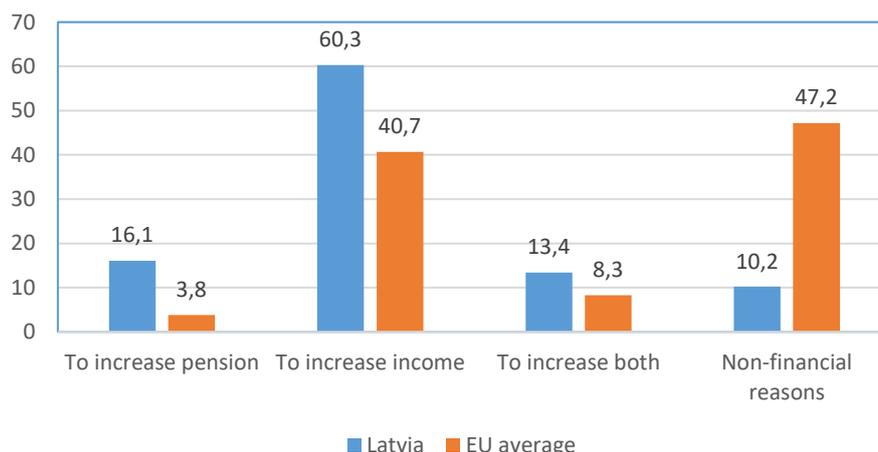
Country	Financial reasons for continuing to work			Non-financial reasons for continuing to work
	To increase pension	To increase income	To increase both	
Denmark	0.5	6.0	4.3	89.2
Spain	0.0	16.2	0.0	83.8
Slovenia	2.3	16.5	1.9	79.4
Netherlands	0.3	21.4	2.9	75.4
Sweden	6.1	10.1	8.9	75.0
Austria	1.3	24.7	1.4	72.6
Luxembourg	0.0	24.3	3.7	72.0
Finland	5.7	14.3	8.4	71.6
Belgium	3.3	29.1	1.3	66.4
Ireland	2.6	29.7	10.2	57.5
United Kingdom	3.0	28.9	12.0	56.1
Malta	6.7	30.4	13.3	49.6
Germany	2.5	45.2	3.8	48.5
France	4.0	52.2	0.0	43.8
Cyprus	1.2	44.8	19.0	35.0
Italy	6.9	49.1	9.7	34.3
Portugal	2.0	62.4	4.3	31.3
Croatia	<i>0.0</i>	<i>71.4</i>	<i>0.0</i>	28.6
Poland	5.0	47.7	20.5	26.9
Czechia	5.4	48.0	22.3	24.3
Bulgaria	6.1	66.3	11.7	15.9
Hungary	2.0	66.3	16.4	15.3
Slovakia	3.5	73.2	9.1	14.2
Lithuania	12.3	52.6	21.9	13.3
Latvia	16.1	60.3	13.4	10.2
Estonia	6.6	82.4	1.1	10.0
Greece	0.9	88.0	3.3	7.7
Romania	3.7	93.0	1.8	1.6

Notes:

1) Countries ranged by the author in descending order according to the proportion of non-financial reasons for continuing to work

2) Figures in italics relatively uncertain because of small number of observations

Source: the author's compilation based on the European Commission, 2016: 30



Source: the author's compilation based on the European Commission, 2016: 30

Fig. 1. Comparison of reasons for continuing to work of the elderly in Latvia with the EU average proportions, 65-69 age group, %, 2012

Based on the data presented in Table 2, it is possible to suppose that the share of non-financial reasons in the total 'reasons portfolio' strongly correlates with the level of economic development of a country, since the largest share of non-financial reasons for employment of the elderly is observed in such economically developed countries as Denmark, Netherlands, Sweden, Austria. For empirical confirmation of this assumption, it is necessary to conduct a correlation analysis for assessing interconnection between selected reasons for continuing to work of the elderly in the EU countries and competitiveness of these countries, which is measured by the Global Competitiveness Index (Schwab, 2013).

Table 3

Interconnection between selected reasons for continuing to work of the elderly in the EU countries and competitiveness of these countries, Pearson correlation coefficient, n = 28 countries, 2012

Selected reasons for continuing to work of the elderly	Correlation variables	Global Competitiveness Index (GCI)	
		Rank*, out of 148 countries	Score, 1-7
To increase income	Pearson correlation coefficient, r	-0.710**	+0.707**
	Statistical significance of the correlation, p-value	0.000	0.000
Non-financial reasons	Pearson correlation coefficient, r	+0.735**	-0.694**
	Statistical significance of the correlation, p-value	0.000	0.001

* Lower rank means higher competitiveness

** statistically significant correlation, with 99% probability

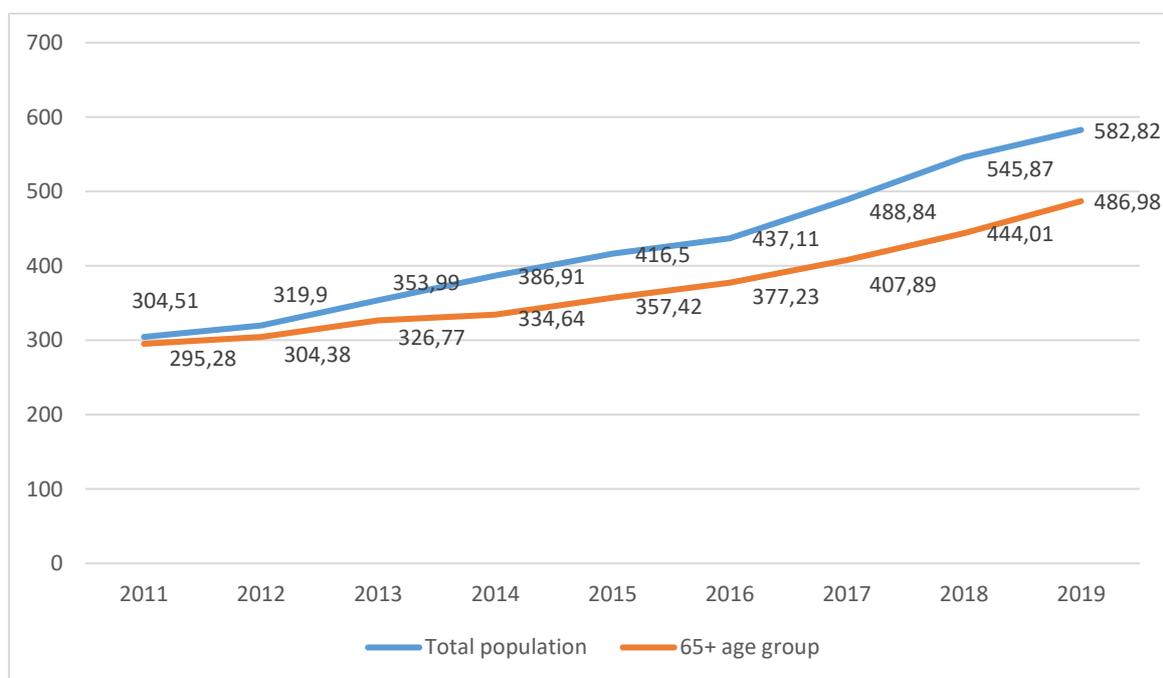
Source: the author's compilation based on the European Commission, 2016: 30 and Schwab, 2013

As the data presented in Table 3 shows, the higher a country's position in the global competitiveness rankings, the less often the elderly in that country continue to work to increase their income ($r = -0.710^{**}$, $p = 0.000$) and, accordingly, more often work for non-financial reasons ($r = -0.735^{**}$, $p = 0.000$). Almost the same situation is with the correlation between the selected reasons for continuing to work of the elderly and the GCI score (Table 3). Thus, it can be argued that active ageing in the form of employment for non-financial reasons is a phenomenon that is more typical for countries with a relatively higher level of

competitiveness. Although, there are some exceptions – for instance, Slovenia with 62nd rank of the competitiveness out of 148 countries of the world (Schwab, 2013), but very high share of those elderly, who continue to work by non-financial reasons, – 79.4 %, which is the 3rd rank out of 28 EU countries (Table 2). In turn, Germany with 4th rank of the competitiveness out of 148 countries of the world (Schwab, 2013) does not show a high share of those elderly, who continue to work by non-financial reasons, – 48.5 %, which is only the 13th rank out of 28 EU countries (Table 2).

The author supposes that a type of reasons – financial or non-financial – for continuing to work of the elderly have to be taken into consideration in development of the Active Ageing Index (AAI), which measures the level to which older people live independent lives, participate in paid employment and social activities as well as their capacity to actively age (European Commission, 2021).

The data of the Central Statistical Bureau of Latvia indicates a decrease in the income of the elderly in Latvia compared to the average income of the population of Latvia over the past 10 years. Although the income of the elderly in Latvia increased between 2011 and 2019, the average income of Latvia's population increased faster. As a result, the gap between the average income of Latvia's population and the income of people 65+ is constantly increasing (Figure 2).



Source: the author's compilation based on the Central Statistical Bureau of Latvia, 2021c

Fig. 2. Comparison of the mean disposable income per household member between the total population of Latvia and 65+ age group, euro per month, 2011-2019

Comparison of statistical data on the increase in disposable income per household member for the period from 2011 to 2019 by age groups of the population of Latvia allows the author to conclude that the 65+ age group lags behind most in terms of income growth, since income growth in this age group over the past 10 years the lowest (Table 4). According to the previous research findings by the author, "the amount of pension is a significant economic factor, which impacts the labor supply of older people" (Kudins, 2020: 206).

Table 4

**Mean disposable income per household member by age group
 in Latvia, euro, 2011 and 2019**

Age groups	2011	2019	Changes 2019/2011, %
0-15	255.25	512.35	+100.7
16-24	276.21	557.89	+102.0
25-34	344.28	702.73	+104.1
35-44	308.32	622.65	+101.9
45-54	314.03	634.64	+102.1
55-64	346.16	627.82	+81.4
65+	295.28	486.98	+64.9
Total	304.51	582.82	+91.4

Source: the author's calculations based on the Central Statistical Bureau of Latvia, 2021c

Latvia's researcher A. Grinfelde in her Doctoral Thesis "Life Quality of Pensioners in Latvian Regions" argued that "pensioners' perceptions of a good life in Latvia are mainly associated with material provision, good health and good relationships with the closest people: family members, friends and neighbours" (Grinfelde, 2010: 90). She also found that the poorest Latvia's pensioners live in Latgale region and Vidzeme region. Four out of ten pensioners in Vidzeme region and five out of ten pensioners in Latgale region cannot afford one of the following goods: telephone, colour TV, washing machine, and car. More than a half of pensioners in Vidzeme region (54.8 %) and Latgale region (59.7 %) live in inadequate or not well-facilitated lodging, comparing to Pieriga region, where pensioners are twice less unsatisfied with housing condition. Material unsafety is intensified by the fact that 92% of those living in Latgale region and Vidzeme region barely can 'make the ends meet' (Grinfelde, 2010).

Thus, both the results of studies of international organizations and the data of official Latvia's statistics show that the rapid growth in the elderly employment in Latvia over the past 10 years is more likely not an indicator of active ageing of these people, but their attempt to overcome the poverty that threatens them. Another indirect evidence of this fact is contained in the results of a research conducted by the Bank of Latvia on the shortage of laborforce in Latvia and the possibility of replenishing it with the help of employed pensioners (Opmane, 2018). Analyzing the results of this research, I. Opmane, an economist at the Bank of Latvia, is stressed the major sectors popular with pensioners – education and health care. These sectors can be seen as areas where the education and experience of employees is a bonus, so seniors have an advantage that is often used. However, it should be noted that these sectors have relatively lower average wages and are therefore less attractive to young people, so the elderly employment in them shows not only the importance of knowledge, but also the difficulties in attracting new employees (Opmane, 2018).

Relatively more seniors are employed in agriculture, noting both the age distribution of those living in rural areas and the fact that agriculture can also be a way of life, which is characterized by continuing the usual work even reaching retirement age. However, it should be noted that, compared to new employees, seniors are more often skilled agricultural workers than simple physical ones – thus, their experience and knowledge is used more than the physical force. Also, in general, relatively fewer seniors work in sectors related to heavier physical work (construction, transportation and storage) or the use of the new technologies (information and communication services) (Opmane, 2018).

However, there is another reason for the elderly employment, related to the culture of financial behavior of the inhabitants of Latvia, which, according to the author of this article, does not fall into the field of view of international organizations studying the elderly employment in Latvia. In December 2011, the SEB Bank conducted a sociological survey "On the Latest Trends in Pensions", which was realized in an electronic environment (answers were given by 1450 respondents). According to the data of this survey, almost a half (48 %) of the residents of Latvia, looking at the active travelling of foreign pensioners, admit that it is important to build up pension savings in a timely manner, but only 33 % of the residents of Latvia are ready to make savings to increase their material well-being in retirement years. In addition, the share of the population who believe that they will continue to work at retirement age has increased from 17 % to 19 % during the year (SEB Bank, 2012). Based on this data, K. Martinsone, SEB Bank's manager of the projects of external communication, concludes that "the residents of Latvia prefer to work in old age than to make pension savings today" (SEB Bank, 2012).

Thus, the data of the studies analysed by the author, as well as statistical data over the past 10 years, indicate that Latvia's government and policy-makers are facing a difficult dilemma. On the one hand, increasing the elderly employment is a priority for the active ageing policy, and it is also necessary to fill the laborforce shortage in the Latvia's labor market. On the other hand, the main incentive for the elderly employment in Latvia is their poverty. In such a situation, an increase in pensions will lead to a decrease in the elderly employment, which does not correspond to either the framework of the active ageing policy or the needs of the Latvia's economy.

Conclusions, proposals, recommendations

- 1) Over the past 10 years, Latvia has a rapid – almost 2 times – increase in the elderly (65+) employment, which quantitatively corresponds to the general EU's trend. In turn, the reasons why the elderly in Latvia continue to work at retirement age are quite different from the motivation of the elderly in many other EU countries – especially in such countries, as Denmark, Sweden, Finland, etc.
- 2) The main reason for the elderly employment in Latvia is the need to 'make the ends meet' (especially at Vidzeme region and Latgale region of Latvia), and does not indicate the aspiration of older Latvia's residents to active ageing and self-realization via the work. In addition, the Latvia's economy is also interested in the elderly employment, especially in education and health care, where it is difficult to attract young workers.
- 3) According to the author, one of the reasons for the elderly employment in Latvia is deeply rooted in the habits and culture of financial behavior of Latvia's residents. These habits and culture of financial behavior has been formed over generations and has a rational background from the point of view of adapting previous generations of Latvia's residents to the financial and economic conditions of life in a planned economy. As a result, at the moment the residents of Latvia prefer to work in old age than to make pension savings today, and such a life pattern cannot be changed in the short term.
- 4) The author supposes that Latvia is still far from real active ageing, which is typical for the most competitive EU countries. Nevertheless, in order to move in this direction, it would be useful for Latvia's society to study and, if possible, to use the experience of the EU's active ageing initiatives – for instance, "Older People for Older People" (Northern Europe Periphery Programme), "Retired and Senior Volunteer Programme – Retire into Action" (the UK programme), "The Campaign to End Loneliness" (the UKwide initiative) and others (AGE Platform Europe, 2021).

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REMOTE WORK DURING THE COVID-19 PANDEMIC: - PROBLEMS AND SOLUTIONS ON THE EXAMPLE OF VIDZEME REGION IN LATVIA

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Abstract. The aim of the research was to study the experience of companies in the transition to remote work during the COVID-19 pandemic. The development of information and communication technologies in the 21st century has transformed everyday work and life, and it was expected that, over time, teleworking would become a common practice in most companies. However, it was slower than initially expected due to various social and organizational factors. The COVID-19 pandemic accelerated the shift to forced remote work, creating problems and challenges for both employers and employees. This proves that new approaches and solutions are not only possible, but also useful and necessary. In order to find out what challenges employers have faced in the transition to remote work and what experience they have gained in order to solve them, two focus group discussions were organized with employers of Vidzeme region from different sectors. In order to compare the experience of employers and employees, a survey of 495 remote-working respondents was conducted between September and October 2020. The research data were collected in the framework of the National Research Programme project "Life with COVID-19", during the first wave of the pandemic. The study reveals that the main challenges were to adapt business processes to the constraints of the emergency and the work organization of remote work, which requires new knowledge and skills such as how to sell, communicate, motivate, teach remotely and ICT skills. Teleworking during the COVID-19 pandemic posed challenges such as occupational safety risks, health risks, separating work from leisure time and acquiring new knowledge and skills in a short time.

Key words: business processes, management, remote work, Vidzeme region, COVID-19 pandemic.

JEL code: M1, M10, M12, M21

Introduction

With the COVID-19 pandemic, the work and its management in companies changed. The social distancing measures introduced in all countries during the COVID-19 pandemic brought about great changes in the employment sphere forcing both employers and employees to work from home for health reasons. Most companies encountered remote work for the first time. The COVID-19 emergency situation and the restrictions imposed within it not only in Latvia, but also in the world significantly affected business in certain sectors and also had an impact on employment in these sectors. Therefore, it was important to adapt business processes to the restrictions of the emergency and the work organization of remote work, which required new knowledge and skills. This study showed how successfully remote work was integrated into Vidzeme region companies during the first wave of the COVID-19 pandemic. Forced transition to remote work has created problems and challenges for both employers and employees, and this confirms the need for a new approach and new solutions in company management and work organization. The aim of the study is to investigate and analyse what factors influenced remote work during the COVID-19 pandemic and how they were addressed by the employers in Vidzeme region, providing an opportunity to integrate the findings of this study into business management when switching to remote work.

Based on the aim of the study, two research questions were defined.

- 1) What factors have influenced the management and organization of remote work?
- 2) What were the positive and negative experiences of employers and employees in Vidzeme region in the transition to remote work during the COVID-19 pandemic?

The following steps were taken in order to find out what challenges employers have faced in the transition to remote work and what experience they have gained.

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First, the authors analysed policy documents and previous research on the management and organization of remote work. As a result, factors influencing remote work were identified. The analysis of the Eurofound research was performed in relation to the concept of remote work and the regulation of remote work in various EU Member States, including Latvia, for example, the European Foundation for the Improvement of Living and Working Conditions publication of 28 July 2020 "Regulations to address work-life balance in digital flexible working arrangements, New forms of employment series" (Llave et al., Eurofound, 2020), as well as the study published by Eurofound on 6 November 2020 on living and working under the influence of COVID-19 "Living, working and COVID-19". In addition, the amendments to the Labour Protection Law of the Republic of Latvia were analysed.

Second, two semi-structured focus group interviews were organized with 11 employers in Vidzeme region. The interviews were conducted in person in September 2020, thus the results of the focus groups describe the companies' experience acquired during the emergency situation declared in March. A targeted sample was used for the interviews: employers of companies of different sizes (based on the number of employees) were selected, representing different sectors (see Table 2). The interviews allowed obtaining data on what was happening in the companies in Vidzeme region and understanding the situation development trends.

Third, by using content analysis, the challenges and benefits of remote work in the context of COVID-19 were assessed observing anonymity in data processing. The data of this study were obtained in the project of the National Research Programme of Latvia "Life with COVID-19: Evaluation of the overcoming coronavirus crisis in Latvia and recommendations for social resilience in the future".

Finally, a survey of employees was conducted to compare the identified problems of employers and employees while working remotely during the COVID-19 pandemic. Econometric research methods were used - mathematical statistics, factor analysis, data input quality control, data cleaning and weighing. The sample structure of the study was based on the latest data of the Latvian Central Statistical Bureau. The target group of the study was the remotely working population of Latvia (180 000 employees). A statistical approach was used to assess the size of the sample and the confidence level of the result. According to the statistical calculation, the recommended selected sample was 384 respondents, the confidence level 95% and the margin of error 5 %. Using the number of respondents (495) decreased the estimation of error to 4.4 %. The obtained survey data were analysed with the data processing programme IBM SPSS version 26 and visualized using MS Excel. First, the respondents who worked remotely during the COVID-19 pandemic were selected – there were 495 such respondents, of which 82 were employed in Vidzeme region.

In order to create the structure of the interview and to develop the survey, previous research on remote work was analysed. Such research was conducted before the COVID-19 pandemic, for example, several scientists have identified occupations that can be performed remotely and sectors where remote working is a successful alternative in work organization (Overbey, 2013). The studies have concluded that organizational factors are crucial for performing remote work (Baker, Avery and Crawford, 2007; Grant et al. 2019). These studies show that employers support employees' requirements when working from home, providing employees with everything they need for remote work to succeed, such as compensating for equipment costs, training in the use of technology, and organizational communication. This study highlights the need for a range of sustainable human resource management strategies and effective employee training and development programmes (Dima et al., 2019). Baruch and Nicholson (1997) define four factors influencing remote work: individual factors, work factors, organizational factors, and family / home factors. During the COVID-19 pandemic, studies covering the impact of the pandemic have been published, for example, Belzunegui-Eraso and Erro-Garcés (2020) analyse remote work as a safety tool in the COVID-19

pandemic conditions in their research "Teleworking in the Context of the COVID-19 Crisis", which supplements Baruch and Nicholson (1997) approach to remote work with environmental, security and legal factors (Belzunegui-Eraso, Erro-Garcés, 2020; Baruch, Nicholson, 1997). In addition, the study "Workaholism and Technostress During the COVID-19 Emergency: The Crucial Role of the Leaders on Remote Working" points to increasing levels of stress in the transition to remote work (Spagnoli et al., 2020). The data from several studies suggest that attention should be paid that employers provide more support to their employees – both in organizing remote work (for example, in terms of setting up an ergonomic workplace, reimbursing expenses), in providing psycho-emotional support and in organizing training.

Research results and discussion

1. Factors influencing remote work

The analysis of the previous studies and legislation identified the most significant factors influencing the transition to remote work during the COVID-19 pandemic (Table 1).

Table 1

Factors influencing the transition to remote work during the COVID-19 pandemic

No	Factors	Explanation
		External environment factors
1.	Information provided by the state in connection with the COVID-19 pandemic	The most important sources of information from state institutions were the Centre for Disease Prevention and Control, the Ministry of Health, the Ministry of Welfare, the State Labour Inspectorate, the Ministry of Economics, the Consumer Rights Protection Centre, the websites of these institutions and the website maintained by several institutions www.stradavesels.lv.
2.	Legislation of the Republic of Latvia	Changes in legislation during the first wave of the pandemic: In Latvia, the amendments to the Labour Protection Law entered into force as of 1 July 2020.
3.	Electricity and Internet provision	During COVID-19, when many worked remotely from home, household electricity consumption patterns also changed and the number of Internet connections increased.
Internal environment factors		
4.	Employment	Reduction/ increase of workload, forced leave, downtime, dismissal/ recruitment of employees.
5.	Changes in revenue	The COVID-19 pandemic can cause a decrease or increase in revenue, depending on the industry of the company.
6.	Expenditure on COVID-19 protective equipment	Budget spending may increase.
7.	Changes in workload	The volume of work decreased or increased depending on the industry of the company.
8.	Changes in customer trust levels	Retaining and attracting customers became a challenge. Demand for online stores increased.
9.	Efficiency of remote work	Before the COVID-19 pandemic, entrepreneurs had no experience working with restrictions and remotely. Management, control, accounting of working hours.
10.	Internal and external communication	During the COVID-19 pandemic, communication is an important factor influencing the relationships with partners and employees, as the way of concluding transactions, signing contracts, establishing contacts, as well as communicating with employees in the emergency changed.
11.	ICT provision	The provision of new technologies and software can be a challenge for many companies if ICT equipment is not suitable for remote work, which can lead to additional costs.
12.	Remote training and professional development of employees	The transition to remote working changed the content and organization of employee training and professional development, for example, webinars, conferences, online courses, stress management, time management.
13.	Safe work environment	When working remotely, it is necessary to ensure an ergonomic work environment, observe work safety, as well as identify employees who are at risk.
14.	Motivation of employees	When working remotely, motivational tools change, for example, the bonus system, ICT provision, job accounting and control, the level of trust.

Source: Authors' creation based on the literature analysis (Belzunegui-Eraso, Erro-Garcés, 2020; Baruch, Nicholson, 1997, Livina et al., 2016).

2. Participants of the interviews and survey

In order to find out how the previously mentioned factors have affected companies in Vidzeme region, two structured employer focus group interviews were conducted. The characteristics of the interviewees are shown in Table 2.

Table 2

Descriptive analysis of the participants of the interviews

Respondent ID	Sector represented (according to NACE 2 classification)	Number of employees in the company
A	N: Administrative and support service activities, L: Real estate activities	3
B	G: Wholesale and retail trade; repair of motor vehicles and motorcycles	3
C	M: Professional, scientific and technical activities	4
D	P: Education	3
E	J: Information and communication	41
F	M: Professional, scientific and technical activities	N/A
G	H: Transportation and storage	251
H	A: Agriculture, forestry and fishing	61
I	G: Wholesale and retail trade; repair of motor vehicles and motorcycles F: Construction	28
J	P: Education	120
K	L: Real estate activities	46
L	J: Information and communication	272
M	E: Water supply, sewerage, waste management and remediation activities	86
N	J: Information and communication	70
O	K: Financial and insurance activities	1800

Source: Focus group discussions with the employers in Vidzeme region from 22 September 2020 and 29 September 2020

The e-survey was disseminated via a link on publicly available sites, social networks, as well as through direct e-mails from 28 September 2020 to 27 October 2020. Anyone with access to the Internet could complete the e-survey, but it had a filter question that allowed selecting employees who had access to the full version of the survey (for example, people who had not worked during the last year or were housewives at the time of completing the questionnaire were not asked all the questions). All the questions were answered by 1006 respondents, of which 495 worked remotely. The characteristics of the respondents were: industry of the company (according to NACE 2 classification), type of residence (Table 3). The survey data were collected and managed using the REDCap (Research Electronic Data Capture) electronic data collection and compilation tool. REDCap is a secure, web-based software platform designed to support data collection for research.

Table 3

Descriptive analysis of the respondents

Sector represented (according to NACE 2 classification)	Vidzeme	Other regions of Latvia
A: Agriculture, forestry and fishing	3.9%	2.3%
C: Manufacturing	5.2%	3.9%
D: Electricity, gas, steam and air conditioning supply	2.6%	2.6%
E: Water supply, sewerage, waste management and remediation activities	2.6%	1.0%
F: Construction	6.5%	3.3%
G: Wholesale and retail trade; repair of motor vehicles and motorcycles	2.6%	3.1%
H: Transportation and storage	1.3%	4.6%
J: Information and communication	7.8%	5.4%
K: Financial and insurance activities	0.0%	3.6%
L: Real estate activities	0.0%	0.3%
M: Professional, scientific and technical activities	6.5%	6.4%
N: Administrative and support service activities	2.6%	2.1%
O: Public administration and defence, compulsory social security	13.0%	20.8%
P: Education	33.8%	29.6%
Q: Activities of extraterritorial organisations and bodies	1.3%	4.4%
R: Arts, entertainment and recreation	3.9%	1.0%
S: Other service activities	6.5%	5.7%

Source: Employee survey from 28 September 2020 to 27 October 2020, n-495

3. Results of the employer focus group discussions

Analysing the results of the focus group interviews, one of the challenges of the external environment was the information and communication provided by the state to the public about the restrictions and precautionary measures of the COVID-19 pandemic. The most important sources of information from state institutions were the Centre for Disease Prevention and Control, the Ministry of Health, the Ministry of Welfare, the State Labour Inspectorate, the Ministry of Economics, the Consumer Rights Protection Centre, as well as the website *www.stradavesels.lv* maintained by several institutions. However, the analysis of the interviews shows that employers used Internet portals (for example, *www.delfi.lv*, *www.tvnet.lv*), social network accounts, as well as direct telephone consultations more. The participants of the interviews acknowledged that the information provided by the state was general and voluminous, which sometimes led to aggression, confusion and panic, as the information was tendentiously interpreted in the media and on social networks. The employers of large companies also admitted during the interview that there was enough information, but it was relatively contradictory. The employers indicated that the communication of the public administration institutions in the e-environment should be improved.

Another external environment factor was the changes in legislation in the country related to the COVID-19 pandemic when companies had to comply with new requirements for remote working. Analysing the situation in the field of regulatory enactments, it can be concluded that, even though remote work was performed in Latvia before the emergency situation caused by the COVID-19 pandemic, the legislation regulating the field of remote work is new and was not in force before the first wave of COVID-19 in 2020. The analysis of the employer interviews shows that remote working at home does not meet the occupational

safety requirements. The survey of employees shows that 81.7 % of the participants from Vidzeme region did not have a written agreement on performing remote work with the employer, but in Latvia as a whole – 76.0 %

The analysis of the focus group interviews of employers shows that a significant aid provided by the state was the introduction of downtime benefits. Examining the regional distribution of the cost of benefits, it can be seen that half of all recipients of downtime benefits are declared in Riga, but 20 % in Pierīga, while in other regions the share is lower – 9 % in Kurzeme, 9 % in Zemgale, 6 % in Vidzeme and 6 % in Latgale (State Revenue Service of the Republic of Latvia, 07.05.2020). Analysing the interviews, it was seen that, even though employers faced difficulties, sometimes terminating their activities, the downtime benefits made it possible to keep existing jobs and employees.

An important external environment factor that affects the performance of remote work is the uninterrupted supply of electricity and the provision of the Internet. The analysis of the focus group interviews revealed that the power supply infrastructure of buildings did not correspond to the power consumption during the COVID-19 pandemic and was not able to ensure an uninterrupted supply of electricity. As people were forced to isolate themselves and work remotely from home using information communication technologies, electricity disruptions occurred that affected the electricity supply of many apartment buildings.

During the COVID-19 pandemic, many good and talented specialists became available in the labour market, which, according to the analysis of the interviews, was successfully used by employers in Vidzeme region. Before the pandemic, good specialists were concentrated in the capital and did not want to work in regional cities (Livina, Rozentale, 2020), but, thanks to the COVID-19 pandemic, people moved from the capital to regional cities.

The analysis of the focus group interviews revealed that the companies faced additional costs related to the provision of protective equipment on the company's premises, disinfectants, face masks and face shields were purchased, the cleaning of the premises was intensified, and the companies faced a shortage of this equipment, but the costs of the protective equipment increased with each order, which created an additional burden for the budgets of small businesses. As well as that, the employers also emphasized that during the emergency they had saved both financial resources (for example, not spending money on business trips, not paying sick leaves because the absence of employees due to illness decreased), and time.

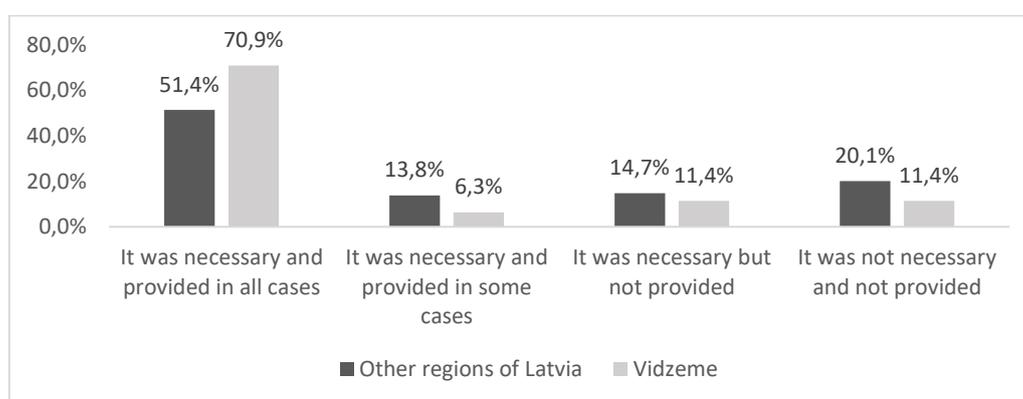
The results of the research analysis show that during the COVID-19 pandemic work duties and workload increased. Analysing the focus group interviews of the employers, it was revealed that the most important task in entrepreneurship faced by the entrepreneurs in many sectors during the COVID-19 pandemic was retaining and maintaining market positions, as well as e-commerce development. The workload of the representatives of the information technology company increased many times, because there was a great demand for online stores, but many companies did not have an online store.

The analysis of the interviews shows that, when working remotely with ICT tools, the workload remains the same, however, the work time spent on servicing ICT tools, various software, and communication time with colleagues, the employer, and customers on communication platforms increases, and, as a result, work efficiency decreases. Communication in business plays a very important role in building cooperation. Analysing the results of the research, it can be seen that making new contacts became a significant challenge during the COVID-19 pandemic.

Internal communication processes were equally important during the COVID-19 pandemic, creating a clear understanding of what people need to hear and see in order to switch to remote working more

successfully, making it a successful management process. The focus group discussions showed that employers chose such online way of communicating with employees that was more relevant to their industry, such as WhatsApp, using the ZOOM programme. The rapid transition to remote working affected companies' internal communication. The employee survey data show that 81.7 % of Vidzeme region respondents were provided with the necessary software for remote work (ZOOM, Webex and other).

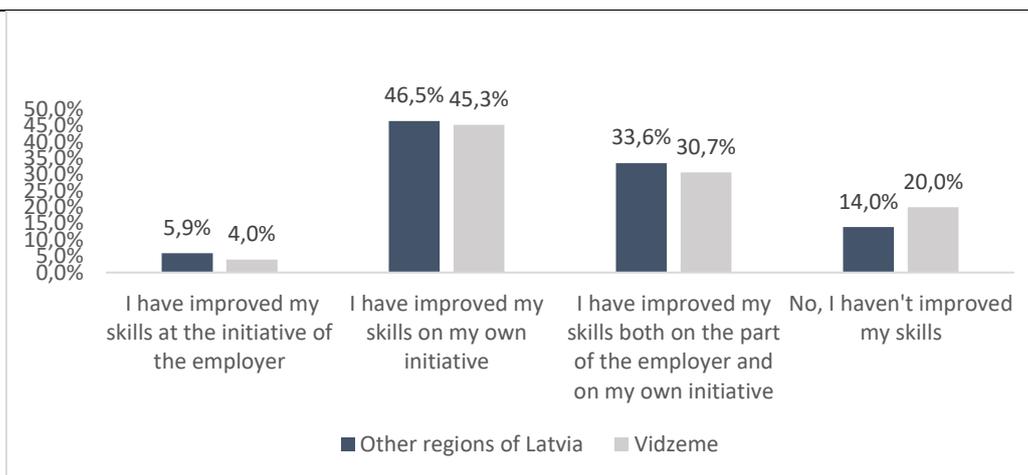
The interview data show that the challenge for the transition to remote work was the provision of ICT. It turned out that small businesses are not ready to switch to remote work due to outdated technologies, which require additional investments, such as the purchase of laptops and additional equipment. It was easier for the large employers to provide the possibility for employees to work remotely. The analysis of the survey data of employees shows that 17 % of the respondents in Vidzeme region and 29 % of other respondents in Latvia needed a computer and other IT equipment when performing remote work, but it was not provided or was provided only in some cases (Fig. 1).



Source: author's calculations based on the employee survey from 28 September 2020 to 27 October 2020, n-495

Fig. 1. Provision of computers and other IT equipment for remote employees during the COVID-19 pandemic

The transition to remote working required employers and employees to quickly learn and improve their skills for working outside the office. The training offers during the COVID-19 pandemic were very diverse. There are several advantages for companies when using online training. The study shows that companies have also used global and local training platforms for employee training (a quote from a large company employer of Vidzeme region: "We continued as usual; we provided more information about the recently introduced possibility to use the global training platform Linked Learning with more than 8000 training courses."). The analysis of the survey data of employees shows that 20 % of teleworkers in Vidzeme region have not improved their skills either on their own initiative or at the initiative of employers, but in other regions of Latvia – 14 % of teleworkers (Fig. 2).

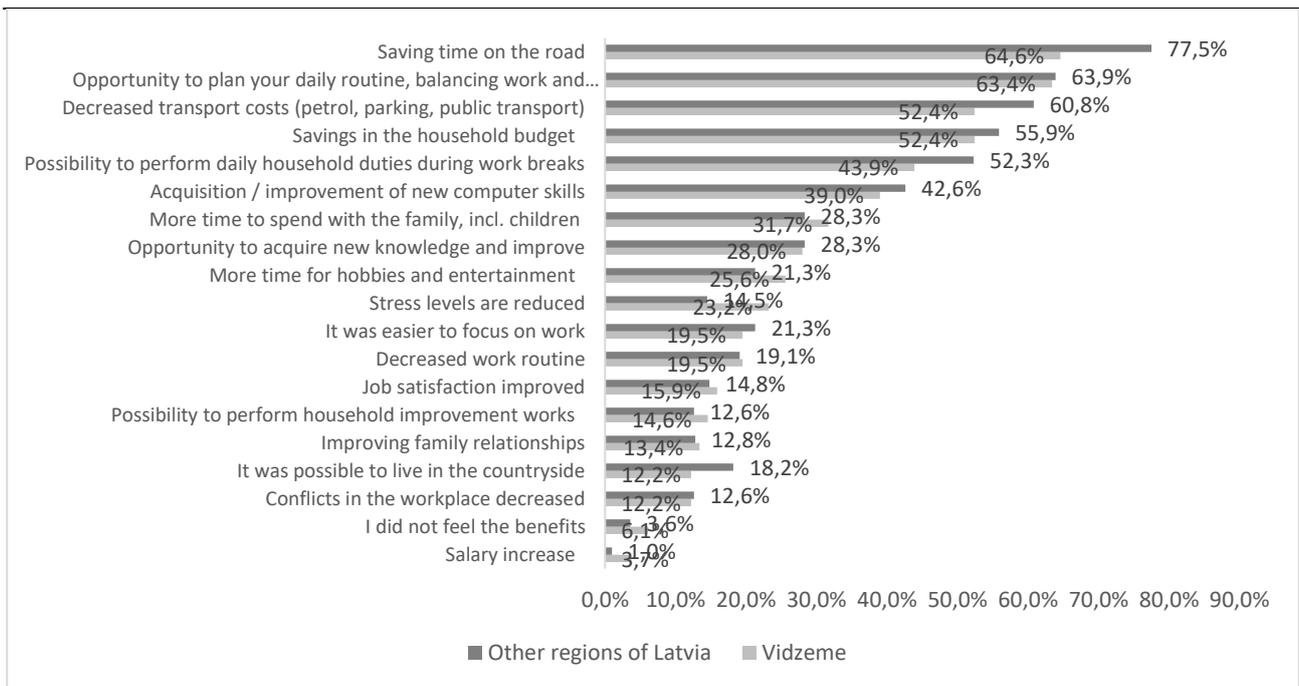


Source: author's calculations based on the employee survey from 28 September 2020 to 27 October 2020, n-495

Fig. 2. Improving the skills of teleworkers during the COVID-19 pandemic

The focus group discussions were organized in the autumn of 2020 - several months after the end of the emergency situation, when the requirements of the regulatory enactments regarding the assessment of the work environment risk for remote workplaces were already in force. The entrepreneurs acknowledged that the work environment risk assessment for remote workplaces had not been performed and that risk groups had not been identified. When working remotely, employees face many risks, for example, increased psychological load, employees experience stress that they cannot combine private life with work responsibilities that have to be performed remotely. The employers admitted that the employees' work environment at home had not been inspected, and the provision of technologies and the Internet connection could be mentioned as the maximum supportive measure on the part of the employer.

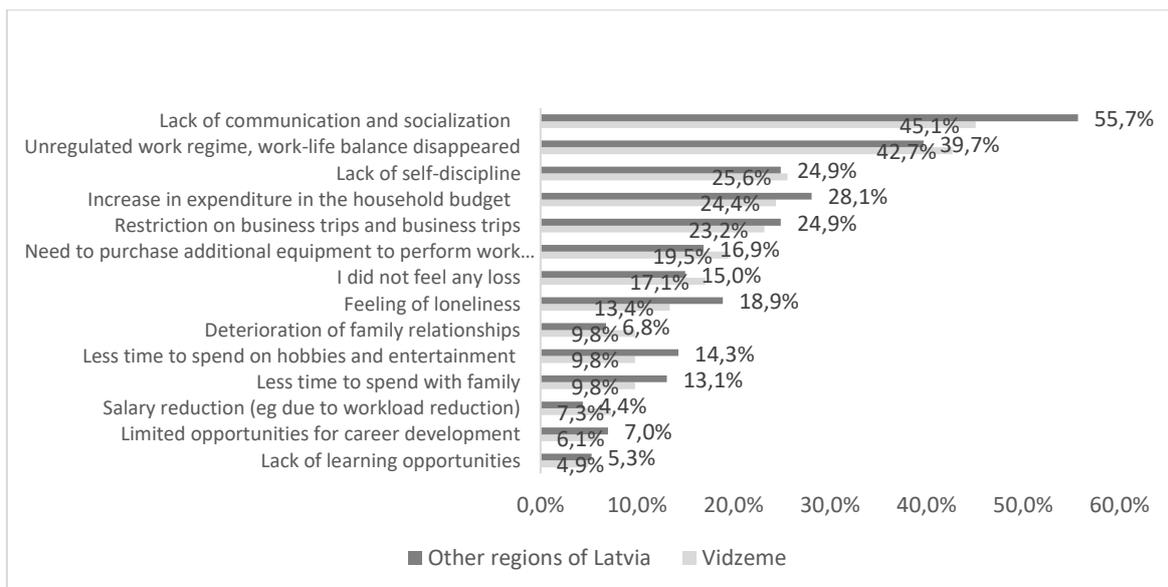
The analysis of the employee survey data reflects the benefits of teleworking during the COVID-19 pandemic. Most of all the respondents from Vidzeme region have appreciated the possibility to save time on the way to and from work (64.6 %), to plan a daily routine, balancing work and private life (63.4 %) and the reduction of transport expenses (52.4 %), as well as savings in the household budget (52.4 %). There is a similar tendency in the answers of respondents from other regions of Latvia. The biggest differences between Vidzeme region and other regions of Latvia are observed in the decrease of stress level (23.2 % Vidzeme, 14.5 % other regions of Latvia) and the possibility to live in the countryside (12.2 % Vidzeme, 18.2 % other regions of Latvia, which also includes the capital Riga) (Fig. 3).



Source: author's calculations based on the employee survey from 28 September 2020 to 27 October 2020, n-495

Fig. 3. Benefits of telework for Vidzeme region teleworkers during the COVID-19 pandemic

The biggest challenges of telework in both groups of the respondents - Vidzeme and other regions of Latvia - have been the lack of communication and socialization, but this also reflects the biggest difference between the two groups of respondents. The respondents of other regions of Latvia, including Riga, lacked communication by 10.6 % more than the respondents of Vidzeme region. This could possibly be explained by differences in leisure habits in cities and rural areas, but such a statement requires more in-depth research. The respondents from other Latvian regions also more often felt lonely in comparison with the respondents from Vidzeme region.



Source: author's calculations based on the employee survey from 28 September 2020 to 27 October 2020, n-495

Fig. 4. Challenges of telework during the COVID-19 pandemic

There have also been several limitations to our study. One of the limitations of the web-based survey method is the fact that some groups of employees may be excluded from the sample by default (such as the elderly, people living in remote areas, and people with low education level and digital skills). The questionnaire was only available in Latvian, which probably resulted in fewer responses from the Russian-speaking population. In order to obtain data representing the demographic profile of the working age population in Latvia, the sample was weighted by sex and age.

Conclusions, proposals, recommendations

- 1) Extensive information was provided by public authorities during the COVID-19 pandemic, but small businesses were sometimes unable to navigate the news flow and mostly used social networks and the media as a source of information. The solution could be to involve municipalities, planning regions, business associations so that small businesses receive information in a timely manner. It would be necessary to create a single website devoted to the emergency situation where the information on the emergency situation would be gathered by all institutions involved in crisis management.
- 2) It would be necessary to promote employers' awareness of the need to legally formalize remote working by agreeing with remote workers, providing a term for remote working in the employment contract or its amendments and defining the employer's and employee's rights and responsibilities for occupational safety and health, data protection, working time and its accounting, risk assessment, compensation for expenses related to remote work.
- 3) The most economical home Internet connection speed chosen sometimes did not correspond to performing efficient remote work. These circumstances should be taken into account when deciding on remote work also after the COVID-19 pandemic.
- 4) Companies faced additional costs associated with the provision of protective equipment, but the cost of these materials increased with each order, which placed an additional burden on the budget for small businesses. The possibilities for the state to influence the availability and price of protective equipment during an emergency situation should be considered (for example, through centralized procurement at the state or municipal level, setting price increase ceilings).
- 5) Communication became a major challenge during the COVID-19 pandemic, affecting relations with partners and employees, as the way in which transactions were made, contracts signed, contacts established and the way how to communicate with employees in an emergency changed. Municipalities and business associations should organize and promote online experience exchange events for business leaders on business success stories in the context of the crisis, strengthening employers' skills in managing employees and organizing work in the case of remote work.

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Economic Benefits of Remote Work from the Employer Perspective

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Abstract. In recent years, remote work, driven by mobile technology, the availability of the Internet and the spread of COVID-19 limiting work to be done at the workplace, has become increasingly popular. Although it is very easy nowadays to do many kinds of work remotely, many companies still do not want to introduce such practices on a permanent basis. Therefore, the research aims to examine the experience of companies in remote work to identify the economic benefits of remote work as well as develop scenarios for remote work. The research methodology is based on case study analysis, comparative analysis, economic analysis and the scenario method. The results of the research revealed that potential financial savings from applying remote work practices in companies varied, depending on the specifics of the industry and jobs, as well as the funds that the company was initially willing to invest in its employees. For companies, the largest economic savings from applying remote work practices came from maintenance of premises, as well as electricity and Internet bills, while the provision of equipment to their employees accounted for the smallest proportion of preliminary cost savings. However, the main disadvantages of remote work were the difficulty of controlling employees, communicating effectively with each other and ensuring successful teamwork. Companies could introduce part-time work practices if a large proportion of the tasks could be performed remotely, yet only the companies with a high level of automation of tasks might fully switch to remote work.

Keywords: remote work, remote work scenarios.

JEL code: J64, J81, O15

Introduction

With the emergence of new types of work arrangement, e.g. remote work, in recent years, the "virtual, invisible employee who works everywhere" has become increasingly popular (Popma J., 2013). The main factors for the growing number of mobile workers are the availability of various mobile technologies and communication media, as well as the Internet (Holtgrewe U., 2014). Besides, companies have recently begun to view remote work as an opportunity to attract and retain top-level employees in business fields having a shortage of employees (Steil A. V., Barcia R. M., 2000). This topic has become especially relevant in the world today because due to the spread of COVID-19, most of the companies work remotely (Bojovic D. et al., 2020; Kawashima T. et al., 2020).

Various definitions of the term "remote work" are available in the scientific literature, e.g. the assignment of jobs to employees rather than the assignment of employees to jobs (Nilles J. M., 1998), work done by using information technology (Muhammad S. et al., 2008), work performed outside the premises of employers. Some authors define remote work only as work done from home (Baruch Y., 2000; Bailey D. E.), while others have determined how long it takes to work from home to be considered remote work (Caulfield B., 2015). According to the European Trade Union Confederation, remote work is defined as a type of work arrangement whereby the work that could also be done at the employer's premises is regularly performed elsewhere by using information technologies (Implementation of the..., 2006). The authors of the research consider the above-mentioned definition of remote work suggested by the European Trade Union Confederation to be the basic definition, as it includes the most important elements of remote work: 1) the company has at least one employee who works outside the company's office at least once a week or when the need arises; 2) the company has one or more remote workers who regularly work from home. Overall, the present research considers remote work to be a job in which the employee performs his/her work duties remotely from the workplace at least once a month.

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Today, it is very easy to do many jobs remotely, yet many companies are still reluctant to adopt such practices. This could be explained by the difficulty of assessing and controlling employees (Lowe J., Oliver N., 1991; Causer G., Jone C., 1996), the challenges of managing teamwork (Baruch Y., 2000; Pearlson K. E., Saunders C. S., 2001; Brodt T. L., Pyoria P., 2011; Tremblay D. G., Thomsin L., 2012) and ensuring high-quality information exchange and frequency (Fonner K. L., Roloff M. E., 2010). Although the potential benefits of remote work have been extensively analysed (Perez M. P. et al., 2002), the exact benefits are difficult to determine. First, there is disagreement about the types of work arrangement that could be attributed to remote work (due to the lack of a common definition of remote work). Second, the benefits and costs of working remotely are usually analysed by employees rather than employers. Therefore, the authors of the present research focus on the potential benefits of remote work from the employer perspective.

Hypothesis: The economic benefits of using remote work practices in companies vary, depending on both the specifics of the industry and the job and the company's position on covering costs for remote workers. The research **aims** to examine the experience of companies in remote work to identify the economic benefits of remote work as well as develop scenarios for remote work. To achieve the aim, the following specific research **tasks** are set: 1) to perform a case study on the economic benefits of remote work from the employer perspective; 2) to describe the development opportunities of remote work in business.

A number of **research methods** were employed to do the research: monographic and descriptive for theoretical discussion and interpretation of the research results; analysis and synthesis for examination of problem elements and identification of regularities; induction for making assumptions based on individual elements or facts; deduction for logical systematization and interpretation of empirical data. Three companies implementing remote work practices were selected for a case study to further examine the opportunities, challenges and economic benefits of remote work. The research conducted semi-structured interviews with company representatives about remote work practices in the company. An analysis of secondary data available in the public arena of Latvia was also performed to obtain information on the companies selected. As a result, the data obtained were analysed and interpreted, as well as the experience of companies in relation to remote work practices was mutually compared. Economic analysis was employed to identify the costs and benefits of remote work practices implemented by employers, and a scenario method was used to identify development opportunities for companies in relation to remote work.

The present research used the following **information sources:** research papers from international journals, electronically available national and foreign periodicals focusing on remote work.

1. Economic benefits of remote work for the companies selected for the case study

Three companies operating in different fields of economic activity were selected for a case study analysis, thereby drawing conclusions on remote work practices, taking into account the specifics of the industry.

Company A provided insurance services and was headquartered in Estonia, with branches in Latvia and Lithuania. In total in the Baltic States, the company had 20 offices, which employed about 210 employees, of which 55 were employed in Latvia. Only the official employees of the branch located in Latvia were analysed in the present research. The company used remote work to perform such work duties as attracting new customers, consulting current customers, developing offers, meeting with customers etc. The company used e-mail, mobile phones and face-to-face meetings in the office to communicate with remote employees. Each employee planned his/her own working hours and meetings with clients. According to the expert

interview, about 60 % of the total employees could use remote work opportunities. The employees hold positions such as IT specialists, product specialists, customer service personnel and managers. At the beginning of 2020, about 10 % of the employees worked remotely more than once a day, and about 20 % worked remotely infrequently, while the rest did not use the opportunity to work remotely or used it in emergencies. The remote work practices implemented in the company were stipulated in its guidelines for remote work and in its strategy. However, according to the expert interviewed, it was difficult for the company's management to follow the work done by the employees working outside the office premises.

Company B provided outsourced services, and its core business was accounting, financial analysis, data processing, IT support and other services, as well as the provision of telemarketing and personnel management services. The company's units were located in six countries, incl. Latvia where 200 employees were employed. About half of the employees of the company were allowed to work remotely, and they used this opportunity more than once a week. The employees who were not given this opportunity worked in a contact centre or provided telemarketing services.

Creating an effective work-life balance is one of the reasons why company employees choose to work from home. It is up to the employee to decide on which days and how often to work from home, yet this must first be agreed with the direct manager. This opportunity gives employees the opportunity to be productive and reachable even in cases when something unplanned happens – a short-term illness, the need to care for a child etc. The introduction of remote work in the company was mainly influenced by the desire to be more environment-friendly and reduce travel time to the office, as well as the desire to be flexible and enable employees to be productive even on days when they are unable to come to the office for various reasons. This type of work arrangement has improved the work-life balance of employees, as well as reduced the amount of overdue work due to their absence.

The expert from company B, like that from company A, emphasized in the interview that it was important not to increase the company's total costs through working remotely. At the same time, one cannot forget about the work environment – it is necessary to try to maintain it pleasant and comfortable both in the office and in the virtual space. It is important to invest in the right software to ensure seamless communication between employees and with customers, as well as IT security to make working remotely easier. Company B conducted an employee home risk assessment to identify the various risks that might arise from working remotely. It is positive that the company's management had not observed that working remotely made a negative impact on the work culture or reduced the ability to control the employees.

Company C provided IT support for offices and shops, as well as participated in software development and testing. It was part of an international group of companies, which was the leading motor fuel trader in the Baltic and Scandinavian countries with more than 100 years of experience. The company employed 120 people and working remotely was allowed, yet the employees were not encouraged to work outside their offices because, according to the company's manager, the office was for work and home for leisure. The manager of the company also believed that by working in the company's offices, the employees cooperated and communicated more with each other, thereby developing their individual skills. Besides, the company could not guarantee its employees suitable working conditions and provide an ergonomic environment if working outside the offices. However, there were some exceptions, and working remotely was allowed, e.g. during illness or under other unforeseen circumstances, if the employee was able to guarantee that the work would not interfere with the recovery process. The maximum duration an employee might spend working from home was 6 days a month, unless there was an emergency when it was necessary to do so for longer. In this case, it had to be agreed separately with the direct supervisor.

Practicing working remotely raised concerns about the company's ability to plan its operation and set "tangible" goals.

The health of employees was very important for company C. As the expert noted in the interview, the deterioration of mental health often related to stress or personal reasons; however, if the employee worked outside the office, it was much more difficult to detect it. In order to take care of the health and wellbeing of the company's employees, individual negotiations were conducted between its employees and managers, during which the employees could also discuss health-related problems. As regards digital development, the company representative acknowledged that more meetings and training sessions were held virtually. In addition, for the employees to be able to work remotely, access to the virtual private network was provided, thereby allowing them to securely connect to the company's server from any location. Based on the characteristics of the companies selected for the case study, information on remote work practices was collected and presented in Table 1.

Table 1

Comparison of the companies selected for the case study with regard to working remotely

Indicator	Company A	Company B	Company C
Kind of economic activity	Insurance	Outsourcing: accounting and a call centre	IT
Kind of remote work	From home, from the client's office, in public places	From home, from another office	From home
Proportion of employees in total employees who were allowed to work remotely	60 %	50 %	100 %
Frequency (how often employees work remotely)	10 % more often than once a week 20 % less than once a week	More often than once a week	Less often than once a week
Departments where working remotely is implemented	IT, product development, customer service, management	Accounting, finance, IT, personnel management	IT

Source: authors' own compilation based on the information obtained in interviews with company representatives

As shown in Table 1, the companies implemented different practices regarding working remotely, depending on the industry the company was engaged in, as well as the specifics of the economic activity and the company's policy on remote work in general.

To determine the economic benefits of remote work practices, the above companies were analysed in detail. It should be noted that the economic analysis did not fully take into account all potential savings by the companies, but identified only the most important ones. The amount of savings largely depends on the financial resources that the employer is willing to invest in its employees, thereby providing various additional benefits to the employees. Although not any company makes a work environment risk assessment for its remote workers, the research included such an item in the calculations based on the amendments to the Labour Protection Law, which entered into force on 7 January 2020. It should be noted that working remotely also allows employers to save on indirect costs, such as absenteeism. However, indirect costs were much more difficult to determine and therefore were not included in the case study calculation.

Rental costs. Offices are divided into three classes: A, B and C. In the research, Class B offices were chosen as the basis. According to a report on commercial premises for 2019 by the real estate company Latio, the average monthly rent on Class B offices in Riga was 9-14 EUR/m². The research assumed the rent to be 12 EUR/m². According to the Cabinet Regulation No. 343 of 6 August 2002 Occupational Safety Requirements when Working with a Display, each employee needs enough space to be able to work comfortably and easily change the working position. The research assumed the space suitable for work to be 6 m². Accordingly, the total cost of renting premises per month per employee was EUR 72.

Telephone and Internet costs. As regards Internet services, the Internet connection for business customers, which cost on average 39 EUR/month, was chosen. By choosing this kind of Internet connection, the company was provided with a router with four Internet output ports, which means that only four computers could be connected to the router to ensure maximum Internet capacity.

Equipment. This cost category includes expenses on printers, worktops, computer chairs and other office equipment. The duration of these pieces of equipment is determined by each company. The research did not take into account the cost of purchasing and maintaining information systems because when working remotely, employees also needed software to perform their duties, as well as the cost of computers for the employees, as the research assumed that companies provided this equipment to their remote employees. The useful life of equipment was assumed to be 5 years, with the exception of a computer desk (10 years). On average, the equipment cost EUR 20 per employee per month. The useful life of equipment for call centre employees was assumed to be one year, totalling around EUR 60 per employee per year.

Electricity. Based on data from the project "Odyssey – Mure" implemented under the EU research and innovation programme Horizon 2020, the average electricity consumption per employee in Latvia was slightly above 4000 kWh/year, which was due to the fast increase in the number of electrical appliances used and the spread of ICT in offices. It follows that one employee spent about 50 EUR/month on electricity.

Work environment risk assessment. In Latvia, Cabinet Regulation No. 660 Procedures for Internal Monitoring of the Working Environment stipulates that an environmental risk assessment must be performed by each employer at least once a year. The National Labour Inspectorate, in cooperation with the European Agency for Safety and Health at Work, has developed a website-based interactive tool, OiRA (Online Interactive Risk Assessment), which can be used to assess work environment risks and identify occupational safety measures. The OiRA tool is available free of charge, yet it takes time to perform work environment risk assessments. The calculations were based on the forecasted average gross earnings in Latvia by the national information agency LETA, which at the end of 2020 was 1200 EUR. Given that an assessment of work environment risks for one employee could take about an hour, for the employer it would create an additional cost of EUR 7.14 per employee per year.

Coffee and drinking water. Many companies provide their employees with drinking water and coffee in the office. About three litres of water are consumed per person per week. According to the authors' calculations, it costs approximately EUR 3.84 per employee per month. Many coffee companies offer free rental of coffee machines if they buy large quantities of coffee. The authors estimated that the cost of providing coffee per employee is about EUR 19.37 per month.

Fruits in the office. Given that an employee consumes about 1 kg of fruits per week, it costs about EUR 5.15 per month per employee.

The aim of the authors was to identify approximate savings by an employer, assuming that all the employees work remotely. The preliminary financial savings by the companies analysed in the case study if practicing working remotely are summarized in Table 2.

Table 2

Financial savings by the companies selected for the case study if practicing working remotely, EUR

Kind of savings	Company A		Company B		Company C	
	Per employee per month, EUR	Per 55 employees per year, EUR	Per employee per month, EUR	Per 200 employees per year, EUR	Per employee per month, EUR	Per 120 employees per year, EUR
Rental cost	72	47520	72	172800	72	103680
Internet cost	9.75	546	9.75	1950	9.75	1170
Equipment	20	13200	20	48000	20	28800
incl. equipment for call centre personnel	-	-	-5	-12000	-	-
Electricity	50	33000	50	120000	50	72000
Coffee and drinking water	-	-	23.21	55704	23.21	33422.40
Fruit in the office	-	-	-	-	5.15	7416
Parking lot	-	-	40	96000	-	-
Work environment risk assessment	-7.14	-392.70	-7.14	-1428	-7.14	-856.80
Total	144.61	93873.30	202.82	481026	175.97	245631.60

Source: authors' calculations

Table 2 shows the approximate financial savings per employee per month and per year, as well as per employee employed in the company's branch in Latvia per year. As shown in Table 2, the location of the office chosen affects the amount of costs – the closer to the centre of Riga, the higher the rent. The Internet and electricity costs also account for a large part of the employer's total cost.

It could be concluded that company A has the potential to save its financial resources, and the total amount of savings per month would be approximately EUR 145 per employee. In the case of company B, only about half of its employees are currently given an opportunity to work remotely. Some of the employees work in the call centre, and the employees need special equipment to perform their duties, which the employer has so far provided only for work from the office. Unlike company A, company B has three more cost components: coffee and drinking water, parking and equipment for call centre personnel. This calculation also includes two cost components that would not bring savings for the employer if working remotely – the provision of additional equipment to call centre personnel and an assessment of work environment risks. To ensure the possibility of working remotely, company B should also purchase and provide its call centre personnel with specialized equipment suitable for performing their respective work duties from home. As shown in Table 2, company B could save almost 100 EUR more per year on coffee and drinking water than on the purchase and maintenance of work equipment per employee. The additional costs that company B would incur if an employee began working remotely would be around EUR 12 per month, which is only 5.99 % of the total current cost per employee.

Company C provides the opportunity to work remotely for its employees, yet the company prefers that its employees work from their offices. This is one of the reasons why the company strives to make the office environment as attractive as possible for its employees by providing unlimited free coffee, tea and drinking water, as well as fresh fruits in the office kitchen. All the costs that the employer could save on by

allowing its employees to work remotely are listed in Table 2. It could be concluded that the company can save the most on rental costs, as well as on Internet and electricity costs, which would amount to almost EUR 132 per month per employee or 74.87 % of the total savings.

2. Characteristics of scenarios for remote work

After summarizing the results of the case study analysis, three remote work scenarios, assessing their benefits and risks, were proposed for companies.

Scenario 1: All employees work in their offices 8 hours a day. In this case, employers do not need to allocate additional funds for assessing work environment risks at any employee's home. It would cost EUR 7.14 per employee per year, which would amount to EUR 392.70 for company A, EUR 1428 for company B and EUR 856.80 for company C (Table 3). Under this scenario, companies have to take into account the fact that it will not be possible to save on office rent and other various bills. Besides, under this scenario, the employer does not have high risks of possible communication problems with employees and their control and difficulty in eliminating various technical problems remotely. However, it should be taken into account that in this case there are more external nuisances, especially in open-plan offices, that can reduce the productivity of employees compared with a situation where employees work from home, regardless of cases in which work at home is combined with childcare.

Scenario 2: Employees work both in their offices and remotely. Assuming that employees work half-time or 10 working days a month remotely, the employer could save on electricity bills. In this case, it should be taken into account that the employer incurs additional expenses to perform work environment risk assessments, as well as to provide employees with the equipment necessary for their work. The calculation assumed that the employer provides the employees with equipment worth EUR 600 with a useful life of 5 years. Despite the additional costs, employers can also save under this scenario: company A – EUR 9507 per year, company B – EUR 34572 per year and company C – EUR 20743 per year, which could then be used for technological modernization and introducing automation in operational processes. Such a flexible work schedule increases employee productivity and job satisfaction. Under such a scenario, work should no longer be delayed in cases employees have a mild illness, personal circumstances or other reasons that prevent the employee from coming to the office. This would also be the best option for companies that want to give their employees the freedom to make their work schedules while performing their usual on-site work.

Scenario 3: All employees work 100 % remotely. Under this scenario, Company A could save 9.18 times more financial resources than would be the case if its employees worked part-time remotely. For company B, it would be 13.22 times more and for company C – 11.15 times more. Even though the companies are able to save resources on office equipment, it should not be forgotten that the employees also need to be provided with equipment for working from home. Under such a scenario, companies need to have confidence in their employees, as it is not possible to control the work of employees so easily. In this case, employers need to set goals for their employees and define the results to be achieved rather than try to track how this is being achieved. This scenario allows employers to make the largest savings, which means that the companies have a better chance of modernizing their production processes and investing in R&D; however, it should be taken into account that this could involve fragmentation in the workforce if the employers fail to set up their own systems for engaging their employees in joint events (both virtually and in person).

A comparison of the scenarios is summarized in Table 3.

Table 3

Characteristics of the remote work scenarios

Scenario	Benefits	Risks	Savings by the companies per year per employee, EUR
Scenario 1: All employees work in their offices 8 hours a day	No additional expenses on assessments of work environment risks in the employee's home Easier to communicate with employees More effective employee control Easier to troubleshoot various technical problems	Open-plan offices have more external nuisances that could reduce employee productivity It is not possible to save on rent and various bills	Company A – EUR 392.70 Company B – EUR 1428 Company C – EUR 856.80
Scenario 2: Employees work both in their offices and remotely	Some electricity savings Work productivity and employee job satisfaction increase On-site communication and employee control are also possible	Additional expenses on assessments of work environment risks in the employee's home Additional expenses on the provision of employees with equipment to work from home	Company A – EUR 9507 Company B – EUR 34 572 Company C – EUR 20 743
Scenario 3: All employees work 100 % remotely	Largest financial savings are from lower rent, electricity and other costs	Employees must also be provided with equipment to work from home It is not so easy to control employees, so employers need to set clear goals and objectives for their employees	Company A – EUR 87 273 Company B – EUR 457 026 Company C – EUR 231 231

Source: authors' own compilation based on the results of the case study analysis

An analysis of the above scenarios reveals that scenario 1 is the most suitable for companies providing no possibility to perform many or all work tasks remotely, e.g. the companies that need to serve customers in person, as well as those in which most work tasks are not yet automated and are done manually (e.g. paper work).

Scenario 2 is more appropriate for companies providing the possibility to perform many work duties remotely, yet there are some specific duties that could only be performed from the employer's offices (e.g. for human resources department personnel). This scenario is also suitable for the companies whose owners take care of their employee satisfaction and are ready to adapt to their needs.

Scenario 3, however, is appropriate only to the companies that have the automation of tasks at a high level, thereby enabling the employees to perform their work duties remotely without any problems. It should be noted that the employees who are forced to perform their duties in this way might not be as productive and might not show as high a level of satisfaction as those who have made this choice independently. The implementation of this scenario could also be more successful at the companies in which their employees have to perform their duties individually, as group cooperation is difficult to implement in this case. Overall, it could be concluded that before switching to remote work, each company should assess whether the level of automation of tasks allows work to be done remotely, whether there is mutual trust between its supervisors and employees, and whether teamwork and employee presence is necessary.

Conclusions and proposals

- 1) The analysis of the case study and the companies' experience in implementing remote work practices revealed that the potential financial savings from working remotely made by the companies varied, depending on the specifics of the industry and jobs, as well as the funds that the companies were initially willing to invest in their employees, thereby providing them with additional benefits.
- 2) The largest economic savings from applying remote work practices came from maintenance of premises, as well as electricity and Internet bills, while the provision of equipment and drinks to employees accounted for the smallest proportion of preliminary cost savings. However, the main challenges regarding remote work practices were the difficulty of controlling employees and ensuring effective communication and teamwork.
- 3) An analysis of the remote work scenarios has revealed that full-time work in offices is the most suitable for the companies providing no possibility to perform most work duties remotely. Scenario 2 involves partial remote work and is more suitable for the companies providing the possibility to perform many work duties remotely, yet there are some specific duties that could only be performed from the employer's offices. Scenario 3, however, is appropriate only to the companies that have the automation of tasks at a high level, thereby enabling the employees to perform their work duties remotely without any problems, as well as this scenario is more suitable to the companies in which their employees have to perform their duties individually, as group cooperation is difficult to implement in this case.

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DISTANCE LEARNING ON FORMATION OF TECHNICAL COMPETENCIES OF UNIVERSITY STUDENTS (ON THE EXAMPLE OF NATURAL SCIENCES)

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Abstract. This paper presents our model of the organization and content of distance learning in physics for the formation of technical competencies of university students. An example of the organization of lectures on the topic "Electromagnetic induction" for students of the specialty "Power Engineering" is given. The organization of other forms of education is also given. The aim of the work is to develop technical competencies in students. A professionally oriented approach was used in teaching physics. The content of distance learning, presented through the electronic educational and methodological complex of the discipline, has been determined. The activities of teaching and learning of students are regulated, methods, forms and means of online distance learning are selected, at present, as methods of organizing activities, the result of educational activities reflects the quality of training in accordance with the successful teaching activities of students, as well as its diagnostics and control. The possibility of improving the quality of training in physics, increasing the levels of formation of technical competencies of future bachelors in the field of energy is shown on the example of distance learning in physics online, based on the use of professionally oriented training. The results of survey of the first year distance learning students showed quite high satisfaction, also for the students living in the rural regions in Kazakhstan.

Key words: physics, technical competencies, synchronous distance learning, asynchronous distance learning, student.

JEL code: I25

Introduction

Changes in the requirements in the world for professional training have led to the emergence of a number of tasks in teaching students of a technical university at the level of disciplines of the natural science cycle, which are due to the following factors:

- changing the requirements for the quality of training of technical specialists;
- changing goals, curricula and programs;
- the need to introduce new teaching technologies aimed at enhancing the role of students' independent activity (Aldous H., 2000; Armstrong M., Baron A., 2004). The training of a specialist for the engineering and technical sphere of labour, the formation of his personal qualities can be carried out by giving the educational process and the content of training in a higher educational institution a professional orientation (Boyatzis L., Richard E., 1982). Currently, the attention of many teachers is attracted by the organization of optimal conditions, the formation of the technical competencies of the future engineer in the learning process, the creation of conditions for personal growth and the development of their cognitive interests (Cakir M., 2008; Byham W. C., 2016).

Today, according to the State Program "Digital Kazakhstan" for 2017-2021, it is planned to improve the life quality and the competitiveness of the republic's economy through the accelerated development of digital ecosystem, primarily, by creating conditions for the development of technological entrepreneurship with stable links between business, science and the Government, as well as the introduction of innovations

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into the education system (Digital Kazakhstan, 2010). Digitalization, especially in higher education, is of paramount importance for the development of rural regions in Kazakhstan, because 67 % of the population is living in rural areas.

In the framework of implementation of this program, the modern organization of universities educational activities in the country suppose the teaching in condition of need for digitalization of education using information technologies, such as computer learning technologies, interactive multimedia, teaching based on web technologies, online training, distance learning, which have important roles in training specialists in engineering education. Providing high-quality distance education is very crucial for the accessibility of education. The introduction of distance learning has also been accelerated by the COVID-19 pandemics.

Thereby, educational institutions are digitalizing the educational process, actively developing online, massive open online courses and distance learning, using the latest achievements of information technology. In the light of recent events, in the fierce need to move to online learning, the organization of educational process must correspond to the educational and methodological complex of a discipline, and each developed course is divided to certain modules dedicated to a specific topic. The developed thematic module should be based on competencies and form specific learning outcomes. Illustrated lectures, tests and tasks for self-control, practical exercises in the form of virtual, remote laboratories, final control form the basis of the module. With the unification of the teaching system for engineers by the introduction of a qualification framework, the educational teaching standard for engineering should provide a link with professional standards as a key document for the development of various educational programs in the field of engineering technologies (Martin L., 2013). In this regard, distance education received an additional load on the teaching system of future bachelors in the field of engineering work in the form of requirements for the quality of future professional activities, its practical composition, and readiness to apply knowledge in practice. This position determines the great demand for the definition of new models of education for training students already in junior course, focused on mastering skills in disciplines related to future professional activities, the growth and development of their personal qualities: professional orientation and competency, cognitive activity and independence, etc.

The aim of this paper is to present our model for teaching technical competences in Physics education at the university level in the conditions of distance learning. As said before, the introduction of distance learning was accelerated worldwide due to the COVID-19 pandemics, however the concerns about the quality remain.

The research hypothesis is to show that the quality of teaching physics in the case of distance learning is maintained at high quality, using the elaborated model of developing technical competences. In the process of forming the technical competencies of students, professionally oriented teaching of physics was used. To prove the hypothesis, we use a case study of the formation of technical competencies of future bachelors in the field of energy. Based on the results of the study, the effectiveness of professionally directed training has been proven. Detailed analysis is given on the examples of organisation of the educational process in distance learning on the selected topic for students of the specialty "Power Engineering".

The novelty of the work is the filling of the physics course with technical content. Based on the results obtained, digitalization of education using the example of online distance learning in physics based on the use of professionally oriented training, showed the possibility of improving the quality of training in the discipline studied, increasing the levels of formation of technical competencies of future bachelors in the field of energy (agriculture).

As far as we know, this is a first attempt to elaborate a method of the development of technical competences in Physics education in the field of electrical engineering in distance learning conditions.

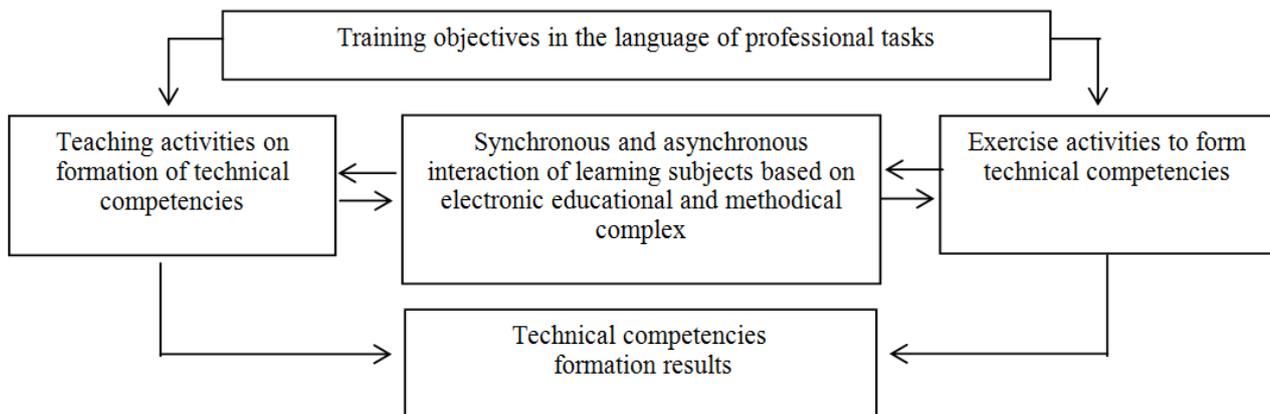
Research results and discussion

From a psychological point of view, readiness for professional activity is characterized by the presence of a specialist's knowledge, skills and abilities that allow him to carry out his activities at the level of modern requirements of science and technology (Borisova L. A., 2006). In this connection, a special place should be given to the formation of technical competencies of a future bachelor, i.e. a complex of knowledge, skills and abilities and personal qualities that determine the effectiveness of engineering work. It should be noted that students at technical universities begin to acquire professional practical skills in the field of their chosen specialty in senior courses, in manufacturing or in research laboratories after studying a physics course.

The teaching continuity in this case, in our opinion, can be achieved by switching to teaching physics while simultaneously using the principles of personality-activity and professionally-directed learning in the context of a model of technical specialist.

The main purpose of such specialist is the determination of the object of practical professional activity of a future bachelor (Tashkeyeva G., 2014; 2020). This allows to align the educational activities of students with their future professional ones by defining professional tasks from the model of specialist working in the electric power industry.

In accordance with the goals and objectives, the content of distance learning is determined, presented through the electronic educational and methodological complex of the discipline. The activities of teaching and learning of students are regulated, methods, forms and means of online distance learning are selected, at present, as ways of organizing activities, the result of educational activities reflects the teaching quality in accordance with the successful teaching activities of students, as well as its diagnostics and control (Figure 1).



Source: author's model

Fig. 1. Schematic representation of the development of the content of distance learning on physics for formation of technical competencies of students

In this case, the formation of technical competencies can be effectively realized in the context of teaching students, providing that the content and methods of distance learning in physics are focused on a model of professional activity, founded on a competency-based approach to professional training (Zvezdova A. B., 2012; Arabadzhi V. A., 2010).

Technical competencies consist of three criteria components (activity and independence; awareness of the role, function and importance of a specialist; relation to himself as a subject of future professional activity) and three components of indicators (value-motivational, content-based and technological). In

accordance with the criteria and indicators, there are four levels in the structure of students' technical competences: high, sufficient, medium, low levels of technical competences formation (Ageeva N., 2004).

In a digital format, online teaching provides, as known, there are synchronous (electronic interaction between a teacher and a student at a certain time) and asynchronous (students work at any time with information uploaded to the system) types of teaching. To conduct a professionally directed online lesson with maximum benefit for both sides, teachers need to combine the synchronous lesson with the asynchronous one. For these purposes a student should read the content of a lecture in advance, which was uploaded by a teacher as a video lecture, presentations or other materials on the discipline under study to the system of a chosen platform (Microsoft Teams, Platonus, Moodle, Univer, Google Classroom etc.). Thus, the authors of the article prepared presentations and video lectures for the course "Physics".

Let us give an example on the topic of lecture "Electromagnetic induction" for students of the specialty "Power Engineering". The goals of the lecture are to understand the physical meaning of the phenomenon of electromagnetic induction and its consequences. During a video lecture, a teacher talks about the discovery of Faraday, explains Lenz's rule and the physical nature of electromagnetic induction, as well as illustrates the phenomenon of self-induction and mutual induction, eddy currents, etc. For preview purposes, students are shown a clear and understandable video lecture. Here you need to pay attention to the design of a slide, the content of each slide should be accompanied by its application in technology and everyday life, for example, where are used the devices, installations prepared based on electromagnetic phenomena (household electrical appliances, microwave, the principle of operation of the generator, etc.). At the end of the lecture, students are offered questions for self-development and study the lecture material. During a synchronous teaching, teacher discusses the lecture materials with students, asks questions, explains some problems, and questions asked by students. Moreover, the construction of a physics course using the goals and objectives of teaching identified in this way, obtained due to knowledge of professional tasks of the specialty, orients the content and technology of teaching for future professional activities based on the idea of the unity of fundamental knowledge and applied knowledge, taking into account the role of physics in the development of Power Engineering systems and their functioning in the above example. For this, the content of lectures and practical classes, students' independent work, laboratory work with technical content are used. An example is not only the selection of the lecture material content in accordance with the set learning objectives, but also the widespread use of computer modelling methods, which make it possible to show the application of certain laws and phenomena of physics in obtaining modern Power Engineering systems. Moreover, some of the presentations are prepared by students themselves on a given topic for a synchronous lesson. The main point of this form of work is to teach students to find a solution to a problem on their own, develop the necessary competencies and teach them how to work with information. Solving problems and performing laboratory work is related both to the sections of the course and has technical content focused on the use of the laws of physics in various Power Engineering systems in general (obtaining information, converting it into electrical signals and signs, distribution, conservation, and possible energy losses).

For the performance of computational and graphic tasks for the section "Electricity and Magnetism" students are offered part of the tasks with technical content. An example is the following level A task: "The mass of a tram moving uniformly at a speed of 35 km/h is 18 tonnes. The movement resistance coefficient is 0.01. Find the current I in the motor winding if the voltage is 545 V and the efficiency is 85 %". In solving problems with technical content, students have the opportunity not only to see the application of the laws of physics from different sections, but also their connection with practice.

Further, when drawing up test tasks, midterm control, different control works, methodological instructions for performing computational and graphic works, physical tasks should be included in the tasks not only with technical content, but also with their possible modelling using information and communication technologies. If it is difficult to solve such problems, a student can look at already existing solved problems with technical content, recommended by teacher (hyperlinks), the possibilities of their modelling. Physical problems with technical content are real practice-oriented problems of physics; they contain information about the principles of action of mechanisms and machines, transmission and conversion of energy, etc. If throughout the entire training period, physical tasks of technical content are applied, then the quality of training of future engineers can increase significantly. Solving such problems, students acquire new competencies not only in physics, in the studied physical concepts, phenomena and their laws, receive information about new achievements, problems of science and technology, features of the professional activity of engineers, but as a result they consciously acquire technical competencies (Mazhitova L., 2010).

Thus, a teacher, with a certain expenditure of his time and effort, can be confident in the assimilation of this material by students in the context of their future professional training at the university in the senior years. Within the framework of the physics course, there are enough opportunities to create this kind of educational material, material, especially those materials that affect the technical application of the phenomenon in question.

Laboratory studies play an important role in teaching physics. One of the important trends in the application of information technology in online distance learning is the creation of virtual works, which are an integral part of any technical discipline. Based on new information and communication technologies using Microsoft Teams applications, online laboratory work can be organized at a new level. In this regard, we have prepared the author's virtual laboratory work on the physics section "Mechanics" for students on the topic: "Study of gyroscopic effect". The work presents the title, goals and objectives, a brief theory of studying the gyroscopic effect and its use in practice, the experimental method and the setup diagram, the procedure for performing the measurements, tables for the experimental results, tests with five answers for each test, which can be used to testing students' knowledge on a given topic. In the work there is also the possibility of obtaining the results after the teacher has entered the password, which is very convenient for distance learning.

At the same time, during the period of distance learning, students can and should be involved in research work, which contributes to the formation of competencies related to the development of computer models of physical phenomena, working diagrams and installations, to participate in international online conferences and exhibitions with independently simulated phenomena and laws of physics, but associated with their application in practice in energy efficiency systems. An example is the research work of students of the group EE-18-2 Marat Yafarov on the topic "Solar collector" and the group PE-19-1 Nurbek K. on the topic "Sources of alternative energy. Getting electricity through a strong stream of water" (Mazhitova L., 2010).

A scientific approach to solving online learning problems requires a thorough study of the initial state of the system and identifying its problems. In this regard, we carried out a survey of first-year distance learning students of the study programme Electrical Engineering, which study physics at the University of Power Engineering and Telecommunication, Almaty, Kazakhstan. Students were asked to fill out a questionnaire developed by us, which contains several questions and points that allow students to state their difficulties in studying physics in online format and express their wishes:

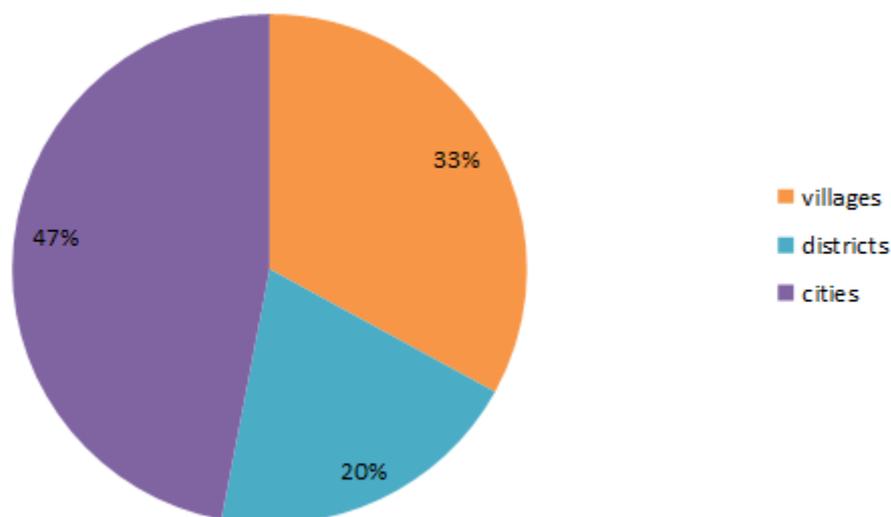
- 1) How did you adapt to the new conditions of distance learning?

- 2) Is there a timely notification of changes in the distance learning process?
- 3) Is it convenient for you to study remotely?
- 4) What is your level of motivation for learning in the distance form?
- 5) Are you satisfied with the distance learning process?
- 6) How do you assess the work of the teaching staff in the framework of distance learning?
- 7) What difficulties did you face in the process of distance learning?
- 8) What technical challenges did you face with distance learning?
- 9) What did you like about distance learning?
- 10) What did you dislike about distance learning? What are your wishes for improving distance learning?
- 11) In total, 103 questionnaires were distributed, the number of respondents participating in the survey was 76, making 74 % form the total.

As follows from the results of the questionnaires, 33 % of the students lived during their studies in villages, 20 % – in districts, 47 % – in cities of Kazakhstan.

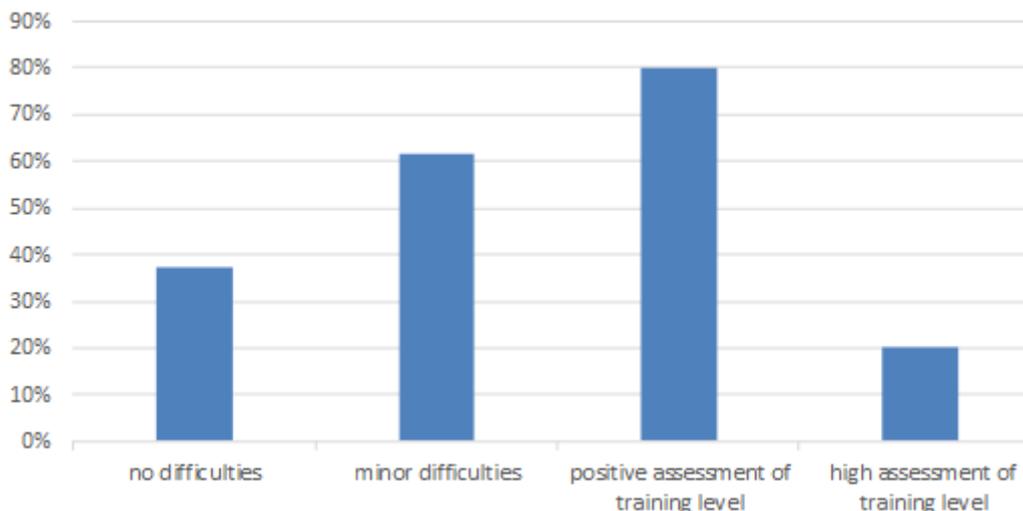
On 1-2 questions, some of the students answered that the transition to distance learning caused certain difficulties, for many students this is associated with an increase in the level of anxiety, and timely notification of changes in the distance learning process is received depending on access to the Internet, and to the third question, students from remote rural areas answered that it is not convenient to study remotely due to the poor Internet network.

By answering questions 4-6, the level of their training in physics was assessed. On the issue of the difficulties of studying physics online, 29 students wrote that they did not experience any difficulties, 47 - minor difficulties - these are students, mainly from South Kazakhstan and West Kazakhstan regions (Figure 2, 3).



Source: author's survey

Fig. 2. Place of residence of respondents participating in the survey



Source: author's survey

Fig. 3. Results of students survey in the framework of the study of satisfaction of distance learning

From the analysis of the questionnaires, we can see that the most satisfied were students living in cities of Kazakhstan and the most difficulties were experienced by those students living in the rural regions. The cause for that could be that in the rural regions there are problems with internet coverage and technical availability. However, to study correlation in more detail further investigations would be necessary after completion of the full Physics course.

Conclusions

- 1) Digitalization is important not only because it has been defined in national strategies, but also because it is important for the balanced development of the country and the provision of equal opportunities in education for the population throughout the country, especially in the regions.
- 2) In this paper, we presented the model of training of the technical competences of students in the Physics discipline, developed basing on the needs of future professional qualification in the conditions of distance learning. The model was presented for the case of the students in the field of electrical engineering at our universities.
- 3) The survey of the first year distance students of the programme of Electrical Engineering showed quite high satisfaction with the distance learning, except for residents of remote rural areas.
- 4) Thus, the digitalization of education on the example of online distance learning in physics based on the use of professionally directed learning has shown the possibility of improving the quality of training in the studied discipline, increasing the levels of formation of technical competencies of future bachelors in the field of engineering.
- 5) The presented case study of the organizing distance learning studies in Physics, giving positive results, is very important for further application and giving very important contribution to the sustainable rural development.

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METHODOLOGY FOR A NEW GAMBLING AND LOTTERY PRODUCT / SERVICE SOCIAL IMPACT ASSESSMENT

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Abstract. The authors of the study believe that the topic of this study is very relevant in the Baltic States. Although the sector was originally set up to provide entertainment for people, there are now a large number of bargaining companies that do a great deal of damage to society as a whole and, for this reason, have a mixed view of the gambling and lotteries industry as a whole.

The aim of the study is to evaluate the methodology of the social impact of a new gaming and lottery product / service. To achieve this goal, the authors have set the following tasks:

summarize and assess the influencing risk factors;

develop a methodology for assessing the impact of new gaming and lottery products / services;

draw conclusions and suggestions;

Research methods: document analysis, qualitative data analysis. Based on the research results, new rules for the impact of gambling and lottery products / services have been proposed. This would allow the sector to be further developed while reducing the negative impact of the gambling and lotteries sector on society.

Keywords: addictions, risk factors, methodology, lotteries, gambling.

JEL code: M10

Introduction

Today, people's attitudes towards lotteries and gambling are very different. For some it seems to be the prerogative of very naive and psychologically dependent people, but for others it is a great opportunity to make big money with happiness and special skills. Some people use lotteries and gambling to get rid of everyday worries, to feel the tide of energy and enthusiasm. Excitement also plays an important role - a strong emotion that can be felt by each of us to a greater or lesser degree. The article provides information on the current situation in the AI sector, explaining the problems that should be addressed in relation to the factors contributing to addiction. The authors express an opinion on the desired changes in the gambling and lottery industry. When developing the methodology, information on addictive factors and ways to successfully reduce these addictive aspects is evaluated. Based on the developed product evaluation methodology, a solution is proposed that would allow further development of this sector, while reducing the negative impact on consumers and society as a whole. Demand for entertainment and a source of vivid emotions, this set has created a lottery and gambling business, which over time has become a separate and important industry in several countries around the world. Currently, we can see casinos or gaming halls on virtually every street. Today, the lottery and gambling business is little different from many other commercial activities. Of course, both many years ago and now, there are public disputes about the moral side of lotteries and gambling, their negative consequences. Today, addiction to lotteries and gambling is equated with drug and alcoholism (Centre for Disease Prevention and Control, 2021) is important to note that with the advent of the global network, it has become possible to play lotteries and gambling without even leaving home, which further tempts and attracts people to play their favourite games, according to the authors, mostly endangering young people and players with mental health problems (Williams, R. J., Volberg, R. A. & Stevens, R. M. G., 2012).

To reduce the risk of addiction the authors have developed a methodology for assessing the social impact of a new gambling and lottery product/service design. In order to develop the methodology as

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successfully as possible, the authors consulted and relied on the opinions of professionals during its development. In order for the authors to be able to identify the eight risk factors reflected in the article and the limits of their risks, a commission was formed, which consisted of four specialists in the field of gambling and lotteries, a professional mathematician, an addiction specialist and three authors. This type of commission was chosen to be able to assess the existing risk factors from all sides. Specialists in the gambling and lottery industry were only invited to understand the problematic situation on the part of the industry, the mathematician and the addiction specialist were able to determine the critical limits that should be observed when performing responsible activities in the field of gambling and lotteries. Thanks to the established and ultimately successful cooperation and input of the commission, in the opinion of the authors, a very valuable and important methodology for services and products was developed, which should be integrated into the gambling and lottery business in the shortest possible time.

The evaluation methodology has been developed taking into account the knowledge and experience of gambling and lottery practitioners on the desires and needs of players, the design structure of gambling and lottery products/services and customer expectations as well as global research results and information on social risks and tools to mitigate impact on vulnerable groups. This methodology sets out the principles for assessing the social impact of any new gambling and lottery product/service - risk factors, criteria rating scales, and tools for minimizing the impact of risk factors, creating an overall assessment accordingly. The methodology is applicable before the launch of a new gambling and lottery product / service. In order to reduce the pro-addictive effects, any company operating in the gambling and lotteries sector should apply this methodology to ensure that the new product does not pose a threat to the individual consumer and to society as a whole. According to the authors, a new gambling and lottery product/service is one the criteria of which are changed by more than 50 %, or a previously non-existing gambling and lottery product/service or mode of operation.

Research hypothesis: Based on the risk factors developed by the research commission and the risk assessment methodology of the new gambling and lottery products proposed as a result of the research, the industry can further develop its business while controlling and reducing the level of negative impact on the final product / service recipient.

The aim of the study is to evaluate the methodology of the social impact of a new gaming and lottery product / service. To achieve this goal, the authors have set the following tasks:

- 1) summarize and assess the possible risk factors contributing to gambling and lotteries;
- 2) develop a new methodology to evaluate new gaming and lottery products / services, and reduce addictive factors;
- 3) to develop conclusions and proposals appropriate to the gambling and lotteries industry.

Research methods: the study uses analysis and synthesis methods, deductions and induction methods as well as logical approach methods. However, appropriate quantitative methods are used to process the data obtained.

Research results and discussion

Determining the impact levels of risk factors and their reducing tools

The methodology is developed and based on eight addictive risk factors. Applying the developed addiction risk factor assessment methodology, an opportunity is created which results in the assessment of the social impact of a new gambling and lottery product / service on three levels:

- **Risk factors at the gambling and lottery product/service level.** There are six evaluation factors in this group:
 - 1) size of the prize pool;
 - 2) possible maximum winnings/savings;
 - 3) frequency of the lottery/game;
 - 4) incentive loss or the feeling that the winnings are near, "almost won" feeling;
 - 5) multiple lottery/game opportunity;
 - 6) cost per one lottery/game.
- **Risk factors at the situation level.** There is one evaluation factor in this group:
 - 7) availability, location and number of locations.
- **Risk factors at the organizational level.** There is one evaluation factor in this group:
 - 8) marketing and advertising.

Risk assessment scales

For each assessment factor, a rating scale is developed to assess the impact of a specific factor on the new gambling and lottery product/service, according to its risk level which are graded as high, medium, moderate, low risk or no risk. (Williams, R. J., Volberg, R. A. & Stevens, R. M .G., 2012). The scales for evaluating each specific factor criterion are defined below (see tables 1 to 8). From the point of view of the authors and the addiction specialist, it follows that the proportional amount of winnings influences the formation of the addiction risk. According to the developed data in Table No. 1, we see that the addiction risk factor starts to work a little from the 11 % winning fund. For the most part when a person is gambling or participating in lotteries his main goal is not to entertain after spending this time, but rather his goal is to make a profit. If a product offers frequent winnings, it makes that consumer think he is very close to winning, resulting in a strong addictive tendency to play over and over again. The recommended prize pool should not exceed 60 % as it is followed by a rapidly increasing risk.

Table 1

Size of the prize pool

Criterion No 1	Size of the prize pool				
	0 %-10 %	Up to 60.00 %	60.01 %-65.00 %	65.00 %-90.00 %	Above 90.01 %
Percent of winning pay-out					
Criterion evaluation	No risk	Low risk	Moderate risk	Average risk	High risk
Score	0	1	2	3	4

Source: developed by the authors

Changes in psychological impact occur when large savings accruals are discussed. The less significant the savings, the lower the risk factor. While it must be understood that without victory in this industry there can be no business must be able to find the golden mean so that the size of the win does not exacerbate the propensity to become addicted.

Table 2

Possible maximum winnings / saving

Criterion No 2	Possible maximum winnings / saving				
Possible maximum winnings / saving	0 € - 100 €	100.01 € - 150 000.00 €	150 000.01 € - 750 000.00 €	750 000.01 € - 10 000000.00 €	10 000000.01 € and more
Criterion evaluation	No risk	Low risk	Moderate risk	Average risk	High risk
Score	0	1	2	3	4

Source: developed by the authors

The risk of addiction is influenced by the frequency of the games or lotteries offered. When doing business in this industry, it is necessary to pay attention to the fact that when purchasing a product or service, the customer is forced to wait until receiving the final product / service. Thus, sorting the consumer in time and space from the moment of announcing the win. Considering this factor, the consumer is not "zombie" and in the event of an unfortunate win does not become addicted to make the next purchase immediately.

Table 3

Frequency of the lottery / game

Criterion No 3	Frequency of the lottery / game				
Frequency of the lottery / game	Less than once a month	From once a month to once or twice a day	From once in 10 min to once a day	From once in 6 secs to once in 9:59 min	Once in 5 sec or more often
Criterion evaluation	No risk	Low risk	Moderate risk	Average risk	High risk
Score	0	1	2	3	4

Source: developed by the authors

Unfortunately, as mentioned above, customers in the gambling and lottery industry do not gamble or participate in lotteries in order to have a good time but to get as much material benefit as possible. And if the customer has come to receive the intended win, then this criterion has a great influence. Because when you feel that you have almost won or that you are very close to winning, it creates a tendency to play again and again.

Table 4

Incentive loss or the feeling that the winnings are near, "almost won" feeling

Criterion No 4	Incentive loss or the feeling that the winnings are near, almost won feeling		
Incentive loss, or the feeling that the winnings are near, won feeling	There are no elements that give the feeling of "near winning"	One element that gives a person a "near winning" feeling	There are elements that give the feeling of "near winning"
Criterion evaluation	No risk	Low risk	High risk
Score	0	1	4

Source: developed by the authors

Each additional opportunity that increases the probability of winning increases the risk factor. Although the biggest risk is with the system game according to industry experts if the system game is played by several people as people in financially rich countries do then the system game is not exposed to a high degree of risk.

Table 5

Multiple lottery / game opportunity

Criterion No 5	Multiple lottery / game opportunity			
Multiple lottery / game opportunity	No such opportunity	No more than 1 additional game per draw/game	More games and additional games within one draw/game	Additional chances (with extra winnings plus to the winning fund)
Criterion evaluation	No risk	Low risk	Moderate risk	Average risk
Score	0	1	2	3

Source: developed by the authors

The following table shows the effect of price on the formation of dependence. The higher the price of a product / service, the lower the risk factor. Among financially different customers, these impact indicators may vary, but most observations show that if the purchase value of a product / service exceeds one hundred euros per variant, then this is not considered to be a factor contributing to the risk of dependence.

Table 6

Cost Per Lottery / Game

Criterion No 6	Cost per lottery / game				
Cost per one lottery / game	100 € and more	1.50 € - 99.99 €	0.75 € - 1.49 €	0.50 € - 0.74 €	0.02 € - 0.49 €
Criterion evaluation	No risk	Low risk	Moderate risk	Average risk	High risk
Score	0	1	2	3	4

Source: developed by the authors

In the current context of the world, due to the severe travel restrictions created by the COVID-19 advantage, many people are forced to do many everyday things, such as sending food home, working from home offices or workplaces. Performing a lot of functions without leaving home and doing the necessary things on the Internet increases and increases the likelihood of encountering the gambling and lottery industry on the Internet, thus providing access to this industry's product / service without leaving home. As shown in the table with the number of points indicated between points of sale and the Internet, there are very sharp increase in risk factors.

Table 7

Availability, Location and Number of Locations

Criterion No 7	Availability, location and number of locations	
Availability, location and number of locations	On spot	On Internet
Criterion evaluation	Low risk	High risk
Score	1	4

Source: developed by the authors

The goal of any advertisement promoting your product / service in this case is the gambling and lottery industry is to reach the widest possible audience for self-designed advertising that works as a marketing ploy to increase the company's profitability. Thus promoting your business. The gambling and lotteries industry is no exception, so in order to reduce the risk factors that affect marketing and advertising, it is advisable for the industry not to advertise. (Gambling and lottery advertising restrictions and their impact on the player/client., 2019)

Table 8

Marketing and Advertising

Criterion No 8	Marketing and advertising		
Marketing and advertising	No gambling and lottery product/service ads	Gambling and lottery product/service ad plan respects code of ethics	Gambling and lottery product/service ad plan does not respect code of ethics
Criterion evaluation	No risk	Low risk	High risk
Score	0	1	4

Source: developed by the authors

During the development of the evaluation factors, several consultations were performed with specialists in the field and based on the previous experience of the authors in developing and publishing articles and research related to this field such as gambling and lottery advertising restrictions and their impact on the player/client.

Assessment scale of instruments to minimize risk factor impact

For each existing tool, a specific rating scale has been developed to mitigate the impact of the considered and assessed addictive risk factor. These developed tools assess aspects to reduce the impact of each new or improved existing gambling and lottery product / service addiction risk on the customer / player as low, moderate, medium and high. The following table shows a developed scale that can be used to assess each addiction risk factor / criterion to achieve the addiction risk reduction potential. The impact of the instrument on the addiction risk factor is assessed separately for each identified addiction risk factor according to the type of gambling and lottery products / services.

Table 9

Evaluation of the Instruments for Eliminating the Impact of Risk Factors

No.	Evaluation of the instruments for eliminating the impact of risk factors			
	Low impact	Moderate impact	Average impact	Strong impact
1.	Leaflets about responsible gaming (RG), section of responsible gaming in home page with info that there is no way to influence luck. Informing sales person about responsible gaming.	Available on TV and on home page (RG info on every page) RG – self-test of playing habits and info for help.	For interactive draws and gambling: requirement to set max limit for one stake or total sum of stakes for next 24 hrs.	For Internet games: possibility to block one's account temporarily or completely. For interactive games: prohibition to play games installed by submitting official application that can be recalled no sooner than in 12 months.
2.	For draws – in brochures for customers and sales person and on the website on each page a sign that LL does not recommend to buy/sell lotteries to people under 18. On the Internet only people over 18 can register after the identity check.		Possibility to decrease the limits set at any time, but there is a waiting time for decreasing limits or for stake limits – 7 days after the request for increasing.	Limiting additional games
3.	For draws: availability of info about % of pay-outs and probability on TV and website. (Does not refer to interactive gaming).		Remote sales channels can constantly display the balance of the player's account, timing of the session, possibility to set losing limits within time (in case those are not set by a player, daily losing limit is set automatically) For interactive draws and gambling: requirement to set a stake limit or their total limit for the next 24 hrs.	
4.	For Internet games - on the website there are RG video/campaigns.			

Source: developed by the authors

Modifying assessment results according to their social impact

The authors, with the help of a professional mathematician and based on his knowledge, performed calculations and their analysis. Based on these results, the following two tables show the recommended criteria on which to base your future actions when introducing new or revising and improving existing products / services in the gambling and lotteries sector. After assessing all addictive risk factors and assessing the social impact on each gambling and lottery product / service according to each risk factor and the applicable risk mitigation tool, each result is changed by applying the appropriate scale or weight of each risk factor and the applicable social mitigation tool. Initially, it is necessary to take steps to determine the distribution of critical points by position. The first step to be taken is to work on the distribution of critical points by position. Once this has been identified and done, calculations and a correct division into addiction risk categories are needed. The social impact assessment methodology assumes that the desired impact of a gambling and lottery product / service should be at least 180 points and should not exceed 300 points.

Table 10

Distribution of critical points

Criterion No.	Name of criterion	Weight of risk factor in %	Risk decreasing instr. Weight in %	Evaluation of game					
				New game					
				On the ground			On the Internet		
				Assessment	Assessment of risk of decreasing instruments	Weighed assessment	Assessment	Assessment of risk of decreasing instruments	Weighed assessment
No.1	Winning fund/ amount of theoretical winning	25%	-2%	2	3	25	4	1	98
No.2	Jackpot/ the biggest possible winning	20%	-3%	2	3	80	2	4	28
No.3	Frequency of draw/game	15%	-4%	2	3	15	4	10	20
No.4	A stimulating loss, feeling of almost winning	10%	-2%	2	3	10	4	6	28
No.5	Possibility of more draws, games	5%	-2%	2	1	20	3	0	15
No.6	Price of draw/game/service	10%	-3%	2	1	10	4	1	37
No.7	Availability, location of playing sites and their number	5%	-1%	2	3	5	4	10	10
No.8	Marketing and advertisement	10%	-3%	1	3	10	0	0	0
Total		100 %	-20	100%		140			236

Source: developed by the authors

Table 11

Breakdown of risk categories

Less than 180	100 - 126	Lowest margin in a low risk category	Low risk for vulnerable players
	127 - 152	Moderate margin in a low risk category	
	153 - 179	Highest margin in a low risk category	
180-300	180 - 219	Lowest margin in a moderate risk category	Moderate risk for vulnerable players
	220 - 259	Moderate margin in a moderate risk category	
	260 - 300	Highest margin in a moderate risk category	
More than 300	301 - 333	Lowest margin in a high risk category	High risk for vulnerable players
	334 - 366	Moderate margin in a high risk category	
	367 - 400	Highest margin in a high risk category	

Source: developed by the authors

In case the new product falls within margins of 180 – 300 points, the design elements of the new product should be reconsidered or – the risk decreasing instruments should be reconsidered so that the negative social impact on vulnerable groups is minimized and the assessment of the new product would approach "green category" of 179 points or below. The assessment of addiction risk factors can be divided according to the traffic light principle. If the total number of points does not exceed 180, then we have to mark this

indicator in green and it symbolizes that the risk factor for addiction is low and we can move forward. From 180 to 300 points in our traffic light should be a yellow light which means we are careful there is a need for adjustments. If our calculations show that the total number of evaluation points exceeds 300 points, the industry must take immediate action to stop traffic in the process of developing a new or existing product. Just like people stop at a red light on a traffic light.

Introducing a gambling and lottery product/service, its evaluation and conduct after it has been initially assessed

- 1) Assessment should be performed in the following way:
 - after taking a decision to launch a new gambling and lottery product/service the involved parties develop a gambling and lottery product/service concept;
 - as soon as it is in place, assessment of gambling and lottery product/service social impact is performed according to the criteria and risk decreasing instruments of this methodology;
 - the new gambling and lottery product/service assessment is performed by a commission of at least three members;
 - the commission:
 - assigns points to the new gambling and lottery product/service according to the scale in two categories – for products on the Internet and on the ground;
 - minuses points to the gambling and lottery product according to the risk decreasing instruments.
- 2) The points are either added or subtracted using relevant scales.
- 3) After every new assessment of gambling and lottery product/service assigning points to it, the commission takes a decision about further development of the product depending on the score of the product has received. The decision of the commission should be properly documented.
 - In case gambling and lottery product/service is in the red category, there are actions suggested to modify the design and principle of the new product and to apply risk decreasing instruments to minimize the possible negative social impact on vulnerable groups. After modifications have been performed, the responsible specialists submit the product for a new assessment by the commission.
 - In case gambling and lottery product/service is in the yellow category, the commission suggests how to minimize the possible negative social impact on vulnerable groups but this assessment gives permission to further the development of the product without modifying the principle of the product and without applying additional risk factor decreasing instruments;
 - In case gambling and lottery product is in the green category, the commission approves the product.

Conclusion

- 1) The current global situation of COVID-19 restrictions on the movement of people, giving people more time to spend on computers and online gambling and lotteries, and high activity on the part of the industry's business, increases the causes of addiction risks by at least four times;
- 2) According to gambling and lottery experts, immediate availability and quick information about winnings, is the main risk factor, resulting in a sharp increase in the effects of addiction;
- 3) In a situation where it is ensured that the customer is separated in time and space from the receipt of the final product, then this customer is at least slightly protected from the increased impact and formation of the risk of addiction;

- 4) When creating advertising content, players in the gambling and lotteries industry try to follow the general advertising regulation, although this advertising industry is monitored, in the opinion of the commission members, it is not done at the appropriate level;
- 5) Despite the fact that lotteries and lotteries have a lower risk of wagering than those that arose from gambling, there is still such a risk when participating in lotteries and lotteries.

Proposals, recommendations

- 1) It is recommended to develop a new, additional methodology for reporting and monitoring available information on winnings and how often these announcements are published;
- 2) Recommendation and request all companies operating in the gambling and lotteries sector to take into account and adhere to the principles of this developed valuation methodology when developing new or improving existing products and launching them;
- 3) Gambling and lottery supervisors need to develop new legislation requiring information so that supervisors can qualitatively ensure control and supervision of the necessary period between the purchase of a product / service and the announcement of the results;
- 4) It is necessary to develop and harmonize amendments to the regulatory enactments, which determine the principles of responsible advertising and with the help of which it will be possible to more effectively monitor and control the availability of gambling and lottery advertisements and the presence of advertising risk factors;
- 5) Stronger involvement of each country, individually and in cooperation with the European Lotteries Association, is needed to combat illegal online gambling and lotteries and to develop concrete steps to combat this illegal activity as effectively as possible and in the shortest possible time. available networks;
- 6) After consulting the members of the established commission, it is concluded that by changing the conditions of the criteria, it is possible to apply the established methodology in other sectors as well.

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VALUE CHAIN ANALYSIS OF ADVENTURE TOURISM: A CASE STUDY OF AJARA AUTONOMOUS REPUBLIC (GEORGIA)

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Abstract. Ajara Autonomous Republic, both within the country and in the world tourist market, has always been positioned as a maritime tourist destination. However, over recent years diversification of tourist products and appealing new market segments have become one of the main priorities of the tourism development strategy of Ajara Autonomous Republic. As a result, the government is creating an appropriate tourist infrastructure, especially in rural areas to support developing such tourist products as adventure and eco-tourism. Adventure tourism can deliver significant benefits at the local level and it is a developing segment in Ajara. Creating adventure tourism products requires integration of various interdependent services. A tourism value chain is defined as a system that describes the cooperation of private and state sectors in providing resources, which creates costs and adds value through various processes and delivers final products to visitors. The purpose of the research was to determine weak links in the value chain and creating a comprehensive value chain model to form the competitive adventure tourism product. The research involved all actors, which operate in the tourism sector. Based on the results of the survey, in the value chain, the food link turned out to be the weakest, whereas the accommodation with the highest share was distinguished in the visitor spending structure. Overall, the cost of the adventure tour will be affordable for both international and domestic tourists. At this stage, government support and participation are crucial in the formation of adventure tourism infrastructure. Through using the case study and qualitative research methods, we tried to identify challenges to the growth of adventure tourism in Ajara and developed recommendations to overcome these challenges.

Keywords: adventure tourism, case study, value chain analysis.

JEL code: M2

Introduction

Prior to the 2020 pandemic period caused by COVID-19, a growing trend of visitors was observed in Georgia, including the Autonomous Republic of Ajara. According to the World Bank report, "Georgia has become a competitive tourist destination in recent years" (Forbes Georgia, 2018), Ajara hosted an average of 2 million visitors each year, and the number of tourists in 2019 exceeded one million. Since the Soviet era, Adjara has been considered one of the most attractive locations for maritime tourism. Today, gambling tourism is added to the seaside vacation, which mainly attracts tourists from the country where the gambling business is banned. Based on the tourism development strategy of Adjara, it becomes important to intensify the diversification of tourism and to promote the areas that the region really has potential for. In particular, it is adventure tourism, rural tourism, eco-tourism and mountain-skiing tourism. At this stage, it is necessary to select appropriate locations for adventure tourism, develop product concepts and create appropriate tourism infrastructure, in order to stimulate the business sector to be interested in the development of rural adventure tourism. Adventure tourism requires both physical and mental involvement from the tourist and at the same time requires from the stakeholders the sustainable development of tourism, protection of biodiversity, conservation of cultural resources and the creation and management of relevant tourism products. Adventure tourism as part of active tourism is well developed in connection with rural tourism and eco-tourism.

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Based on the above-mentioned, our research aims to determine the current level of development of adventure tourism and further perspectives, besides finding out the weak links in the existing value chain that prevent the creation of a competitive tourism product. In addition, all the services included in the value chain should be determined, and the appropriate calculation should be made to determine the average value. Quantitative and qualitative research methods are used in the research.

Research results and discussion

Adventure tourism is one of the fastest-growing categories of tourism, represented in virtually every country at all levels of economic development. The priority of this direction of tourism is that the formation of adventure tourism product is accompanied by the involvement of ecological, cultural and economic values. The Adventure Travel Trade Association (ATTA) explains that adventure travel should include at least two of these three elements (World Tourism Organization report, Global Report on Adventure Tourism, p. 10): Physical activity, natural environment and cultural involvement. Adventure tourism generally attracts both international and domestic tourists. Adventure tourism based on its activities, the number of which is 34 based on the materials of the World Tourism Organization, includes **three types of products**: **soft** (Archeological expedition, Backpacking, Birdwatching, Eco-tourism, Educational programs, Environmentally sustainable activities, Fishing/fly-fishing, Hiking, Horseback riding, Hunting, Kayaking/sea/whitewater, Orienteering, Rafting, Safaris, Sailing, Scuba Diving, Safaris, Snorkeling, Skiing/snowboarding, Volunteer Tourism, Research expeditions, Surfing), **hard** (Climbing (mountain/rock/ice), Trekking) and **other** (Attending local festival/fairs, Cultural activities, Getting to know the locals, Walking tours, Visiting friends/family, Visiting historical sites) (UNWTO., 2014).

From the activities of adventure tourism, in the region of Adjara, we can find archeological expeditions, walking tours, bird watching, cultural activities in the countryside, educational programs, hunting, horseback riding, rafting, skiing, visiting historical sites. As we can see we have mainly developed soft and other activities. The development of hard activities is hindered by the low professionalism, experience of instructors, and lack of appropriate infrastructure.

Adventure tourism undoubtedly provides sustainable rural development that can bring some benefits at different social levels, it can create jobs based on the traditional knowledge and experience of the locals.

The demand for adventure tourism is influenced by such factors as:

- Tour cost
- Price of related services, such as logistics costs
- Target market revenues

These factors should be taken into account by the business when forming competitive tourism products. (Koscak M., O'Rourke T., 2017).

Proper branding of the region, creation of a special online platform, formation of specific activities as a tourist product and their corresponding promotion are important for positioning locations in terms of adventure tourism. Along with adventure activities, it is no less important to create customized accommodation for the target customer, creating campsites, taking into account eco-tourism trends, in particular healthy, organic food, using alternative energy sources, training relevant staff and purchasing equipment. It is important to take into account the experience of foreign colleagues, to invite them for special infrastructure formation and staff training. In modern times, eco and adventure tourism often intersect. Ecotourism with an active component allows tourists to be classified according to lifestyle and age (Metreveli M., 2012).

The Adventure Travel Trade Association (ATTA) determines the ranking of countries in terms of the development of adventure tourism:

Table 1

Top ten countries for adventure travel, 2020

#	Developed countries	Developing countries
1	Island	Czech Republic
2	Switzerland	Chile
3	New Zealand	Slovak Republic
4	Germany	Slovenia
5	Norway	Israel
6	Finland	Estonia
7	Sweden	Poland
8	Canada	Bulgaria
9	Australia	Romania
10	Denmark	Costa Rica

Source: ATDI, 2020

In the ranking process for countries, the organization pays attention to various criteria, namely: Supporting Sustainable Development, Government Policy, Security & Protection, Health, Natural Resources, Cultural Resources, Adventure Resources, Entrepreneurship, Tourism Infrastructure, Image and Humanity.

To assess the current state of adventure tourism in Adjara and the opportunities and threats for its further development, qualitative information was collected using in-depth interviews with specialists in the field, mainly representatives of the department of tourism and resorts of Ajara Autonomous Republic and tourist agencies offering adventure tourism activities. The information received was the basis for compiling the following table:

Table 2

Potential of Adventure tourism by locations in Ajara

Locations	Tourist infrastructure and adventure activities	Development stage
Chirukhi Mountain (Shuakhevi Municipality)	It is planned to arrange the longest zip line in Europe (1752 meters), which will be two-lane. With a zip line, Chirukhi becomes the centre of attraction, this, in turn, will lead to the arrangement of appropriate tourism infrastructure - upper and lower stations, food facilities, information centre, resting place.	Project
Chvana valley (Shuakhevi Municipality)	Chvani valley is loaded with historical and cultural monuments. Chvani valley has great potential for the development of adventure and extreme tourism. It will be possible to climb the cliffs, enjoy mountain biking, horseback riding and more. An integral part of extreme tourism is the placement of capsules hanging on a rock. Chvana valley is involved in a very interesting route, the length of which is 88 km: Kintrishri Protected Area (Kobuleti Municipality) - Gomi Mountain (Guria Region) - Jvari Mindori - Khabelashvili Bridge	Project
Machakhela (Khelvachauri Municipality)	The tourism infrastructure of Machakhela Valley mainly serves the development of rural tourism, at the same time includes the adventure activities of rural tourism. The concept of Machakhela Valley Ethno Village aims to interact with the local population. Machakhela Mountain is planned to be granted the status of a protected landscape	Tours are carried out
Goderdzi, Beshumi and Green Lake (Khulo Municipality)	Goderdzi is an emerging tourist location, appealing in all four seasons of the year. Here all the conditions are created to develop a mountain-ski resort, at the same time an alpine botanical garden was arranged. Beshumi is the best resort to build the necessary infrastructure for camping. Tourist infrastructure for hiking enthusiasts is arranged around the Green Lake.	Tours are carried out
Mtirala National Park (Kobuleti Municipality)	Mtirala National Park is rich in flora and fauna, with one- and two-day tourist routes. The paths are marked and landscaped. Arranged for picnic and camping places, the national park offers hiking, horseback riding, science and eco-tours. Zipline is arranged in Mtirala National Park.	Tours are carried out
Sakhalvasho and Chaisubani, (Kobuleti Municipality)	The best place for those who share information about the ecology and migration of birds. There are platforms for bird watching.	Tours are carried out
Khikhani Fortress, (Khulo Municipality)	The castle dates back to the X-XIII centuries. At this stage, a path to the castle is made, which is a real discovery for tourists interested in hiking and historical monuments.	Tours are carried out
Uchkho Canyon, (Khulo Municipality)	The beautiful one-and-a-half-kilometer canyon allows hikers to access the 12-cascading waterfall with ropes. Uchko is the first canyoning tourist route in Adjara, which makes the region's tourist products even more diverse.	Project
Kaviani Fortress - to Dandalo, Shuakhevi – Keda Municipality	Arranging a bicycle path for mountain biking lovers.	Project
Ghorjomi valley - resort Bakhmaro (Khulo municipality / Guria region)	Mount Leknari-Bakhmaro: Route for hiking	Tours are carried out

Source: Author's created based on the results of the survey

A value chain is a network that connects value-creating actions, starting with the supplier including actions that include manufacturing, product service and marketing, ending with product delivery to the final buyer.

The concept of "value chain" was first introduced by Michael Porter. Porter and Millar (1985) state: "The value a company creates is measured by the amount that buyers are willing to pay for a product or service". A company reaches profitability when its margin value is positive, meaning value created exceeds arising costs associated (Porter and Millar, 1985). According to Porter and Millar, a company's value chain is a 'system of interdependent activities, which are connected by linkages. He viewed it in the context of adding value to the product in a sectoral context, in particular, it indicated that at each stage of processing, from the extraction of the raw material to its consumption by the end-user, a certain value is added to the product, in other words, the value chain in the sector reflects the whole process of transformation in individual sectors, starting from the extraction of primary raw materials, ending with the delivery of goods to the final consumer and consumption. (Belgen M., Elif A., 2014)

The researchers have introduced the following definitions of `value chain of tourist products.

- A typical travel product value chain has four components: travel service provider, tour operator, travel agent and customers (M. Kaukal, W. Hopken, H. Werthner, 2000).
- The value chain (health tourism) is viewed as a sequence of links: the preceding subsystem (travel companies, incentive companies, health insurance); transportation (auto, air, rail transport); accommodation (hotels, resorts, boarding houses, campsites); public catering (restaurants, bars, clubs, canteens, cafes); health-improving activity (fitness, sports, beach, relaxation, healthy eating) (K. Weiermair, S. Steinhauser, 2003).
- The process of adding value to a tourism product by participants in the tourism industry and providing it to the client in places visited by tourists (OECD, 2008).
- The value chain is divided into five production activities (or segments): accommodation, public catering, the performance of travel agencies and tour operators, transport and trade. There is a thesis that within each segment, several different supply chains can be distinguished (R. Denman, J. Denman, 2009).
- The tourism product supply chain (TSC) is defined as a network of tourism organizations of various activities that create value from different components of tourism products or services in a total tourism product at a specific tourism destination, includes a wide range of participants in both the private and public sectors (X. Zhang, H. Song, G. Q. Huang, 2009).

The value-creating activities occur at two levels, namely: within the industry in which a company exists (industry value chain) and within a company itself (firm's value chain). Creation of value is a function of the ability to deliver high performance on the benefits that are important to the customer. Value chain analysis requires the "mapping of the market" to track and analyse the contribution of the different chain actors and the relationships among themselves. An understanding of the interactions within a value chain helps identify the factors that influence how well or how badly the chain works. The resulting market map defines the value chain actors, the enabling environment and the service providers. The enabling environment includes critical factors that create the operating conditions within which the value chain operates, such as infrastructure, policies, and regulations, as well as institutions and processes that shape the market ecosystem. Service providers, on the other hand, include business or extension services that provide support to the value chain, such as providers of market information, financial services, transport services, R&D facilities, and accreditation services. Industry level value chain analysis is an effective way to examine the interaction among different players in a given industry. Value chain analysis (VCA) includes

both qualitative and quantitative approaches. Observation, semi-structured interviews, focus group meetings, and questionnaires are recommended to build up an understanding of the various chain players and how they interact with one another. (Zamora E., 2016)

In the report, 'Aid for trade and value chains in tourism' (Marion Jansen, OECD/UNWTO/WTO, 2013) the author presents the value chain in tourism. Along with the key links that create a value chain, the paper discusses the sectors indirectly related to this process and the services created by them. According to the model presented in the report, which we think perfectly reflects the process of creating a value chain in tourism, value creation begins before the visitor arrives.



Source: WTO, 2013

Fig. 1. Value chain links to tourism

- The first line is related to **communication with travel companies (tour agencies, tour operators, online booking services) and the purchase of services from them;**
- Line II is the **transportation** of the visitor;
- Line III – **Accommodation;**
- Line IV – **Provision of food and drink;**
- Line V – the **use of tourist assets** on the tourist destination, which in turn can be divided into cultural and natural assets, followed by **recreation, excursions and tours;**
- Line VI – **Support services** (security, internet, financial services, trade services etc.).

Both public and private organizations supporting tourism development are indirectly involved in the value chain process in tourism. The model presented in this report generally reflects the process of creating a value chain in the tourism sector, although the value chain model is usually created at the level of specific tourism products.

As a result, the adventure tourism product value chain includes 6 main stages.

1) **creating and developing a product concept.** The main initiators of creating the concept of adventure product in Adjara are governmental organizations, they create route routes, mark them, create appropriate infrastructure and interest tour operators and tour bureaus with relevant tours.

- 2) **Promotion and sale.** Adventure tours are promoted by the Department of Tourism and Corrections through social media, websites and print ads in information centres. Special brochures and maps have been prepared.
- 3) **Accommodation and meals.**
- 4) **Transportation to the destination.**
- 5) **Support tourist services: Guide, instructor services, and more.**
- 6) **International transportation.**

Thus, the main participants/players in the value chain according to Wilson Sh., Sagewan-Alli I. (2014) are:

- **users:** Domestic and international tourists;
- **suppliers:** These include government agencies - the Department of Tourism and the Agency and Private, Protected Areas: Tour operators and tour agents;
- **organizations involved in the promotion;**
- **transportation Organizations / Tourist Guides / Excursion Bureaus.**

As the research showed, most of the locations have accommodation and food facilities, however, the low quality of service remains a significant problem in this area. Based on the value chain analysis, it is possible to visualize the general structure of visitor costs by considering the elements of tourism services.

Based on the study of the prices of the tourist services included in the existing adventure tours, we tried to create a general value chain for the formation of the adventure product. Each line shows what the tourist spends.

Table 3

Tourist Expenditures by the components of adventure tourist service

Adventure tourism service components	Cost per person per day (euro)	Cost in %
Transportation from Batumi to the destination	5	10
Accommodation	12.5	25
Food	10	20
Guide service	10	20
Shopping, souvenirs	7.5	15
Taxes	5	10
Total:	50	100

Source: author's created based on the results of the survey

The value chain analysis of adventure tourist product enables us to draw the following **recommendations and conclusions.**

- 1) The role of state investments in the diversification of tourism products is important, in particular, the arrangement of relevant tourism infrastructure and business support.
- 2) It is important to create specialized locations for different types of adventure tourism activities based on the tourism-recreational potential of the Adjara region.
- 3) In the process of forming adventure products, more attention should be paid to staff training in terms of providing relevant services.

- 4) Based on the results of the survey, the food line appeared to be a weak line in the value chain, because it is important for tourists to find a healthy, local product, and in general, it is necessary to increase the quality of service in all lines.
- 5) Accommodation with the highest share in the structure at the expense of visitors is distinguished. Overall, the cost of the adventure tour is affordable for both international and domestic tourists, which is a contributing factor to the development of this type of tourism.

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CREATIVITY OF THE POPULATION AS A KEY TO REGIONAL SUSTAINABILITY AND ENTREPRENEURSHIP DEVELOPMENT

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Abstract. Every capable, creative person must be able to create and prove his ideas in every region of Latvia. Development of creativity of the population will increase human capital, which determines the quality of life of the country's population in general, but mainly in the regions. Promoting the development of human capital requires cooperation between the population and educational institutions, the implementation of which presupposes the digitalization of information exchange, the introduction of information platforms, the sharing of knowledge and the recognition of ideas. By developing the creativity of the population, it is possible to promote the advantages of each region, which in Zemgale would be associated mainly with the development of bioeconomy and eco-products and services. One of the tools to promote creativity would be the creation of regional university business incubators, which would encourage the involvement of creative people in the creation of eco-products and services.

Key words: Creative person; regional development; commercialization of ideas.

JEL code: C31, R11

Introduction

The aim of the present work is to analyse the possibilities of regional development through the establishment of tools in Latvia University of Life Sciences and Technologies that will develop the creativity and entrepreneurship of the population in Zemgale region. To analyse this, the authors hypothesize: An effective tool for the development of the creative population, providing social and economic benefits in the regions of Latvia, is specialized university business incubators. Latvia University of Life Sciences and Technologies intends to create a bioeconomy business incubator that will involve local people in the commercialization of their ideas.

The monographic or descriptive method is used to interpret the research results based on the existing scientific knowledge and theories as well as the legal framework in Latvia.

Research results and discussion

Today, capital is no longer just money or resources, but above all a human being with his or her unique and creative abilities. *"Our main capital is people – their skills, knowledge and talents. Our capital is nature, environment and space of Latvia. Also, cultural heritage and creativity, the ability to co-operate and to do something jointly, which would be impossible to do individually, is our capital and the source of growth"* (Saeima of the Republic of Latvia, 2010). The development of Latvia as European Union country requires significant investment in the creation of knowledgeable and creative people, because human capital is the most important resource for fastest growth, as other resources are limited. By creating an environment for knowledge transfer and creativity, it is possible to develop an environment for entrepreneurship in the regions of Latvia. By using regional advantages, many new business ideas can be commercialized. The only prerequisite is that people living in the regions outside the largest cities have the right tools for entrepreneurship.

"Nowadays innovation is not attributed only to high technologies, but also to the creation and introduction of new ideas in every field of activities, so it becomes more important that the competitiveness of countries involves increasingly large number of inhabitants in the process of creative activity. Economic

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system with higher social mobility means also higher creativity of the society because each capable, creative person even from the lowest classes of the society has an opportunity to create and prove his or her ideas" (Saeima of the Republic of Latvia, 2010).

In recent years a large part of the Latvian population has moved to the big cities and also out of the country. These people have travelled mainly for the higher salaries and better life. This movement of labor means that talented and skilled people are flocking to global development centres where they have the opportunity to get a higher salary or an environment for personal growth and business development.

National Development Plan of Latvia for 2021-2027 Priority 2 "Knowledge and Skills for Personal and National Growth" determines these goals:

"A knowledgeable, inclusive and creative society in an efficient, innovative and productive economy" and "Quality education for the acquisition of knowledge and skills applicable in business and daily -life for every inhabitant of the country".

These goals are in line with the EU's general policies on regional development following the EU priorities in integration: e.g. in jobs and growth, digital single market, energy and climate, industrial development, migration issues, etc. However, there are some spheres that needed additional attention and common efforts from the sub-regional communities' perspectives. The regional "influences" have grown from the lack of state governance to take a proper stand on local issues.

In order to achieve the goals, the conditions set by the authors must be ensured.

- More and more people must be involved in the process; especially users of services and products, interoperability, openness, knowledge and creativity are the keys to success.
- Global experience shows that around 73 % of industrial innovations are not turned into successful industrial products, not because they are not technologically excellent, but because they do not meet the needs of users. This means that feedback from potential users must be provided during the product development process.
- Information platforms should be used for knowledge transfer and release of ideas.
- Knowledge, universities and research play an increasingly important role in today's economy. This means that educational and research institutions need to create and maintain their own platforms through which knowledge becomes accessible to Latvian businesses and young entrepreneurs, especially in the regions.
- Globalization offers new opportunities for creative and enterprising people to choose cities and countries where they can start a successful business. We must promote Latvian regions for new business opportunities.
- The government plays a key role in creating and maintaining a framework in which businesses can innovate, as well as in providing direct support. The government should establish business support mechanisms that support start-ups in all regions of Latvia.

A European strategy for smart, sustainable and inclusive growth says: *"At national level, Member States will need: ... to focus school curricula on creativity, innovation, and entrepreneurship"* (European Commission, 2010)

According to the regional officials, the Baltic States are facing a "profound change" in the Baltic Sea Region (BSR) governance based on "closer cooperation, good action plans and communication"; in fact, it is about "a new narrative for the region". Strikingly enough, these "changes" have not been fully integrated into the modern global and European trends, e.g. sustainability, bio- and circular-economy, digitalisation and scientific innovations, to name a few.

The changes include drafting a new type of a strategy with, e.g. circular economy issues and optimal action plans for the regions and local communities in circular and bio-economies' practical implementation.

An efficient sub-regional cooperation in BSR is balancing between the national political economy's guidance and that of the regional-EU's planning: e.g. less activity in the former could result in more active part in the latter, and vice versa!

Coordinated transfer of skills and knowledge in regional entrepreneurship and business development will develop the creative society and strengthen the economy in Latvia. Now we see economically growing businesses mainly in or near the largest cities in Latvia. To create regional business development we need to use already existing opportunities such as universities with their infrastructure, municipalities, Magnetic Latvia 15 regional incubators, 9 Rural Support Service Customer service centres, 26 branches of Latvian Rural Consultation and Education Centre, financial institution Altum 21 branches and Latvian Chamber of Commerce and Industry with 5 regional centres. These business support structures can be used for business start-ups in Latvian regions, but we need to ensure information transfer between these authorities.

We can see that there are already authorities working separately in Latvian regions, but unfortunately they do not focus on the benefits of the region such as organic or bio products. Luck and the fragmentation of information is also a reason why people do not use the local opportunities offered by the existing authorities.

The authors believe that a regional specialized business incubator operated by the local university is an effective tool for commercializing ideas and support businesses.

"...business incubators have positive effects to regional innovation performance through its basic, finance and incubation capacities. In this sense, managers of business incubators and policy makers should emphasize more on the cultivation of those specific capacities to develop business incubators further. Moreover, this study indicates that regional communication infrastructure investments are essential to facilitate the positive impacts of business incubators on regional innovation performance. Effective investments into the communication infrastructure would not only help improve the performance of business incubators, but also accelerate the transfer of outputs of business incubators into the wider regional innovation performance. Therefore, effective policies introduction and streamlined procedures to facilitate communication infrastructure development should be one of the most important focus of policy makers" (Z.Wang, Q.He, S.Xia, D.Sarpong,A.Xiong,G.Maas, 2020).

University business incubators used to be and are now mainly interpreted as helping students and researchers to develop scientific start-ups by providing necessary business development services to students and researchers (E. Rogova, 2014). But today we see many new ideas such as entrepreneurial university, which of course include the tools as business incubators for all business start-ups. Implementation of Entrepreneurial University focuses on education and interaction of creativity, which will help to raise a generation of entrepreneurs. Universities with their laboratories and scientific infrastructure and knowledge can offer many advantages to potential new entrepreneurs, but also the simple transfer of knowledge and education can be crucial for the potential entrepreneur.

"Many incubators around the world are supported by universities. Others are making initiatives to link up with universities and higher education institutions to get the revenues and returns from its academic nature. Lately, university incubators became a type of incubator evolution and more supportive for entrepreneurs than other types of incubators." (N. A. Hassan, 2020).

In Latvia, there are 11 business incubators operated by Latvia higher educational institutions. The research of Veronika Bikse, Inese Lusena-Ezera, Baiba Rivza and Tatjana Volkova shows that:

"Overall, the authors can conclude that the contribution of the Latvian universities and student business incubators to ensure sustainable education is essential. In cooperation with business incubators, the universities contribute to the engagement of new entrepreneurs in business; incubated enterprises create new jobs and develop products of various kinds, and these in turn play a considerable role in the sustainable higher education development. Nevertheless, according to the survey, new entrepreneurs need assistance in creating networks of cooperation with various institutions, particularly local governments, as local government support as well as cooperation with universities - upon which knowledge transfer to production, innovation and eco-entrepreneurship is dependent - are important to the new entrepreneurs, nowadays the most important prerequisite for economic growth." (V. Bikse, I. Lusena-Ezera, B. Rivza, T. Volkova, 2016).

However, to date none of Latvia's higher education institutions or Magnetic Latvia incubators specialize in specific regional development or the development of e.g. bioeconomy products. For example, the Magnetic Latvia business incubators of the Investment and Development Agency of Latvia provide basic business incubator services without focusing on the priorities or strengths of a specific region.

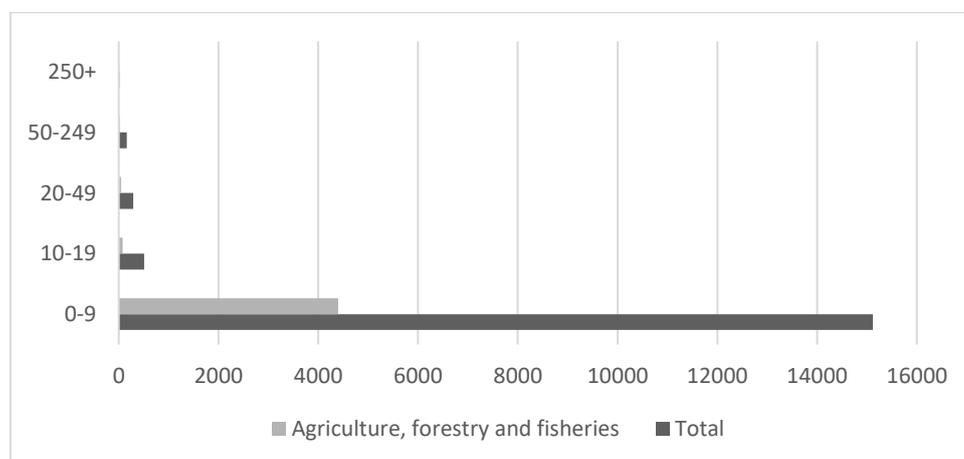
The authors' research focuses on increasing the creativity of people in Zemgale region, leading to the commercialization of their ideas, through close cooperation with the organizational units of Latvia University of Life Sciences and Technologies and obtaining direct or indirect financial support from national institutions for the creation of a specialized business incubator. Accordingly, we can explore the idea of establishing the bioeconomy business incubator in Latvia University of Life Sciences and Technologies.

According to the data from Central Statistical Bureau Republic of Latvia in Fig. 1 below, we can see that the number of economically active enterprises in Zemgale is the largest by the number of employees – 15117 enterprises, in the small or micro enterprises.

According to the Law on the Annual Financial Statements and Consolidated Financial Statements: "A micro-entity is a small undertaking which on the balance sheet date does not exceed at least two of three limit values of the criteria referred to in this Paragraph:

- 1) balance sheet total – EUR 350 000;
- 2) net turnover – EUR 700 000;
- 3) average number of employees during the reporting year - 10."

This shows that the main activities in Zemgale region of Latvia are carried out by small businesses, which is our target group for further development.

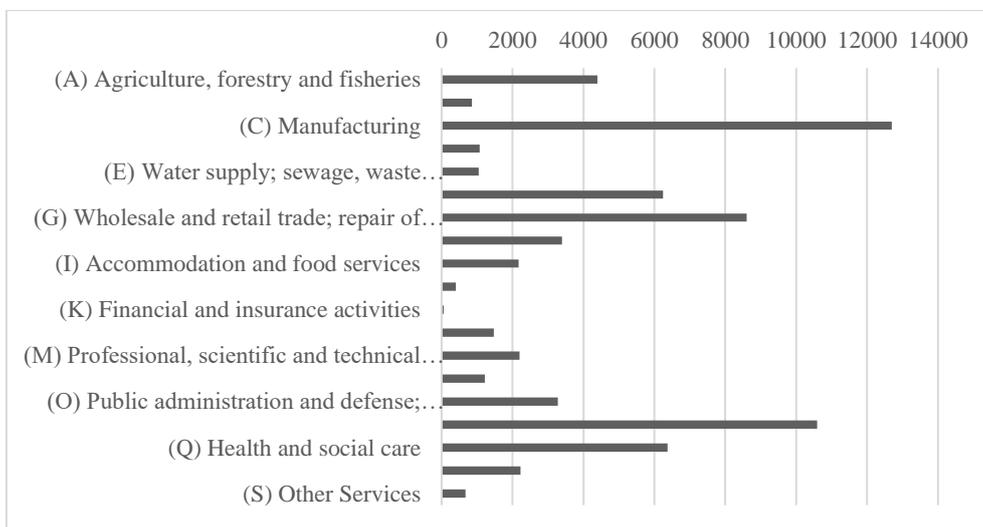


Source: author's calculations based on Central Statistical Bureau Republic of Latvia data

Fig. 1. Number of economically active enterprises in Zemgale by number of employees

Fig. 2 below shows the occupied jobs in Zemgale by type of occupation, with the population mainly employed in sectors such as agriculture, manufacturing, construction, wholesale and retail trade, health and social services and also to a large extent in education.

These data show that focusing on small business development in a specific area where the region's main activities take place is the right way to improve regional economic activity and social well-being in general.



Source: author's calculations based on Central Statistical Bureau Republic of Latvia data

Fig. 2. Occupied jobs in Zemgale by type of activity at the end of the 3rd quarter of 2020

The authors' idea intends to shift regional culture and business towards ecosystem philosophy. In Latvia, the knowledge-intensive bioeconomy is one of the nationally defined areas of smart specialization (RIS3). The Latvian Bioeconomy Strategy for 2030 has been developed. The implementation of specialized business incubator in Latvia University of Life Sciences and Technologies would make a significant contribution to the local business possibilities, expanding the knowledge base of university and opportunities for the creation and commercialization of new bioeconomy products and creating a new knowledge.

To achieve that, it is planned to focus on knowledge transfer and the development of new businesses through an IT platform, with an emphasis on a virtual environment which, due to the spread of COVID-19, would enable the development of various products distantly. This business incubator would also serve as a knowledge transformation platform for other regions. The platform will provide transfer at team and individual levels, improve international cooperation and will support locals with necessary education for further business development especially in areas related to regional advantages.

Also the involved entrepreneurs will benefit from network of educational institutions and their scientifically works. This network of educational institutions and entrepreneurs will effectively manage idea commercialization and fundraising. Latvian education system will be more related to business development with its educational competence.

For the establishment of such regional business incubators, significant public investment is needed. The government shall develop the program for university specialized business incubator establishment and funding.

Also municipalities shall participate and educate local people of all ages to upgrade their digital skills achieve significant gains from business opportunities.

The mentioned platform shall also share access to fundraising opportunities. This requires funding in the first phase through business incubators and after successful approval of ideas for further financial incentives.

Further economic growth and a higher standard of living for the people of Latvia depend on the ability to create new businesses using creative ideas for business start-ups in local regions but with potential world markets. The rapidly changing environment, increases business opportunities in the creation of ecological products. Such products as Purenn, Kiwi Cosmetics, Rudolfs are some of the successful examples from Zemgale region that have established long term business with ecological products that are produced locally but have a great potential in the world market.

Providing local support will allow small Latvian companies to compete in international markets and integrate into global value chains with higher value added products, thereby increasing export. The innovative eco ideas will be commercialized and developed by private, public and academic cooperation that aligns research and innovation capacity with business needs.

Conclusions, proposals, recommendations

- 1) Business incubators are recognized as a tool for developing and stimulating the economy in regions and situations where the market itself does not provide the environment and conditions for business start-ups. This is particularly the case in the aftermath of a pandemic and could be especially important if the COVID-19 pandemic lasts for a long time. At the beginning of this century, business incubators have become important places for technological advancement, information exchange and innovation. They attract financial resources and serve as homes for young entrepreneurs.
- 2) By developing the creativity of the population, it is possible to promote the benefits of each region, which in Zemgale would be mainly associated with the development of bioeconomy and eco-products and services. Creative people will establish new start-ups and provide recognition and visibility of new/innovative bioeconomy products in the Baltics and the European Union, increasing the value and efficiency of Latvia's natural capital.
- 3) The establishment of the Bioeconomy Business Incubator in Latvia University of Life Sciences and Technologies will serve to regional consolidation of innovations in bioeconomy-related products, including development and commercialization of goods and services in the bioeconomy industries, which would contribute to regional initiative and reduce COVID-19 risks by concentrating business expansion in less burdened regions.
- 4) The established LLU business incubator would also serve as a knowledge transformation platform for other regions. To achieve this, we need to focus on knowledge transfer and new business development through a IT platform, with a focus on a virtual environment which, due to the spread of COVID-19, would enable the development of various products distantly.
- 5) The methodological framework for this research should be established and presented to national institutions for fundraising.

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THE ROLE OF ENTREPRENEURSHIP ACTIVITY IN ECONOMIC DEVELOPMENT

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Abstract. The paper presents a summary of the literature on the significance and importance of entrepreneurship to economic growth and development. Entrepreneurship has been shown to have been seen to lead to an overall optimistic development in many economic data. There is a general expectation that this inquiry would address the question of whether there is a correlation between the entrepreneurial enterprise and economic growth. In countries with various economic groups, different citizens are classed due to how much wealth they have. The data used in this paper were extracted from the World Bank, the World Entrepreneurship Monitor (WEM) over the last five years, and the World Economic Forum has a Database of Worldwide businesses. However, in low-middle- and middle-income nations, growth-oriented entrepreneurship is associated with economic progress. Analysis of various countries and different levels of economic growth, so it can be claimed that entrepreneurship serves a special position.

Keywords: entrepreneurship, entrepreneurial activity, economic development, economic growth, role of entrepreneurship

JEL code: C20 General

Introduction

Lively entrepreneurial society is a key catalyst for improving the socio-economic well-being of countries across the globe. There is a broad literature that has tested the inter-relationships between role of entrepreneurship and economic development. Such dynamic factors, such as changes in the economy, have caused old and new openings for companies from all around the world. To respond to these ever-changing forces, public, private, and non-profit organizations recognize the significance of entrepreneurship. It is now more important than ever for growth and development in open economies.

This decade has seen a developing interest in ideas of sustainable growth and entrepreneurship. Investigators, studies have found a few conclusions from this point of view (Ács, 2013; Szirmai, 2011; Naud, 2011; Walzer, 2005; Harper, 2010). They assert that improvement has been made in regards to the principle of "progressful economic production, economic growth, and innovation" on a "a general philosophy of entrepreneurship." from the perspective, from a multinational corporation, states, as well as economists, sees industry in a somewhat different light. While it is considered by policymakers all over the world to be a way to increase economic growth, the conventional non-contentious path utilized by firms is "a plunge into raising the size of the pie while at the same time offering a clear method that increases job and adding on a corresponding amount of money" (Shane, 2005).

Entrepreneurship originated in business schools, but this has changed over the last decade, as many educational institutions have implemented entrepreneurial education in engineering schools. Different engineering fields have given covert space for entrepreneurial activities as it starts with manufacturers or service providers. The textile industry is also at the forefront of contributing to entrepreneurship, and policies are also in favor of having a positive effect on the economy. For example, recent research on innovative reinforced metals-crystals-polymer composite fibers with electromagnetic field protection properties for office applications, a brilliant idea and research by (Inga Ļašenko, 2016; Sergejs Gaidukovs, 2016), focuses on supporting government policy in any given country and on the best possible scope for entrepreneurship.

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Adam Smith, founder of current economics 'detested businessmen' (H. B and Srinivasan, 1998). Entrepreneurship intellectuals have been more concerned with the role of entrepreneurship rather than with the effect of entrepreneurship on development or developing nations (Bruton, 2008); a circumstance described as a scholarly disconnect (Audretsch, 2007), It is broadly believed that entrepreneurship is beneficial for economic growth and development. Entrepreneurship has unexpectedly resurfaced over the last decades in countries that have undergone a drastic decline in poverty, such as China. Givers and international development organizations have turned to entrepreneurship to improve the effectiveness and feasibility. The hypothetical and observational cases for understanding the role of entrepreneurship are not yet strong (Naudé W., 2010a).

We are interested in topics like sustainable growth and creativity during the last decade. Linked research to be identified in the literature for these two essential concepts include (Ács, 2013; Szirmai, 2011; Naud, 2011; Walzer, 2010; Harper, 2005; Carriere, 2005). Analysts also claimed that while "theories of economic development will never pretend to integrate a general theory of entrepreneurship, they have paved the way for advancement in acknowledgement of growth to extend a range of theory sub-bound problems" (Naudé, 2008) While there has been increased focus in recent years on the global position of entrepreneurship in promoting economic growth, the perspective often considers the contributions that industry, governments, and NGOs make in other contexts. Perceived by authorities around the world, entrepreneurship is recognized as a boost to the pie. This approach, which many people see as safe and non-contentious, often increases per capita development (Shane, 2005).

The authors published scientific research into the economic allocation of space, which is intimately related to the growth of smart cities. With respect to the globalisation phase, capital being reallocated across the frame is an indication of a quality change. Noted in analytical literature, however a great numbers of scientists have contributed to revealing the content of this principle, or concepts have worked to expand upon it That is, the authors have thus condensed the concepts of spatial economics and formed the nature of it into the above list of concepts, and finally described it as a new economics' (Ineta Geipele, 2017; Ineta Geipele, 2017; I. Geipele, 2018).

The aim of this paper is to analyze the entrepreneurship activity that has arisen in countries over the last five years. The following is the organization of the document. Section 2 discusses the partnership between entrepreneurial activity and economic growth and its reliance on the stage of economic development, as well as the TEA and GCI prices. Section 3 addresses the model and factor definitions; section 4 discusses the outcomes; and section 5 concludes.

Entrepreneurship activity and economic development

(Wong, 2005) have given a comprehensive research study reviewing the theoretical links between entrepreneurship and economic development, as well as empirical evidence linking new business formation and growth. Although their analysis will not be replicated here, it is notable that theoretical literature indicates that entrepreneurs can lead to growth across a broad number of circumstances, including creativity, a mixture of capital and increased competitive pressures. Whereas some research has claimed that entrepreneurs are vital of development, mostly through the leveraging of creativity and through strictly illustrative projects that utilize under-utilised resources (Minniti, 2006), the falsification between entrepreneurial frequency and economic development has not been identified. For instance, studies have continued to model the impact of the "business ownership rate" on growth in the economy (Carree, 2007). They believed that the level of inflation was dependent on fluctuations from the "equilibrium" caused by corporate ownership.

Even though it relates to the empirical analysis of this connection, contrary results have been observed in the correlation between entrepreneurship, redundancy, job generation and development. All of these outcomes just haven't been controlled by variations amongst entrepreneurship styles and motives, and also between pushing and pulling forces. Analogously, some researchers who claimed that economic growth rates are partly influenced by variances in company's overall possession rates from 'optimum value' have not provided for variances between types of business—variances that may be very necessary to challenge and factors toward this theorised balance (Carree, 2007). Not because all nations that differ significantly from balance in the same way do so for precisely this reason, and thus cannot undergo common balancing powers.

This separation of entrepreneurship emerges from an economic point of view. Some scholars, for example, differentiate between the global market and the supply factors of entrepreneurship (Audretsch, 2007). The resource side throughout entrepreneurship corresponds to the collection of relevant interests, expertise and services within the economy. Peter refers to all of these as either the 'Schumpeter' influence and the 'immigrant' influence, and this is expressed in their empiric nature by incorporating the subgroups of entrepreneurship described in the GEM database. GEM identifies three main factors or motivations for individual involvement in start-ups and thus calculates three different directories for the national rate of occurrence of entrepreneurs (Niels Bosma, 2020):

- High-expectation Entrepreneurship Activity (HEA): Start-founded or brand-born firms plan to create at least 20 new hires in the next 5 years 93 % of the current employment (Autio, 2005). Of the gelled firms, others are characterized by their smaller size, more capital lying about, and decreased financing (Moreno, 2007).
- Opportunity Entrepreneurship Activity (OEA): realize there are other jobs as well (Sternberg, 2005). Healers (as well as a greater number of businessmen who take advantage of anything and remain poor or half-hearted healers) refer to this term. To be frank, these citizens expect to pursue sluggish growth because of both economic factors and perceived entrepreneur ambitions and rewards.
- Necessity Entrepreneurship Activity (NEA): People see entrepreneurship with their last venue and start out a business along with all new employment opportunities. They seem to be either semi or unsatisfying (Niels Bosma, 2020). The relevance of 'informal' business needs has been extensive description (De Soto, 1989).

Prior research findings show that economic growth does influence the degree of entrepreneurial engagement (Carree, 2007). It seems that the three contributing elements to a nation's nascent entrepreneurship rate each peak at a different period seem to be U-shaped. Countries with the lowest of wages have a high level of entrepreneurship. Third World areas have the largest degree of entrepreneurship, at \$ 20 000 per capita (Niels Bosma, 2020).

The u-shaped relationship between nascent entrepreneurship and per capita income development shows that various socioeconomic factors might be at work in the poorest and wealthiest countries (van Stel, 2005). The average rate of entrepreneurship does not rise in under-developed countries. Even while it may reduce the number of poor workers, this does not imply that creativity must be harmed. Entrepreneurial activity in developing nations doesn't support the overall economy. While entrepreneurship may be diminished, the reality remains that the OEAs and the NEA prevent joblessness.

Nations, on the other hand, at comparable stages of economic growth, have markedly different levels of entrepreneurial activity. GEM Global Executive Reviews reveal major disparities between countries with low entrepreneurial development, such as Japan, France, Belgium, and Sweden, and countries with high

entrepreneurial activity, such as the United States, Canada, Australia, and South Korea. Certain developed countries, such as Thailand and India, rate first in terms of entrepreneurial development. Entrepreneurial behavior is strongly associated with self-employment (André van Stel, 2005).

If entrepreneurial pursuit is vital for financial advancement, we ought to find that the effect that are top regarded on the list are also growing relatively quickly in aspects of this activity. The regular procyclical phrase refers here because there are other variables that could illustrate economic progress. Which include factors such as education, interest rates, investment in capital assets, weather, quality of institutions and personal liberty. It is crucial to secure insight into possible theories for economic growth in addition to entrepreneurial activity.

Model and data

Using the Stel et al. (2005) model as a starting point, the aim of this paper is twofold: to test the model of Stel et al. (2005) regarding the effect of TEA rates on GDP using a more recent dataset and including more countries, and to contribute to an understanding of the importance of preferences for avoiding uncertainty (one of Hofstede's cultural dimensions) on GDP growth. In other terms, this study would examine the extent to which expectations for avoiding ambiguity and entrepreneurial behaviour lead to the explanation of response variable fluctuations. Entrepreneurship and the GCI are the pillars of the economy, so we can claim medium-term growth rather than short-term production. A weighted mean growth trend over the next five years (2015-2019) is used for this study. We use the total entrepreneurial activity of the Global Entrepreneurship Monitor as a measure in addition to try to the previously mentioned issue measuring problem.

Our model is developed using data from the Global Entrepreneurship Monitor (GEM), the Global Competitiveness Report (GCR), and other sources. Four variables are used in this model: overall entrepreneurial activity, GDP development, per capita revenue, and the index of growth competitiveness. The following sections provide references and descriptions for these variables.

- *Total Entrepreneurial Activity (TEA)*

Statistics on total entrepreneurial operation was obtained from the Adult Population Survey of the Global Entrepreneurship Monitor (GEM). This dataset includes numerous entrepreneurial interventions that are based on surveys of, on aggregate, some 2 000 participants per country. The total entrepreneurial activity rate (TEA) is characterized as the proportion of the adult population (18-64 years of age) that is either actively involved in the start-up of a new venture or is the sole proprietor of a business that is less than 42 months old (Niels Bosma, 2020). The GEM Adult Population Survey 2019 provides data on entrepreneurship activities in general.

- *Global Competitiveness Index (Δ GCI)*

The structure for development effectiveness is included in the Global Competitiveness Study of the World Economic Forum (GCR). The GCR's core task is to identify the ability of the economies around the world to achieve sustainable economic development. The GLR analyzes the extent to which global economies rely on universal mechanisms and laws for potential economic development primarily applies to an exponential increase of Gross Domestic Product (GDP) (GCI). to measure how near the economy is to reach sustainable growth in the short term (Schwab, 2019). The Global Competitiveness Index (GCI) details come from the 2019.

• *Growth of GDP (ΔGDP)*

GDP forecasts are based on the October 2020 version of the International Monetary Fund's World Economic Forecast database.

• *Per capita income (GNIC)*

Global per capita wealth violence in 2019 is reflected in (thousands) US dollar buying power parities, although these are taken from the World Bank's 2020 International Development Indicators database.

Table 1

Variable and data Sources

Name of a variable	Code	Form of variable	Source of information
GDP Growth rate	GDP	Dependent variable	World Bank Database (https://data.worldbank.org/)
Entrepreneurial activity	TEA	Independent Variable	GEM (https://www.gemconsortium.org/)
Gross National Income per capita	GNIC	Independent Variable	World Bank Database (https://data.worldbank.org/)
Global Competitiveness Index	GCI	Independent Variable	World Economic Forum (https://weforum.org/)

This theory is being tested on two fronts. The first approach is to combine the average amounts of entrepreneurship with per capita profits. The template is measured accordingly (i is the country index).

$$\Delta GDP_{it} = a + bTEA_{i,t-1} + cTEA_{i,t-1} \times GNIC_{i,t-1} + d \log(GNIC_{i,t-1}) + eGCI_{i,t-1} + f\Delta GDP_{i,t-1} + \varepsilon_{it} \quad (1)$$

If the hypothesis is true, then the value of c is positive. Similarly, the effect of TEA on distinct classes of countries (developed versus poor; wealthy versus transformational versus developing) can be distinguished, which implies that the word relation is substituted for (A and B are nation groups):

$$\Delta GDP_{it} = a + bTEA_{i,t-1}^A + cTEA_{i,t-1}^B + d \log(GNIC_{i,t-1}) + eGCI_{i,t-1} + f\Delta GDP_{i,t-1} + \varepsilon_{it} \quad (2)$$

Where:

TEA – total entrepreneurial activity;

GNIC – benefit per capital;

GCI – development competitiveness index;

ΔGDP – development of GDP (2015-2019);

i – country;

t – period (year).

Here, *A* denotes a category of rich countries and *B* denotes a group of impoverished countries. The meaning of $b > c$ in this theory.

Results

The table below contains the regression findings for all four versions. The research involves 65 countries (for models that use the Hofstede preference for avoiding uncertainty) and 65 for the first variant. Both models incorporate sluggish rise (2015-2019 GDP growth), the World Competitiveness Index (WCI), per capita Gross National Income (GNIC), and business activity. The word TEAxGNIC interaction appears in

Model 1. Models 2, 3, 4 include all of the components of Model 1 except for TEAxGNIC, since all countries are divided into three income classes.

Table 2

Estimation results

	Model 1	Model 2	Model 3	Model 4
	All data	Income (All)	Below High Income	Extremely High Income
Constant	6.2487 (1.527*)	24.156 (2.935*)	2.701 (0.206)	-2.837 (-0.268)
GDP growth in last 5 years	0.239 (2.168***)	-0.201 (-0.826)	0.322 (1.971*)	0.378 (1.926*)
Log (GNIC)	-3.653 (-2.384**)	-4.921 (-1.823)	-3.210 (-0.983)	-0.738 (-0.214)
GCI	1.803 (3.259***)	-0.683 (-0.285)	2.647 (2.753*)	1.398 (1.45)
TEA	-0.213 (-0.735)	0.073 (1.562)	0.107 (0.887)	0.192 (1.319)
TEAxGNIC	0.073 (0.875)	-	-	-
Number of Observations	65	63	24	35
R²	0.521	0.741	0.574	0.298
Adjusted R²	0.491	0.514	0.479	0.187

Note: t-values are enclosed in parentheses.

*Significant at the 0.10 level

**Significant at the 0.01 mark,

Simulations confirms influence of the GCI's positive effect. GCI plays a significant role in Models 1, 3 and 4. The increased GCI terms resulted in a substantial linear, but not a proportional increase in R². It is what was expected, and what was observed in the initial study (Stel, 2005) the relationship cannot be established; we, therefore, cannot draw any conclusions about the position of entrepreneurial investment in GDP growth or its relationship to GDP per capita. Just Model 1 studies countries have completed, but preliminary results have been observed. We believe that national economies will benefit regardless of their current development.

The interaction term TEAxGNIC is not used in Models 2, 3, 4 since countries are classified into three stages of development. Again, the influence of TEA is marginal for countries of any income status (low income and lower middle income, upper middle income and high income). The TEA coefficient is advantageous for those with medium and lower middle incomes, as well as those with upper middle and large incomes. However, in Model 2, the importance of b is greater in higher-income countries than in the average-income area. Again, we are running a model using the countries from the (Stel, 2005) Analysis.

The effect of TEA was determined to be significantly positive only for high-income countries (Model 4). So, it follows (but we weren't able to achieve substantial results), Low-income economies cannot reap the benefits of business innovation because companies do not have enough money and lack human resources.

Conclusion

- 1) As a result of the difficulties of identifying and judging entrepreneurship, it has not been considered to be a fully developed research concept by most experts. It's impossible to collect accurate numbers on the state of entrepreneurship because of all the many ways that entrepreneurs choose to vary. There was another rationale for the existence of the Global Entrepreneurs Monitor: the research findings show that over-the-arching some particular segment of the economic growth must be supplied by self-oriented entrepreneurial enterprise. While, this paper has an impact on future research, it is not a representative of the current body of research investigating the effects of entrepreneurship. the results of (Stel, 2005) cannot be reproduced, and as a result, however our model is effective in producing a greater understanding of the cultural dimension and the rate of GDP growth in entrepreneurship has on GDP production. our results are in opposition to the notion that as to the belief that an income based approach to growth leads to increased entrepreneurship. In either case, economic production, whether measured in GDP or not, our model predicts a growth in entrepreneurial productivity.
- 2) It has been shown that cultural factors have a major influence on GDP growth. The impact of entrepreneurial activity on GDP growth rates varies according to the level of preference for avoiding uncertainty (Countries with higher expectations for avoiding uncertainty are more restrictive in upholding codes of belief and behavior, more intolerance for unorthodox behavior, so that creativity can be resisted, whereas countries with the lowest preferences for avoiding uncertainty express a reasonable degree of acceptance of new ideas and a willingness to try something different or new).
- 3) We found that vague preferences hampered economic development. The need to avoid confusion could be a big part of why development occurs. Surprisingly, the impact of entrepreneurship is influenced by an aversion to uncertainty It has a big impact on up to the 5% level.
- 4) Separate models show fascinating yet negligible results. GDP development in countries would be adversely influenced by TEA's effect on uncertainty. In Potential GDP growth rate could be explained by more by entrepreneurs becoming risk-tolerant rather than risk-averse. Countries with these two extreme values should assume that TEA would have a positive effect on GDP growth because there is no high or low preference for uncertainties. These new companies are likely to be advanced, creative and yet not too risky, resulting in a significant increase in GDP over the long term. Despite this, though, certain observations were not statistically significant.

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FEMALE ENTREPRENEURSHIP IN RURAL AREAS IN THE ASPECT OF THE LABOR MARKET

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Abstract. The article aims to assess the importance of undertaking entrepreneurial initiatives by women in rural areas. Authors review the literature on entrepreneurship and professional activity of women. Initiatives were examined within the framework of the use of aid programs for entrepreneurship. The study begins with a look at the development of entrepreneurship in the context of sustainable rural development. Then, the attitudes of women to undertaking economic activity were traced. The long-term changes concerning education and preparation of women in the professional market were verified. The article ends with reflections on the social and economic importance of undertaking entrepreneurial activities by women in rural areas, as well as finances and support for such initiatives.

Keywords: woman, rural areas, entrepreneurship, Poland.

JEL code: A13, Q18.

Introduction

In business management, the main goal of the effort is to achieve success understood as prosperity, success, or a successful outcome of implemented activities. Success then is the result of the entrepreneur's game for the effectiveness of the functioning of his enterprise. Success can be defined as the situation in which the company will bring the desired profits now and in the future, the quality of manufactured goods will be satisfactory, and the company, thanks to its good image, will be able to enjoy credibility and an established position on the market.

The concept of "entrepreneurship" was first introduced to the scientific literature by two French scientists Belidon and Say. Belidon described the first of them as an entrepreneurial buyer who, after purchasing material goods and work at a changing and uncertain price, sells the finished product at a fixed price, while Say pointed out a risk element in entrepreneurial activity. An enterprising businessman, placing his resources in an uncertain future, can gain a lot and a lot. Therefore, the entrepreneur invests his funds in the lower field for higher productivity and higher income. This definition was formulated almost two centuries ago, but by that time one single, binding definition of "entrepreneurship" had not been developed. Entrepreneurship in the field of economics is closely related to a man who over the centuries, through his activity and innovation, gave his shape and character. From a mathematical point of view, interest in the phenomenon of entrepreneurship was sinusoidal, from undervaluation in the times of classical or Marxist economics, ending with the focus on J. Schumpeter's theory which describes entrepreneurship as the driving force of the country. In the economy of the 21st century, the issue of entrepreneurship has become a social fact of increasing importance (Cumber C. J., et al., 2005)

Self-employment, which can be a good solution and professional opportunity for women in rural areas, gains importance in the development of entrepreneurship. The data of the Central Statistical Office show that there are more and more micro-enterprises in which women are among the owners and co-owners. When it comes to more stabilized entities (operating for more than 3.5 years), we also observe a dynamic increase in the percentage of enterprises run by women (from 2.9 to 3.8 %), but a much larger increase in this category applies companies owned by men (from 7.1 to 9.2 %). The results of PARP's research do not indicate for differences (PARP, 2014). In 2008, there were 928.5 thousand registered in rural areas economic entities, which constituted over 24 % of all entities registered in the REGON number. Entrepreneurship indicator (measured by the number of business entities per 1000 inhabitants in 2008 was

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twice lower in rural areas than in cities and amounted to 62.5 (in the city - 121.5), 33.9 % of all households operated in rural areas; they were on average from a larger number of people than in cities. Of nearly 1.6 million Polish farms, only every tenth can be considered competitive and can provide satisfactory income for farming families (Sikorska-Wolak I., et al., 2018).

Smaller and smaller part of the village inhabitants earns income from farm work. This process has significantly accelerated after accession EU, which clearly shows the direction of changes and the growing role of non-agricultural jobs in the employment structure of the rural population. Professional activation of women going towards running their own business is a phenomenon observed in Poland since the beginning of transformations to the market economy. The initiative of women living in the countryside shows some specific features depending on their family situation, age, education, and professional aspirations. It turns out that women are just as engaged in professional activities as men although they are much more absorbed in their work at home. However, they can reconcile these two spheres of activity. More and more women are interested in starting their own business. Such a change in the attitude of women, from passive to active, became possible thanks to political changes after 1989. Women living in the countryside more and more often decide to start their own business because they want to be independent and autonomous in making decisions, they want to pursue themselves in the professional field, they create jobs, they want to improve their and family's standard of living, they pay attention to the prognosis for their own economic activity, pay attention to the favorable policy of lending to small enterprises (FOCUS GROUP-CRSG, 2012; GUS, 2018).

Other factors encouraging women to decide starting their own business are willingness to be independent, pay appropriate to the amount of work, entrepreneurship, and creativity.

Our work illustrates the situation of active women living in rural areas. The subject of the study covered the social and professional characteristics of the entrepreneurial figure of a woman and mainly include:

- 1) social and professional characterological features (education, age, skills, and professional predispositions);
- 2) the type of economic initiatives undertaken by women;
- 3) obstacles to the development of business activities of enterprises run by women.

The article aims to assess entrepreneurship and prospects for women's professional development in rural areas in Poland. Indication of women's self-employment as one of the forms of supporting rural development. The research method is desk research, analysis of publications, reports, Statistics Poland data, and Eurostat.

Research results and discussion

According to Statistics Poland reports, the number of entrepreneurs in 2017 was 2.882 million. Most companies are located in the Mazowieckie Voivodeship, about 13 % in the Śląskie Voivodeship and less than 11 % in the Greater Poland Voivodeship. The smallest number of enterprises is located in the Opolskie Voivodeship - only 2 % of all companies. In 2017, 2073.6 thousand were operating in Poland micro-enterprises (employing up to 9 people). This means an increase of 3.5% compared to the previous year and 20.8 % compared to 2010. The financial result of micro-enterprises in 2017 was at the level of PLN 141.7 billion - i.e. an increase of 13.5 % compared to 2016 and by 52.9 % compared to 2010. The vast majority of micro-enterprises in 2017 belonged to natural persons (89.3 %, i.e. 1 852.6 thousand entities). Legal entities and organizational units without legal personality constituted only 10.7 % (221.1 thousand entities) (GUS, 2018).

Polish Agency for Enterprise Development (PARP) data show that as many as 79 % of Poles believe that starting their own business is a good idea to make a career. This is the second-best result in Europe, after the Netherlands, which achieved 81 %. The average score for Europe is 59 %. This is huge progress compared to 2016 when Poles in the vast majority perceived running the company only as a necessary way to earn. The number of entrepreneurs in Poland is increasing every year. The perception of the entrepreneur's image is also changing. According to the PARP Report (2018), over 68 % of Poles believe that people who have set up their own companies and have been successful deserve respect and recognition. It should be noted that this is the first time since the beginning of GEM research in Poland when the result is at the level of other European countries and only slightly lower than in countries with the most developed economies.

In theory and practice, there is confirmation that being entrepreneurial is the sum of many factors. External factors that contribute to starting a business are national determinants and framework determinants. The most important are framework determinants that directly affect the economy by inhibiting or supporting it. Framework determinants include taxes and legal regulations, availability of capital (ease of obtaining funds for new and growing companies, public programs to support entrepreneurship, education and training, research and development, quality and the possibility of cooperation with subcontractors and various service providers, access to the Internet, telecommunications, electricity as well as cultural and social factors, aspects that support or discourage people from starting and developing a business. In the literature on the subject, factors affecting the level of women's entrepreneurship are more and more often indicated, research on this topic was conducted (Pujol M. E., 1992; Parlinska M., Sawicka J., 2004; Sawicka J., 2005; Wrzochalska A., 2013; Szepelska A., 2014; Krzyzanowska K., 2014).

In scientific research concerning women in rural areas, socio-geographical factors, family situation, age, level of education, gender, ethnicity, previous experience in self-employment, entrepreneurship were most often taken into account. The subject scope of the research is women's entrepreneurship, and among the basic features of entrepreneurial behavior can be indicated: knowledge, intelligence, courage, energy, ingenuity, risk-taking capacity, responsibility, as well as the ability to anticipate and self-control (European Parliament Resolution, 2012).

Rural women are increasingly seeking to work outside agriculture, are considering setting up their businesses or working in public benefit organizations, so they are an important target group for activities focused on the development of non-agricultural activities in rural areas. An important issue regarding women's entrepreneurship is other institutional factors, access to capital, childcare system, parental leave, costs of starting their own business (Moczydlowska J. M., 2017).

The professional activity of women, despite continuous development, is still at a lower level than in men. In 2017, the economic activity rate among men of working age was 80.2 %, for women it was at the level of 71.1 %. Among women older than 15 years, more than half are economically inactive, where among the men's community over 62 % work, and only 34.9 % are economically inactive. Most professionally inactive in both groups are persons under 20 and over 55. Family responsibilities are the main reason for the inactivity of women under 45 years of age. Among men, one of the most significant reasons is science activity. However, interestingly above the age of 25, the most common reason for inactivity among men is an illness, there are far fewer such cases among women (Eurostat, Farmers in the EU-statistic, 2020).

Education is also an important aspect. Both women and men with higher education were more willing to work. The lowest professional activity is characteristic of basic education. Based on Statistics Poland data, nearly 45% of professionally active women have a university degree, where it is 27 % among men

(GUS, 2018). As for women's entrepreneurship, every third company is founded by a woman (33.4 %), which is higher than the average in Europe (31 %). Still, women tend to run their businesses less often than men. On average, 5.4 % of adult women are self-employed in Europe. The lowest entrepreneurship is shown by Italians and Bulgarian women (2.9 %) as well as German and Slovenian women, among whom only every thirty adult woman runs her own business (3.3 %). Latvian (9.8 %), Estonian (9.7 %), Luxembourg (8.7 %) and Romanian (7.5 %) perform best. Polish women are in seventh place in Europe, ex aequo with Greek women (6 % of women are entrepreneurs). At the same time, along with the growing number of female entrepreneurs in Poland, the participation rate of Polish women is falling, which currently amounts to 48 % among women in total, and 71.1 % among women of working age. This is especially visible among women under 20 and aged 45-54 - in these age groups, the difference in the activity of women is the smallest (Eurostat, Farmers in the EU-statistic, 2020).

Due to different characteristics between men and women and their natural predispositions, it is obvious that employees, depending on gender, usually take on different professions or choose other industries in which they would like to work. The distinction between sex and professional activity is one of the most common. It also involves the natural social roles that people play in a generally accepted worldview, such as the fact that women usually take care of children on a larger scale. As a result, her work should usually be more flexible. A man is less often a guardian, so he may have more fixed working hours. It also affects the remuneration, which differs between employees in the same position - more often it is higher among men (PARP, 2011).

Family life is an important issue for most women. This is influenced by both biological considerations and stereotypes of society, which put a woman mainly as a guardian of the home. Career and development are secondary aspects. The main reason for such an order in many countries in the world is historical conditions. Initially, only men could work, women entered the labor market very slowly. It was only after World War II that the development of the economy caused a gradual increase in the economic activity of women. In 1950, the share of women in the total number of employees in Poland was at the level of 30.7 %, after 1970 it increased to over 40 %, at the beginning of the 90s it exceeded 45 %, and since 2014 it has remained at the level of almost 49 %. The result of Poland's integration in the EU structures is beneficial changes and progress that has taken place in Polish agriculture. The Polish village is almost equal to rural areas in EU countries through, among others the introduction of new technologies and the use of modern agricultural production techniques. Due to the smaller involvement in agricultural work, a large number of women took up non-agricultural activities, and some women decided to run their farms. In recent years, there has been a growing interest in political decision-makers and scientific researchers in the subject of women in rural areas. The transformation of rural areas in the world is subject to constant influences and economic changes (Cumber C. J., et al., 2005; Istenic M. C., 2015; Wiest K., 2016; Varela-Candamio L., et al., 2018).

Restructuring, modernization, environmental changes, the development of modern information technologies, numerous migrations, and other social processes mean that the role and importance of women in rural areas are constantly changing (Wiest K., 2016; Alonso N., Trillo D., 2016; Yasaswini Y., et al., 2017; Mills M. B., 2016). Women play a key role in the rural economy of both developed and developing countries. In most developing countries, women in rural areas mainly participate in the cultivation and production of plants and animals, provide food to households, often engage in non-agricultural activities to diversify the means of subsistence for their families. They often have (also reproductive) functions in caring for children, the elderly, and the sick (Rural Women in a Changing World, 2008).

The situation of women in rural areas is varied. This is mainly due to the diversity of their experiences in the context of the changing rural economy, e.g. their position in the household, local community, access to labor resources, technology, or information. Moreover, importantly, there are significant differences between women operating in rural areas, among others due to age, education, marital status, ethnicity, race, or religion. Women are increasingly exclusively or partly the owners of large corporations, enterprises, and farms. Importantly, women in the countryside more and more often and more willingly use modern information and communication technologies. Indeed, that the role of women and the information and communication tools and technologies they use are increasingly discussed in the literature, however, it is not comprehensively studied (Alonso N., Trillo D., 2016; Damesa T. E., Ogato G. S., 2016; FAO, 2019,).

Currently, the European Union places great emphasis on introducing activities aimed at bringing women together in the countryside. Noteworthy is, for example, the European Parliament Resolution of 5 April 2011 on the role of women in agriculture and rural areas (Official Journal EU C296E / 13 of 2 October 2012), where it is emphasized that, in the medium term, women's representation in political, economic and social bodies should be increased.

Interest in rural women is related to the new concept of development of non-urbanized areas adopted in the European Union and defined as a balanced and multifunctional model of rural development. According to this concept, the village next to the traditional agricultural function is to perform other important functions: recreational, residential, ecological and socio-cultural (Michalska S., 2013; Krzyzanowska K., 2014). This means the need to develop the service sector and the need for socio-professional activation of rural women, whose intellectual capital, and resources not yet fully utilized gain new value (Krzyzanowska N., 2013; Sawicka J., Lagoda J., 2015).

Activation of rural women should include, among others combining family and professional roles as well as participation in the social and political life of local communities and good and reliable communication (Parlinska M., Sawicka J., 2004; Krzyszkowski J., 2008; Wrzochalska A., 2013; Wojcieszak M., 2019).

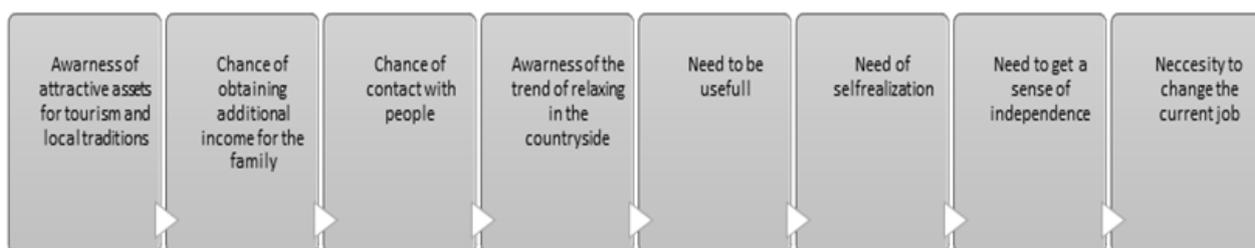
Analyses of strategic documents at the global level show that women's potential is not sufficiently used in the policy conducted towards rural areas. The issues of women's activation, increasing their participation in the labor market, or in creating social capital are not sufficiently highlighted in development policy, and thus in rural development policy.

Women's economic empowerment also contributes to the elimination of many discrimination, bringing many benefits, including it bridges the gap between men and women in terms of workforce, increases economic diversification and income equality, and importantly, women's economic equality is beneficial to business because companies benefit greatly from their knowledge and experience (Ogato G. S., et al., 2009; Mayoux L., 2010; Belwal R., et al., 2012; Singh J., Yadav P., 2012; Fletschner D., Kenney L., 2014).

Nowadays, the development and universal access to information and communication technologies have contributed to their popularity in many environments. It is emphasized in the world literature that ICT covers a wide range of all technologies related to the transmission of information and contributes to the development of a knowledge-based society. It is, therefore, a tool leading to reducing social inequalities and increasing the chances of excluded people, and also allows integrating individual social groups. In a changing environment, continuous acquisition of knowledge is a must, and therefore it is difficult to imagine life today without the use of modern information and communication technologies. Adequate access to women in rural areas to ITC tools is undoubtedly an important strategy that contributes to the social and economic strengthening of women's role and position in rural areas (FAO, 2011). Having access to financial resources enables rural women to purchase the means of production, workforce, and equipment they need to conduct their non-agricultural and agricultural activities (IFAD, 2016; World Bank, 2018; FAO, 2019).

An important topic is the area of financing opportunities for information and communication technologies that women could use, also in rural areas. Women's access to microfinance within ITC requires special attention, especially regarding strategies to build the right environment for an innovative ICT environment and improvements in funding opportunities for SMEs and start-ups (Bekele D., 2012). Also, women's access to ICT services is limited by economic, legal, institutional, socio-cultural, and even educational barriers (Bishaw A., 2014; Wiggins S., 2014). The European Union, in its strategic documents and numerous resolutions, calls on the Member States to increase support for strengthening the position and role of women in digital and ICT sectors as part of development cooperation and EU external relations and enabling women to set up businesses through a variety of tools, including microfinance programs and support networks (Malgesini R., 2015; Wojcieszak M., 2019). Equal treatment policies can effectively counteract negative phenomena and foster women's education and professional development. Women working part-time in rural areas can contribute to exploiting the opportunities for diversity management.

An important motive for undertaking business activity by women in the countryside is the possibility of creating a new job for themselves. Women want to take up a job other than the duties related to the farm and household. The most common arguments in starting one's own business are the awareness of the attractiveness of villages for tourists and the willingness to show rural areas, e.g. through agritourism, pointing to local traditions and additionally making money on it (Figure 1).



Source: based on (Kubal-Czerwińska M., 2020)

Fig. 1. Motives and factors of starting professional activity by women in rural areas.

As indicated in the figure and according to Kubal-Czerwinska (2020) the following reasons are motivated by women taking up economic activity in rural areas:

- potential increase in farm income (agritourism can be an additional, supplementary, or main source of farm income);
- the ability to start selling organic products, launch organic agricultural production in addition to traditional forms of farming; potential increase in farm income (agritourism can be an additional, supplementary, or main source of farm income);
- the need and opportunity to share the experience of living in the countryside with others (e.g. tourists visiting the farm) and the will to create a positive image of working in the countryside;
- the desire to meet new people;
- achieving satisfaction from working at home;
- achieving satisfaction from working at home;
- pursuing a hobby;
- lifestyle;
- willingness to self-employment, the possibility of employing family members; being for yourself the boss;
- being active when the husband works outside the farm;

- quitting farm work and creating better conditions for myself work without leaving home;
- willingness to support the rural economy by activating the not most prosperous farms.

The approach to economic development so far has not taken into account the benefits of equitable development for women and men so that it contributes to the emergence of gender inequality and inequality. Therefore, in some fields, efforts are needed to increase the empowerment of women to realize equality of access, participation, benefits, and control between men and women as members of the community. The implementation of entrepreneurship for women, it will provide a variety of quite positive impacts, especially for the economy. But with conditions, training or knowledge about entrepreneurship given must be continuous and gradual so that women will have more time to learn. Besides, there are several things that women must possess to become entrepreneurs, including creative, innovative, risk-taking, willingness to make changes, deft, produce efficiently; effective; and productive, fast and precise in making decisions and taking actions, and can calculate quickly and accurately. To realize all these things, starting from the existence of entrepreneurship education for women to the emergence of characteristics that must be possessed, the need for collaboration between the central government, local government, village government, family, the surrounding environment, and the woman herself so that what is desired is achieved. It is also necessary to strengthen management from the internal side of women's entrepreneurial business, which must be carried out by means of: attention and assistance, such as access to production, technology, and marketing which are complemented by strengthening human resources; promotional activities of products produced by women entrepreneurs; more modern machine assistance to help increase the production capacity of women's entrepreneurial businesses. And the most important thing is that there is a need to increase the motivation of the woman herself so that they can be good at entrepreneurship, and get the desired results.

Conclusions

Interest in enhancing rural women's entrepreneurship is related to the new concept of development of non-urbanized areas adopted in the European Union and defined as a balanced and multifunctional model of rural development.

- 1) Women in rural areas often have secondary education, few women have completed university studies. Rural women would like to be more valued in the local environment as helping people with good ideas than more educated ones. Most often women in rural areas would like to develop professionally by conducting agricultural activity, a significant number of women thought about combining work in agriculture with non-agricultural activity. The smallest part of women would like to conduct activities related to abandoning agricultural activity.
- 2) Women in Poland appreciate life in the countryside despite the disadvantages associated with it. However, they work part-time and would like to do business, especially middle-aged women with raised children; Women in rural areas have more and more opportunities to do business. More and more rural women declare that they are interested in starting their enterprise, often of a non-agricultural nature.
- 3) The problems faced by women living in the countryside can include worse access to the gas and sewage network than in the city, more difficult access to culture and entertainment, fewer opportunities for raising qualifications and education of adults, as well as studying, fewer opportunities for using sports and recreation facilities.

It is particularly important, that the percentage of self-employed women has not approached the percentage of self-employed men in any age group over the past ten years.

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Characteristics of the Factors Affecting the Performance of the Global Business Services Sector in Latvia

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Abstract. In Latvia, the global business services sector accounts for 2.3 % of GDP, and its share in total service exports is 8 %, while the turnover of the sector in 2019 was estimated at EUR 400 mln., which indicates that the global business services sector in Latvia is an important component of the national economy. The global business services sector in Latvia has developed relatively recently, so it has not yet been sufficiently assessed and researched. The aim of the research is to describe the factors affecting the development of the global business services sector in Latvia. The research concluded that the global business services sector in Latvia was promoted by such factors as the availability of labour and low labour costs, as well as a relatively favourable business environment. The potential of the global business services sector in Latvia is also characterized by its advantageous geographical location, especially from the perspective of Scandinavian investors (including in terms of cultural similarities), as well as the foreign language skills of potential employees. The establishment of the Association of Business Service Leaders in Latvia (ABSL Latvia) (the only such an association in the Baltic States that defends the interests of this sector) is also an important driver for the development of the sector.

Keywords: global business services, service centres, shared service centres, PESTLE.

JEL code: F23, F63, F65, F2, O10

Introduction

In today's globalized world, companies increasingly try to find new ways how to enter the market to sell their goods and services and how to use their skills, talents and resources to enhance their performance. Outsourcing, offshoring and global business services are part of this phenomenon (Oshri I., 2011). Studies show that companies who operate in this sector can reduce costs up to 30 % compared with companies using conventional organizational concepts (Richter P. C., Bruhl R., 2020). In Latvia, the global business services sector accounts for 2.3 % of GDP, and its share in total service exports is 8 %, while the turnover of the sector in 2019 was estimated at EUR 400 mln. (Zvejnieks O., 2019). This means that in Latvia, the global business services sector is an important contributor to economic growth and an export-capable element of the financial sector. According to ABSL Latvia, about 50 companies operate in this sector, employing about 15000 employees. However, the global business services sector in Latvia has developed relatively recently, so the public often lacks an understanding of global business services, shared service centres, business process outsourcing etc., as well as this sector has not yet been sufficiently assessed and researched.

Although this topic is increasingly researched in the world and presented in the scientific literature (Oshri I., 2011; Oshri I. et al., 2015; Bangemann T. O., 2017; Strikwerda J., 2006; Marciniak R., 2013), in Latvia, however, more attention is paid to this topic in various reports produced by companies that, among other responsibilities, also provide audit services and publish reports on this sector, e.g. Deloitte, PwC. It should be additionally noted that foreign scientific research studies often focus on only one particular kind of global business service, e.g. shared service centres (Richter P. C., Bruhl R., 2017; Rothwell A. T. et al., 2011; Banoun A. et al., 2016; Koval O. et al. 2016; Richter C. R., Bruhl R., 2020), business process outsourcing (Krysinska J. et al., 2018; Zhang Y. et al. 2018; Liu S. et al., 2017); however, there is a lack of comprehensive research in this field. In Latvia, research studies on the global business services sector as a whole are very limited in scope.

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The following **hypothesis** is put forward – the global business services sector in Latvia has the potential to develop, which is mainly determined by such factors as low labour costs, an advantageous geographical location and the establishment of the Association of Business Service Leaders in Latvia (ABSL Latvia), which represents the interests of the sector.

The **aim** of the research is to describe the factors affecting the development of the global business services sector in Latvia. To achieve the aim, the following specific research tasks are set: 1) to describe the theoretical aspects of global business services from the perspective of social sciences; 2) to identify the factors affecting global business service activities.

A number of **research methods** were employed to do the research: monographic and descriptive for theoretical discussion and interpretation of the research results based on scientific findings and theories; analysis and synthesis for examination of problem elements and identification of regularities; induction for making assumptions based on individual elements or facts; deduction for logical systematization and interpretation of empirical data. Statistical analysis methods and PESTLE analysis were used to analyse the factors affecting the global business services sector in Latvia. Given that information on global business service activities in Latvia is limited, the authors of the research conducted interviews with four experts from the global business services sector: a senior investment project manager from the Investment and Development Agency of Latvia (LIAA), an executive director of the Association of Business Service Leaders in Latvia (ABSL Latvia), the head of the Business Support Department of the DNB Service Centre and a business analyst from the Circle K Business Centre.

The present research used the following **information sources**: research papers from international scientific journals, electronically available national and foreign periodicals focusing on global business service activities, as well as statistical data (Eurostat, CSB), unpublished materials of the Investment and Development Agency of Latvia and statistical data collected by the Association of Business Service Leaders in Latvia (ABSL Latvia).

1. Factors affecting the performance of the global business services sector in the context of social science theories

A service centre is formed as the separate business unit of a globally represented organization in order to provide business support functions to its group's companies or legally unrelated entities. The most frequently served business support functions are IT, finance and accounting, customer care, logistics, procurements, HR, and legal. However, these are only the most popular functions: other specific services may derive from a company's core business, including broadcast services, quality control of chemical products, banking services etc. (Business Service Sector..., 2020). The following main kinds of global business services could be distinguished in this sector: centres of excellence, shared service centres, business process outsourcing, IT support and system maintenance services, research & development centres etc. Besides, global business services are defined as a separate kind of services, which make up a whole sector in Latvia.

To identify the factors affecting the performance of the global business services sector, research employs various social science theories (Garson D., 2008) that explain the development and operation of the sector. One of the best-known theories is the Transaction Cost Theory. The Transaction Cost Theory combines economic theory and management theory to determine the best way for a company to develop in the market (McIvor R., 2005). The Transaction Cost Theory explains the advantages of producing services within the company or lowering transaction costs as much as possible by using the opportunities provided by the market (outsourcing) (time and financial resources needed for planning and coordinating the tasks

to be performed) (Leimeister S., 2010). It could be concluded that this theory requires companies to consider the opportunities offered by the market for reducing potential costs. The costs include both labour and infrastructure costs, as well as tax policies. Most often, the focus is placed on labour costs (Oshri I. et al., 2015); however, production and transaction costs, which need to be balanced, should also be taken into account instead of focusing only on economies of scale (Elston T., MacCarthaigh M., 2016).

Two theories pertaining to resources are the Resource-based Theory and the Resource Dependency Theory. The Resource-based Theory views a company as a set of productive resources. The company's growth is based on the desire to use the company's resources as efficiently as possible. In order for a company's resources to provide a lasting competitive advantage, the resources should meet four preconditions: they should be valuable, rare, difficult to imitate and irreplaceable. This means that a company's competitiveness depends on its ability to obtain and maintain its resources (Cheon M. J. et al., 1995), focusing more on its internal resources. The Resource Dependency Theory, in contrast, focuses mostly on the external environment of a company and states that all companies are to some extent dependent on the impacts of the external environment. External impacts require that external factors control resources (land, labour, capital, information, specific goods or services). Companies need to adapt to environmental uncertainty, tackle the problem of interdependence and manage and control the flow of resources (Cheon M. J. et al., 1995). It can be concluded that companies assess the available resources and assess whether to manage processes within the organization or outsource them based on the theories.

The Core Competency Theory states that core competences are a specific factor that a company considers to be key to its performance. Accordingly, core competences should be difficult for competitors to imitate, could be used regarding many products and markets and should provide benefits and value to the final consumer. Core competencies can take many forms, e.g. a reliable process or close relationships with customers and suppliers (Kawshala H., 2017). In view of the findings of the Core Competency Theory, it is important to assess the locations where companies are able to exploit core competencies in their economic activities in the global business services sector. Core competencies are important in relation to assessment of the abilities and knowledge of a potential workforce. The abilities include technical and business knowledge, management skills, language skills as well as an ability to learn and be innovative. Companies assess the desired and available abilities of potential employees in any particular country, yet often have to provide various specialized training programmes within the company (Oshri I. et al., 2015). It is important for a potential service provision location to have a qualified and capable workforce. Consequently, there is a lot of discussion about collaboration between industry and academia in order to provide potential employees with the specific skills needed (Aman A. et al., 2017).

The Principal-Agent Theory is viewed in the context of an agent representing a person who has delegated powers to the agent. An agent is the one to whom powers have been delegated (Lupia A., 2001). According to the theory, the task of the principal is to develop a set of incentives that the agents consider to be the best possible set of actions in their own interest (from the principal's point of view). This theory is relevant when referring to effective contracting, particularly in the case of outsourcing, as there is little control over the outsourcing provider acting as an "agent" (Pankowska M., 2019).

The Power-Politics Theory focuses on the role of power and politics in decision-making. Power is defined as the potential of one party to influence the other party's actions in specific situations, while politics is viewed as the way the power is exercised (Dibbern J., 2004). Based on this theory, multinational companies in the global business services sector assess the opportunities and risks when choosing a country in which to operate, as the country's legal framework and business environment are of great importance. This theory refers to government support, the attractiveness and accessibility of the business environment (flight

frequency and duration, time zone difference etc.) (Oshri I. et al., 2015). When choosing a country for potential service providers, companies consider the fact that tax policies and practices vary considerably from country to country (Beaman K. V., 2006).

Based on the social science theories and their application to the global business services sector, it could be concluded that the theories deal with the main factors affecting the performance of the global business services sector: resources and competencies – how they are exploited and taken into account – as well as management and coordination with regard to determining what and how services will be provided. Organizations analyse mostly costs, the business environment, labour availability and specific workforce skills (Oshri et al., 2015). In pursuit of higher competitiveness and due to the attractiveness of potential opportunities, companies often relocate their services without really considering all the possible risks (Senft D., 2013).

Latvia is a popular location for global business services companies due to various factors contributing to this sector. A PESTLE analysis was done to identify the most significant factors affecting the performance of the global business services sector in Latvia.

2. Factors affecting the global business services sector in Latvia

Political factors. To foster the development of the global business services sector in Latvia, regular working group meetings are held between the Ministry of Economics, the Investment and Development Agency of Latvia (LIAA), the Riga City Council, the Finance Latvia Association, the Foreign Investors Council in Latvia, the Alliance of Real Estate Developers and industry representatives. On 26 April 2018, a memorandum on the development of global business services was signed in Riga. The memorandum envisages purposeful cooperation between national institutions, the capital city and the private sector with the aim of contributing to the development and growth of this sector and the creation of new jobs in the sector. The memorandum projects to create 10000 new, high value-added jobs in the global business services sector over five years, emphasizing that these are jobs in internationally recognized and respected companies, with higher salaries than the national average and other guarantees. The memorandum emphasizes the role of such companies in motivating students not to leave the country after graduation, as well as in promoting re-emigration. One year after signing the memorandum, on 18 April 2019, the Association of Business Service Leaders in Latvia (ABSL Latvia) was established with the aim of increasing the role of global business services in Latvia. It should be noted that this is the only association of this kind in the Baltic States, which aims to contribute to public and decision-making institutions' understanding of the contribution of global business services to the economy of Latvia, ensure cooperation with higher education institutions, advocate the opinions of the sector's companies in the public arena, contribute to sharing knowledge of robotic processes and corporate social responsibility, attracting a talented workforce, dealing with immigration issues etc. However, the establishment of the association cannot be considered as a crucial step regarding the development of the sector in Latvia, which will bring immediate results. The authors believe that it is likely that the newly established association alone will not be able to provide such a contribution and influence; therefore, targeted public policies are needed to promote and support this sector. However, in general, the establishment of the association could be viewed as a positive factor in fostering the development of the global business services sector.

On the part of the state, it is mostly the LIAA and the Ministry of Economics that directly work on attracting investors and consider support programmes. To encourage the opening of more global service centres in Latvia, the Cabinet of Ministers has made amendments to the EU funding programme "Support for ICT and non-technological training, as well as for training to facilitate the attraction of investors". The

amendments apply to training organized by the LIAA, in which foreign investors are interested, and provide for support for training foreign investor employees, which is essential for a daughter company in Latvia to successfully take over processes and knowledge from the parent company. The experts interviewed viewed the support programme offered by the LIAA as a facilitating factor whereby the government seeks to attract companies. Several companies have used this employee training programme and were satisfied with it.

Economic factors. According to unpublished data from the LIAA, 50 % of investors in the global business services sector were the Scandinavian countries (Sweden, Norway, Finland and Denmark). The choice of these countries in favour of Latvia was mainly determined by cost efficiency (Business Guide, 2019), incl. relatively low labour costs, which motivated foreign investors to choose the Baltic States. According to the information summarized in Table 1, it could be concluded that although labour costs in Latvia have steadily increased by 28.6 % from 2016 to 2019, in Estonia the costs were higher (according to Eurostat data, EUR 12.4 in 2012 and EUR 13.4 in 2019), while in Lithuania the costs were lower (EUR 9 in 2018 and EUR 9.4 in 2019), thereby creating some competitive advantages over Latvia. However, on average in the EU-27 in 2019, labour costs were almost three times higher, amounting to EUR 27.7, while in Norway even EUR 50.2 and in Sweden EUR 36.3. This indicates the interest of the Scandinavian countries in hiring employees in Latvia. Besides, according to the data from ABSL Latvia, average earnings in the global business services sector in Latvia totalled EUR 1657 before taxes, which was half the average earnings in the country, thereby motivating potential employees to get involved in companies in the sector (Table 1).

Another important factor affecting investments in Latvia was the availability of labour. According to the data from ABSL Latvia, the number of employees in the sector increased by 10 % in 2019. The vast majority of individuals employed in business service centres are millennials; because this generation grew up in the era of technology, they have had the superpower of being able to easily learn the new systems, IT and digital tools widely used in business service centres (Perkune L., Licite L., 2019; Licite, L., Janmere, L., 2017). Interestingly, that is only a small percentage of people aged 45+ employed in the sector. This can be explained by the fact there one of the main requirements to be able to work for a service business is English language skills at a professional level. Generation X and Baby Boomer employees are people who have lived in Latvia since the period shortly after World War II, which had major implications on language skills. Accordingly, a large majority of people aged 45+ are well educated in the Russian language or even German while significantly lacking in English skills. In addition, their ability to adapt to new systems, IT and digital tools might not be as fast since they have not grown up among these new technologies. Nevertheless, there are several business service centres that have started to slowly integrate the 45+ age group (Business Services Sector..., 2020).

As indicated by the experts interviewed, the current problem is the availability of a qualified workforce in the field of IT. According to a study conducted by ABSL Latvia (2020), the most popular sectors serviced by operational centres based in Latvia are IT and banking, financial services, and insurance (Business Services Sector..., 2020), which indicates that the availability of such specialists is a problem, which is going to be even more acute in the future. In general, there is a great interest from European companies to increase the supply of business services in the IT sector in the Baltics, which would mean some employees will be poached from domestic companies and lead to even higher wages because there are no free IT specialists in the labour market. Against the background of other EU Member States, according to Eurostat data, Latvia had the lowest employment rate of ICT specialists at 1.7 % of the total workforce, compared with the EU average of 3.9 %. Compared with the neighbouring countries, 6.0 % of the total workforce in Estonia in 2019 were ICT specialists, while in Lithuania – 3.1 % (on average in the EU-27

in 2019 – 3.9 %). Some business service centres organize internal IT training in order to have the required programming skill sets. In Latvia, higher education institutions have around 7000 IT students each year and nearly 800 graduates, however, this is not enough to meet the demands of the fast growing IT sector. Because of this, people are being recruited also from other countries. According to a study conducted by the ABSL Latvia (2020) at the end of 2019, approximately 750 foreign residents, 7 % of total foreign residents, were employed in companies of the sector under review (Business Services Sector..., 2020).

Table 1

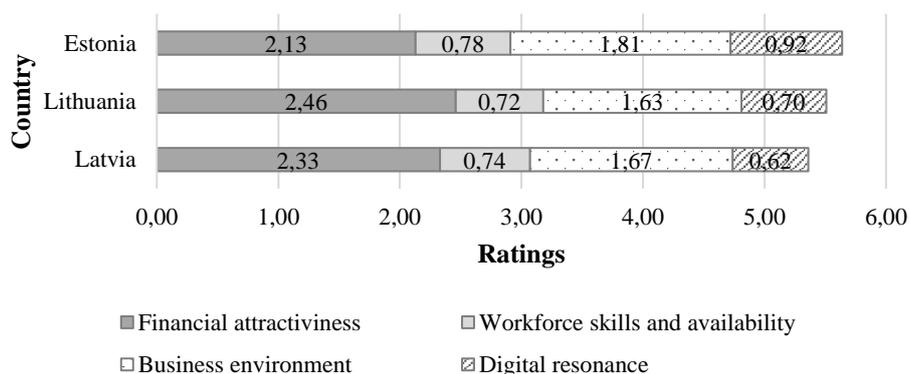
Characteristics of the workforce in Latvia in the period 2016-2019

Indicator	2016	2017	2018	2019	2019/2016
Average hourly wages and salaries, EUR	7.7	8.2	9.3	9.9	1.3
Average monthly wages and salaries (gross), EUR	859	926	1004	1076	1.3
Proportion of ICT specialists in the total workforce, %	2.8	2.8	2.6	3.1	1.1

Source: authors' calculations based on Eurostat and CSB data

The development of the global business services sector is also affected by the development of the property market, as companies in this sector demand high-quality and energy-efficient offices. The development of modern office centres is a critical prerequisite for the development of this sector, and Tallinn and Vilnius are mostly preferred. However, currently (in 2020), according to the experts interviewed, Riga could be considered attractive due to many vacancies for A and B1 class office spaces.

The global business services sector is also affected by competition. According to the 2019 Kearney Global Services Location Index (Digital resonance: the..., 2019), which rates a country's attractiveness as a service provider in four categories (financial attractiveness, workforce skills and availability, the business environment and digital resonance), Estonia ranked 12th among the Baltic States and had proven itself in the digital field, as well as its business environment rating was higher. Lithuania ranked 16th in the index, and unlike Latvia and Estonia, it had the highest financial attractiveness rating, which could be explained by lower average hourly earnings, which was considered an important factor in the country's attractiveness. Latvia ranked 21st in the index and had the lowest digital resonance rating, yet its business environment was more attractive than that in Lithuania (Digital resonance: the..., 2019).



Source: authors' construction based on the 2019 Kearney Global Services Location Index data, 2019

Fig. 1. Attractiveness of Latvia, Lithuania and Estonia to global services in 2019

Overall, according to Figure 1, it could be concluded that the business environment and financial attractiveness in Latvia were rated as good among the Baltic States.

Social factors. The public have a misconception about the global business services sector, which was also pointed out by the experts interviewed. In other words, there was little or no public awareness of the

sector, and the public associated it with call centres. Low value-added jobs or call centres – this was the most frequently given answer about the global business services sector in Latvia, seemingly consistently ignoring the fact that this was the sector that made one of the largest investments in important areas such as data science and robotics in recent years. Besides, few people knew about the high added value that companies contributed to the economy of Latvia (taxes paid, high earnings, insurance, good working conditions, social events etc.) and the fact that often these business centres employed highly qualified specialists.

It could be concluded that another of the most important social factors is the skills of the workforce. Estonia is viewed as more attractive than Latvia and Lithuania in terms of workforce skills and availability, and it is highly valued in terms of digital skills in particular (Digital resonance: the..., 2019). In relation to skills, it is very important to note the qualifications of employees. According to the 2019 report "Assessment of the Ecosystem of Latvian Start-ups, the Identification of the Current Situation and the Development of Proposals based Thereon" prepared by GatewayBaltic, several important elements in the field of ICT were emphasized, given that it was one of the most represented fields in the global business services sector. This report states that among the Baltic States, Lithuania had the largest number of employees in the ICT sector, yet the turnover of the sector was lower, which was due to the existence of global business service centres that operated as part of companies and did not generate value added in the sector. In Latvia, a large number of ICT employees were employed in shared service centres in particular. Although the report stated that Latvia had high potential for ICT outsourcing, Latvia, unlike the other Baltic States, had the largest number of active companies in the sector and was also a leader in terms of employment growth. Nevertheless, Latvia lacked at least 3000 ICT employees to meet its market needs (Latvijas jaunuznemumu ekosistemas..., 2019) and the digital gap still exists between the more developed Nordic European countries and the less developed Eastern European countries (Grinberga-Zalite G., Zvirbule A, 2020).

Language skills should also be considered with regard to skills, which is an important criterion for potential investors. Latvia as a whole was in the best situation in relation to both English and Russian language skills. The high number of English speakers is a clear advantage for Latvia (The most spoken..., 2020), given that English a working language in all global business service centres, or at least a language a potential employee should be able speak. It is also important to note the population's knowledge of the Russian language, and Latvia is the leader among the other Baltic States. It should also be noted that according to the data from ABSL Latvia, companies in the sector annually invest approximately EUR 10 million in personnel training (digital skills, foreign language skills etc.).

Currently, there is a tendency for business services to become geographically closer to the group companies. This is due to data security, and the work is also becoming increasingly complex. In this situation, it is very important that both business parties have a similar culture and understanding of quality. Besides, the experts interviewed admitted that the Scandinavians who most represented the global business services sector in Latvia, had similar cultural features, communication and understanding, which created a kind of guarantee of trust on their part when choosing Latvia.

Technological factors. In the global business services sector, IT systems are of great importance; however, the automation of systems, as well as the connection of internal and external IT systems is considered to be expensive, complicated and time-consuming. Accordingly, robotic process automation or RPA is an alternative used by companies in this sector. RPA means that robotic software is trained to perform operations in IT systems that humans used to do. It is mostly designed for mostly "repetitive" jobs that do not require human skills such as intuition. RPA is most commonly used for data entry, where the robot obtains electronic data and enters the data into other systems. The most typical examples are the

entry and processing of invoices or customer data. RPA is also effective in data verification and validation, where it can verify the accuracy and adequacy of information. This approach could also be used for performing tasks with a time limit etc. The majority of business services centres have already implemented automated solutions at certain level. Few companies are still in the process of developing the most efficient tools to limit routine tasks, thus making space for more advanced business support activities. It is only a matter of time until all business services organizations will have automated processes to some extent. According to a study by ABSL Latvia (2020), currently 80% of all companies under analysis answered positively about robotic solutions in their organizations, while 8% were planning to use it in the future. Accordingly, companies have released their workforce to tackle much more complicated tasks with higher added value; this allows employees to be responsible for more interesting tasks while also earning a higher wage.

In addition, companies in the global business services sector also tend to introduce artificial intelligence, which is associated with computer functions that require human intelligence. The financial sector is considered to be one of the sectors where artificial intelligence has the greatest potential. Owing to artificial intelligence, according to the experts interviewed, it is possible to speed up transactions by using online chat robots that help customer service professionals.

Legal factors. At the end of 2019, ABSL Latvia, the Alliance of Real Estate Developers and others submitted proposals for the National Development Plan of Latvia for 2021 – 2027, which emphasized the role of foreign investors in the development of the national economy, including the global business services sector, and were aimed at ensuring the competitiveness of the country in the international arena and increasing the prosperity of the country's population. As a result, the National Development Plan of Latvia for 2021 – 2027 states that one of the courses of action is "Capital and the entrepreneurial environment", and it is necessary to contribute to the development of an environment that supports local and foreign investments.

In addition, it should be noted that although global business service providers operate under different legal forms (companies in the sector choose either the legal form of a branch of a foreign company or are registered as a limited liability company), their economic activities are governed by the legal framework for business in Latvia.

Environmental factors. The most important environmental factor is the favourable location or proximity to the Scandinavian countries, which is one of the main reasons why many companies of Scandinavian origin choose Riga as the most suitable location. First of all, there are very frequent flights to Stockholm, Oslo and other smaller cities from the Riga International Airport. The experts also pointed out that the location of Latvia was always highly valued, as well as the Riga International Airport, which served almost half of the region's passengers (44 %). In addition, it should be noted that according to the data from the Central Statistical Bureau of Latvia, there were 627487 residents in Riga region (2020). Given the large number of people living in regions close to Latvia's capital city, the majority of which work in Riga, it is more appropriate to consider the total population of Riga's surrounding area to be more than 1 million people. This gives Riga the status of the third largest city in Northern Europe. Besides, 61 % of the population are in their working age. This explains why the vast majority of business service centres are based in Riga. Nevertheless, Latvia is still home to other cities where business service centres could be developed. The current situation shows that companies are being passive in trying to expand their operations in smaller cities of Latvia. Ventspils and Jekabpils have established their first business service centres (Business Services Sector..., 2020).

Given the political, economic, legal, social and technological factors, it could be concluded that the global business services sector in Latvia has the potential to grow and develop owing to government support, available human skills, potential in ICT and the country's cultural and value similarities and geographical proximity to investors. The trends in technological progress are also important, as companies in the sector introduce new technologies, thereby creating a more technologically advanced general business environment in Latvia.

Conclusions and proposals

- 1) In Latvia, the global business services sector consists of centres of excellence, shared service centres, business process outsourcing, IT support and system maintenance services, research & development centres. Although this sector has been developing fast in Latvia in recent years, accounting for 2.3 % of GDP as well 8 % of total service exports, the general public does not have a clear picture of it or has a misconception about it. This means that the association ABSL Latvia should do informative work and educate the public, informing the public about the sector's contribution to the national economy.
- 2) Relatively low labour costs as well as the establishment of the Association of Business Service Leaders in Latvia (ABSL Latvia), which is the only such an association in the Baltic States that defends the interests of this sector, are the factors contributing to the global business services sector in Latvia.
- 3) The potential of the global business services sector in Latvia is also characterized by its advantageous geographical location, especially from the perspective of Scandinavian investors (including in terms of cultural similarities), as well as the foreign language skills of potential employees, especially among young people.
- 4) Global business service providers, regardless of their legal form (most often a limited liability company or a branch of a foreign company) are governed by the legal framework for commercial activities as well as other binding regulatory enactments.

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**CIRCULAR ECONOMY CLIMATE CHANGE, ENVIRONMENTAL ASPECT,
COOPERATION, SUPPLY CHAINS**

FOREST ECOSYSTEM SERVICES IN LATVIA: ASSESSING OF EXPERIENCE AND TENDENCIES

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Abstract. The research observed the experience of Latvia in valuing ecosystem services. The development of the economy of Latvia is significantly affected by the forest area reaching 52 % of the country's total area. Assessing the services of the ecosystem of Latvia and valuing them in monetary terms could significantly change the structure of the economy of Latvia. Therefore, the value of ecosystem services consumed domestically and the possibility to export the services should be taken into account when drawing up policy documents for the forest and related industries of Latvia. The research aims to make a theoretical observation and experience collection of ecosystem service valuation methods and indicators that determine the value of ecosystem services and suggest the main methods for valuing the services of the ecosystem of Latvia.

It should be acknowledged that no extensive research on the potential monetary contribution of ecosystem services to the national economy has been conducted in Latvia. Several research studies that focused only on certain areas have been carried out in Latvia. It should be emphasized that valuation practice employs a wide range of methods. Therefore, it is necessary to examine and select the most appropriate methods for identifying the value of ecosystem services under Latvian conditions, supplementing the range of the methods and adapting them to local conditions so that they help to more accurately value ecosystem services in the national and international context. Determining the value of ecosystem services would help to redirect the flow of national investment from traditional industries to efficient forest land management. Otherwise, private forest properties are increasingly sold to foreign businesses, which might lead to a lower value of the national capital of Latvia in the future.

Key words: forest ecosystem services, valuation, Latvia.

JEL code: Q023; Q057

Introduction

Since Latvia restored its independence in 1991, according to Eurostat data, the forest area in Latvia has increased from 40 % to 55 % of the total area. The forest area in Latvia increased by 7.5 % from 3173 thou. hectares in 1990 to 3411 thou. hectares in 2020 (Eurostat, 2020). According to the Central Statistical Bureau, the growing stock of forest increased by 52 % during the same period from 442 million cubic meters to 672 million cubic meters (Central Statistical Bureau, 2020).

The European Commission adopted the Green Deal in 2019 (European Commission, 2019), and the Member States support it, yet the question is: will it make a positive effect on the development of the economy of Latvia? The answer to this question could be found not only by assessing forests through the economic dimension of timber production assets but also by analysing the contribution of forests to ecosystem services affecting the economic development of the country in the context of the European Union's Green Deal strategy to limit the negative consequences of climate change.

In Latvia, the value of a forest is determined based on the volume of wood available therein. As the ecosystem services market in Latvia is not developed, when buying or selling a forest, the transaction amount is based on a concept developed by the founders of forest valuation at the end of the 19th century (Faustmann, 1849, Pressler, 1860). Such an approach to forest valuation contributed to the development of the timber industry, yet today the approach is not appropriate, as the forest no longer serves only as a source of wood. Forest valuation does not take into account the value of ecosystem services that are or could be paid for and that would change the strategy of forest management and exploitation. Valuing

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ecosystem services in monetary terms, which in most cases is provided free of charge, contributes to the protection and sustainable exploitation of forests in the economy (Brown et al., 2007).

In Latvia, forests represent a diverse segment of ecosystem services. As the range and quantity of ecosystem services decrease, their value as well as their role in the economy is expected to increase (Brown et al., 2007).

Latvia implements industrial development projects that are important for the national economy and impact the environment, e.g. the construction of a railway for the Rail Baltica route and an electric cable connection with the Scandinavian countries. These projects ran throughout the territory of Latvia and therefore affect forest areas and change natural landscapes as well as development opportunities for the surrounding areas. However, forest ecosystem services are not valued when implementing projects important for the national economy and European security to determine their contribution to the wellbeing of the population and their role in economic development.

The research aims to observe ecosystem service valuation methods of ecosystem services and observe the main methods for valuing the ecosystem services in Latvia.

Specific research tasks:

- 5) to examine the methods described in the scientific literature on valuation of ecosystem services;
- 6) to observe relevant research studies to identify the value of ecosystem services in Latvia.

Research results and discussion

1. World experience in identifying the value of ecosystems

The authors observe the forest valuation experience in European countries with similar nature conditions for foresting. The research observes evolution of the ecosystem valuation. The research suggests the most applicable definition and main methods of the valuation and discusses research experience in Latvia regarding ecosystem valuation.

The contribution of biological processes to humankind has not been fully identified and assessed; therefore, it leads to environmental pollution and ecosystem degradation (Lele et al., 2013). As the world's population continued to grow, forests were cut down to produce food (Andronache et al., 2019). This activity has expanded the agricultural land area. As the consumption of fossil fuels and the production of cement, which produce carbon dioxide emissions, increased, forests play an increasingly important role as an absorber of carbon dioxide (IPCC/Watson, 2019). At the beginning of the 20th century when urbanization progressed, the production of industrial goods and environmental pollution in the form of carbon dioxide emissions increased fast, and the negative impacts of pollution on human health became increasingly important, as it determines both labour availability and productivity (Dong et al., 2021).

For the first time the healing role of nature, incl. forests, was emphasized several thousand years ago, yet the concept of ecosystem services appeared in the scientific literature in the 1970s as "environmental services" (Wilson, Matthews, 1970). In the mid-1980s, they were renamed "ecosystem services" (Ehrlich, Mooney, 1983), yet the concept became more widespread after a research paper *The Value of the World's Ecosystem Services and Natural Capital* by Costanza, R., R. d'Arge, R. S. de Groot, S. Farber, M. Grasso, B. Hannon, K. Limburg et al. was published in 1997. The most popular definition of ecosystem services could be as follows: "ecosystem functions and products that benefit people or contribute to population wellbeing" (Millennium Ecosystem Assessment, 2005).

Ecosystem services include:

- provisioning services – food, raw materials and energy sources –, i.e. what people use daily;
- regulating services, which represent the way ecosystems regulate other environmental processes (water flow regulation, soil protection, nutrient leakage reduction, pollination etc.);
- cultural services that relate to population cultural or spiritual needs (rural and urban landscape, its aesthetic value, recreation and tourism opportunities, life quality);
- supporting services, which represent the ecosystem processes and functions that are the basis of the three kinds of services mentioned above (Millennium Ecosystem Assessment, 2005).

Supporting services ensure the functioning of logistical, control and cultural services. Provisioning services (food, water), regulating services (water purification, climate regulation and disease control) and cultural services (spiritual, religious, aesthetic) ensure human wellbeing, i.e. security (individual, resource), materials (shelter, food), health (mental wellbeing, clean air and water) and also social needs (opportunity to help others, social cohesion, dignity) (Lele et al., 2013).

Accordingly, the definition of forest value that emerged in the late 19th century and was improved in the early 20th century (Faustmann, 1849; Pressler, 1860; Ohlin, 1921), which is limited to the economic benefits of selling forest or timber, needs to be extended to assessment of non-timber resources. In Latvia, forests also provide free ecosystem services, e.g. clean air, agricultural crop pollination by forest birds and insects, water runoff control.

The contribution of the natural world to human wellbeing is assessed to identify the value of ecosystem services. Identifying the value of ecosystem services could lead to policy and strategic decisions about their future development (Bateman, 2010).

According to T. C. Brown et al. (2007), the value of an ecosystem service can be calculated by using a number of valuation methods, which are divided into four groups:

- 1) Household revealed preference methods;
- 2) State preference methods;
- 3) Production function methods;
- 4) The replacement cost method.

The household revealed preference methods include the travel cost method, the hedonic method and the averting behaviour method. *The travel cost method* is used to determine how much individuals are willing to pay for access to a recreation site. This means that travel costs are the price that an individual is willing to pay for a recreation site or an available ecosystem service. *The hedonic method* compares the prices of several objects, including real property with and without certain ecosystem services, for example, the property near forest with the property that is not surrounded by forest; however, the following condition should be met – the real properties have to be comparable in other parameters: available infrastructure, buildings, construction quality etc. The difference in price between two comparable real properties is the charge for an ecosystem service provided. *The averting behaviour method* is based on data on the willingness of individuals to pay for avoiding health problems by paying for preventive measures that improve their health. This is the cost of health improvement through consuming ecosystem services and clean water.

The state preference methods include the contingent valuation method for identifying the charge for a real or imaginary service; in addition, attribute-based methods are employed to identify the willingness of individuals to pay for certain additional attributes of the service, for example, an extra service is offered

for a campsite parking lot – tables and chairs for an extra charge, or a fireplace is offered for an extra charge.

The production function methods identify the value of ecosystem services based on changes in production costs if the ecosystem service is limited. The easiest way to identify an increase in the cost of production is to compare two producers, one of them does not have access to an ecosystem service, e.g. natural wastewater treatment, while the other one has access to such an ecosystem service. The difference in production cost is the charge for the ecosystem service.

The replacement cost method allows identifying the cost of restoring a lost ecosystem good or service, or a saving from not having to restore the ecosystem service.

The shortcomings of the above-mentioned methods mainly relate to subjective valuations by individuals, including their ability to accurately identify a value and real costs, for example, by determining the willingness to pay for some ecosystem service. The biggest challenge is to determine the value of ecosystem services for human spiritual and aesthetic needs (Brown et al., 2007).

There are researchers who examine forests as part of culture, yet it should be noted that it is difficult to determine what public benefits the forest provides to society (Bateman, 2010) and what the value of services is, as the value varies depending on the benefits to society. Accordingly, the less society is educated about the role of ecosystem services, the less society is willing to pay for them, thereby lowering the true value of ecosystem services. The value can vary from generation to generation and between age groups (Cabana et al., 2020). Consequently, trends in life expectancy and population aging affect the outcome of ecosystem service valuation. In addition, the valuation is affected by the income level of the population (Moros et al., 2019).

The boundary between different cultural ecosystem services is not clear. This could lead to the problem of double counting, for example, the benefit of recreation is linked to other benefits – aesthetic, educational, spiritual and religious (Cheng et al., 2019). The level of income also affects the valuation: it varies between countries and regions. Although the same ecosystem services are provided in any region, the regions with lower incomes have lower ecosystem service values. Other methods can increase the accuracy of the valuation, similar to the valuation of a company in the field of corporate finance (Brealey et al., 1991). In determining the value of ecosystem services by employing a survey method that illustrates respondents' willingness to pay for the services could be supplemented by a method that determines the contribution of the service to the production of goods or services (Bateman, 2010).

Valuing ecosystem services in monetary terms, forest owners can expect to receive payments for the provision of ecosystem services. If money is received for ecosystem services, it could be discounted to identify the forest value provided by ecosystem services.

2. The experience of Latvia in valuing forest ecosystem services

In Latvia, the value of ecosystem services is not widely incorporated in decision-making or policy and strategic documents, as there is insufficient valuation practice and history. A search of research papers included in the Scopus and Web of Science databases revealed that ecosystem services were referred to 17 times, while forest only five times in the research papers by authors from Latvia. The reason is the insufficient valuation practice, which mainly focused only on certain areas.

In Latvia, experience in valuing ecosystem services is limited. In his three papers, M. Saklaurs examined the valuation of ecosystem services in riparian forests from different aspects. The author concluded that the value of coastal forests was greater than the value of wood around rivers and lakes (Saklaurs et al., 2016). M. Saklaurs (2015) conducted a survey of 1024 respondents and, receiving 418 responses,

concluded that on average every resident of Latvia would be willing to pay an average of EUR 28.5 per year for the opportunity to use ecosystem services by the water basin.

Additional insight into the value of ecosystem services for the economy of Latvia could be obtained from research studies by I. Paulina and Z. Liebiete (2019) "Analysis of Landscape Paintings to Highlight the Importance of Forest Ecosystem Services in Latvia" and E. Jurmalis and Z. Liebiete (2019) "Developing a Framework for Characterizing Recreational Potential of Forest Areas Using Weighted Criteria Analysis". The authors concluded that the ecosystem services provided by forests play an important role in the recreation industry of Latvia. It is necessary to examine and select methods suitable for the population of Latvia, which should be supplemented and adapted so that the methods help to more accurately value ecosystem services.

Research studies on ecosystem service valuation were carried out in Latvia within the project Application of the Approach to Valuing Ecosystems and their Services in the Protection and Management of Biodiversity under the LIFE+ programme Environment Policy and Governance. The research found that forest ecosystem services were of greater value than those of sandy beaches, dunes or river ecosystems. However, the research was carried out in a limited territory of the pilot project in Saulkrasti and Kemeru (Konstantinova et al., 2017a; Konstantinova et al., 2017b; Arhipova et al., 2017).

Within a research study by I. Arhipova and other co-authors (2017), a pilot project was implemented in certain areas, and it was concluded that the priority in the areas would be forest conservation, followed by the creation of a recreation and tourism zone by the sea. The areas examined were located near the town of Saulkrasti as well as Jaunkemeru (214 ha), which are the areas adjacent to the Baltic Sea in the Gulf of Riga. To be able to use the few researches available in drawing up national policy documents, it is necessary to perform an additional economic analysis of the results obtained. First, it should be complemented by a sustainability analysis and, second, by a scenario analysis (Bateman, 2010).

I. Arhipova et al. (2017) employed the benefit transfer and travel cost method to identify the value of ecosystem services. The methods that use survey data are subjective and depend on the ability of each surveyed individual to value such services; however, it is one of the possibilities to value the services, the true value of which is difficult to determine (Daily et al., 2000).

The above-mentioned research studies on the areas of Latvia do not cover all ecosystem services provided by forests sufficiently broadly to generalize them and estimate the value of forest ecosystem services in Latvia. They cover only a part of cultural services related to the cultural or spiritual needs of the population (rural and urban landscapes, their aesthetic value, leisure and tourism opportunities, life quality). However, the research studies do not cover provisioning services (food, raw materials and energy sources) and regulating services (ways whereby ecosystems regulate other environmental processes (water flow regulation, soil protection, nutrient leakage reduction, pollination etc.)) Provisioning forest ecosystem services make a significant impact on agriculture and the energy supply industry in Latvia.

The state joint stock company Latvian State Forests manages half of the forest area that captures approximately 5.8 million tons of carbon dioxide emissions in the form of wood every year (Joint Stock Company Latvian State Forests Medium-term Strategy, 2020). The price of a tonne of carbon emissions is EUR 33 (Reuters, 2021). Accordingly, every year half of Latvia's forests produce carbon dioxide capture services worth EUR 191.4 million, while the entire forest area of Latvia produces ecosystem services worth EUR 382 million. Every year, the population obtains products worth about EUR 100 million by picking berries and mushrooms in the forests of Latvia (Latvian public media, 2011). There are no precise estimates of the contribution of forests to agriculture, yet according to the Central Bureau of Statistics, crop and livestock production, hunting and related service activities generated EUR 460.6 million in value added at

current prices in 2018 (Central Statistical Office, 2018). Assuming that the contribution of forests to the agriculture of Latvia in the form of water flow regulation, soil protection, nutrient leakage reduction and pollination makes up 10 % of the value added, ecosystem services for agriculture amount to EUR 46 million per year. Summing up only the above-mentioned ecosystem services provided by forests reveals that they can be valued at EUR 530 million annually. A discount factor should be applied to calculate the total value of the services, assuming that the value of the services provided does not change each year and the services are provided for an indefinite period. Accordingly, the value could be calculated by multiplying EUR 530 million by the discount factor. Assuming the discount factor calculated by the joint stock company Latvian State Forests to be 4.58 %, the value of forest ecosystem services would be EUR 11.6 billion in 2019.

The value system of individuals differs in the regions of the world, as it is influenced by the history, traditions, climate of the region or country. Therefore, developing ecosystem service valuation methods requires considering the values and historical evolution of the particular country (Scholte et al., 2015). When drawing up national policy documents for the forest and related industries of Latvia, the values of the population should be taken into account in relation to the ecosystem services that are consumed domestically, yet the services that involve the possibility of sales, including exports, international valuation standards must be applied to. This can help to preserve the specific values of Latvia.

Conclusions, proposals, recommendations

- 1) Forest ecosystem services are not valued when implementing projects important for the national economy and European security to determine their contribution to the wellbeing of the population and their role in economic development.
- 2) The definitions of forest value need to be supplemented with assessment of non-timber resources in order to make optimal decisions for the economic policy of Latvia.
- 3) Valuing ecosystem services in monetary terms, forest owners can expect to receive payments for the provision of ecosystem services. If money is received for ecosystem services, it could be discounted to identify the forest value provided by ecosystem services.
- 4) In Latvia, ecosystem service valuation practice is hampered by insufficiently tested methods for valuing ecosystem services in monetary terms, which would allow for a more detailed collection and analysis of the values of ecosystem services in various parts of Latvia in order to get a comprehensive picture of the overall situation in Latvia.
- 5) It is necessary to examine and select the most appropriate methods for identifying the value of ecosystem services under Latvian conditions, supplementing the range of the methods and adapting them to local conditions so that they help to more accurately value ecosystem services.
- 6) The value of ecosystem services consumed domestically and the possibility to export the services should be taken into account when drawing up policy documents for the forest and related industries of Latvia, applying international valuation standards.

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POSSIBILITIES OF BIOGAS PRODUCTION FROM LIVESTOCK WASTE IN LATVIA

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Abstract. With the adoption of the Green Deal in the European Union (EU), the role of biodiversity, basic principles of the circular economy, climate change mitigation, forest protection and renewable energy increased. Since 2007, biogas production in Latvia has increased significantly, as it was possible to receive co-funding from the EU Funds for the construction of biogas plants. In 2021, inputs of agricultural origin are used by 40 biogas plants with an average installed capacity of 1 MW. The emergence of biogas plants on livestock farms is facilitated by the development of a circular economy producing waste from the production process – manure and feed waste. Anaerobic fermentation results in digestate – a nutrient-rich plant fertilizer that reduces the application of chemical fertilizers. Rational use of biogas can reduce the need for fossil fuels. Energy production from biogas should be encouraged, as waste is used efficiently, thereby generating energy and reducing the release of greenhouse gases into the atmosphere. In Latvia, livestock production is one of the key industries of the national economy, which produces manure and feed waste. The present research calculated the amounts of cattle, pig and poultry manure and feed waste in Latvia. The research analysed livestock farms by number of cattle, pigs and poultry, the potential amounts of manure and waste produced and theoretical biogas output. Theoretically, 309 farms analysed can produce 93.5 mln. m³ of biogas from agricultural waste and construct 269 new biogas plants. A policy for supporting the construction of new biogas plants would contribute to the country's independence from fossil energy sources, as well as increase the proportion of renewable energy sources to 50-70 % in final energy consumption by 2030. Farmers on whose farms a biogas plant could be built need to carefully consider the uses of the biogas produced. The uses could be thermal energy generation for heat supply, cogeneration (thermal and electrical energy) or biomethane production.

Keywords: biogas, agricultural waste, livestock manure, bioenergy

JEL code: Q15, Q56.

Introduction

European Member States are committed both to increase their share of renewable energy sources and to reduce their Greenhouse Gases (GHG) emissions (European Parliament and..., 2009). Within the Renewable Energy Directive, 2009/28 EC mandatory sustainability criteria are defined for biofuels, but only voluntary recommendations were defined for biomass used for power and heat production.

In Latvia, the National Energy and Climate Plan was approved on 4 February 2020. In 2030, it is planned to ensure at least 50 % of the share of renewable energy in Latvia's final energy consumption (Par Latvijas Nacionalo..., 2020).

Agricultural anaerobic digestion serves not only in electricity and heat production, but also in production of nutrient rich digestate stream, that is the side product of anaerobic digestion plant. As a side product for energy produced (in the form of biogas), anaerobic digestion facilities generate significant quantities of collateral biomass known as digestate which is often recycled to soil as fertilizer (Risberg et al., 2017; Slepetiene et al., 2020).

In the context of the circular economy model, the biogas production has been highlighted as a versatile renewable energy source that could be used to replace fossil fuels and heat by reducing greenhouse gases emissions (Potting et al., 2017). Biogas can be produced from a wide range of raw materials, from organic waste to dedicated energy crops, and can be utilised for various energy services such as heat, combined heat and power or as a vehicle fuel. Biogas systems are therefore affected by a number of different incentives and barriers, including energy-, waste treatment - and agricultural policies Lantz et al., 2007).

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Large-scale biogas generation is a well-established technology in developed countries. However, there is a shortage of research on these large-scale systems in developing countries. To achieve suitable biogas production, some challenges need to be surpassed such as construction materials and models, efficiency, and performance (Ahlberg-Eliasson, 2017). The biogas produced can be transformed onsite into heat and energy (Boulamanti et al., 2013; Agostini et al., 2015) or domestic activities (Russo, von Blottnitz, 2017).

The biogas end use option is important when environmental benefits of its production are considered, especially the kind of energy production systems it replaces (Patterson et al., 2011; Poeschl et al., 2012). Biogas injection into the natural gas distribution network is one of the most promising opportunities (Poeschl et al., 2010; Uusitalo et al., 2013), but is only possible when the network is close to the production plant. Despite being the most adequate raw material in terms of reducing GHG emissions, manure has low energy value, due to its low organic matter content and high ammonium concentration (Regueiro et al., 2012).

By means of adapted management and configuration, biogas plants can supply electricity on demand and, through the substitution of power production from fossil fuels, avoid CO₂ emissions (Hahn et al., 2015). Some researchers analysed the GHG emissions mitigation costs for biogas plants in Germany and found a wide range of potential CO₂ mitigation costs from 95 378 EUR per tonne (Scholzet al., 2011).

The authors of the paper draw attention to the amount of manure from cattle, pigs and poultry as well as spoiled fodder. Methane is one of the greenhouse gases that inevitably results from agricultural activity. The research investigates how much biogas could be obtained from the largest cattle farms (200 and more cattle), pig farms (400 and more pigs), and poultry farms (50000 and more poultry) in Latvia. Farms with fewer livestock were not considered because the amount of manure was not enough to set up a biogas plant next to them. For example, all Danish biogas plants have increased gas production as a result of admixing industrial organic wastes with manure. This is predominantly regarded as a great advantage for both biogas plants and waste suppliers (Mæng et al., 1999).

Hypothesis of the research: in Latvia, there is unused agricultural waste potential to produce biogas from manure and feed waste from animal production.

The aim of the research is to identify the amount of biogas to be theoretically produced by cattle, pig and poultry farms from feed waste in Latvia.

Research tasks: 1) to analyse livestock farms by number of animals and identify the potential amount of manure produced by the farms, as well as the potential amount of feed waste from animal production in Latvia; 2) to calculate the theoretical amount of biogas from manure and feed waste in Latvia; 3) to determine the number of biogas plants to be needed to produce biogas in Latvia.

Research methods. The research used literature review and empirical research methods, while information and data were derived from various sources: national institutions – the Central Statistical Bureau, the Ministry of Agriculture, the Agricultural Data Centre, the Rural Support Service –, research studies by national and foreign scientists, analytical reports, publications and researches related to the agricultural industry. The research used the methods of comparison, analysis, synthesis, induction etc. for selecting and grouping the data and identifying the similarities and differences.

The novelty of the research is to determine the amount of unused manure and feed waste to be used for biogas production is still available in Latvia.

Research results and discussion

1. Potential amounts of agricultural biomass waste and biogas to be produced in Latvia

The main sources of agricultural biomass in livestock production are: 1) manure; 2) miscellaneous unused feed residues. To calculate the potential amount of waste from livestock production in Latvia, the research used data on livestock density on a farm to identify the amount of waste produced and whether it is advantageous to build a biogas plant, as well as on manure per livestock unit and potential feed loss in livestock production. The research selected the following main industries having potential to establish biogas plants in Latvia: cattle, pig and poultry production.

Cattle. As at the beginning of July 2020, 416003 cattle on more than 17 thou. farms were registered in Latvia. Of the total cattle, 199777 or 48 % were dairy cows and 34812 or 8.3 % were calves (Agricultural Data Centre, 2020). The rest of cattle – 187 839 or 43.3 % – were beef cattle, breeding bulls and suckler cows with calves. The calculations assumed that biogas plants could be installed only on the farms with a sufficient cattle density and a sufficient amount of manure to be produced. Therefore, the amount of manure was calculated for farms with more than 200 cattle. There were 267 such farms in Latvia, representing 1.6 % of the total number of cattle farms; however, the farms kept 32.4 % of the total cattle. In addition, farms with 300 cattle accounted for only 0.9 % of the total number of farms and kept 25.4 % of the total cattle (Table 1).

Table 1

Number of farms with over 200 cattle in Latvia at the end of 2019

Number of cattle	Farms in the respective group		Total cattle in the respective group	
	number	%	number	%
200-299	114	0.7	27557	7.0
300-499	79	0.5	30064	7.6
500 and more	74	0.4	70369	17.8
Total	267/ 17064	1.6/ 100.0	127990/ 395320	32.4/ 100.0

Source: authors' calculations based on the Central Statistical Bureau, 2021a.

Both litter manure and slurry can be produced by dairy farms. Litter manure is produced if a relatively large amount of litter is used to clean livestock housing facilities. This is typical of the facilities where cows are tethered in tie-stalls, as approximately 2 kg of straw per day need to be spread over such a tie-stall. Such manure is also obtained from calf pens and calving stalls. It should be taken into account when considering storing litter manure that in addition to solid manure, slurry is also obtained, which needs to be stored in a separate facility. Each dairy cow with a milk yield of 6000-8000 kg/year produces 15 tonnes of litter manure and 19 tonnes of liquid manure, i.e. a total of 34 tonnes of manure per year (Karklins, 2019; Ministry of Agriculture, 2008). Cattle manure can produce 8-25 m³ (on average 20 m³) of biogas (SEA, 2015). The theoretical output of biogas from the manure of almost 128 thou. cattle kept on 267 farms with more than 200 cattle is a little more than 68 mln. m³ per year (Table 2).

Table 2

Potential amounts of manure and biogas output per year for farms with more than 200 cattle in Latvia at the end of 2019

Kind of cattle	Number	Amount of manure per cattle per year, t	Amount of manure per year, t	Theoretical biogas output, m ³
Dairy cows	31917	34	1085178	21703560
Beef cattle, breeding bulls, suckler cows with calves	81052	25	2026300	40526000
Calves	15021	20	300420	6008400
Total	127990	x	3411898	68237960

Source: authors' calculations based the Central Statistical Bureau, 2021a.

Pigs. In July 2020, 323 348 pigs were registered in Latvia, of which 141 840 or 43.8 % were fattening pigs, 53 801 or 16.6% were dairy piglets, 23 976 or 7.4 % were sows, 420 or 0.12 % were breeding boars and 103 330 or 31.9 % were other pigs (young pigs, gilts, weaned piglets) (Agricultural Data Centre, 2020).

Table 3

Number of farms with more than 400 pigs in Latvia at the end of 2019

Number of pigs	Farms in the respective group		Total pigs in the respective group	
	number	%	number	%
400-999	6	0.2	4544	1.4
1000-1999	3	0.1	4393	1.4
2000-4999	11	0.4	30742	9.8
5000 and more	15	0.5	256576	81.7
Total	35/ 2772	1.2/ 100.0	296 255/ 314 204	94.3/ 100.0

Source: authors' calculations based the Central Statistical Bureau, 2021b.

Of the total pigs, 94.3 % were kept by 35 farms or 1.2 % of a total of 2772 pig farms. The analysis of the data took into account the farms with more than 400 pigs (Table 3).

Table 4

Potential amounts of manure and biogas output for farms with more than 400 pigs in Latvia

Kind of pigs	Number	Amount of manure per pig per year, t	Amount of manure per year, t	Theoretical biogas output, m ³
Fattening pigs (30-100 kg)	130973	3.0	392919	6286704
Sows with piglets	22613	4.0	90452	1447232
Piglets (7.5-30 kg)	50326	0.65	32712	523392
Boars	395	5.0	1975	31600
Young pigs, gilts, weaned piglets	92343	2.3	212389	3398222
Total	296428	x	730844	11687150

Source: authors' calculations based on the Ministry of Agriculture of the Republic of Latvia, 2008.

One ton of pig manure can produce 8-22 m³ (on average 16 m³) of biogas (SEA, 2015). Summing up the potential amounts of manure from farms with more than 400 pigs and multiplying it by the biogas

potential per tonne of manure reveals that more than 11.7 mln. m³ of biogas could be produced per year (Table 4).

Poultry. Poultry produces less manure than cattle or pigs; however, the theoretical biogas output from poultry manure is higher, 21-84 m³/t (on average 55m³/t) (SEA, 2015). This is due to the higher dry matter content of poultry manure. The amount of poultry manure per poultry varies, depending on the poultry species, age, type of housing and diets, type of feed and other factors. Laying hens produce 0.03 tonnes of litterless manure per year (Agricultural Data Centre, 2020).

In July 2020, 5621631 poultry, not grouped by species, were registered in Latvia. Let us assume that on average each poultry produces 0.025 tonnes of manure per year. Seven farms with more than 50000 poultry kept a total of 4569900 poultry or 88.6 % of the total poultry in the country (Central Statistical Bureau, 2021d). Per year, 4569900 poultry could produce 114247 tonnes of manure. The theoretical output of biogas could be 6283585 m³ per year.

Fodder crop waste from cattle farms. Fodder and green fodder crops (maize for silage and green fodder, perennial grasses, nectar plants) occupied 300.7 thou. ha in Latvia in 2019. Perennial grasslands occupied 273.3 thou. ha, while 25.4 thou. ha were cropped with maize. Forage and silage crops, other than maize, occupied 2 thou. ha in 2019 (Central Statistical Bureau, 2021c).

Table 5

Areas under fodder crops and yields in 2019 as well as the potential amount of biogas production from feed waste in Latvia

Crop	Sown area, thou. ha	Output, thou. t	Feed for farms with > 200 cattle, thou. t	Average amount of waste, %	Potential amount of waste, thou. t	Theoretical biogas output, m ³
Maize for fodder	21.4*	725.9*	254.7	15	38.2	4202000
Perennial grasses	273.3	396.6	128.3	10	12.83	1411300
Other forage crops	2.0	29.3	9.5	15	1.42	156200
Meadow and pasture hay	-	437.7	141.5	10	14.1	1551000
Total	296.7	1651.1	534.0	x	66.55	7320500

* 4 thou. ha under maize are used for biogas production (Rural Support Service, 2021), therefore the total area and the total output of maize for fodder is reduced proportionally.

Source: authors' calculations based the Central Statistical Bureau, 2021c.

The area sown with maize for fodder was 21.4 thou. ha because in the database of the Rural Support Service, 4 thou. ha were declared for direct payments as areas for biogas production from maize; therefore, it could be assumed that the maize yield did not change, depending on the kind of use. In 2019 in Latvia, the total maize output was 861.7 thou. tonnes, yet in proportion to the forage area – 725.9 thou. tonnes. In 2019, the output of perennial grass hay was 396.6 thou. tonnes, the output of meadow and pasture hay was 437.7 thou. tonnes, while the output of green fodder and silage crops other than maize was 29.3 thou. tonnes. Unfortunately, the statistical sources did not classify farms by area of fodder crops grown, yet the research assumed that the mentioned kinds of fodder were used by cattle farms. Since the farms with more than 200 cattle represented 32.4 % of the total cattle had the potential for biogas production, it was assumed that such a proportion would be the basis for calculations for biogas production from fodder.

Of the total silage that was harvested at the right time and acidified according to the technology, 10-20 % (on average 15 %) was fodder waste (Priekulis, 2012). Feed waste includes that part of the feed which has been damaged in the silage pit for various reasons. The other part of feed waste represents feed residues. A tonne of grass and maize waste with a dry matter of 20-30 % is able to produce 55-128 m³ and 68-170 m³ of biogas, respectively (SEA, 2015), which is on average 110 m³/t.

Calculating feed waste in proportion to the number of cattle analysed, 3-4 kg of feed dry matter per 100 kg of live weight per day is required per cattle (SEA, 2015). Maize accounts for 80 % and grass silage for 85 % of the total silage prepared on farms, as 15 % and 10 %, respectively, are fodder waste. Based on this pattern, one can calculate the amount of feed waste produced by farms with 200 and more cattle.

Table 5 summarizes the calculations of the potential amount of feed that could be used in cattle production. Based on the total crop output, the output of crops sown on farms with 200 and more cattle was calculated proportionally. Accordingly, based on the assumptions about the amount of fodder wasted, the calculation shows that each year the amount is a little more than 66 thou. tonnes. If this amount were used for biogas production, the theoretical output of biogas from feed waste would be 7.32 mln. m³.

In pig and poultry production, however, feed consumption cannot be calculated due to the lack of data on its structure and uses.

2. Potential justification for building biogas plants

Agricultural waste is an important resource for increasing the energy efficiency of businesses. It is the most advantageous to recycle agricultural waste in the vicinity of the farm, saving on logistics costs.

The potential output of biogas from cattle, pig and poultry manure as well as cattle feed waste is 93.5 mln. m³ (Tables 2, 4, 5 and calculations of poultry production); besides, 7.8 % could be produced from unused fodder in cattle production, while 92.2 % from manure in cattle, pig and poultry production.

Table 6

Potential distribution of biogas output for various groups of cattle farms in Latvia

Number of cattle	Farms in the respective group	Distribution of biogas from manure, m ³	Distribution of biogas from feed residues, m ³	Amount of biogas per farm in the respective group, m ³
200-299	114	14692034	1576146	142703
300-499	79	16028643	1719538	224661
500 and more	74	37517283	4024816	561380
Total	267	68237960	7320500	282990

Source: authors' calculations

On cattle farms, biogas is produced from cattle manure and feed waste. The amount of biogas per farm in the respective group is calculated proportionally.

On farms with 200-299 cattle, the annual output of biogas totals 142703 m³. With such a biogas output, it would be the most advantageous for the farm to use the biogas produced for heat production for the farm itself. It is also possible to purify biogas to biomethane and store it compressed for later use for heating or transport (for self-consumption).

On farms with 300-499 cattle, the output of biogas per year totals 224661 m³. Such an amount of biogas would be enough for running a 50 kW cogeneration plant, and the heat and electricity produced would be used for self-consumption on the farm. An alternative would be to purify the biogas to biomethane and store it compressed for road transport or heat generation or to sell it.

On farms with 500 and more cattle, the annual output of biogas is 561380 m³. This amount of biogas is enough to run a 140 kW cogeneration plant. It would be possible to generate 3.4 MWh of electricity per day or 1.2 TWh per year by such a cogeneration plant. The amount of heat depends on the equipment of the cogeneration plant; however, it would not be less than the amount of electricity generated. The cattle farms of this group would have to purify biogas to biomethane and compress it to use for running their farm machinery or sell the biomethane. If the farms chose to have no cogeneration plant, part of the gas produced should also be used for heating enzymes.

Table 7

Potential distribution of biogas output for various groups of pig farms in Latvia

Number of pigs	Farms in the respective group	Distribution of biogas from manure, m³	Amount of biogas per farm in the respective group m³/year
400-999	6	179259	29876
1000-1999	3	173302	57767
2000-4999	11	1212760	110250
5000 and more	15	10121828	674788
Total	35	11687150	333919

Source: authors' calculations

The amount of biogas produced by farms with 400-1999 pigs is relatively small; therefore, the biogas from manure could be used for producing hot water and heating the farms.

The amount of biogas produced from manure by farms with 2000-4999 pigs is sufficient to be purified to biomethane. The further uses of it are heating and transport fuel or compressed biomethane could be sold.

On farms with 5000 and more pigs, the amount of biogas produced from manure is enough to run a cogeneration plant with a capacity of 160 kW. An investment in a cogeneration facility is larger than if burning biogas in boilers; therefore, the cogeneration facility should be in operation all year round, also due to the need to heat the fermenter so that fermentation does not stop.

There were 7 farms with more than 50000 poultry in Latvia. The theoretical output of biogas totals 6.3 mln. m³ of biogas, while on average per farm – 897 655 m³. Theoretically, this amount of biogas allows operating a cogeneration plant with a capacity of 0.22 MW. Potential scenarios for the farms to use the biogas produced are similar to those for cattle and pig farms.

After analysing the locations of cattle (200 cattle and more), pig (400 pigs and more) and poultry farms (50000 poultry and more) in Latvia (Nipers et al., 2019), it could be stated that the farms were located throughout the country. From an economic perspective, there would be no economic justification for building a biogas plant on each farm. It would be necessary to examine in more detail what kind of farms with an adequate number of livestock could cooperate for constructing a joint biogas plant, if the distance between them does not exceed 15 km, thereby ensuring rational use of both raw material resources and the biogas produced.

The total number of livestock farms that could be involved in the processing of biomass (waste) of agricultural origin would be 309 (including 267 cattle, 35 pig and 7 poultry) farms. This means that the maximum number of biogas plants could be 309, yet it should be taken into account that in 2021 biogas cogeneration plants with a total electrical capacity of 42.9 MW were built on as many as 40 livestock farms in Latvia (LBA, 2021); therefore, at least 269 new biogas plants, which use agricultural waste from the

main livestock industries, could be built. The overall economic impact of the construction of new biogas plants would be as follows:

- 7) energy dependence on fossil fuels and/or electricity would decrease on each of these farms; 93.5 million m³ of biogas can generate 475 568 MW of thermal energy;
- 8) the biogas remaining for self-consumption on the farm could be purified to biomethane and compressed for subsequent use in transport or sold;
- 9) the construction of new biogas plants and the installation of related equipment would be performed by local contractors. At least 100 new jobs would be created at the largest biogas plants, as smaller biogas plants would be serviced by current farm workers. In addition, at least 40 other residents of the country would be involved in the maintenance of biogas plants, who would provide repair work services for biogas plant equipment;
- 10) a feasibility study for the construction of biogas plants (a cogeneration plant, a boiler house, a gas treatment plant) should be done for each farm.

Conclusions, proposals, recommendations

In 2019 in Latvia, there were 267 farms with 200 and more cattle, 35 farms with 400 and more pigs, 7 farms with 50000 and more poultry, which have the potential to use manure from the livestock production process and unused feed waste for biogas production. Accordingly, it will be possible to produce 93.5 mln. m³ of biogas.

In 2021 in Latvia, 40 livestock farms had biogas cogeneration plants; therefore, it would be maximally possible to build 269 new biogas plants. However, farms should consider cooperating to set up joint biogas plants. The biogas produced could be used locally for heating and transport or for electricity generation. This would increase the country's independence from fossil energy sources, as well as increase the proportion of renewable energy sources to 50-70 % in final energy consumption by 2030, thereby create new jobs in rural areas.

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**EFFICIENCY OF PRODUCTION PROCESS
AND COMPETITIVE OF COMPANIES**

ENTREPRENEURSHIP IN THE TIME OF COVID-19: CHALLENGES, OPPORTUNITIES AND GOVERNMENT ASSISTANCE IN LATVIA

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Abstract. The aim of this article is to analyse the government assistance provided to entrepreneurs in Latvia and its efficiency and appropriateness to the economic conditions encountered by entrepreneurs during the COVID-19 crisis. An insight into international experience creates the framework of this study. The empirical analysis is based on secondary data analysis and entrepreneur's survey data on business response to COVID-19 related pandemic restrictions and government assistance in Latvia. The observed business areas are financial and risk management, international trade, communication, employment, innovations, strategic change and legal issues. The paper finds that the crisis affected the most such industries as accommodation and food services; arts, entertainment and recreation. The result provides support to justification for a national long-term crisis management strategy for business sustainability.

Key words: government assistance; entrepreneurship; Latvia; COVID.

JEL code: H54; H81; M21

Introduction

The crisis had a significant impact on start-ups, created briefly before the COVID-19 pandemic. Most of these companies invested resources in business development without creating savings for a crisis. Some of them, due to their short life, were not eligible for government support because they did not meet the eligibility criteria. However, the crisis also gave a push to business development: some start-ups continued to grow successfully, many companies have changed their business models through cost-cutting measures, and new lines of business have emerged as well as new ways of delivering products or services to customers.

The aim of this paper is to analyse and evaluate the government assistance provided to entrepreneurs in Latvia and its efficiency and appropriateness to the economic conditions encountered by entrepreneurs during the COVID-19 crisis. Thus, the main tasks of the research are literature and current research analysis; gathering and analysing secondary data regarding the research subject; conducting the empirical study (enterprise survey); and processing the data, drawing conclusions and proposing recommendations for both government and enterprises.

This paper discusses the challenges and opportunities of Latvian companies during COVID-19 pandemic in context of government support and its evaluation. The main hypothesis, tested by Chi-square test, is that there is linkage between the severity of crisis impact on Latvian enterprises and government support use and evaluation.

3. Theoretical framework

There are several ways the coronavirus pandemic affects the economy and business, on both the supply and demand sides. On the supply side - reduction of turnover and revenue, non-fulfilment of supply contracts, etc. On the demand side, loss of demand and revenue for enterprises severely affects their ability to function and causes severe liquidity shortages. Consumers experience loss of income and heightened uncertainty, which in turn reduces spending and consumption. Accommodation, food service and transport sectors, are particularly affected (OECD, 2020).

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Given the circumstances faced by companies in many sectors, countries have put in place a number of measures to support them and reduce the economic impact of the coronavirus outbreak. Countries are implementing large-scale fiscal stimulus programs to support business and stabilize the economic situation. The size of these programs was significant and depended on the amount of government debt, which determines the country's borrowing capacity in the international financial market.

In contrast to previous financial and other crises, government intervention has been much greater than any crisis in recent memory (OECD, 2020).

Many countries have introduced policy measures specific to entrepreneurship.

- Several countries have introduced measures related to working time shortening, temporary lay-offs and sick leave. Similarly, governments provide wage and income support for employees temporarily laid off, or for companies to safeguard employment.
- Measures towards deferrals of tax, social security payments, debt payments and rent and utility payments. In some cases, tax relief or a moratorium on debt repayments has been implemented.
- Tax policy instruments as a temporary measure to increase consumer spending and to support the sectors particularly affected (Deloitte, 2021).
- Provision of loan guarantees, to enable commercial banks to expand lending to enterprises. To mitigate the effects of the crisis, banks have developed various solutions for determining bank loan holidays, deferrals of capital payments, and temporarily postponing other liabilities.
- In some cases, direct lending to enterprises was increased through public institutions.
- Grants and subsidies to companies to bridge the drop in revenues.
- Increasing use of non-banking financial support intermediaries in the policy support mix.
- Structural policies to help companies adopt new working methods and digital technologies and to find new markets and sales channels (OECD, 2020).

In the wake of the COVID-19 pandemic, entrepreneurs in many parts of the world are making far-reaching changes with the main goal of increasing the speed of **strategic direction adjustment** and resource use.

Such changes result in higher profitability, sustainability and growth. These changes are being achieved mainly through three directions:

- a faster decision-making mechanism,
- improved internal communication and cooperation, and
- increased use of technology (McKinsey & Company, Jul. 28, 2020).

The main obstacles to these improvements are weak internal cooperation within the company, slow decision-making process and uncertainty about strategic direction.

International experience shows that building the **skills of employees** during and after a pandemic will be crucial to strengthening the long-term stability of companies. Skills development ensures that employees have the information and skills they need to adapt to change and do things differently.

To improve the development of these skills, entrepreneurs are encouraged to train employees and promote the exchange of experience in various fields (McKinsey & Company, Sep. 9, 2020). It must be borne in mind that the COVID-19 pandemic has made digital transformation a priority at individual, company and government level.

In order to be able to focus on the development of the most important skills from the perspective of the future, it is first necessary to determine which set of skills will have the most significant impact on the direction and development of the company.

When developing employee skills that are critical to the business model of companies, it is important to start with qualifying a critical group of the workforce that will create added value in the crisis and post-crisis business model. It is important to focus on the development of four types of skills:

- digital (ability to operate in a digital environment),
- cognitive (to ensure the ability of critical employees to respond to change, reorient and innovate),
- social and emotional skills (to ensure effective collaboration); and
- adaptability and resilience (to be able to evolve in changing business conditions) (McKinsey & Company, May 7, 2020).

Although recommendations based on international practice may initially seem difficult to implement in Latvia's economic conditions, research (McKinsey & Company, May 7, 2020) shows that small companies are the ones that are able to gain more from the improvement of employees' skills.

This is due to the ability to reorient more quickly and make the necessary changes, most often due to less internal bureaucracy, as well as a clearer awareness of the specific skills required.

With the change in shopping habits, the crisis caused by the COVID-19 pandemic has led to a gradual **restructuring of supply chains** on a global scale, moving plants closer to points of sale. As companies become more local, the location of the required skills will also change. If a company's activities are relocated geographically, it is also possible to relocate talent (skills) geographically, including through the use of local talent and skills.

In the long run, companies will have to adapt to the risk of global trade and supply chain disruptions, making their supply chains more resilient. This is possible, for example, by reducing the number of unique units, eliminating redundant delivery stages, and bringing delivery partners closer and regionalised (McKinsey & Company, Nov. 30, 2020).

During the COVID-19 crisis, a large part of the world's governments carried out an unprecedented economic response, allocating more than USD 16 trillion by the end of September 2020 (McKinsey & Company, Nov. 30, 2020). Governments have used both fast-track and innovative mechanisms to support household well-being and help businesses survive the crisis. Potential future government practices include driving incentives in specific areas that achieve wider goals of promoting a more resilient society, such as expanding green energy and energy efficiency; accelerating the digitalisation of government, as well as incentives for companies to introduce new technologies, create a future workforce to increase the viability and competitiveness of companies.

Research results and discussion

1. Research methodology

In our data analysis, we use both the enterprise survey data and secondary data.

In September-October 2020, the Research Centre SKDS conducted a CAWI/CATI survey of Latvian entrepreneurs. The data were weighted according to the Central Statistical Bureau's 2017 statistics on the distribution of enterprises by characteristics: industry, enterprise size and location. Statistical data on the distribution of enterprises were used to determine the weights:

- by company's field of activity (production, trade, construction, services) and industry,

- by the number of employees of the company (1-9 employees, 10-49 employees, 50-249 employees, 250 and more employees), so that the obtained data can be compared to statistics on the contribution of companies to Latvia's gross domestic product (GDP) depending on the number of employees;
- by company location (Riga, outside Riga).

In the multi-level quota sample, 750 respondents were selected from the enterprise database, broken down by industries according to NACE code. The size of the target group of the survey is proportional to the industry's (according to NACE code) contribution to Latvia's gross domestic product.

To reach the target group, the internet survey method was used first and then the telephone interview method was used to collect the number of missing responses. The interviews were conducted in Latvian and Russian language, offering each respondent the choice of the most convenient interview language.

The survey included a total of 55 questions. The set included basic information questions about firm characteristics (industry, number of employees, origin of capital, region, export status, revenue group). The specific questions about pandemic's impact and response to the crisis contained such themes as enterprise financials, international trade, liability and receivables management, communication, employment, client service, innovations, strategic changes, legal issues and risk management.

As secondary data, we used official statistics and government institutions' data.

For data processing and analysis, we used Microsoft Excel and SPSS software.

2. Results

There are differing views on the effectiveness of the business support instruments. European experts think that emergency liquidity assistance to small businesses, temporary tax deferrals for businesses and short-term work are the most appropriate forms of support (EconPol, 2020).

In the United States, researchers have found mass layoffs and closures had occurred, the risk of closure was negatively associated with the expected length of the crisis, and many small businesses are financially fragile (Bartik et.al., 2020). Other study reveals that firms that received the relief funds were less likely to report revenue decrease and employee hours decline, providing preliminary support to the social insurance value of the relief programs in boosting small businesses' economic activities during the COVID-19 crisis (Li, 2020).

During the COVID-19 pandemic, Latvian government implemented a very extensive support program for residents and entrepreneurs, which was aimed at maintaining employment, compensating for lost income and solving the most pressing business problems. The programs that were used for business support are shown in Table 1.

Table 1

Support programs to reduce the effects of COVID-19 in Latvia

Program	Implementation time	Source of funding	Funding provided (million euro)	Funding used (million euro)*
Downtime support	14.03.2020 -30.06.2020 09.11.2020 -30.06.2021	State budget	206.2	107.8
Wage subsidies	09.11.2020 -30.06.2021	State budget	75.6	11
Grant for the working capital	01.11.2020 - 30.06.2021	State budget	70.8	62
Extension of the deadline for the payment of taxes or a division of the taxes into several payment periods for a period of up to three years	Up to 30.06.2021.	Total amount of extensions	386.5	
Working capital loan	25.03.2020 - 30.06.2021	State budget	60	
		ALTUM**	150	97
Loan holidays guarantee	25.03.2020 - 30.06.2021	State budget	47.5	41
Export loan guaranties	15.04.2020 - 30.06.2021	EU funds	2.5	10.3 (total amount of guaranties)
Guaranties to large companies	24.08.2020 - 30.06.2021	State budget	20.0	
Investment fund for large companies	31.07.2020 - 30.06.2021	State budget	50	2.9
Loans for large and medium-sized businesses	10.11.2020 - 31.12.2021	State budget	50	
Support for hotels	04.12.2020 - 18.12.2020	State budget	4.7	2,17
https://www.liaa.gov.lv/lv/programmas/skv-uznemejdarbiba Promoting international competitiveness and exports	05.08.2020 - 31.07.2023	European Regional Development Fund (ERDF)	69.3	37.9
Support for export companies	05.08.2020 - 30.10.2020	State budget	31	30.39
Support for tourism companies	29.07.2020 - 30.09.2020	State budget	14.6	14.6
Training to improve the skills of employees	2021-2023	ERDF	19.7	
Other forms of support	2020 -2021	State budget	1.04	

* As of March 26, 2021

** ALTUM is a state-owned development finance institution, which offers state aid for various target groups with the help of financial tools (loans, credit guarantees, investments in venture capital funds, etc.). ALTUM develops and implements state aid programs to compensate for the market's shortcomings that can't be solved by private financial institutions.

Source: authors' summary based on Ministry of Economics of the Republic of Latvia, 2021 data

Companies in Latvia are also offered support for business rent payments and extension of real estate tax payment terms.

The results of the enterprise survey regarding the impact of COVID-19 are grouped into two categories. First, the consequences of the crises on business financial results are described. They are captured by revenue and profit change, pricing policy, debt and receivables management. Second, the approaches to business economic survival and development are analysed by various type of changes implemented and/or planned.

Table 2

**Frequency table of financial variables change due to COVID-19
 pandemics, %, N=750**

Change	Revenue	Profit	Demand	Prices	Inven-tory	Recei- vables	Loans	Export
Decreased	52.6	54.5	47.3	20.3	26.8	1.8	3.6	7.3
No change	33.2	35.0	38.6	72.6	54.8	58.0	46.5	35.5
Increased	12.9	9.2	12.1	4.4	6.4	20.4	4.5	2.2
Hard to say	1.3	1.4	2.0	2.7	12.0	1.8	1.6	2.4
Not relevant						18.0	43.7	52.7

Source: authors' calculations based on enterprise survey data

Table 2 presents the frequency data of the main financial variables that changed during the pandemics. In total, 73.3 % of the companies participating in the survey reported at least one negative overall effect from the pandemics in Latvia. On average, 3-4 variables worsened due to the crises.

The data show that due to government restrictions and decrease in consumption, 47.3 % of the companies experienced decrease in demand of their goods and/or services and 20.3 % lowered the price level of their production. This significantly worsened their profitability. In 20.4 % cases, the level of receivables increased, which may indicate lower solvency of companies' clients that, as a domino effect, worsened their own liquidity as well. The most severe situation was in accommodation and food services, and arts, entertainment and recreation industries.

Across the sample, 12.7 % reported they had to close at least one business activity because of COVID-19 restrictions and consequences of the pandemics.

In Table 3, there are frequency values of the main implemented or planned changes and improvements companies did as a response to COVID-19 crises. 82.2 % of the companies reported at least one implemented or planned change. On average, 3 changes were mentioned.

The most significant improvements are made or planned by companies in the arts, entertainment and recreation sector; wholesale and retail trade, repair of motor vehicles and motorcycles; and administrative and support service activities. Most companies – 52.5 % - optimized work organization; the most in: administrative and support service activities (83.3 %); arts, entertainment and recreation (63.6 %) and construction (71.2 %).

26.7 % of the survey participants introduced a new management approach. 20.8 % of the surveyed companies plan to expand their operations in Latvia, including the most significant wholesale and retail trade, repair of motor vehicles and motorcycles (33.3 %); in construction (25.8); in the arts, entertainment and recreation sector (27.3 %). In turn, 12.9 % of companies plan to expand their operations outside Latvia.

Table 3

Frequency table of implemented or planned change due to COVID-19 pandemics, %, N=750

Response	Optimised		New management approaches	Digitalized	Restructured business	Cooperated	Expand (LV)	Expand (abroad)	Attract EU funds
	number of employees	work organisation							
Yes	16.1	52.5	26.9	45.9	12.7	17.0	20.8	12.9	6.9
No	80.9	44.3	69.1	50.4	78.0	74.1	73.6	84.1	89.1
Hard to say	3.0	3.2	4.0	3.7	9.3	8.9	5.6	2.9	4.0

Source: authors' calculations based on enterprise survey data

Overall, 20.5 % of surveyed enterprises have received or been eligible to receive some kind of support from government institutions in forms of downtime allowances for employees (14.0 %); tax payment extension (16.0 %); possibility to submit the 2019 report later (18.1 %); and other. On average, these companies received 2 kinds of support.

Statistically significant relation (approved by Chi-square test) was between company profit change and tax payment extension and later report submitting. 15.9% and 16.1% of enterprises with lower profit used these opportunities, accordingly.

Overall, 34.6 % of companies are very critical of the support measures developed and proposed by the government. 28.3 % evaluate it as average, but 25.0 % - as good and 2.9 % - as excellent. The most critical attitude towards the support comes from companies whose financial situation worsened due to the pandemic restrictions (43.8 %).

Conclusions, proposals, recommendations

- 1) It should be noted that the government's actions were reactive to the negative impact of the pandemic on business and the economy. No proactive action was taken to anticipate developments and develop a medium-term crisis management strategy. The criteria for participation in the support program were not always well thought out, and its management was criticized by the representatives of professional business associations.
- 2) The speed of economic recovery in the current situation depends very much on how strong and effective the support that governments can provide to entrepreneurs will be. It is up to the public policy makers to create a favourable environment for the creation of new businesses by supporting new business types and ways of providing goods and services, encouraging entrepreneurs to innovate in a way that addresses current societal challenges. The combination of R&D investment, with general support for entrepreneurship during a downturn, can later lead to more positive economic results. In times of crisis and, more importantly, in the recovery phase, innovation must be at the heart of business strategy. An important aspect is the creation of a favourable business ecosystem that is able to adapt to shocks and new challenges. Policy makers need not only to respond to the challenges of COVID-19, but also to offer long-term development perspectives and support.
- 3) During the COVID-19 pandemic, government support programmes were aimed for residents and entrepreneurs to maintain employment, compensating for lost income and solving the most pressing business problems. The support was in forms of subsidies, grants, loans, extension of tax payments, guaranties, training, and other.

- 4) A number of mechanisms are in place to support companies and employees in the COVID-19 affected sectors. However, it should be noted that currently, in response to the current situation, short-term support is mainly offered, without a longer-term vision. Long-term recovery planning and proactive crisis management are needed.
- 5) Tax policy instruments, such as lowering the VAT rate on socially important goods, medical equipment, etc., can be used as a temporary mechanism to increase consumer spending and support the sectors particularly affected by the crisis (accommodation, catering services, and other). Of course, such a support mechanism could only be part of a long-term reform strategy.
- 6) The impact of the crisis on business manifested itself in form of revenue and profit reduction because of sharp drop in consumption caused by government restrictions and more prudent spending. The hardest hit were accommodation and food services; arts, entertainment and recreation industries.
- 7) Recommendations for employers from the point of view of business development are: (1) Strategic: development of telework policy; strategic workforce planning in the context of the company's business plans and the skills required for their implementation; diversification of areas of activity; rationalization; flexibility and adaptability to change and new circumstances; moving towards digital transformation; (2) Additional skills acquisition, skills development programs for employee training, such as digital skills acquisition; cognitive skills (critical thinking, creativity, problem solving, etc.); socio-emotional skills (for maintaining professional ties also in remote work); adaptability and flexibility skills; training on personal data protection, confidentiality in the context of teleworking; (3) Introduction of new forms of employment in addition to teleworking, such as rolling schedules; "hiring" of employees; shortened working week; flexible work schedule; multiple workplaces etc.; (4) Experience exchange activities (e.g. within the framework of professional association members).
- 8) 20.5 % of surveyed enterprises have received or been eligible to receive at least one kind of support from government institutions. About one third of the enterprises are critical regarding the support measures developed and proposed by the government.
- 9) The hypothesis that there is linkage between the severity of crisis impact on Latvian enterprises and government support use and evaluation, is approved.
- 10) our paper contributes to the research of economic impact of COVID-19 on entrepreneurship in Latvia.

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REGIONAL AND STRUCTURAL DEVELOPMENT OF SPECIALIZED FARMS IN CENTRAL AND EASTERN EUROPEAN COUNTRIES (2005-2016)

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Abstract. This paper analyses the structural development of farm specialization in Central and Eastern European countries (CEECs/EU-10²) over the 2005-2016 period with a special focus on regional aspects of such development. We look at the number, land, labour and production of ten specialization types of farming in each of the EU-10 countries using EUROSTAT data, and compare these with the EU-15/27 averages. We conclude that the number of specialized farms in EU-10 declined to a lesser than in the EU-15 but doubled the production against 30 per cent growth in EU-15. The growth of production shows strong regional differences from 50 per cent to 200 in EU-10 and, offering more jobs in three countries in 2016 than in 2005. Cereal farms more than tripled production closing the gap to EU-15 average from two third to 50 per cent. In 2016, already over 75 per cent of the production of specialized farms in CEECs came from TOP 3 specializations (dairy, cereal and pig), well above EU-15 average (55 per cent). From 2005 until 2016 growth of area, labour and total productivity of specialized farms in EU-10 well exceeded that of EU-15. Their levels, however, were still only around 43 per cent, 25 per cent and 20 per cent of that of EU-15 in 2016. The ratio between the highest and lowest productivity levels within EU-10 is 3.8 with respect to area, 5.2 with respect to labour, and 35.4 with respect to total productivity in 2016 and shows clearly the extent of scattering in the productivity of specialized farms in EU-10 countries.

Key words: agriculture, specialization, farm size, productivity, CEECs.

JEL code: Q1

Introduction

Significant changes in farm structure of the EU-10/15/27 took place between 2005 and 2016. One of the key features of this change is that specialized farms play an increasing role in the production both in the EU-10 and in the EU-15. The higher share in production, land and labour use belongs to different farm types in CEE countries. The aim of the paper is to explore the regional differences in growth of specialized farms by farm types at the EU-10 level and, by farm types in countries and by countries total. Differences between the EU-10 average data and the EU-15 average by specialization types allows one to monitor how effective the catching up in EU-10 agriculture has been by improving specialization. Progress achieved in specialization in EU-10 countries is also compared to the EU-10 and EU-15 average.

Literature review

Before and after the EU Eastward enlargement small farms have always been an important topic for researchers. In 2005, 53 % of farms were small (below 5 ha) in the EU-15 and 80 % in the EU-10 which, in 2016, decreased to 47 % and 76 % respectively, yielding a 63,5 % average for the EU-27. On the one hand, it was underlined that small scale farming gave the only job opportunity for most of the rural population to support family. Therefore, it is a challenge for agricultural policy to pay special attention to this agenda and provide a helping hand to small farms to help them grow and avoid migration from rural to urban areas. Feedback from researches to policy makers emphasized the need for developing policy measures better tailored to this subsector (EP resolution, 2014; Davidova S,-Bailey A, 2014; Davidova S, 2014). Davidova, S. et. al. (2012) pointed out that in five of the EU-10 member states the poorest small farms give the largest cluster and CAP instruments are not efficient to help poor farms. Hornowsky, A. et al. (2020) regarding the Polish case identified three types of small farms as "hobby", "two-occupation" and "professional" farms and confirmed that the development of small farms is particularly influenced by

² Bulgaria, Czech Republic, Estonia, Latvia, Lithuania, Hungary, Poland, Romania, Slovenia and Slovakia.

external factors (EU funding; national benefits), rather than internal (entrepreneurial) ones. Erjavec, E., et.al. (2014) concluded that most Semi-Subsistence Farms exist to survive rural poverty, and off-farm employment is becoming the predominant strategy. Hubbard, C. et.al. (2014) draw the attention to the fact that small and Semi Subsistence Farms (SSFs) appear to play a wider role in the rural economy, as providers of environmental public goods, supplying speciality foods and ensuring the continuation of local and cultural traditions.

On the other hand, researchers also investigated the possibilities of how small farms themselves could adjust to the changing social and economic environment and be integrated into the fast growing and changing food chains. Research outcomes supported small farms to find the best development path for survival (Csaki C., – Forgacs C., 2008; Gordon M., et al., 2014). Benedek, Z. et. al. (2018) based on a survey identified those factors influencing which phase in marketing channels are more fit to small farms to cooperate. Forgacs (2016) showed that small specialized farms achieved higher growth in total productivity backed by intensive labour use than non-specialized small farms. Large and very large farms in the EU-28 have focused more on taking advantage of specialization by extending their land to more than 90 % of the total utilized agricultural area in 2013 (EUROSTAT 2018, pp. 20). Szabo, L. et.al. (2018) investigated the agricultural performance in Visegrad 4 (V4) countries and confirmed that for a successful catching up V4 countries must invest more in purchasing intensification factors and adjust the structure of assets production specification. Csaki, C., Jambor, A. (2019) analysed the issue of convergence/divergence in Central and Eastern Europe and Commonwealth of Independent States in agricultural productivity and found that CEE and CIS countries have experienced a limited convergence to Western-European standards. Forgacs (2019) concluded that specialized farms in the EU-10 have increased productivity at a higher rate than non-specialized farms. As far as the direction of specialization in CEE countries is concerned, Forgacs (2020) found that in production growth rate, the three leading specialization types of farms were cattle rearing and fattening; cereal, oilseed and protein crops and, fruits and citrus fruits farms.

Research question: Did specialization of agricultural farms help convergence of EU-10 agriculture?

H1: Specialization is a development path for EU-10 farms to support convergence.

H2: Specialized farms of EU-10 increase their share in land use.

H3: Specialization in CEE countries was a development path to keep more labour in sector.

H4: Dynamics of labour, area and total productivity of specialized farms in EU-10 exceed that of EU-15 resulting in a step ahead in convergence.

H5: Productivity development of specialized farms is a general phenomenon in all EU-10.

Methodology

The paper gives a comparative analysis of farm size and its dynamics to learn more about farm structure and farm restructuring in EU-10 with a special focus on regional development and specialization. We compiled the basic dataset using 2005-2016 EUROSTAT data on the number, land size (Utilised Agricultural Area, UAA), labour size (Agricultural Working Unit, AWU) and production (Standard Output, SO) of all ten specialized farm types (with UAA only) in all EU-10 member states and the corresponding data for the whole of EU-15 and EU-27. We then computed average farm size by land (UAA/farm) and labour (AWU/farm). In order to analyse the productivity level of CEECs' agriculture we used land (SO/UAA), labour (SO/AWU) and farm productivity (SO/farm) indicators. For a more detailed analysis we calculated ratios for comparison of average figures and distribution of input and output at the country level. To measure the amount of change in inputs, outputs and productivity indicators of all specialized farms of EU-10 we computed a dynamics index for number, land and standard output, and that of -of-productivity indicators

for land, labour and total farm output. Such an approach makes it possible to gain some insight into the changes of mainstream directions and level of specialization in each 10 CEE countries and to compare them to EU-10/15/27 average.

Research results and discussion

Radical changes in farm structure in EU-10

The EU-10 has brought 8.6 million farms and some 100 million new customers to the EU, creating one of the largest single markets with 480 million customers and, increased UAA of the EU by 37.5 %. Per capita UAA in the EU-10 was 0.46 ha in 2005, while it was only 0.36ha in the EU-15. After the eastward expansion, the number of farms in the EU more than doubled, although farm size in the CEECs was predominantly small, with 80 % of the farms having UAA below 5 ha, compared to 53 per cent of farms in the EU-15. It was a challenge to integrate the EU-10 into the EU under the Common Agricultural Policy (CAP) in the phase-in period (2004-2013) with an asymmetric but narrowing gap in subsidies between EU-10 and EU-15 countries. It was also unclear how CEECs would manage the adjustment process under CAP.

In the analysed period, 40 % of the number of non-specialized farms in the EU-10 and 31 % in the EU-15 have disappeared. These figures for specialized farms were more modest, 15.8 % and 18.1 % respectively, providing evidence that specialization in the new member states helped the agriculture sector find a path to growth. Except for small farms, the number of specialized farms in the EU-10 increased in all farm size categories, while in the EU-15 only the number of the largest specialized farms (100 ha and over) increased from 2005 to 2016. Most farms found cereal production and cattle rearing/fattening best for specialization. In 2016, half or close to half of the farms were already specialized in Czechia, Hungary and Lithuania, the only country where even the number of specialized farms grew compared to 2005.

Fast growth in land use of specialized farms in CEE countries

In 2005, only 40 % of land (UAA) was used by specialized farms in the EU-10 and 51 % in the old member states that was 54.7 % in EU-10 close to the corresponding measure of 56.3 % in the EU-15 in 2016. In 2005, a third of the cereal farms in the EU-27 were in the EU-10 using 60 % of UAA of the specialized farms, a share that rose to 71.4 % by 2016. 12 years after joining the EU, the UAA of specialized farms increased by 40.7 % in the EU-10, and 90 % of the land belonged to cereal and dairy farms. Pig farms have lost more than 600 thousand hectares. The growth in UAA of specialized farms varied by country in the EU-10, ranging from 3.5 % in Slovenia to 77.8 % in Latvia. Baltic countries, Poland and Slovenia more than doubled UAA of cereal farms. Cattle rearing/fattening farms in Bulgaria used 25 times more land in 2016 than in 2005, in Latvia twelve times more, and in Poland 6 times more. In 9 CEECs, pig farms lost land area, while dairy and horticulture indoor farms both lost land area in 7 countries. The Baltic countries have made strong strides in diversification of specialization witnessed by a significant growth of land use in cereal, outdoor horticulture, fruit (except in Latvia), cattle rearing/fattening and poultry production.

Absorbing more labour with regional differences in EU-10

In 2005, EU-10 countries used 17 % more labour (AWU) in agriculture than the EU-15. Due to technology and farm structure development, by 2016 the EU-10 already offered 5 % fewer agriculture jobs than the EU-15. In 2005, 56.3 % of labour was employed on specialized farms in the EU-15, more than twice of what the EU-10 employed. From 2005 to 2016, labour use (AWU) by specialized farms has declined both in the EU-10 (-5 %) and in the EU-15 (-15 %) but to a lesser extent than the labour use decline across all farms. The labour use of cereal and cattle rearing/fattening farms in the EU-10 helped to slow down the speed of letting people go out from the agriculture sector.

In 2005, the level of labour use by specialized farms in the EU-10 varied by country with a range of 20 % in Romania to over 50 % in Slovenia. Specialized farms already offered some half of the agricultural jobs in the Baltic countries and Slovenia in 2016. Labour was a key factor in extending and deepening the specialization of the EU-10 agriculture and shifting towards a more labour intensive production.

The need for labour on farms depends very much on the type of specialization. In the EU-10, more than a third of the labour on specialized farms had jobs in dairy farms in 2005 showing that replacing labour with capital is very costly. In the Baltic countries, more than 70 % of specialized farm labour was employed on dairy farms in 2005, with an enormous decline to 40-50 % in 2016. TOP 3 labour intensive specialized farming accounted for 72.5 % of labour use in 2005 which grew to 74.5 % by 2016.

In 2016, apart from Romania, cereal farms more than doubled labour use in the EU-10 compared to 2005 levels. Cattle rearing/fattening farms offered more jobs in nine countries, while dairy farms offered much fewer jobs in all EU-10 countries. Most of the labour worked on dairy farms in 8 out of EU-10 countries in 2005. In 2016, cereal farms used most labour in 7 out of 10 countries, dairy farms in two countries (Estonia and Latvia) and cattle rearing/fattening in Slovenia. Structural changes in labour use in the EU-10 have been significant over the twelve-year period and look as yet unstable.

High concentration in farm production

In the EU-10, the production of TOP 3 specialized farms (dairy, cereal and pig farms) amounted to 72,5 % in 2005 and to 77.6 % (dairy, cereals, poultry) in 2016 (Table 1). These figures well exceeded the production of TOP 3 farms in the EU-15 (50-55 %). In 2005, dairy farms provided the highest production figures in one half of the EU-10, cereal farms in the other half. By 2016, cereal farms led production in already 7 out of 10 countries. Dairy farms were second most productive in six countries. Production in the EU-15 has been more balanced among 7 specialization types, each having over 7 % share in production both in 2005 and 2016. In the EU-10, there were already three countries - Bulgaria and Hungary and Slovenia - where production of TOP 3 specialized farms did not change and ranking was kept from 2005 to 2016.

Table 1

**Share of production of TOP 3 farm specialization types in EU-10
 (2005 and 2016), %**

Country	2005		2016		From 2005 to 2016		2016/ 2005, %
	TOP 3	%	TOP 3	%	IN	OUT	
Bulgaria	cereal, dairy, poultry	84.6	cereal, dairy, poultry	91.2	no change		107.8
Czechia	cereal, dairy, pig	73.5	cereal, dairy, cat/fat	79.2	cat/fat	pig	107.8
Estonia	dairy, cereal, poultry	90.9	dairy, cereal, cat/fat	97.1	cat/fat	poultry	106.8
Latvia	dairy, cereal, poultry	85.5	cereal, dairy, pig	89.4	rank, pig	poultry	104.6
Lithuania	dairy, cereal, poultry	87.2	cereal, dairy, pig	93.6	rank, pig	poultry	107.3
Hungary	cereal, poultry, dairy	70.1	cereal, poultry, dairy	79.2	no change		113.0
Poland	dairy, pig, hort. indoor	70.6	dairy, cereal, poultry	71.3	cereal, poultry	pig, h. indoor	101.0
Romania	cereal, dairy, poultry	80.7	cereal, dairy, pig	84.5	pig	poultry	104.7
Slovenia	dairy, cat/fat, vine	82.2	dairy, cat/fat, vine	75.0	no change		91.2
Slovakia	cereal, dairy, hort. indoor	79.0	cereal, dairy, pig	83.1	pig	hort. indoor	105.2
EU-10	dairy, cereal, pig	72.5	cereal, dairy, poultry	77.6	rank, poultry	pig	107.0
EU-15	dairy, pig, vine	51.7	dairy, cereal, pig	54.8	rank, cereal	vine	106.0

Source: Author's calculation based on EUROSTAT data

The increasing level of concentration of production has been a solid trend in CEE agriculture as part of adjustment to CAP. With the exception of Slovenia, the concentration level of specialized farms' (TOP 3) output increased from 2005 to 2016 in all CEE countries over 90 % in Bulgaria, Estonia and Lithuania.

Changes in farm size and labour use

The average farm size (UAA/farm) in the EU-10 was about 25-30 % of the average EU-15 farm size between 2005 and 2016. Specialized farms in the EU-10, however, were 37 % and 47.3 % of the size of the average specialized farm size in the EU-15 in those years. Looking at farm size by specialization types we find that cattle rearing/fattening farms were largest followed by cereal farms in 2005 and, along with significance growth in size, also in 2016.

The average farm size of specialized farms shows significant differences among specialization types. The average area of specialized farms grew by 67 % reaching 12 ha, well exceeding the average size of all farms (8.2 ha) in the EU-10. The average size of specialized farms by type scattered very much by country. In 2005, small farms were prevalent in Romania, with the average size of cereal farms a mere 7 ha, in sharp contrast to the more than 120 ha in Bulgaria and Czechia. The average dairy farm size was less than 6 ha in Bulgaria and Romania in 2016, while exceeding 300 ha in Czechia and 200 ha in Estonia and Slovakia. In 2016, the land size of poultry farms was exceedingly high in Slovakia (165 ha) and Czechia (140 ha). In 2005, there were only three countries (Bulgaria and Czechia and Estonia) where the average cereal farm size was above 100 ha, and in Estonia pig farms also had more than 100 ha of land on average. In 2016, four specialization types had average farm sizes over 100 ha: cereal and dairy farms in three countries, cattle rearing/fattening and poultry farms in one country each.

Labour use rose significantly in Slovakia (poultry, pig, vine), Czechia (poultry, pig), Poland (poultry, outdoor horticulture, fruits), and Estonia (indoor horticulture). The EU-10 average in per farm labour use increased by 12 % on poultry farms, but this increase was almost ten times higher in Slovakia, more than five times higher in Poland, more than 4 times in Czechia and more than double in Bulgaria.

Total productivity (SO/farm) of specialized farms

CEE countries have great potential in land and labour resources but their per farm production was only about 12 % of the EU-15 average in 2005, with the gap slowly narrowing over 12 years. In catching up cereal and cattle rearing/fattening farms were the leading ones in closing the gap, although in 2016 their per farm output was still only 30 % of the EU-15 average. The largest disparity between EU-10 and EU-15 average productivity is on vine farms where total per farm productivity in EU-10 is just above 5 % of EU-15 average.

Productivity figures (SO/farm) of the EU-10 countries are varied. Farms specialized in cereal production in 5 out of EU-10 already have higher averages than that of the EU-15 demonstrating that the rate at which per farm production catches up to the EU-15 level very much differs by country. Excluding olive farming (it is marginal in EU-10 as it is limited to Slovenia), data on the EU-10 countries in nine specialization types provide 90 observations of specialized farms. Of these in only 11 cases (12 %) do we find that individual EU-10 countries have a higher per farm output than that of the EU-15 average in 2005, with 14 cases in 2016. Not a single EU-10 country's productivity average is over that of the EU-15 in indoor horticulture, vine and cattle rearing/fattening farms. However, outdoor horticulture, dairy and pig farms in the EU-10 strengthened their positions by 2016 when compared to 2005. Figures from 2016 show moderate gains in total productivity of specialized farms in EU-10 over the 2005-2016 period. Czechia is the only country where the national average of per farm output already exceeded that of EU-15 average in 6 out of 7 specialized farm types. In Slovakia, cereal, outdoor horticulture and poultry farms produced a higher per farm national average than that of the EU-15. In Estonia, cereal farms and dairy farms beat the EU-15 average, while Bulgaria and Latvia have better average in cereal production only. In four of the EU-10 countries, there is still no specialization type with per farm production higher than the EU-15 average.

From 2005 to 2016, specialized farms in the EU-10 increased per farm output by 138 % well above the 58 % EU-15 average. CEE countries show evidence of substantial adjustments in selected specialized farm types leading to the increased average figures. Apart from olive production, growth of per farm output exceeded already EU-15 average in all EU-10 countries. Indices were outstanding in Slovakia (420 %), Bulgaria (316 %) and Latvia (>200 %). Growth in per farm output was extremely high in Czechia (pig, 9705 %, and poultry, 1370 %). Poland shows high growth in poultry (1800 %), fruits (560 %), and pig farms (360 %). Slovakia, with larger farms by physical size, increased per farm output in pig, poultry and vine farms by 8000 %, 4500 % and 2100 % respectively. A high growth of production on dairy farms was a general trend across the EU-10 countries, with outstanding figures in Estonia, Slovakia (590 %), and Czechia (330 %).

Area productivity (SO/UAA) of specialized farms

The key issue in the catching up of EU-10 agriculture is how fast farms in the EU-10 countries are able to increase competitiveness. This in turn depends substantially on how area productivity can be improved. Growth of per hectare production on EU-10 farms exceeded that of EU-15, but it was still only at a level of 43 % of EU-15 in 2016. Cereal farms in the EU-10 showed the highest growth in productivity reaching 75 % of that of EU-15 average, while cattle rearing/fattening farms reached 60 % of the EU-15 average in 2016. Some specialized farm types in CEE countries achieved growth well above EU-10 average. In 2005, in eight of the ten specialization types the EU-10 country average was above the EU-15 average. Three of these belonged to poultry, two to cattle rearing/fattening and one each to cereal, outdoor horticulture and dairy farms. In four specialization directions (indoor horticulture, vine, fruits and pig production) specialized farms production per ha was below the EU-15 average in all EU-10 countries. From a country point of view, all three Baltic countries had higher productivity in poultry production than the EU-15 average in 2005. By

2016, area productivity of selected specialized farms in the EU-10 has reached the EU-15 total average in six countries and in 14 specialized farm types. The growth of area productivity of specialized farms in the EU-10 was twice that of the EU-15 42 % and 20 % respectively. Growth of area productivity of specialized farms were higher in all EU-10 countries than EU-15 average. From 2005 until 2016 specialized farms in Bulgaria, Czechia, Latvia and Slovakia increased area productivity by over 50 %. Area productivity of cereal farms was more than doubled in 5 out of the EU-10. Specialized farms' area productivity more than doubled on pig farms in 6 countries, on cereal farms in 5, in outdoor horticulture in 5, and on dairy and fruit farms in 2 countries each.

Growth of labour productivity (SO/AWU) exceeded area productivity

EU-10 agriculture has achieved significant growth in labour productivity over the 12 years under consideration. However, the difference between the EU-10 and the EU-15 was still much bigger in labour productivity than in area productivity over 2005-2016 period. There is supporting evidence for this in all specialization types of farming and all EU-10 countries, except for outdoor horticulture in Slovakia.

In 2005, one unit of AWU produced 5.4 times more value in the EU-15 than in the EU-10. This production value figure is almost 25 higher in the case of poultry farms, more than 10 times higher on pig farms and more than 5 times in the other 4 specialized farm categories. Cereal and indoor horticulture farms in the EU-10 fared the best but they still used more than three times more labour than their competitors did in the EU-15. Specialized farms in the EU-10 did their best to reduce their labour use per unit production and, more than doubled their labour productivity on average. Growth was more than three times higher in four countries (Bulgaria, Slovakia, Latvia and Estonia). In 2016, there were four countries in CEE where labour productivity of cereal farms already exceeded 50 % of that of the EU-15. In indoor and outdoor horticulture, as well as in fruit production, three countries each reached the 50 % guideline of the EU-15. Looking at labour productivity by countries, we find that Slovakia had labour productivity that was 4.5 times higher than the EU-15 average on outdoor horticulture farms, with quotients above the guideline in horticulture indoor (81 %), cereal (76 %), fruit (53 %) and pig farms (51 %). Czechia also neared the EU-15 average in 2016 with quotients of 92 % in cereal, 82 % in fruit, 54 % in horticulture outdoor and 51 % in vine farms. Among the Baltic states, only Estonia has an outstanding labour productivity with 75 % of that of EU-15 on average, and with an 81 % on cereal farms. In Poland, only indoor horticulture farms had high labour productivity with 81 % of that of EU-15 while the ratios of all other specializations are below 33 % of the EU-15 average. Labour productivity of specialized farms in the EU-10 has seen growth from 2005 to 2016, but there is still a wide gap between the EU-10 and EU-15 averages. Although some of CEECs did a good job in few types of specializations, others are still well behind in catching up.

Conclusions

Justifying hypotheses

H1: Specialization is a development path for EU-10 farms to support convergence: Justified, as share of number of specialized farms in total farms increased from 2005 to 2016 in 9 of EU-10.

H2: Specialized farms of EU-10 significantly increase their share in land use: Justified. Specialized farms increased land use in 9 out of EU-10 countries.

H3: Specialization in CEE countries was a development path to keep more labour in sector: Justified. Decline in labour use of specialized farms was moderate compared to that of total farms in EU-10.

H4: Dynamics of labour, area and total productivity of specialized farms of EU-10 exceed EU-15 average, resulting in a step ahead in convergence: Justified. Dynamics of all three productivity indicators of EU-10 were higher than those of EU-15.

H5: Productivity development of specialized farms is general phenomena in all EU-10: Justified. Productivity development was a general picture in EU-10 and was higher than EU-15 average, however growth of labour productivity of specialized farms was below that of total farms in EU-10.

Growth of production of specialized farms in Central and Eastern European countries was significant between 2005 till 2016 with pronounced regional differences. Further specialization looks the only development path for a successful convergence of EU-10 to EU-15 average. It is supported by the higher growth of inputs, production and productivity indicators of EU-10 compared to EU-15 average narrowing the gap but the latter is still significant.

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FEATURES OF INVESTMENT RISK ANALYSIS AND ASSESSMENT

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Abstract. The article examines the essence of the analysis and assessment of the risks of investment projects in the innovative development of the country's economy. One of the most important tasks for investors in the context of the coronavirus crisis is the analysis, assessment and effective management of risks that can affect investment projects before investing. And also, the investor must identify the factors that negatively affect the project and develop measures to reduce their negative impact. Based on the above, it can be said that improving the risk management methodology and evaluating investment projects based on modern and best practices has become one of the urgent tasks. In this article, the author explains the essence of risk management and presents the main stages of risk management developed by foreign and domestic economists, and also expresses her own opinion about the stages of risk management of investment projects in the form of a scheme. The article also presents the content of the methods of risk analysis that are frequently used in practice. In particular, the author shows the essence of methods for assessing investment risks, such as Break-even point, the sensitivity analysis of the project, the method of Scenarios, the method for assessing the sustainability of the project, Expert evaluation method, Analogy method, and others.

We can identify two aims of research:

- 1) to study the stages of investment risk management, developed by foreign and domestic scientists, and, on their basis, to propose the stages of risk management, developed by the author;
- 2) to study various methods of risk assessment, which are a key part of investment risk management, and develop proposals for their application in Uzbekistan.

To achieve the objectives of the study, the following **tasks were identified:**

- explain the content of the economic categories "risk" and "investment risk";
- explain the content of investment risk management;
- study of the process (stages) of investment risk management, developed by foreign and domestic economists;
- development by the author of the stages of the investment risk management process;
- study and outline methods for assessing the risks of investment projects;
- development of recommendations on the application of risk assessment methods in Uzbekistan.

Subject of research: methods for assessing the risks of investment projects.

Information sources for writing the research was books and articles by foreign and domestic economists.

Keywords: risk, investment risks, risk analysis, risk management, methods for assessing investment risks.

JEL code: G11

Introduction

In defining the priorities and development programs of the Republic of Uzbekistan, of course, the main focus is on creating a more favourable investment climate in the country and attracting foreign investment in the national economy. The President of the Republic of Uzbekistan Sh. M. Mirziyoyev in his Address to the Oliy Majlis wrote that: "Investments are the driver of the economy, in Uzbek, it is the heart of the economy, this is no exaggeration. Along with investment, new technologies, advanced experience, highly qualified specialists will come to various industries and regions, and entrepreneurship will develop rapidly". This is true, because the implementation of active and effective investment policy and the achievement of a more favourable investment climate for investors – has a positive impact on the economic and social development of the country.

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Given the significant impact of the coronavirus pandemic on international capital flows, there is a need to fully demonstrate the investment potential of our country to attract more foreign investment in the national economy. One of the most important tasks for investors in the context of the coronavirus crisis is the analysis, assessment and effective management of risks that can affect investment projects before investing. And also, the investor must identify the factors that negatively affect the project results and develop measures to reduce their negative impact. Based on the above, it can be said that improving the methodology of risk analysis and assessment of investment projects on the basis of modern and best practices has become one of the urgent tasks.

In the economic literature, a number of economists define risk in different ways. The word "risk" has Spanish-Portuguese roots and means "reef", "underwater rock". This is associated with the concept of "maneuvering between the rocks", which means that it is fraught with danger (Kuznetsov, B. T., 2015).

In the dictionary of the Russian language, the famous lexicographer Ozhegov S. I., risk is defined as "a random action in the hope of a happy outcome" (Ozhegov, S. I., Shvedova, N. Yu., 2006), and in the world-famous Webster dictionary, risk is defined as "the possibility of loss or injury" (Merriam-Webster's Dictionary and Thesaurus, 2014).

The concept of "uncertainty", which is very close to the concept of "risk", is used by a number of economists as a synonym for the classification of certain types of risk, in particular M. Bernadete Junkes, Anabela P. Tereso, Paulo S. L. P. Afonso wrote in their research: "Risk is, fundamentally, the possibility of financial loss. It is used as a synonym of uncertainty and refers to the variability of returns associated with an investment project" (Junkes, M. B., Tereso, A. P., Afonso, P. S. L. P., 2015). Professor Livshits V. N. explaining the difference between risk and uncertainty, wrote that: "Uncertainty is the incompleteness and inaccuracy of information about the conditions for the implementation of the project. The risk of a project for a given participant is understood as the possibility of such conditions for the implementation of the project, which he assesses negatively" (Vilensky, P. L., Livshchits, V. N., Smolyak, S. A., 2008).

Another Russian economist, Khominich I.P. argued that: "Risk is an economic category that represents the possibility of an event occurring that can entail three economic results: negative (damage, loss), zero and positive (benefit, profit). Risk is a subjective-objective category. The subjective side of risk lies in making certain strategic decisions and calculating the likelihood of their result. The objective side of risk is a qualitative and quantitative expression of possible manifestations of risk and their consequences" (Khominich, I. P., 2019).

Michel Crouhy, Dan Galai, Robert Mark in their book commented on the concept of risk as follows: "In particular, we understand that risk is not synonymous with the size of a cost or of a loss. After all, some of the costs we expect in daily life are very large indeed if we think in terms of our annual budgets: food, fixed mortgage payments, college fees, and so on. These costs are big, but they are not a threat to our ambitions because they are reasonably predictable and are already allowed for in our plans.

The real risk is that these costs will suddenly rise in an entirely unexpected way, or that some other cost will appear from nowhere and steal the money we've set aside for our expected outlays. The risk lies in how variable our costs and revenues really are. In particular, we care about how likely it is that we'll encounter a loss big enough to upset our plans" (Crouhy, M., Galai, D., Mark, R., 2006).

Michel Crouhy continued his scientific research on risks and highlighted three broad risk types in the global banking industry:

"Credit risk is the risk of loss following a change in the factors that drive the credit quality of an asset. These include adverse effects arising from credit grade migration, including default, and the dynamics of recovery rates.

Market risk is the risk of losses arising from changes in market risk factors. Market risk can arise from changes in interest rates, foreign exchange rates, or equity and commodity price factors.

Operational risk refers to financial loss resulting from a host of potential operational breakdowns that we can think of in terms of people risks, process risks, and technology risks (e.g., frauds, inadequate computer systems, a failure in controls, a mistake in operations, a guideline that has been circumvented, or a natural disaster)".

Uzbek scientist, professor Abdullayeva Sh. Z. explained the difference between risk and danger as follows: "Danger is an already existing reality, that is, in most cases, danger is primary, risk is secondary. Usually, knowing that there is a danger and deciding to deal with it and get a positive result creates a risk. Danger often leads to negative situations. In our opinion, positive results of dangerous situations can be achieved only by risking" (Abdullayeva, Sh. Z., 2002).

Uzbek Professor Vakhobov A. V. defines: "Investment risk as an integral part of the overall financial risk, which includes the possibility of financial losses and incomplete return on investment or additional investment costs" (Vakhobov, A. V., Khazhibakiev, Sh. Kh., Muminov, N. G., 2010).

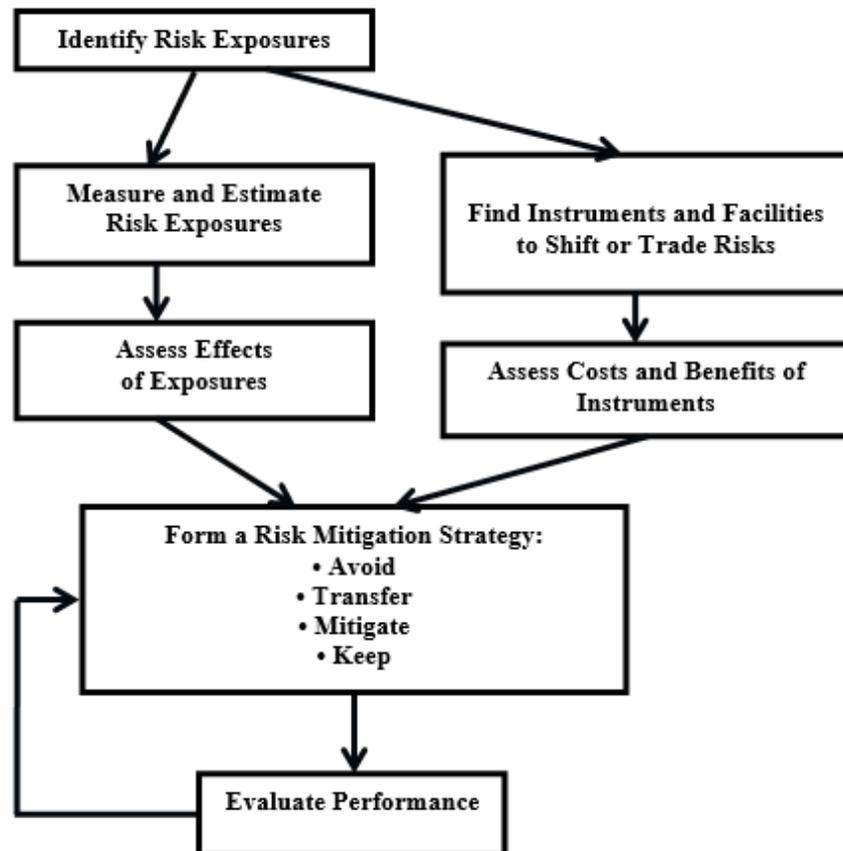
Martina Merkova, Josef Drabek commented on risk: "Risk is unavoidable part of any entrepreneurship, so it is very important to make its analysis, but, paradoxically at the same time, it is one of the most underestimated parts of the project" (Merkova, M., Drabek, J., 2015).

Analysis of the set of definitions given to the nature of risk allows us to single out the main aspects that lead to risky situations: the random nature of the emerging situation; availability of alternative solutions; the ability to determine the expected result; the likelihood of additional costs; the possibility of obtaining additional income.

Currently, project risks are understood as a set of situations that lead to a decrease in the expected benefit (efficiency) from the project. At the same time, the risk of an investment project is also the sum of risks that impede the implementation of the investment project or reduce the efficiency of the project. Investment risk can be defined as the possibility of loss of reserves, the inability to receive income or the need for additional costs as a result of making a certain investment decision.

Research results and discussion.

To date, for the successful implementation of investment projects, measures are being developed to effectively manage and reduce investment risks.



Source: Michel Crouhy, Dan Galai, Robert Mark, 2006.

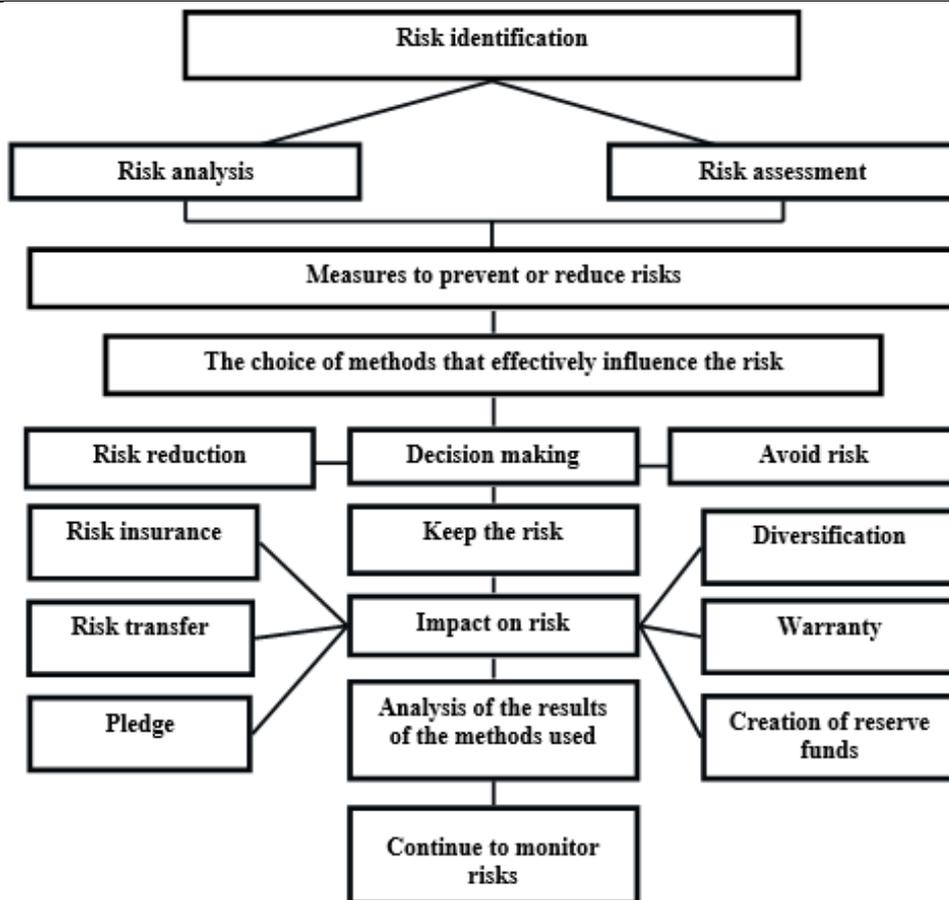
Fig. 1. Risk management process proposed by Michel Crouhy

When developing and implementing an investment project, it is necessary to take into account, study and analyse each type of risk, develop measures to reduce them, which is the most effective way to prevent risk events.

Risk management can be understood as a set of actions aimed at determining a reasonable combination of risk and reward (Mamatov, B. S., Khuzhamkulov, D. Yu., Nurbekov, O. Sh., 2014). In our opinion, risk management is a structural process that is constantly carried out in a company in order to identify, assess, calculate, control (monitor) and reduce risks affecting the profitability of an investment project and their consequences. The purpose of risk management and assessment is to provide the investor with the information necessary to make decisions on the advisability of participating in the implementation of an investment project and to develop measures to protect against possible financial losses.

Foreign and domestic economists have described the risk management process in their scientific papers. They are shown in Figures 1 and 2.

The risk management process described by foreign and domestic scientists has both common features and differences. In both of these processes, risk management begins with risk identification, next stages are analysis and assessment of risks, and the last stage is the choice of risk management methods which is based on the result of the assessment. The existence of differences is mainly associated with the development of not only primary, but also secondary stock markets abroad, which was further considered by foreign scientists when using financial instruments in risk management.

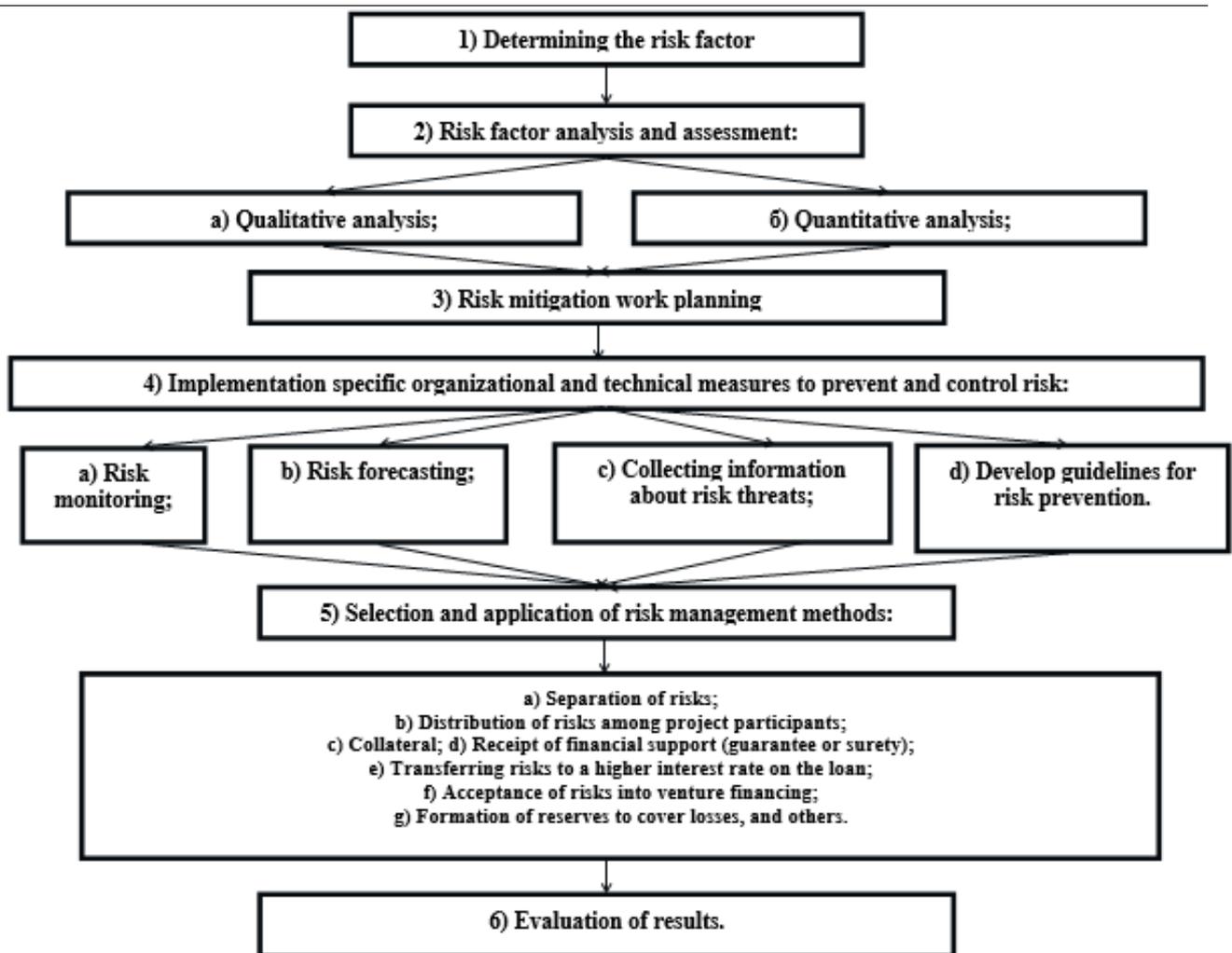


Source: Abdullayeva, Sh.Z., 2002.

Fig. 2. Risk management process proposed by Abdullayeva Sh.Z.

In our opinion, the main stages of risk management can be summarized as follows (Figure 3).

As you can see from Figure 3, risk management consists of six stages, the first of which is to determine the risk factor, that is, the cause of the risk and the event or situation that may affect the project. At the second stage, the analysis and assessment of risks is carried out; it should be noted that risk assessment can be divided into two groups: a) qualitative risk assessment - aimed at identifying types of risks, their causes and organizational measures to reduce risks; b) quantitative risk assessment - means calculating a quantitative expression of project risks through project indicators, determining the likelihood of risks and the impact of risks on the project. Risk mitigation planning is the application of specific measures within the selected risk management measures and methods. At the fourth stage, risk prevention and control is carried out; specific organizational and technical measures based on specific plans and programs, such as risk monitoring, risk prediction, collection of data on negative impact and subsequent costs associated with risk, development of risk prevention guidelines are discussed. Then, in the fifth step, risk management methods are selected and applied. At the final stage, information about risky situations and their consequences are collected and recommendations for the future are given. The received instructions and conclusions will be used in the implementation of subsequent projects.

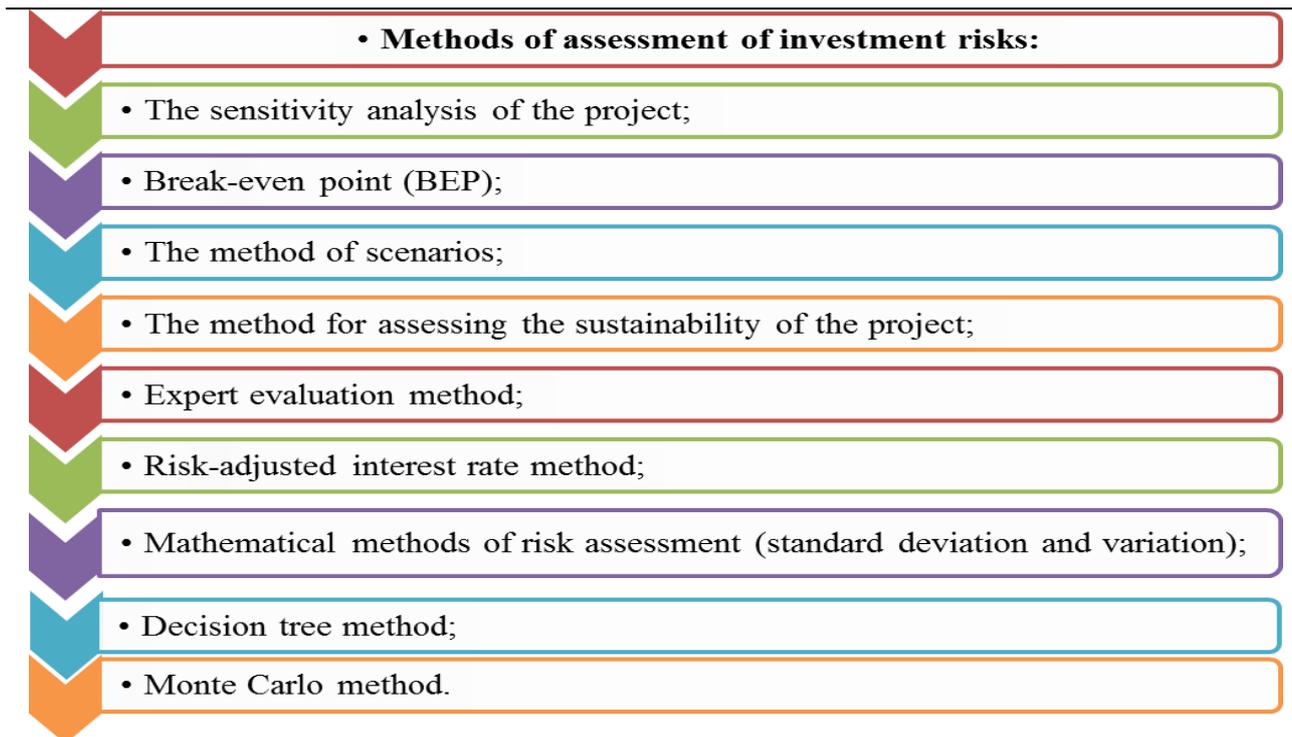


Source: developed by the author

Fig. 3. Stages of investment risk management

It should be noted that when managing the risks of investment projects, management methods are selected based on the results of their analysis and evaluation. This means that the more accurate the project risk assessment is, the more accurate and reliable the project data will be and the more efficient project management will be.

In practice, there are several methods for assessing investment risks, the main of which are listed below (Figure 4).



Source: developed by the author

Fig. 4. Methods of assessing investment risks

1. The sensitivity analysis of the project shows how much the main indicator of the project efficiency (NPV or IRR²) changes with a certain change in the given parameters of this project. The more the project performance indicators change with the change in the initial conditions, that is, if the project is more sensitive to changes in direct and indirect factors, the higher the project risk level.

The following algorithm is used to perform the sensitivity analysis.

- 1) First, the main indicator of the project is selected, for example, net present value or internal rate of return.
- 2) Then the factors that most significantly affect the sensitivity are selected, for example, the selling price, the value of variable or fixed production costs, sales volume, loan fees, the amount of investment costs, and the cost of capital raised.
- 3) Next, the value of the main indicator for the given ranges of factors is calculated.
- 4) Finally, the factors to which the project is most sensitive are determined, and a decision is made to implement the project or to complete the feasibility study.

The factors that affect the efficiency of the project (that is, they are called parameters) are divided into two groups:

- factors directly affecting income and expenses: sales volume, product price, production costs, investment volume, interest payments on loans and others.
- indirect factors: the terms of construction, the production period, delays in payments, sales of finished products, inflation, income tax rate and others.

Sensitivity analysis is recommended to identify factors that significantly affect the results of investment projects, and for comparative analysis.

² NPV – Net present value; IRR – Internal rate of return (They are indicators that assess the effectiveness of investment projects).

2. By using the "break-even point" method, we can determine the volume of sales (quantity of products) when the revenue from sales are equal to the costs of its production. The break-even point (BEP) in economics, business, and specifically cost accounting, is the point at which total cost and total revenue are equal: there is no net loss or gain, and one has "broken even". The break-even point (BEP) represents the sales amount – in either unit or revenue terms – that is required to cover total costs (both fixed and variable). Total profit at the break-even point is zero. Break-even is only possible if a firm's prices are higher than its variable costs per unit.

The main purpose of break-even analysis is to determine the minimum output that must be exceeded in order to make profit.

In the linear Cost-Volume-Profit Analysis model (where marginal costs and marginal revenues are constant, among other assumptions), the break-even point (BEP) (in terms of Unit Sales (Q)) can be directly computed in terms of Total Revenue (TR) and Total Costs (TC) as:

$$TR = TC \quad (1)$$

$$PxQ = TFC + VxQ \quad (2)$$

$$Q = TFC/(P - V) \quad (3)$$

Where:

TFC – Total Fixed Costs;

P – Unit Sale Price;

V – Unit Variable Cost.

The formula (3) allows to find the amount of goods sold, at which the Total Revenue is equal to the sum of Total Costs. The lower the break-even point, the more sustainable the project.

Thus, the following conclusions can be drawn from the application of the break-even point method:

- - a high break-even point is undesirable for the enterprise, on the contrary, it means that the lower the break-even point, the more sustainable the project;
- - the higher the fixed costs, the higher the break-even point;
- - the larger the difference between the unit price of a product and the variable costs per unit of product, the smaller the break-even point.

3. Scenario analysis allows us to determine the impact on the main indicators of the project of all project parameters. In this case, the deviations of the project parameters are calculated taking into account the correlation between them. During the risk analysis, three scenarios are calculated: pessimistic, baseline and optimistic. In a pessimistic scenario, parameter values are used that are lower than expected. This takes into account the correlation between the parameters. For example, a decrease in the volume of products sold is likely to lead to an increase in the price of these products. If, at the same time, all the parameters that are significant for successful work on the project are deteriorated, then a decrease in the quality of the project should be expected. However, the probability of simultaneous deterioration of a large number of weakly correlated values is small. Therefore, the choice of the characteristics of the pessimistic scenario should be treated very carefully. The same difficulties are encountered when developing an optimistic scenario. The Monte Carlo simulation method is devoid of these drawbacks.

4. The method for assessing the sustainability of the project is one of the types of the scenario method described above. It assesses the risk of losing or decreasing the expected profit or increasing losses or costs when the conditions of the investment project change, that is, when the project scenario changes. Often three scenarios are used when conducting a risk analysis: baseline, optimistic and pessimistic. The

net present value is calculated accordingly for each scenario: for the optimistic scenario - $NPV_{op.}$, for the baseline scenario - $NPV_{base.}$ and for the pessimistic scenario, $NPV_{ps.}$. The deviation of the project from the net present value is calculated using the following formula:

$$Var(NPV) = NPV_{op.} - NPV_{ps.} \quad (4)^3$$

Where:

$Var(NPV)$ – Variation of Net Present Value;

$NPV_{op.}$ – Net Present Value for the optimistic scenario;

$NPV_{ps.}$ – Net Present Value for the pessimistic scenario.

According to this formula, the wider the project NPV variation width, the higher the risk level.

5. The main advantage of the expert evaluation method is that the experience of experts is used in the project analysis process and in the calculation of the impact of various quality factors. The algorithm (procedure) for expert assessment of project risks is as follows:

- development of a set of risks that may occur during the life stages of the project;
- segregation of risks by significance level, this means determination of the probability of occurrence of risks and the level of risk (damage) caused by this risk through an expert.

The disadvantage of this method is that the expert evaluates the project subjectively based on personal experience, but the advantage of the method is the possibility of its application for non-recurring events and in the absence of a sufficient amount of statistical data.

6. The analogy method consists in analysing all available data relating to the implementation of similar projects by a firm or a bank in the past in order to calculate the probabilities of loss. A huge role in this is played by a database of all previously undertaken projects, created on the basis of their assessment after completion. The analogy method is most widely used when assessing the risk of frequently recurring projects, for example, in construction. If a construction company intends to implement a project similar to already completed projects, then to calculate the level of risk of an undertaken project, a so-called risk curve can be built on the basis of the available statistical material. For this purpose, areas of risk are established, limited by the lower and upper limits of total losses.

In addition, the following methods are used to analyse and assess investment risks: Mathematical methods (standard deviation and variation), Risk-adjusted interest rate method, Decision tree method, Monte Carlo method, and others.

Conclusions, proposals, recommendations

Effective implementation of investment projects in the national economy requires improved methods of project risk assessment and management. To this end, the following conclusions and recommendations have been developed:

- 1) In investment risk management, methods are selected based on the results of risk analysis and assessment. On the other hand, effective project management leads to the desired result. Therefore, the risk assessment of the project must be thorough and reasonable.
- 2) The specificity of the risks affecting the project should be taken into account when choosing methods for assessing risks and managing investment projects. In this case, for example, risks are divided into insured and uninsured. Of the uninsured risks, it is preferable to use the method of allocating

³ Nosirov, E.I., Mamatov, B.S., Shaislamova, N.K., Sharifkhodjaeva, K.U. (2012). Investitsiya risklarini boshqarish. (Investment risk management). Tashkent: Fan va texnologiya. p. 148.

financial reserves and determine the amount of funds required to cover costs, rather than manage force majeure risks or political risks using the method of insurance and calculating insurance costs.

3) When assessing the risks of investment projects, it is necessary to carry out a comprehensive assessment. Risk assessment requires a comprehensive assessment based not only on a unified assessment method, but also on the integration of objective methods (based on statistical and reporting data) and subjective methods (based on expert opinion), as well as other methods of qualitative and quantitative assessment. In this case, the disadvantage of one method is compensated by the advantage of the second and an impeccable risk assessment is achieved.

4) Methods for assessing risks in the national economy should be based on foreign experience and, in particular, on assessment methods which are used with information and communication technologies. The application of risk management methods based on financial instruments proposed by foreign economists leads to the use of innovative financing mechanisms, advanced and modern management methods.

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HEALTH LITERACY ASSESSMENT OF VIDZEME STATISTICAL REGION

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Abstract. Data on Health Literacy in the population of Latvia is limited. The aim of the study was to determine the Health Literacy impacting factors of inhabitants of Vidzeme Statistical region in Latvia (LV008). Respondent survey (n = 383), using a paper-and-pencil self-administered approach and telephone interviews, was conducted based the European Health Literacy Survey Questionnaire (HLS-EU-Q47). In order to ensure internal consistency and reliability, the authors used Cronbach's α test ($\alpha = 0.965$). The confirmatory factor analysis (CFA) allowed to determine that factor results differentiate between genders and there is a strong positive correlation ($r = 0.945$), that impacts results. Factors *Access*, *Appraise* and *Apply* explained each 30 % of the variance, and factors *Understand* explained 31 %. HL index division by gender indicated that 47.4 % of female respondents and 46.6 % of male respondents have "limited health literacy" ("inadequate" + "problematic"). The largest age group among respondents are 18-39-year old where there is lower level of education and lower income. However, cases have been observed when respondents even with higher education have "limited health literacy," which indicates towards a need for further HL research in Latvia, because compared to HL of other member states, LV008 HL index is by 38.9 % larger than the EU average (47.6 %).

Key words: health literacy.

JEL code: I12; I13

Introduction

The European Health literacy research (HLS-EU) indicates that on average 47 % respondents have encountered difficulties in health management (Sorensen, 2015). The limited health literacy is an actual health risk for the society ever more during the spread of COVID-19. Multiple EU member states are researching the knowledge, motivation, competencies of people to access information on topics concerning health, to understand that, to evaluate, and to use it in order to make conclusions and take appropriate decisions in everyday life concerning the healthcare, disease prevention, health improvements and life quality (ABS, 2009; Berkman et al., 2011; Altin, 2014; Connor, Mantwill, and Schulz, 2013; Guzys, Kenny, Dickson-Swift, 2015).

Health Literacy (HL) as a term was defined first in 1974 (Pelikan, 2014). Over the years multiple HL definitions have been proposed (Berkman et al, 2010; Freedman et al, 2009, Kickbusch, Nutbeam, 2008). However, the definition itself has been created by the National Library of Medicine, and that defines the HL as the level at which person can acquire, process and understand the basic information about the health and healthcare services, which is necessary to take responsible health related decisions "the knowledge, motivation and competences to access, understand, appraise and apply health information in order to make judgments and take decisions in everyday life concerning healthcare, disease prevention and health promotion to maintain or improve quality of life throughout the course of life" (Sorensen et al., 2012).

The essence of the HL definition is focused on the ability to search, find, acquire, understand, evaluate and use health information, in order to take based decisions about individual health condition and the health of society (Sorensen et al., 2012).

Researchers identified that high HL is linked to profound knowledge about the health, less frequent cases of sickness and reduced expenditures linked to sickness (Mancuso, 2008; Baker, 2006). However, low HL is equivalent to average knowledge about health issues and is linked to higher rates if sickness and increased health services are related with expenses (Scott et al, 2002; Kim, 2009; Rowlands, Protheroe, Price, Gann, Raf, 2014; Wallace, Perkhounkova, Bohr, Chung, 2016). However, there is a variety of other

factors that are linked to HL, linked to sex, education, occupation, income level i.e. demographical and socio-economic factors of respondents. (Solar, Iewin, 2010; Bodur, Filiz, Kalkan, 2017).

The OECD and the Government of Latvia have identified HL as a priority that ought to be developed. The research into HL is aimed at the role of patient satisfaction with the healthcare services, at the development of HL skills (Rasnaca, Vibane, Nikisins 2017; Onose et al., 2017; Silkane, Davidsons, Veliverronena, 2018). When assessing and comparing the HL situation in Latvia with that in other EU member states, it does not look bright (Heijmans et al., 2015).

Authors believe that HL and its factors have not attracted significant attention in the public space, and information about the health and health literacy is available in a limited amount. Consequently, the First Global Health Literacy Summit by the International Health Literacy Association (IHLA) has raised the need to affirm the importance of health literacy (IHLA, 2021).

Taking into account the lack of HL information basis in Latvia, which was indicated by the European Commission study (Heijmans et al., 2015), authors suggested the **following aim**: determination of factors affecting health literacy of the population of Vidzeme statistical region in Latvia. **The research tasks**: (1) to carry out analysis of scientific literature about health literacy survey HLS-Q (questionnaire), used methods in factor determination; (2) to carry out survey, to determine and evaluate factors limiting the HL; (3) to determine the HL index divisions by gender, age, education, and gross income per month; (4) to compare the statistical sample of Vidzeme Statistical Region HL index with that of other EU member states.

The methods applied: descriptive method, Pearson's correlation, Chi-square test, KMO and BARLETT'S, Cronbach's Alpha, Manova and Mancova tests, Exploratory Factor Analysis and Principal Components Analysis.

Materials and methods

The Statistical region Vidzeme (LV 008) as a research region is one of six regions of Latvia (NUTS III) (Nomenclature of territorial units for statistics, small regions for specific diagnoses), where the number of population of working age (in the range of 18-64 years) population according to the Central Statistical Bureau (CSB), is 383 respondents, calculation of survey respondent size has been created proportionally 110 868 (CSB, 2020). The calculated sample size is to LV 008 working age population. The survey was conducted from May 2020 till December 2021, while deployed with mixed technique, using a paper-and-pencil self-administered approach (PAPI), and phone interviews.

HL was based on the HLS-EU-Q47 (Sorensen et al., 2013). The questionnaire consists of 47 items of which must be rated on 4-point Likert scales (1 = very difficult, 2 = difficult, 3 = easy, and 4 = very easy), which identifies 4 competences related to managing health information (access, understand, appraise, and apply information). This allows the calculation of a general HL index and index of each of the 4 competencies. The HL indices were standardized to unified metrics from 0 to 50 using the formula (HLS-EU Consortium, 2012):

$$\text{Index} = (M-1) \times (50/n) , \quad (1)$$

where

index – was the specific index calculated;

M – the mean of all participating items for each person;

1– was the minimal possible value of the mean (leading to a minimum value of the index of 0);

n – was the range of the mean;

50 – was the chosen maximum value of the new metric.

The acquired HL index was grouped according to value in 4 groups: 0-25 – inadequate; >25-33 – problematic; >33-42 – sufficient, and >42-50 – excellent HL, in order to evaluate the HL of respondents according to gender, age, education, and gross income per month (EUR) and to compare to other countries. To detect vulnerable groups, the "inadequate" and "problematic" levels were combined to a single level, called "limited health literacy" (0-33) (Sorensen, 2015).

In order to test the internal consistency, reliability test Cronbach's α was conducted. Correlation and regression analysis was performed. The results were considered at the level of significance $p < .05$, $p < .01$ and $p < .001$.

Research results and discussion

During the study, analysis of 10 researches from 2015 to 2020 was conducted, including 17 countries (Austria, Bulgaria, Germany, Greece, Indonesia, Ireland, Japan, Kazakhstan, Korea, Malaysia, Myanmar, Netherlands, Norway, Poland, Spain, Taiwan and Vietnam). The research revealed that for basis for similar researches the European Health Literacy Survey Questionnaire HLS-EU-Q47 conceptual model of HL (Sorensen et al., 2012) or its variation HLS-SF-Q12 (The 12-Item Short Form Health Survey), HL-SDH-Q33 (Health literacy on social determinants of health), HLS-EU-Q86 was used, which differs according to survey questions 12-86, according to the number of respondents from 403 to 10 024, as well as according to the profile of topics of interest in a given research. The analysis indicated the following methods and tests: Confirmatory factor analysis (CFA), Factor analysis, Principle component analysis (PCA), correlations (Pearson and Spearman's), regressions (Multiple linear), Cronbach's and Spearman-Brown methods, Anova, Kaiser-Mayer-Olkin (KMO), Bartlett's test and Chi-squared test. Thus authors chose to use most of the listed methods.

The research was based on HLS-EU-Q47 and while carrying out internal consistency test, it was found out that the alpha coefficient for the 47 items is 0.965, $\alpha > 0.8$, suggesting that the items have high internal consistency.

In the second task of the research the following demographical and socio-economic data on respondents were collected:

Participants. In the study 383 adults (49.9 % male and 50.1 % female) in age from 18 to 64 (18-19 (27.4 %); 20-29 (35 %); 30-39 (30.5 %); 40-49 (2.6 %); 50-59 (2.6 %); 60-64 (1.8 %)) ($M = 2.23$, $SD = 1.08$) participated.

The education of respondents was from primary or lower than primary to higher (higher (27.4 %); vocational or vocational secondary (35.0 %); general secondary (30.5 %); primary or lower than primary (7 %)) ($M = 2.17$, $SD = 0.913$).

Gross income per month (EUR) was from ≤ 200 EUR to 1500 EUR ($M = 2.39$, $SD = 1.111$), <400 EUR (23.2 %); 400-700 EUR (35.8 %); 700-1000 EUR (24.0 %); 1000- <1500 EUR (12.3 %); 1500 EUR $>$ (4.7 %).

Principal axis factor analysis with varimax rotation was conducted to access the structure for the 47 items, which identifies 4 factors related to managing health information (access, understand, appraise, and apply information). The assumption of independent sampling was met. Kaiser-Meyer-Olkin Measure (KMO) measure should be greater than 0.70 indicating sufficient items for each factor (Table 1).

The assumptions of normality, linear relationships between pairs of variables, and the variables' being correlated at a strong level were checked. For construct validity, confirmatory factor analysis (CFA) was conducted. Four factors were requested, based on the fact that the items were designed to index four aspects of health literacy: access, understand, appraise, and apply information. After rotation, the first

factor *Access* accounted for 21 % of the variance, the second factor *Understand* accounted for 17 %, and the third factor *Appraise* 12 %, and the fourth factor *Apply* for 9 % of the variance.

Table 1

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.951
Barlett's Test of Sphericity	Approx. Chi-Square	20313.743
	df	1081
	Sig.	0.000

Source: author's calculations

In the CFA, we used the comparative fit index (CFI) and the root mean square error of approximation (RMSEA) as the model fit indices. A CFI value ≥ 0.90 was considered to indicate acceptable model fit. For the RMSEA, a value < 0.05 represented good fit, and a value < 0.08 was considered acceptable (Kline, 2010).

The first factor, which seems to index *Access*, had 24 items, of which 9 was strong loadings on such items: 17) ...find information about how to manage unhealthy behaviour such as smoking, low physical activity and drinking too much? 24) ...judge how reliable health warnings are, such as smoking, low physical activity and drinking too much? 32) ...find information about symptoms of illnesses that concern you? 23) ...understand why you need health screenings? 2) ...find information on treatments of illnesses that concern you? 7) ...understand what to do in a medical emergency? 15) ...call an ambulance in an emergency? 9) ...judge how information from your doctor applies to you? 29) ...decide if you should have a flu vaccination?

The second factors, which seemed to index *Understand*, had 23 items, of which high loadings on the next five items, where > 0.8 : 33) ...find information on treatments of illnesses that concern you? 14) ...follow the instructions on medication? Other items, that are > 0.7 : 16) ...follow instructions from your doctor or pharmacist? 25) ...judge when you need to go to a doctor for a check-up? and 18) ...find information on how to manage mental health problems like stress or depression? However, > 0.6 is for following items: 6) ...understand the leaflets that come with your medicine? 10) ... judge the advantages and disadvantages of different treatment options? 27) ...judge which health screenings you should have? 22) ...understand why you need vaccinations?

The third factors, had 18 items, of which seemed to index *Appraise*, had high loadings on the next 6 items: > 0.8 there is 36) find out what to do in case of a medical emergency? More than 0.7 3) find out what to do in case of a medical emergency? Items > 0.6 there are 4) find out where to get professional help when you are ill? And 40) find out what to do in case of a medical emergency?

The fourth factors, had 16 items, of which seemed to index *Apply*, had high loadings only two next items: > 0.6 there was 38) ...find information on treatments of illnesses that concern you? and > 0.5 there was item 41) ...find information about symptoms of illnesses that concern you?

Hierarchical Multiple Regression (in SPSS with Assumption Testing) analysis was performed to determine the role of gender, education, age and gross income per month (EUR) in health literacy predicting (*Access*, *Understand*, *Appraise* and *Apply*). The assumptions of linearity, normally distributed errors, and uncorrelated errors were checked and met. Further problems were identified, such as a high correlation indicating high correlation among some predictors (age and education $r = 0.945$) and low multicollinearity 0.105 (tolerances are well over 0.57 ($1 - R^2$)).

When gender was entered alone, it significantly predicted HL factor *Access*, $F(1, 830) = 0.51$, $p = 0.478$), adjusted $R^2 = 0.01$, however, as indicated by R^2 , $< 1\%$ of the variance in HL factor *Access*.

When the other variables (gender, age, education and gross income per month) were added, they significantly improved the prediction, R^2 change = 0.30. This indicates that 30 % of the variance in Access was by model. Combination of variables significantly predicted Access, gender ($\beta = -0.006$, $p = 0.849$), age ($\beta = 0.95$, $p = 0.23$), education ($\beta = 0.100$, $p = 0.62$), gross income per month ($\beta = 0.223$, $p < 0.00$), $F(4, 827) = 89.786$, $p < .001$), with all four variables. The partial correlations can be explained as variance that is not explained by any of the other variables, each independent variable is explaining in the outcome variable, therefore age and education can explain the least unique amount of dispersion that age and education explains the least amount of unique variance 5 %, but gross income per month reaches even 18 %. Among male participants, HL was positively associated with age ($\beta = 0.19$; $p = 0.003$), gross income per month ($\beta = 0.34$; $p < .001$), but was negatively associated with predictor education ($\beta = -0.34$; $p = 0.003$).

To investigate how HL factor *Understand* impacts the predictors, a correlation was identified (age and education $r = 0.945$). When gender was entered alone, it significantly predicted HL factor *Understand*, $F(1, 830) = 1.15$, $p = 0.285$, adjusted $R^2 = 0.10$. However, as indicated by R^2 , 10 % of the variance in HL factor *Understand*. When the other variables (gender, education, age and gross income per month) were added, they significantly improved the prediction, R^2 change = 0.31. This indicates that 31 % of the variance in *Understand* was by model. Combination of variables significantly predicted *Understand*, gender ($\beta = -0.049$, $p = 0.093$), age ($\beta = 0.22$, $p = 0.592$), education ($\beta = 0.235$, $p < 0.001$), gross income per month ($\beta = 0.207$, $p < 0.001$), $F(4, 827) = 94.091$, $p < .001$), with all four variables.

To investigate how HL factor *Appraise* indicated that when the other variables (gender, age, education and gross income per month) were added, they significantly improved the prediction, R^2 change = 0.30. This indicates that 30 % of the variance in *Appraise* was by model. Combination of variables significantly predicted *Appraise*, gender ($\beta = -0.027$, $p = 0.372$), age ($\beta = 0.37$, $p = 0.367$), education ($\beta = 0.217$, $p < 0.001$), gross income per month ($\beta = 0.204$, $p < 0.001$), $F(4, 827) = 94.091$, $p < .001$), with all four variables.

To investigate how HL factor *Apply* when the other variables (gender, age, education and gross income per month) were added, they significantly improved the prediction, R^2 change = 0.30. This indicates that 30 % of the variance in *Apply* was by model. Combination of variables significantly predicted *Apply*, gender ($\beta = -0.033$, $p = 0.255$), age ($\beta = 0.35$, $p = 0.383$), education ($\beta = 0.117$, $p = 0.001$), gross income per month ($\beta = 0.220$, $p < 0.001$), $F(4, 827) = 94.091$, $p < .001$), with all four variables.

HL index division (Table 2) according to gender indicates that out of 192 respondents 47.4 % for women and out of 191 respondents for 46.6 % for men is a "limited health literacy" ("inadequate" + "problematic"). "Excellent" HL evaluation is by 9.8 % higher for women, but "sufficient" HL index is by 5.8 % higher for men. The evaluation "limited health literacy" was estimated the largest number for respondents from 18-19, 20-29 and 30-39-year groups. In between the different age groups the evaluation "excellent" HL it was a dominant value in the age group 30-39 and 60+ years, that can be explained with higher education. This is due to the fact that respondents with lower education specifically with general secondary education 51.3 % and primary or lower than primary 44.4 % indicate that "limited health literacy" HL is more pronounced in groups with lower gross income per month (EUR).

In comparison with other European countries (Fig. 1), if the proportion of people with "limited health literacy" considerably exceeds the average (47.6 %) observed for the overall sample, then for LV008 this amount is by 38.9 % larger.

This research was aimed at a research area that has not been sufficiently analysed in Latvia, i.e., health literacy and health literacy impacting factors and their determination within the inhabitants in the Vidzeme

statistical region of Latvia. There were 47 questions deployed in HL matrix that were used in European countries (Sorensen et al., 2015). When confirmatory factor analysis (CFA) was conducted, four factors were determined: (1) *Access*, included 24 items on availability of information – unhealthy behaviour such as smoking, low physical activity and drinking too much, find information about symptoms of illnesses that concern; (2) *Understand*, had 23 items information on treatments of illnesses, instructions on medication; (3) *Appraise* had 18 items found out what to do in case of a medical emergency, find out where to get professional help when you are ill; (4) *Apply*, where 16 items were determined, about finding of information on treatments of illnesses that concern you, about symptoms of illnesses that concern you. Thus, the second task of the study was fulfilled.

Table 2

HL index division by gender, age, education, and gross income per month

Predictor variables		HL index (%)				N
		0-25	>25-33	>33-42	>42-50	
Gender	Women	16.6	20.8	32.9	29.7	192
	Men	14.6	22.0	43.5	19.9	191
Age	18-19	6.7	1.9	17.1	74.3	95
	20-29	14.2	24.6	57.5	3.7	134
	30-39	51.3	30.8	9.4	8.5	117
	40-49	60.0	30.0	0.0	10.0	10
	50-59	50.0	40.0	10.0	0.0	10
	60>	14.4	57.1	14.3	14.3	7
Education	Higher	6.7	1.9	17.1	74.3	105
	Vocational or vocational secondary	14.2	24.6	57.5	3.7	144
	General secondary	51.3	30.8	9.4	8.5	117
	Primary or lower than primary	44.4	40.7	7.4	7.4	27
Gross income per month (EUR)	<=200	52.8	28.3	18.9	0.0	53
	200-400	37.8	32.4	29.7	0.0	37
	>400-700	27.2	21.3	32.4	19.1	136
	>700-1000	9.6	13.8	29.8	46.8	94
	>1000-1500	17.8	24.4	22.2	35.6	45
	>1500	11.1	11.1	27.8	50.0	18

Source: author's calculations based on the results of the survey

Source: author's calculations based on Sorensen et al., 2015

Fig. 1. Levels of health literacy index by country and LV008

The identification of HL importance by OECD and the Government of Latvia (IHLA, 2021) increased the interest of authors to research into demographic and social predictors, that could impact HL, for instance, gender, age, education, and gross income per month (EUR), based on Sorensen and other authors (Solar, Iewin, 2010; Sorensen et al., 2012; Bodur, 2017). Taken into account that the calculations of the survey respondents was carried out proportionally to LV008 working age population, therefore the research results were aimed at reaching the given cohort of respondents.

In the research Model 1 it was determined that gender does not significantly impact (only 1 %) HL factor *Access*. However, the Model 2 indicates that, when all health literacy domains were added to regression,

they improved the prediction of respondents *Access* to 30 %. Predictors age and education has a strong correlation ($r = 0.945$), that similarly to the partial correlation has an impact on factor *Access*. Education of female respondents is higher than that of men which is indicated by their negatively associated with predictor education. Similar phenomena can be identified within analysis of *Understand*, *Appraise*, and *Apply*. The female respondents are more dominant in categories with higher and general secondary education, but in male respondent groups the dominant categories are vocational or vocational secondary, and primary or lower than primary education. The adjusted R squared value for male factor *Access* was 27 %, *Understand* 29 %, *Appraise* 27 %, and *Apply* 30 %. However, for females the adjusted R squared value factor *Access* and *Understand* were 35 %, *Appraise* 34 %, and *Apply* 30 %, which is related mainly to the education of women. However, the gross income per month (EUR) of respondents impact all factors, especially for females (gross income per month (EUR)* education, $r = - 0.284$; gross income per month (EUR)* age, $r = - 0.267$).

In previous research (Macleod et al., 2017), noted that the respondent HL level is lower especially for people in more senior age, which also affects their abilities to respond to the health problems, thus they have limited *Access*. Nonetheless in authors research this cohort does not significantly differ from other groups of respondents, but the most important differences are in education. It has been proved that education is the strongest factor what affects health literacy (Martin et al, 2009). It should be taken into account that the education level of respondents only reflects the time spent in education system but not the actual HL skills (De Walt, Pignone, 2005). The authors identified these inconsistencies in between respondents of different education levels and HL skills. The common tendencies can be observed (Fig. 1), where, compared to evaluation of the HL index by foreign researchers indicated that respondents of LV008 in "limited health literacy" level exceeds that of Bulgaria by 24.4 %.

There were limitations in this study. The primary limitation was that the research was conducted on a relatively limited number of inhabitants and bound to a given region – in Vidzeme statistical region LV008. Therefore, before the conclusion were generalized in order to acquire better and more detailed understanding about the health literacy and the related factors, it was recommended to carry out similar research in other regions of Latvia. The second limitation was that, due to fact that a large proportion of respondents were youth, a research should be conducted that has a more proportionate division between different age groups. The third limitation included the division by four demographic and social factors (gender, age, education and gross income per month (EUR)) while excluding other factors, including the cultural factors.

Conclusions and recommendations

The research allowed to determine four Health Literacy impacting factors within the Vidzeme Statistical Region of Latvia (LV008): *Access*, *Understand*, *Appraise*, and *Apply*. Study revealed that according to respondents' gender different Health Literacy factor impact was determined. Factors *Access* and *Understand* in female respondent population were 35 %, *Appraise* 34 %, and *Apply* 30 %, meanwhile for male respondents the factor *Access* was 27 %, *Understand* 29 %, *Appraise* 27 %, and *Apply* 30 %. Differences were related to the higher education among female respondents, as well as lower impact of the predictor of gross income per month (EUR). It was determined that there are inconsistencies between different levels of education and HL factors.

European wide research on levels of health literacy index by country revealed that the proportion of responses indicating HL index "limited health literacy" in Vidzeme statistical region of Latvia exceeded even

the other largest result by a member state i.e., Bulgaria, where its national HL index for the given answer was by 24.4 % lower than that of Latvia.

in order to gain a better and more detailed understanding of health literacy and related factors, it was recommended to conduct similar researches in other regions of Latvia, in different age cohorts, as well as to include several demographic and social factors.

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SELECTION OF LOGISTICS SERVICE PROVIDERS: CRITICAL ANALYSIS OF METHODS

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Abstract. Different approaches nowadays are used by the companies to systematically compare and evaluate logistics service providers. The purpose of this study is to classify and critically evaluate methods applied to select logistics service providers. This study is organized as follows. Foremost, a systematic literature review was conducted to learn what evaluation methods are applied and how these methods are categorized. Highly ranked literature reviews related to third-party logistics selection problems and multi-criteria decision-making approaches for supplier evaluation and selection were chosen to learn how evaluation methods are categorized by industry leading experts. Second literature review discovered 42 different methods, various combinations of methods and approaches used for the purpose of selection of logistics service provider it was discovered that selection of logistics service provider is classified as multiple criteria decision-making problem. Selection of logistics service provider is a complex process that is often divided into several sub-processes. Each sub-process may require application of individual method. Single methods are not always sufficient to provide solution in scope of the sub-process, hence, combination of methods is often used.

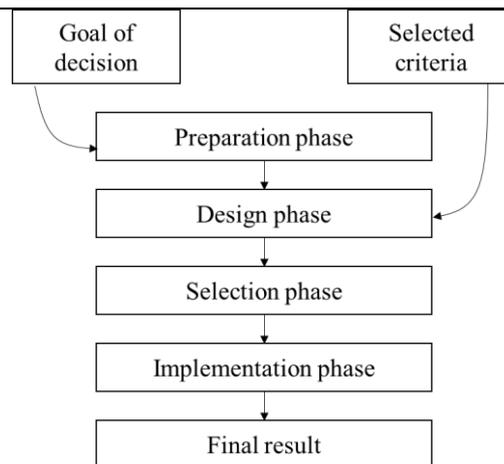
Key words: logistics service providers, multiple-criteria decision-making, methodology.

JEL code: L90, M16, R40, R41

Introduction

To support continuous optimization process of logistics and transportation costs and simultaneously concentrate on core activities, many international businesses outsource part of their logistics functions to logistic service providers, or third-party logistics (3PL). This has become a widely used practice in international business due to wide scope of experience, knowledge and resources of 3PL companies, which allows providing transportation and logistics services at lower costs. As businesses outsource part of logistics and transportation activities, 3PL companies are accurately assessed according to several criteria, which are unique for certain company and industry, e.g. level of prices, scope of available services, responsiveness, financial wealth, reputation. Hence, as a process of strategic decision making, businesses must systematically evaluate 3PL companies according to different criteria, considering both qualitative and quantitative parameters.

Decision-making can be determined as a problem-solving activity that results in an optimal solution. The study of a finite set of alternatives (in this case – logistics service providers) defined in terms of evaluative criteria is an important part of decision-making. If all the parameters are considered at the same time, the job could be to rate these alternatives in terms of how appealing they are to the decision-maker(s). Another task may be to decide the best alternative or the relative overall priority of each alternative (when multiple logistics service providers to be selected) when all parameters are taken into account at the same time. The aim of multiple-criteria decision making is to solve such problems. Figure 1 summarizes general stages of decision-making process.



Source: made by authors based on Aguezzoul, 2014

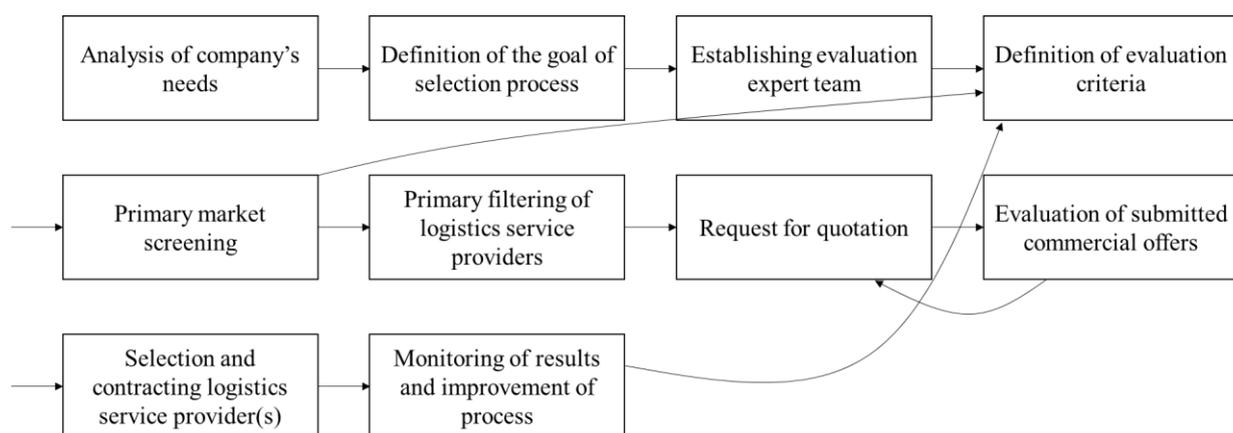
Fig. 1. Decision-making process

The general process is divided into 6 major steps. It begins with definition of decision goal, which is core solution to be taken by the company, and definition of selection (or evaluation) criteria. The next step in the process is preparation phase, when usually market screening is performed to learn about available alternatives. In scope of design phase, a selection process itself is planned, that is followed by selection phase. In this paper, a specific attention to be paid to selection phase, and particularly to methods and approaches used to perform evaluation of logistics service providers. Eventually, decision-making process is complete by implementation phase. In the next section of this paper a detailed review of logistics service providers' selection will be described.

Research results and discussion

1. Selection of logistics service providers

The process of selecting logistics service providers is divided into several phases defined by the companies, according to their practices and their needs. Figure 2 summarizes stages that are typical for most companies.



Source: made by authors based on Aguezzoul, 2014; Govindan et al., 2015 and Jayaram et al., 2010

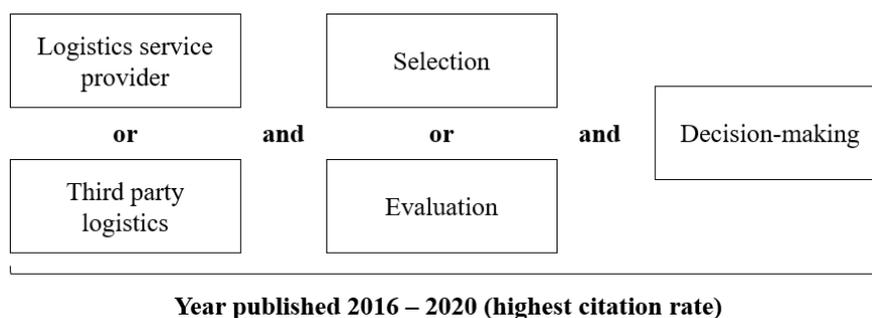
Fig. 2. Logistics service provider's selection

- The selection process starts with analysis of company's needs. The definition of an existing problem for the company, the desired results to be achieved to improve logistics processes.
- Definition of the goal of selection process is a step where the objectives of the selection process are defined.

- Establishing evaluation expert team involves a group of people at the company to make the selection and assessment of logistics providers.
- Definition of evaluation criteria is next step of the process. These criteria will be integrated in chosen evaluation method.
- Primary market screening helps to determine whether predefined targets and evaluation criteria correspond to market conditions and the capabilities of logistics service providers. Evaluation criteria may be adjusted according to the results of the primary market screening.
- Primary filtering of logistics service providers helps to identify logistics service providers to be invited to the selection process (a tender).
- Request for quotation. A tender has been launched in which pre-selected logistics service providers have been invited.
- Evaluation of submitted commercial offers. Commercial offers are evaluated according to specific methods. The preceding stage shall be repeated, if necessary, by the next round of the tender.
- Selection and contracting logistics service provider(s). According to the needs of the company, logistics service providers are selected, and cooperation agreements are concluded.
- Monitoring of results and improvement of process. Quality indicators are regularly reviewed to track the eligibility of the selected logistics service providers for the contractual conditions. As a result of constant monitoring, companies may choose to adjust evaluation criteria for future requests for quotations.

2. Review of the methods used for selection of logistics service providers

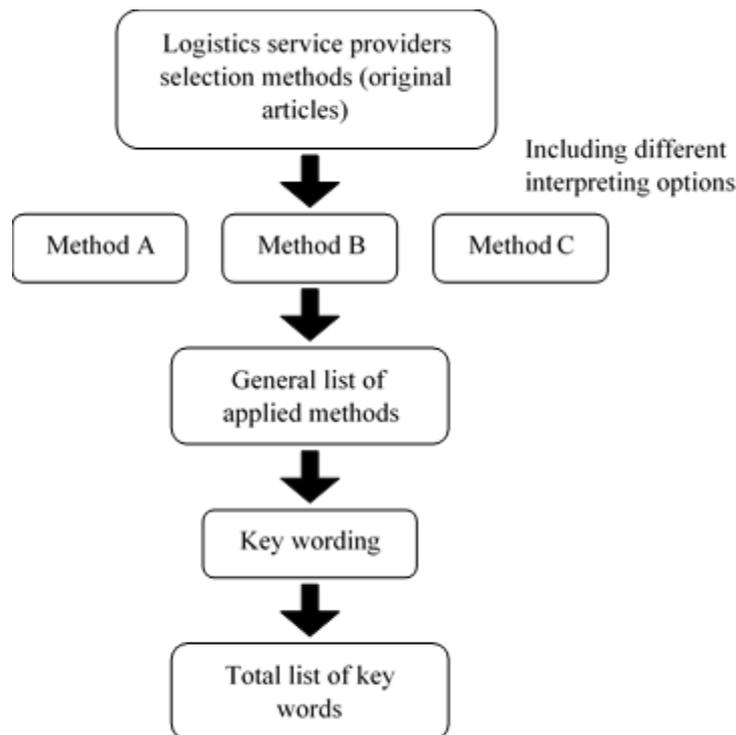
Nowadays there is a significant number of scientific researches available from different authors suggesting different approaches to solve decision-making problem related to logistics service provider's selection. Aguezzoul (2014) proposed classifying selection methods according to 5 main categories: multi-attribute decision-making (MCDM) techniques; statistical approaches; artificial intelligence techniques; mathematical programming models; and integrated approaches. Govindan et al. (2015) proposed classifying selection methods according to 3 main categories: multi-criteria decision-making individual methodology; Multi-criteria decision-making integrated methodology; and environmental criteria-based supplier selection. Ho et al. 2010 proposed classifying selection methods according to 2 main categories with several sub-categories: individual approaches (data envelopment analysis, mathematical programming-based approaches, analytical hierarchy process (AHP)-based approaches); integrated approaches (integrated AHP-based approaches, integrated fuzzy approaches, and other integrated approaches). To collect information about entire variety of methods and prepare classification according to authors' need, a systematic literature review was conducted. Search (filtering) process is described in figure 3.



Source: made by authors

Fig. 3. Literature search process

It was decided to choose original articles published in SCOPUS, addressed to describe process of logistics service provider's selections as a part of multiple-criteria decision-making process. It is important to define filtering criteria so search results reflect selection methods applied specifically for logistics service providers or third-party logistics companies. In fact, selection or evaluation processes satisfy needs of this research, so it was decided to keep both. Finally, it is important to emphasize that selection or evaluation is actually part of decision-making process. To collect actual information, only articles published from 2016 until 2020 were chosen and list methods indicated by authors was created (general list of applied methods). As a result of coding process or key wording (figure 4), a list of unique methods (total list of key words) was created.



Source: made by authors

Fig. 4. **Revision of selection methods**

As shown in figure 4, a revision process begins with review of original articles related to logistics service provider's selection methods. All unique methods and techniques used by authors are noted and extracted from article. It is also important to note that not all listed techniques are standalone and can be used in combination with other methods. The next step of revision is preparing a general list of applied methods. Due to the fact that particular article may contain different methods, quantity of methods in the list exceeds total number of articles reviewed. The next step of revision is key wording that is required because different authors prefer to name same methods differently, so for the purpose of this research, unified naming's are needed. Finally, total list of key words in prepared. Table 1 below shows an entire list of unique methods and tools used to solve a decision-making problem related to logistics service providers selection. In fact, not only standalone methods were chosen (such as AHP, TOPSIS or ANP), but also techniques (fuzzy logic, rough numbers, grey systems) that are used in combination with different methods (integrated approach). This table shows popularity of method or technique among authors, as number of mentions among all selected scientific researches.

Table 1

Summary and popularity of applied methods

Method or technique	Number of mentions	Share, %	Cumulative share, %
AHP	19	16.24	16.24
Fuzzy	18	15.38	31.62
TOPSIS	12	10.26	41.88
ANP	6	5.13	47.01
DEA	5	4.27	51.28
Rough numbers	4	3.42	54.70
Best-worst method	3	2.56	57.26
Linear programming	3	2.56	59.83
WASPAS	3	2.56	62.39
COPRAS	3	2.56	64.96
Linguistic term set	3	2.56	67.52
DEMATEL	2	1.71	69.23
SWARA	2	1.71	70.94
ISM	2	1.71	72.65
Grey systems	2	1.71	74.36
VIKOR	2	1.71	76.07
Graph theory	2	1.71	77.78
MABAC	2	1.71	79.49
TODIM	1	0.85	80.34
Other	-	19.68	100.00

Source: made by authors

As it is seen from table 1. commonly used standalone methods are Analytical hierarchy process (AHP). Technique for order performance by similarity to ideal solution (TOPSIS). Analytical network process (ANP). Data envelope analysis (DEA) and Best-worst method (BWM). Such techniques as fuzzy logic rough numbers and grey systems commonly used in addition to previously mentioned methods (integrated approach). It was chosen to study these methods in detail to understand practical application to solve logistics service provider selection problem.

As a result of this analysis. It was discovered. That selection of logistics service provider cannot be done by applying single method due to specific of selection process. Many authors admit that there is need to split selection process into sub-activities that. A summary of application of particular method and area of application (sub-activity) is described in table 2.

Table 2

Application of selection methods

Methods	Practical application	Sub-activity of selection process
Analytical hierarchy process (AHP)	According to Tavana et al. (2016) intuitionistic fuzzy AHP can be used to evaluate the relative importance weights among the criteria and the corresponding sub-criteria. Afterwards these relative weights are used to produce local weights for all criteria and sub-criteria. Prakash et al. (2016) advised using fuzzy AHP for evaluation and prioritization of selection criteria. Jung in 2017 used AHP as a main evaluation framework to help decision-makers determine the relative importance of each criteria or alternative. After the description of the selection criteria of logistics service providers. Bianchini in 2018 suggests applying AHP to define weights of selection criteria. Jovicic in 2019 determines a set of evaluation criteria and sub-criteria and finds the relationship between them by using AHP. According to Ozcan (2020), the priority levels of service providers can be calculated by using these criteria in the combination of AHP. Finally, Galal in 2018 and Garside in 2017 advised AHP as a tool to determine the importance weight of evaluation criteria.	Evaluation of selection criteria. Determination of importance of selection criteria. Setting priority levels of alternatives.
Technique for order performance by similarity to ideal solution (TOPSIS)	According to Prakash. C. TOPSIS is a suitable method for the selection and development of reverse logistics partner. Bai in 2019. Haldar in 2017 and Bianchini in 2018 suggested to apply to achieve the final ranking results. Nuengphasuk in 2019 advised this method for the last process of AHP analysis for comparison with the conventional AHP. Ozcan in 2020 calculated priority levels of service providers using TOPSIS. Galal in 2018 and Garside et al. in 2017 evaluated overall performance which is measured as closeness coefficient.	Final selection of alternatives. Creation of final ranking results. Evaluation of performance of alternatives.
Analytical network process (ANP)	According to Raut et al. (2018). ANP performs the process of weighting diverse criteria and ranks various alternatives according to their performance on the basis of these criteria. Tavana et al. in 2016 used ANP method to analyse the relationships among the different selection criteria and to obtain a weight indicating the relative importance of each criterion. Jayant in 2016 claims ANP to be a good tool for structuring the problem related to options in selection of logistics service provider.	Determination of importance of selection criteria. Definition of relationships among criteria. Primary selection of alternatives.
Data envelope analysis (DEA)	Raut et al. 2018 used DEA method for screening the maximally efficient logistics service providers. Haldar et al in 2017 used DEA to evaluate the efficiency of each alternative according to the identified criteria.	Market screening (primary selection of alternatives). Final selection of alternatives.
Best-worst method (BWM)	According to Pamucar et al. in 2019. BWM can be used for computing the priority weights of criteria. Govindan et al in 2015 used BWM to evaluate and prioritize shortlisted criteria.	Evaluation of selection criteria. Determination of importance of selection criteria.

Source: made by authors

3. Description of main selection methods

The basic idea behind Technique for order performance by similarity to ideal solution (TOPSIS) is that it is based on the principle of a displaced ideal point from which the shortest distance compromise solution

can be found. The shortest distance from the (positive) ideal solution (PIS) and the farthest distance from the negative ideal solution (NIS) will be used to rank the alternatives. TOPSIS considers the distances to both PIS and NIS at the same time and ranks them in order of preference based on their relative closeness and a combination of these two distance scales. TOPSIS is a utility-based approach that explicitly compares each alternative using data from evaluation matrices and weights. It is presumed that decision information is given in advance by a team or task group while using TOPSIS.

The analytic network process (ANP) is a broader version of the analytic hierarchy process (AHP) which is used in multi-criteria decision analysis. The ANP's decision-making issues are represented as networks. The ANP offers a general structure for dealing with decisions that does not rely on assumptions about the independence of higher-level elements from lower level elements and about the independence of the elements within a level. ANP employs a network rather than a hierarchy. So there are no levels to define. The ANP emphasizes the idea of influence. The ANP is divided into two parts. The first is a control hierarchy or network of criteria and sub criterion that regulates interactions. The network differs from criterion to criterion and for each control criterion a different super matrix of limiting influence is computed. Finally each of these super matrices is weighted according to the priority of its respective control criterion and the results are synthesized by adding all the control criteria together. When using the ANP a problem is often investigated using a control system that includes: a) benefits, b) costs, c) opportunities, and d) risks, each of which is reflected in the control system.

Data envelopment analysis (DEA) is a decision-making technique that uses the linear programming principle to compare the relative operational efficiency of a group of similar decision-making units with multiple inputs and outputs. The maximum potential output for a given set of inputs is estimated using DEA, which is mainly used in efficiency estimation. The envelopment surface and the effective projection path to the envelopment surface are the two most important components of a DEA model. If the model is output-oriented or input-oriented determines the projection direction to the envelope surface. DEA allows for the identification of effective and inefficient units within a system that considers the outcomes in their context. DEA also offers data that allows of inefficient unit to be compared to its "peer group," or a group of efficient units that are like the units under investigation.

Best-worst method (BWM) is a pairwise comparison-based approach that allows for a systematic comparison process. The approach is used to compare a set of options against a set of decision criteria. The BWM is focused on a pairwise comparison of decision criteria that is done in a systematic way. Following that the decision-maker chooses two criteria: the best criterion and the worst criterion. The best criterion is the one that plays the most significant role in the decision-making process while the worst criterion plays the opposite role. The decision-maker prioritizes the best criterion over all other criteria and prioritizes all criteria over the worst criterion. The best solution is found using these two sets of pairwise comparisons as data.

Conclusions, Proposals, recommendations

- 1) The presented paper contains analysis of methodology used to solve decision-making problem related to selection of logistics service providers. A revision of newest scientific researches was conducted to define actual methods and set basis for future studies. A comparison of general decision-making process and adaptation of this process to selection of logistics service providers was made.

- 2) Research clearly shows that unique selection method cannot entirely solve this problem and a search for integrated or hybrid approach is needed. This idea is also confirmed by results of literature review that demonstrate various combinations of methods combined in single framework.
- 3) Comparing current literature review with similar reviews conducted earlier. Several changes are noted. First, there are new methods and combinations of methods and techniques that demonstrated dynamics of this research area. Second. There are more research addressed to solve narrow questions and problematics related to selection of logistics service provider selection e.g. green supplier selection reverse logistics supplier selection. Authors conclude that selection process is being transformed to comply with contemporary trends in supply chain management. Hence it is advised to move from general approach of logistics service provider selection to a targeted approach e.g. focusing on customers' industry specifics or service needs.
- 4) In next research authors will study a detailed split of logistics service provider's selection process to understand sub-activities in scope of this process. There are many researches available that demonstrate application of methods however there is lack of process studies itself. The goal of such research would be to develop a detailed decision-making framework for logistics industry and find optimal integrated approach.

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FACTORS AFFECTING LONG-TERM COOPERATION WITH LOGISTICS SERVICE PROVIDERS

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Abstract. Nowadays different approaches are used by the companies to systematically compare and evaluate logistics service providers. The purpose of this study is to define and classify requirements, evaluation criteria and quality criteria set towards logistics service providers. In this study, information is gathered about the selection arrangements for logistics providers, which were collected from several companies. Authors looked for information related to the following questions: what are the criteria for evaluating logistics service providers; what are the requirements that logistics providers need to ensure to become a partner; what are the objectives of the selection contests (procurement tenders) defined by the companies; what are the main service quality indicators that are used to measure the performance of logistics service providers. Companies originated in the European Union from various countries have been examined. A literature review was conducted that helped to collect information regarding application of multiple-criteria decision-making for selection of logistics service providers and extract proposed selection criteria. Analysis of procurement documentation by logistics service providers was done to extract and group data that will be used to develop decision-making framework in further research. Authors created unique groups of logistics service providers selection criteria, requirements towards logistics service providers, selection goals and key performance indicators. Finally, general market research of pre-defined industries was made. There are very few studies dedicated to selection of criteria and requirements towards logistics service providers. Companies tend to formulate selection criteria of logistics service providers in general manner, at the same time, not paying attention to formulating selection process goals.

Key words: logistics service providers, procurement, evaluation factors.

JEL code: L90, M16, R40, R41

Introduction

The aim of this study is to collect and classify information related to logistics service provider selection. Collected information to be divided in following groups:

- logistics service provider selection criteria;
- requirements set by companies towards logistics service providers;
- companies' goals of the selection process;
- logistics service providers' key performance indicators of service quality.

The main tasks of this study are:

- to collect procurement documentation and data related to selection of logistics service providers;
- to extract specific information about the evaluation and selection of logistics service providers by analysing procurement documentation;
- to structure extracted information by performing word coding and create unique groups;
- to make conclusions regarding logistics service providers selection process.

The data were collected from tender documentation issued by selected companies. Standard logistics service providers selection process consists of following steps.

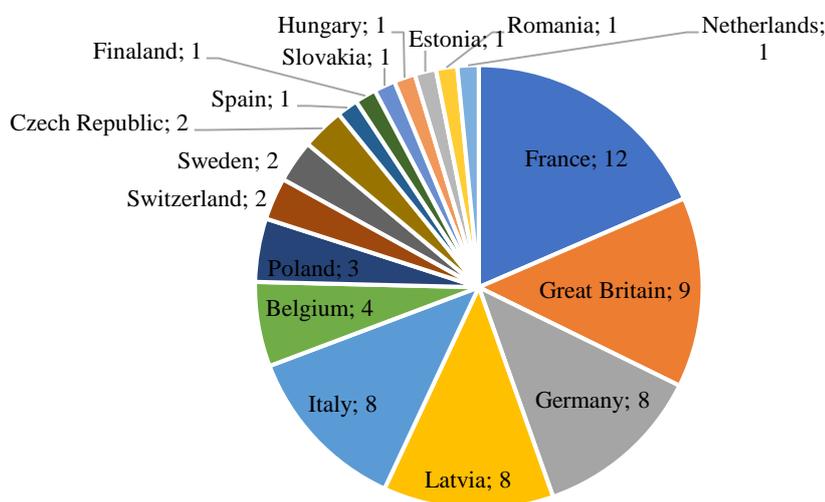
- 1) Analysis of company's needs.
 - 2) Definition of the goal of selection process.
 - 3) Establishing evaluation expert team.
-

- 4) Definition of evaluation criteria.
- 5) Primary market screening.
- 6) Primary filtering of logistics service providers.
- 7) Request for quotation.
- 8) Evaluation of submitted commercial offers.
- 9) Selection and contracting logistics service providers.
- 10) Monitoring of results and improvement of process.

As the result of activities starting from analysis of company's needs until primary filtering of logistics service provider, a set of documentation is prepared that is issued to potential logistics service providers in scope of request for quotation (step 7). This set normally includes general terms and conditions, standard operating procedure, planning procedure, site or warehouse specification, description of products, invitation letter, set of key performance indicators, statistical database (e.g. historical shipments), price template (template of commercial offer) and other specific information needed to describe service request. Authors of this study used these sets of documentation to extract essential information needed to answer four questions defined in scope of this study.

- What are the criteria for evaluating and selecting logistics service providers?
- What are the requirements that logistics providers need to correspond to become a partner?
- What are the goals of the selection process (procurement tenders) defined by the companies?
- What are the main service quality key performance indicators that measure the performance of logistics service providers?

Companies from 17 European Union countries with regional or central logistics purchasing teams and decision-makers were examined. Figure 1 shows number of companies per country chosen for this study.



Source: made by authors based on analysis of companies' documentation

Fig. 1. Summary of analysed companies per country

Analysis was conducted by studying tender documentation issued by the companies in 2018, 2019 and 2020. In total, 65 companies were selected, analysed, and divided into 3 groups.

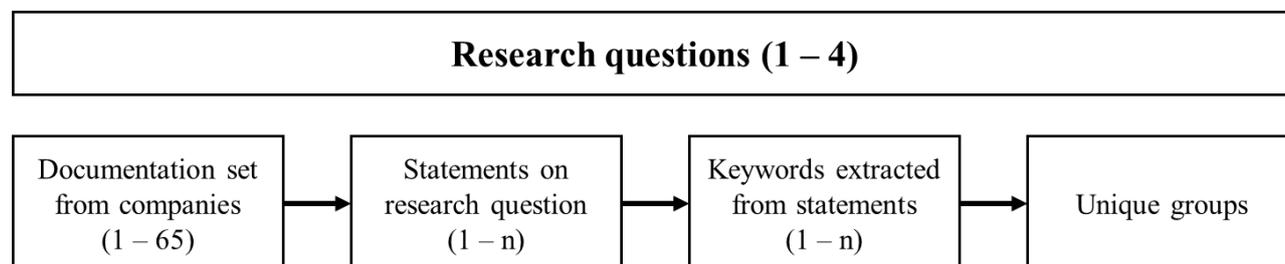
First group companies - Producers of electrical equipment (NACE Rev. 2, group 27).

Second group companies - Wholesale and retail companies, food producers (NACE Rev. 2, groups 46, 47 and 10).

Third group companies - Producers of basic pharmaceutical substances and pharmaceutical preparations (NACE Rev. 2, group 21).

Methodology

While analysing documentation and data related to the evaluation and selection of logistics service providers, authors of this study looked for information, according to four pre-defined questions. The approach of analysis is shown in Figure 2.



Source: made by authors based on analysis of companies' documentation

Fig. 2. **Description of documentation research approach**

The information from set of documentation was collected (statements on research question) and sorted by specific keywords, using coding method. As a result of coding, individual groups of keywords were formed that combine multiple sentences, or statements about a given question.

As a next step, the results of the research (keywords) are evaluated according to the previously defined questions. For each of four pre-defined question, a summary of results is compiled for all 65 selected companies in general and by groups of companies (3 groups).

The coding revealed that the company, when defining the answers to the questions on the evaluation and selection criteria, the requirements towards logistics service providers, the tender goals, and the quality key performance indicators, makes several statements which, in essence, express similar idea. For example, company makes the following statements about the evaluation criteria: "Environment, health and safety policy and practices..." or "Active attitude towards environmental issues...". Both above statements are included in the group "environmental policy" and counted twice.

Knowing that one company can make ideologically similar statements in response to a single question several times (intentionally or unintentionally), the task is to understand the idea of statement (formulation), consider and count all mentioning, and estimate relative number of mentioning.

Literature review

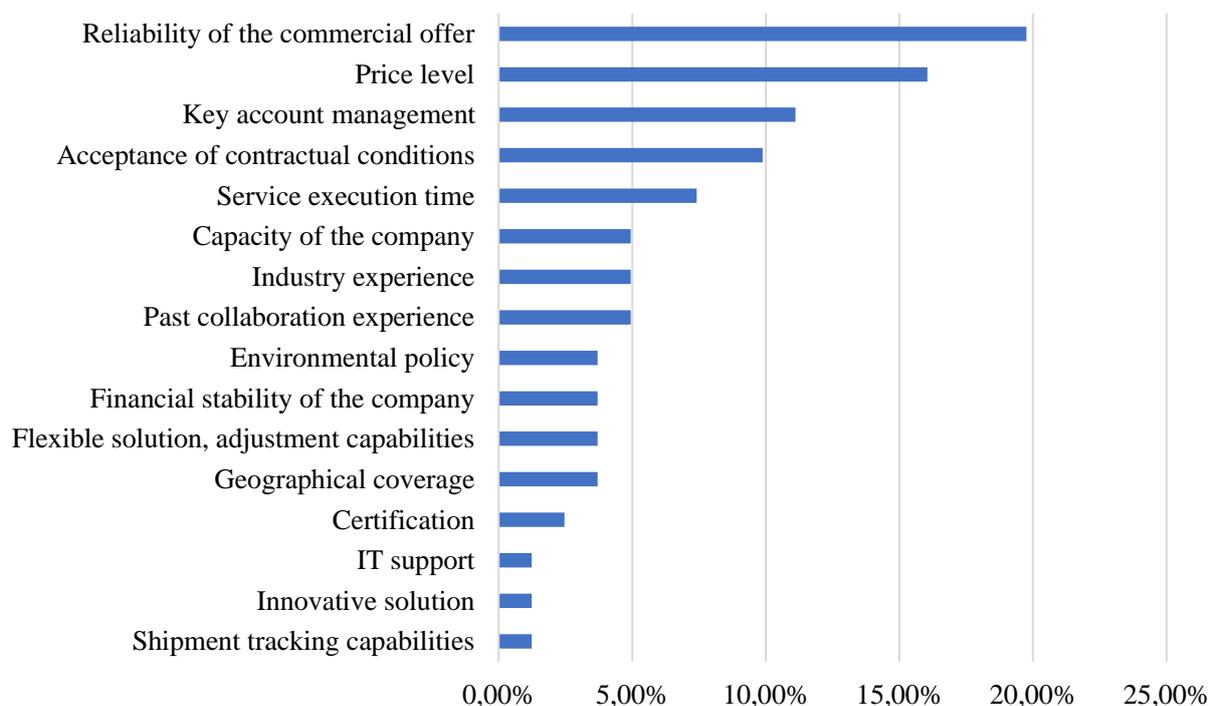
Logistics service provider selection is a multi-criteria problem, so consequently, a complex process where multiple (both tangible and intangible) criteria need to be taken into account. Some criteria are developed according to specific customer needs while others are common for all circumstances. Conducted literature review shows that few attentions are paid specifically to these criteria (how these criteria a developed according to company's needs).

There are various studies dedicated to logistics service provider selection, as a multi-criteria decision-making problem. Aguezzoul (2014) proposed 5 main categories classifying methods for selection of logistics service providers, incl. various techniques of multi-attribute decision-making (MCDM); statistical approaches; artificial intelligence techniques; mathematical programming models; and integrated approaches. Govindan et al. (2015) proposed classifying selection methods according to 3 main categories, incl. multi-criteria decision-making according to individual methodology; multi-criteria decision-making according to integrated methodology; and environmental criteria-based supplier selection. Ho et al. (2010)

proposed classifying selection methods according to 2 main categories with several sub-categories, incl. individual approaches and integrated approaches (combination of various methods). Several authors (Tavana et al. (2016); Prakash et al. (2016); Jung (2017); Bianchini (2018); Jovicic (2019); Ozcan (2020) emphasize importance of choosing correct method to evaluate selection criteria and determine importance of these criteria. There are several studies dedicated to measurement of key performance indicators of logistics service providers. Chia et al. (2009) examined how senior supply chain executives perceive performance measurement from a balanced scorecard perspective. Jothimani et al. (2014) explored the applicability of the supply chain operations reference model and identified the key performance indicators for the logistics service providers. Krauth et al. (2005) examined performance parameters and objectives that play a role in the planning process of logistics service providers.

Logistics service providers selection criteria

Figure 3 summarizes the results on the evaluation and selection criteria for logistics service providers. As a result of the analysis, companies' statements about the evaluation criteria of logistics service providers are divided into 16 unique groups. Relative number of mentioning within the groups is shown in this figure. Total number of mentioning within groups – 143. Explanation of these statements is provided below.



Source: made by authors based on analysis of companies' documentation

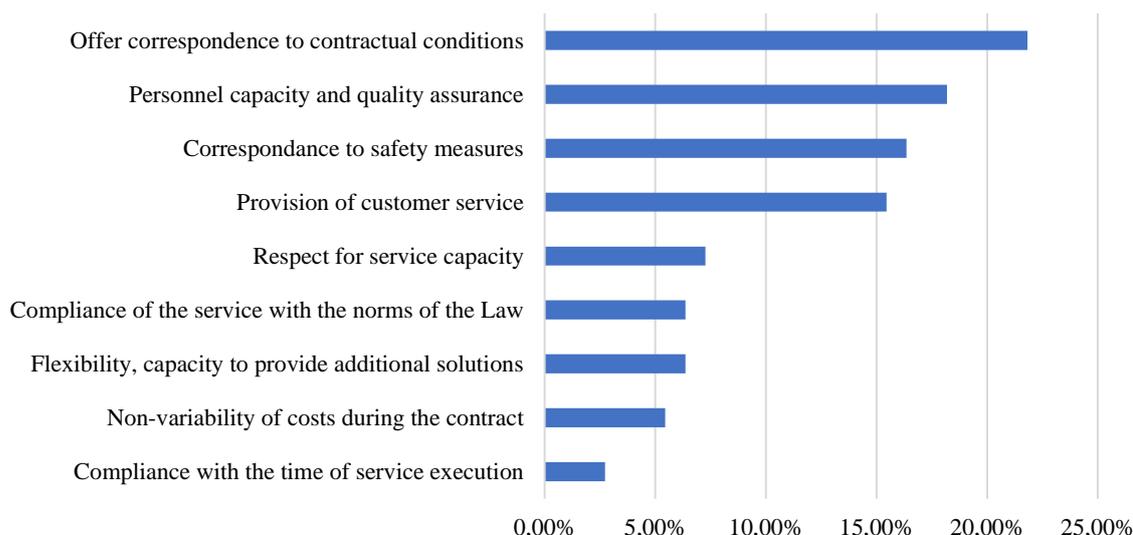
Fig. 3. Logistics service providers selection criteria

The dominant evaluation criterion is reliability of the commercial offer (19.75 % of total mentioning). There are different statements included in this group. The common sign among all those statements is related to reliability of the offer placed by logistics service provider in various meanings. Following statements can be mentioned as example: "Do not quote for lanes unless you are prepared to undertake them...", "The highest standards of customer service and reliability...". Second evaluation criterion is price level (16.05 % of total mentioning). Third evaluation criterion is key account management (11.11 % of total mentioning). It includes such statements as "Service level commitment by logistics service provider...", "Availability of control tower...".

Looking at evaluation criteria set by companies from various industries, some differences may be noticed. First group companies (Producers of electrical equipment) prioritize acceptance of contractual conditions (20.8 % of total mentioning), followed by key account management (18.8 % of total mentioning) and reliability of the commercial offer (12.2 % of total mentioning). Second group companies (Wholesale and retail companies, food producers) prioritize price level (20.0 % of total mentioning), followed by reliability of the commercial offer (18.8 % of total mentioning) and financial stability of the company (12.5 % of total mentioning). Third group companies (Producers of basic pharmaceutical substances and pharmaceutical preparations) prioritize reliability of the commercial offer (22.8 % of total mentioning), followed by price level (12,7 % of total mentioning) and key account management (11.4 % of total mentioning).

Requirements towards logistics service providers

Figure 4 summarizes the results of requirements set by companies towards logistics service providers. As a result of the analysis, companies' statements about the requirements towards logistics service providers are divided into 9 unique groups. Relative number of mentioning within the groups is shown in this figure. Total number of mentioning within groups – 110. Explanation of these statements is provided below.



Source: made by authors based on analysis of companies' documentation

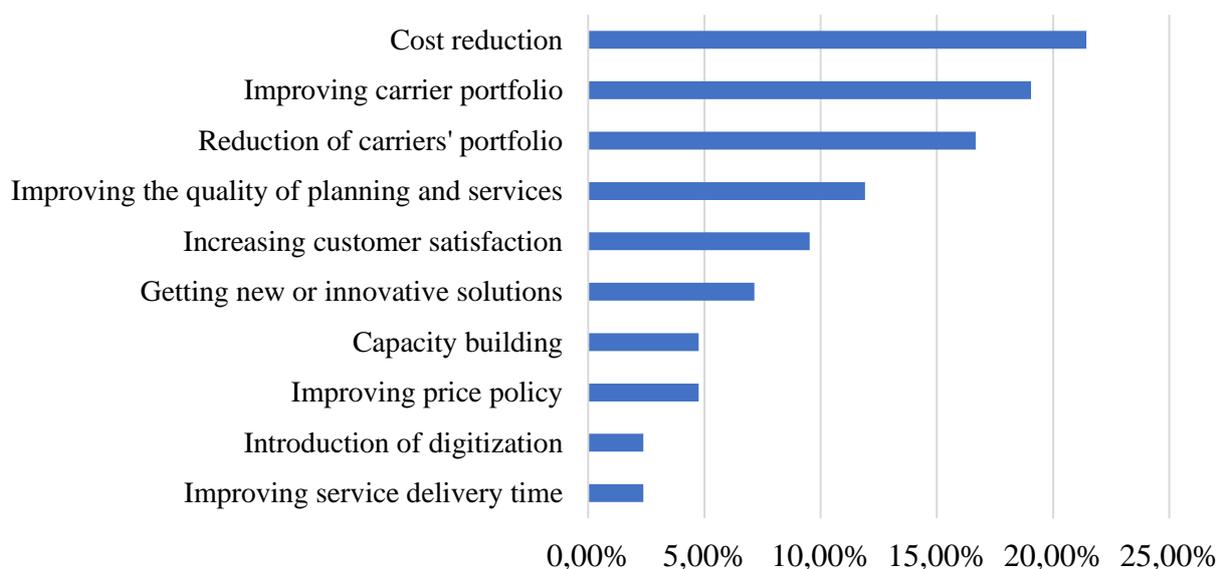
Fig. 4. Requirements towards logistics service providers

The dominant requirement towards logistic service providers is ability to offer correspondence to contractual conditions (21.82 % of total mentioning). There are various statements included in this group. The common sign among all those statements is related to willingness of logistics service provider to accept contractual conditions set by the company. Following statements can be mentioned as example: "Compliance with payment terms...", "High standards of service relating to on-time and in-quality deliveries...", "Acceptance of payment terms...". Second requirement towards logistic service providers is personnel capacity and quality assurance (18.18 % of total mentioning). Following statements can be mentioned as example: "The logistics service provider ensures availability by providing a 24-hour on-call emergency number...". Third requirement towards logistic service providers is correspondence to safety measures (16.36 % of total mentioning). It includes such statements as "Equipment used by the carrier must be in good technical condition and fulfil the necessary requirements for safe and effective execution of transport ...".

When looking at requirement towards logistic service providers in industry cross-sections, priority among companies representing different industries varies. First group companies prioritize provision of customer service (36.4 % of total mentioning), followed by offer correspondence to contractual conditions (18.2 % of total mentioning) and non-variability of costs during the contract (9.1 % of total mentioning). Second group companies prioritize correspondence to safety measures (23.1 % of total mentioning), followed by personnel capacity and quality assurance (15.4% of total mentioning) and compliance of the service with the norms of Law (15.4 % of total mentioning). Third group companies prioritize ability to offer correspondence to contractual conditions (24.7 % of total mentioning), followed by personnel capacity and quality assurance (19.2 % of total mentioning) and correspondence to safety measures (16.4 % of total mentioning).

Goals of the selection process

Figure 5 summarizes the results of goal definition for selection of logistics service providers. As a result of the analysis, companies' statements about the evaluation criteria of logistics service providers are divided into 10 unique groups. Relative number of mentioning within the groups is shown in this figure. Total number of mentioning within groups – 65. Explanation of these statements is provided below.



Source: made by authors based on analysis of companies' documentation

Fig. 5. **Goals of the selection process**

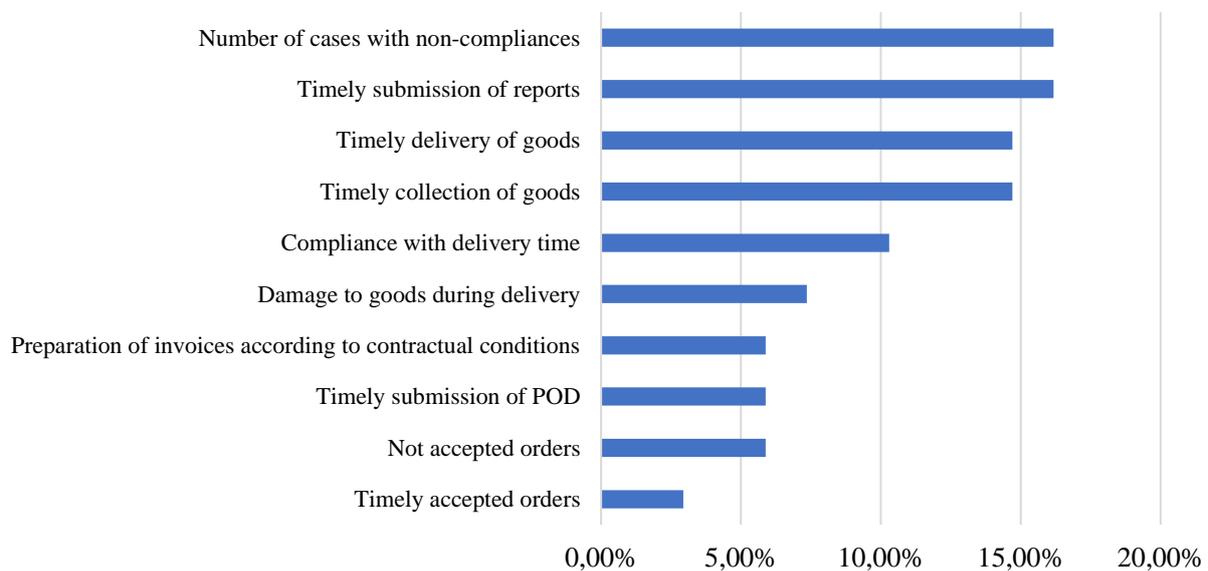
The dominant goal of selection of logistic service providers is cost reduction (21.43 % of total mentioning). Second popular goal for selection of logistics service providers is improving carrier portfolio (10.05 % of total mentioning). Following statements can be mentioned as example: "The goal is to ease the adaptation of the logistics service...", "Formalize supplier management...". In general, portfolio improvement activities mean improvement of portfolio management, for example revision of conditions, structuring, prioritizing of carriers. Third requirement towards logistic service providers is reduction of carriers' portfolio (16.67 % of total mentioning). Study shows that portfolio consolidation approach is clearly set nowadays, as companies tend manage smaller number of carriers.

When looking at goal of selection of logistic service providers in industry cross-sections, priority among companies representing different industries differs. First group companies prioritize improving carrier portfolio (33.3% of total mentioning), followed by cost reduction (22.2 % of total mentioning) and improving price policy (11.1 % of total mentioning). Following statements can be mentioned as example

of improving price policy: "Company is seeking competitive and sustainable rate structure...". Second group companies prioritize cost reduction and improving the quality of planning and services (both goals have 28.6 % of total mentioning), followed by increasing customer satisfaction (14.3 % of total mentioning). Third group companies prioritize cost reduction and reduction of carriers' portfolio (both goals have 19.2 % of total mentioning), followed by improving carrier portfolio.

Key performance indicators of service quality

Figure 6 summarizes key performance indicators of service quality used by companies to evaluate logistics service providers. As a result of the analysis, companies' statements about the evaluation criteria of logistics service providers are divided into 10 unique groups. Relative number of mentioning within the groups is shown in this figure. Total number of mentioning within groups – 68. Explanation of these statements is be provided below.



Source: made by authors based on analysis of companies' documentation

Fig. 6. Key performance indicators of service quality

The dominant key performance indicators (KPI) used to evaluate logistics service providers are number of cases with non-compliances (both have 16.18 % of total mentioning) and timely submission of reports (16.18 % of total mentioning). Subsequent widely used KPI are timely delivery of goods and timely collection of goods (both have 14,71 % of total mentioning). When looking at KPI in industry cross-sections, first group companies prioritize timely delivery of goods and timely submission of reports (both have 18.2 % of total mentioning). Second group companies prioritize timely collection of goods and timely delivery of goods (both have 21.4 % of total mentioning). Third group companies prioritize number of cases with non-compliances (20.9 % of total mentioning), followed by timely submission of reports (16.3 % of total mentioning) and compliance with delivery time (11.6 % of total mentioning).

Conclusions, proposals, recommendations

- 1) According to conducted literature review, it was discovered, that many studies were performed describing process of logistics service provider selection itself. Main emphasis is put on methodology and splitting selection process into sub-processes. At the same time, correctness of selection is crucially dependant on input data. Correct definition of selection criteria, goal of the selection process and requirements towards logistics service providers is a vital part of multiple-criteria decision making.

Definition of selection criteria is a preparatory stage before building a selection framework and it is advisable to study this topic deeper.

2) As a result of tender documentation studies, it was discovered that many companies formulate various logistics service providers' selection criteria, which in fact are very similar. It is advisable to include different (by meaning) selection criteria in tender documentation, that would help integrating these criteria into framework of selection process and access logistics service providers from different angles.

3) As a result of the study, there were created 16 unique groups of logistics service providers selection criteria, 9 unique groups of requirements towards logistics service providers, 10 unique groups of goals of the selection process, and 10 unique groups of key performance indicators of service quality.

4) As a result of tender documentation studies, it was discovered that companies do not pay attention to formulating selection process goals and at the same time, create various selection criteria and requirements towards logistics service providers. Setting the right goal is a basis of selection process that guides companies through entire process towards right choice of logistics service provider.

5) As a result of tender documentation studies, differences of priorities (selection criteria, requirements etc.) among representatives of different industries were discovered. This fact emphasizes the importance of creating individual selection framework for particular industry.

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WORKING CAPITAL IN ESTONIAN AGRICULTURAL COMPANIES: ANALYSIS BY SIZE

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Abstract. The paper examines the working capital indicators to find out the differences between larger and smaller Estonian agricultural companies. In the task of working capital management, a balance between profitability and liquidity is under investigation. A higher level of current assets ensures higher liquidity, but reduces the profitability. The share of inventories in current assets is relatively high in agricultural companies, and can lead to liquidity problems in adverse circumstances. Low levels of current assets can lead to business interruptions, as insufficient stocks lead to delays in the production process, which in turn is amplified in yields or other outputs. The number of employees is used to distinguish the size of the company. The results show that the smallest agricultural companies have higher liquidity and relatively larger share of highly liquid current assets. Larger agricultural companies maintain a higher level of inventory and have a longer inventory turnover period. Smaller companies have a slightly higher share of loans in current liabilities, so they have to maintain a larger financial buffer. The cash conversion cycle is longer for the smallest and the largest agricultural companies while medium-sized companies have a shorter cash conversion cycle. Smaller companies have the longest receivables turnover, showing that they enable longer payment periods for buyers or may have difficulties collecting receivables from the production sold. Having low market power and long receivables turnover, they have relatively higher need for working capital.

Key words: working capital management, agricultural companies, analysis by size.

JEL code: M41, L25, Q12

Introduction

The key issue in working capital management is to make trade-offs between profitability and liquidity. Working capital allocation and management has recently got more attention across and within industries (Banos-Caballero, S. et al., 2020; Chen, C., Kieschnick, R., 2018; Pirttila, M. et al., 2019; Jedrzejczak-Gas, J., 2017; Dhole, S. et al., 2019, Duong, P. et al., 2020).

Working capital is a measure of the liquidity of companies in the agricultural sector. The larger the number of the net balance between current assets and current liabilities, the more liquidity is available in the sector. This enables to indicate the amount of cash that agricultural companies have available to make purchases of inputs and repay their short-term liabilities. The easiest way to generate liquidity or working capital is to earn profits from agricultural production. Therefore, working capital tends to decline as profitability declines. As a result, maintaining a higher level of current assets ensures higher liquidity, but may reduce the financial performance of a company. Working capital policy can affect the efficiency of the company's operation, which impacts on the possibility of gaining profit and improving financial performance (Deloof, M., 2003). Financial performance is associated with managing working capital. Working capital management reduces the likelihood of future financial constraints, enables companies to free up cash and improve liquidity (Banos-Caballero, S. et al., 2010). This balance between performance and liquidity in agriculture is due to the specific nature of the sector (Piccoli, P. et al., 2020). The specific compromise-balancing between financial performance and liquidity in agricultural companies is caused by external factors, as well as farmer and farm-related factors, and farm characteristics.

The scarcity of working capital of dairy and crop farming companies is the result of financial problems in the Estonian agricultural sector for the last five years. The price of milk has fallen to its lowest in recent years and producers have to sell milk below the cost price. Buyers of raw milk do not adhere to the prices

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specified in the contract and pay below the previously agreed level. Dairy farmers have one-year contracts with the dairy industry. The dairy industry is in a stronger position in this situation and dairy farmers need to adapt. They need to monitor their incomes closely. In order to save costs, many agricultural companies have given up buying the necessary fertilizer and renewing their seeds and thus maintain fewer inventories. The low stock of dairy cattle feed would reduce milk production in the next period (Lukjanov, S., 2020). Recently, many crop growers had a problem with a lack of working capital when crop production was low due to drought damage. Politicians consider that working capital loans would help farmers survive difficult times (Uhise põllumajanduspoliitika... 2019). Aware of the situation, and withstanding a difficult financial situation, agricultural firms must have a conservative working capital policy.

The level of working capital is an indication of the strength of the company's strategic position. Working capital is the net balance of operating costs and sources of funds. The level of working capital reflects the balance of power between the company and its customers and suppliers. In countries where financial and economic development is higher and the legislation is more strongly enforced, greater value is attached to working capital management (Banos-Caballero, S. et al., 2020). In this field a number of studies (Banos-Caballero, S. et al., 2010; Chen, C., Kieschnick, R., 2018; Piccoli, P. et al., 2020) using different methods have recently been conducted, producing various results. Several studies provided an understanding of what significantly influences corporate working capital management. A more aggressive working capital policy was observed among companies that had better growth opportunities and companies with higher leverage, investment in fixed assets and return on assets. (Banos-Caballero, S. et al., 2010). Chen, C., Kieschnick, R. (2018), providing an understanding of influencing factors of corporate working capital management found that changes in the availability of bank credit significantly influenced a number of aspects of a firm's working capital policies. These effects differed across firms that are more or less dependent on bank financing.

In the field of agriculture, Piccoli, P. et al., (2020) have explained the lower capacity of agricultural cooperatives of providing resources from their operations. They found that the expansion of net working capital caused by the growth of revenues was mostly funded by short-term debt in agricultural cooperatives. They also found that more than half of firms displayed a current capital structure that could be considered risky in terms of indebtedness, and that the majority of firms exhibited non-sustainable growth in the period. The size of a company plays role in working capital management (Bridging the Gap, 2015). Larger companies tend to be better at managing their working capital. Smaller businesses often have less sophisticated working processes, systems and functional expertise, whilst they have a greater need for effective cash management.

In this analysis the working capital indicators in Estonian agricultural companies are examined in order to find out the differences between larger and smaller enterprises. The aim of the paper is to explore the differences of working capital between larger and smaller agricultural companies in Estonia.

The sample of the analysis includes Estonian agricultural companies engaging crop and livestock production and integral ancillary activities and agricultural service activities. The data were obtained from the database of Statistics Estonia (ESA). From the database, the code A01 for crop and animal production, hunting and related service activities was chosen as the activity code. In the process of data collection, the balance sheets and income statements of companies in the original sample were downloaded in Excel form. The year-end basis data was used to calculate liquidity ratios (current ratio, quick ratio, cash ratio) and other working capital performance indicators. The measure of working capital requirements relative to the size of the company is Net working capital (NWC). The measure of efficiency is Inventories turnover (IT). The measure of inventories relative to assets is Inventories to current assets (ICA). Generally, the lower

the ICA, the better the financial performance. The indicator of financial performance is measured by profits as a proportion of a company's owners' equity: Return on equity (ROE). The number of employees is used to distinguish the size of the company.

This study contributes to the understanding of working capital needs in the farm sector, using annual accounting data from financial statements of agricultural companies. The novelty of this study is that it uses the accounting data from financial statements of companies instead of the FADN data. It is based on agricultural companies' financial indicators of the beginning and end of the year.

Research results and discussion

1. The sample of the study

The value of the total output of the agriculture at basic prices including product subsidies was € 1 036 million in 2019. Of the total production value, the value of total crop production accounted for 48 %, the value of total livestock production for 41 % and integral ancillary activities and agricultural service activities for 11 %. (ESA; Pollumajanduse ... 2020)

From the database, the code A01 for crop and animal production, hunting and related service activities was chosen as the activity code. The number of companies resulting from this search is shown in Table 1.

Table 1

Number of companies: Crop and animal production, hunting and related service activities

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Number of companies Crop and animal production, hunting and related service activities	1060	1116	1153	1288	1451	1673	1877	2206	2398	2618	2782
of that 1-9 employees	789	860	914	1066	1236	1458	1678	1985	2186	2418	2579
... 10-49 employees	233	218	205	186	185	182	165	187	182	175	186
... 50-99 employees	27	27	25	27	20	23	25	27	24	20	17

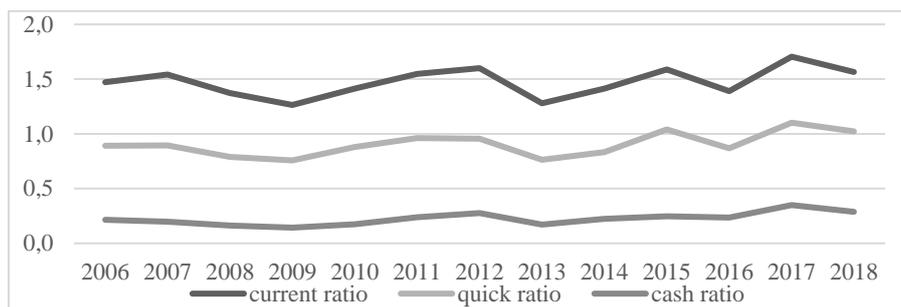
Source: ESA

The number of companies in the database has increased during the analysed period. The decrease in the number of companies with a large number of employees is certainly caused by the increase in labour productivity. In some cases, larger companies have been split into smaller ones in order to take full advantage of the support schemes.

2. Estonian agricultural companies' liquidity

Working capital is the net balance of current assets and short term liabilities. Working capital management is about making trade-offs between profitability and liquidity. Maintaining a higher level of current assets ensures higher liquidity. Figure 1 shows the liquidity indicators of Estonian agricultural companies on the basis of all size groups. Liquidity ratios are calculated at three levels - current ratio (current assets to current liabilities), quick ratio (current assets minus inventories to current liabilities),

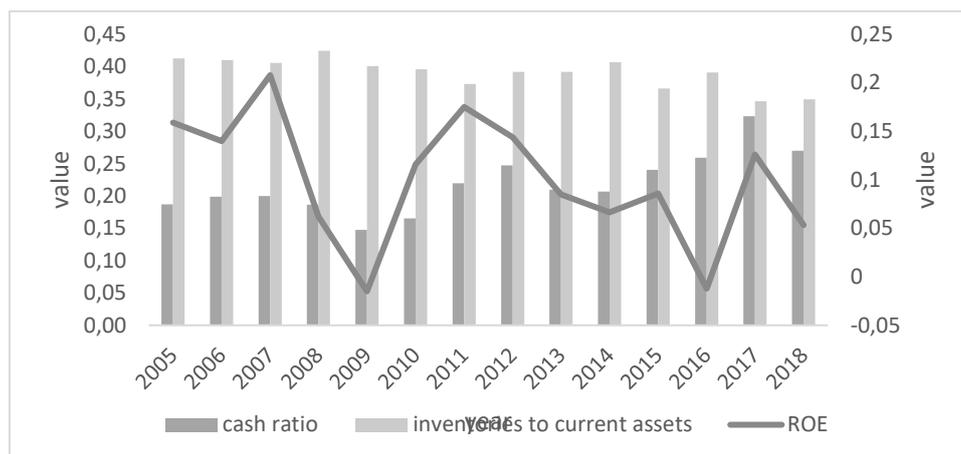
cash ratio (cash to current liabilities). The liquidity of agricultural companies is sufficient, considering the low season in agriculture at the beginning and the end of the year.



Source: authors' calculations based on ESA

Fig. 1. **Liquidity ratios in agricultural companies: Crop and animal production, hunting and related service activities (2005-2018)**

The share of inventories in current assets is relatively large in agriculture. One possibility of making trade-offs between profitability and liquidity is optimizing working capital by decreasing the share of stock in total assets. Maintaining a higher level of current assets ensures higher liquidity, but reduces the company's chances of making a profit. In the current situation the share of inventories in assets and the share of inventories in current assets have fallen. The profitability, measured as return on equity has a cyclical, but downward trend in 2005-2018 (Figure 2).



Source: authors' calculations based on ESA

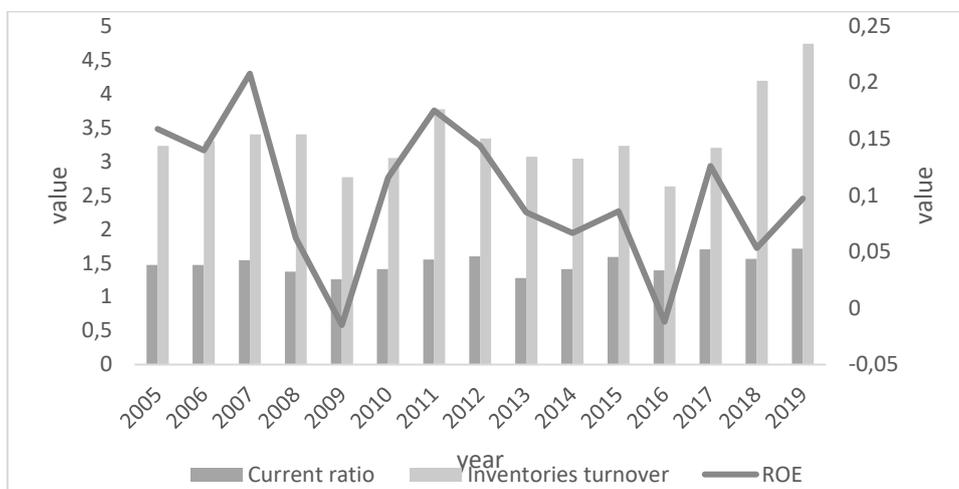
Fig. 2. **Liquidity and profitability in agricultural companies: Crop and animal production, hunting and related service activities (2005-2018)**

The fact that inventories are maintained to a lesser extent has increased the liquidity. On the other hand, low levels of inventories in current assets can lead to business interruptions, as insufficient stocks lead to delays in the production process, which in turn are amplified in yields or other outputs. This may lead to lower liquidity, which increases the risk of insolvency.

3. Working capital management in agricultural companies

In crop production companies a relatively large share of the capital is invested in stocks. If the share of inventories in current assets is relatively high, it may lead to liquidity problems unfavourable circumstances. Maintaining optimal inventories generally increases the ability to make a profit. As a result, farms have a day-to-day focus on addressing the challenges of optimal inventory and working capital management. Currently, the efficiency improvement in use of stocks and a reduction in inventories has not increased companies' profitability (Figure 3). During the observable period the return on equity (ROE) has decreased,

the share of inventories in assets has declined and agricultural companies' liquidity has increased. This situation indicates that it will result in the shortage of working capital, which has been due, among other things, to cost savings due to the low yields and low price of milk, which may jeopardize the sustainability of production.



Source: authors' calculations based on ESA (EM001)

Fig. 3. The liquidity, efficiency and profitability in agricultural companies: Crop and animal production, hunting and related service activities (2005-2018)

In a situation where profitability temporarily decreases and the level of inventories falls, there may be a risk of insufficiency of current assets to purchase inputs and the production may fall due to insufficiency of current assets.

4. Liquidity and profitability in agricultural companies by size

The number of employees is used to distinguish the size of the company. The results show that the smallest agricultural companies with 1-9 employees have higher liquidity than medium- sized companies (Table 2).

Table 2

Liquidity ratios and profitability by the size of agricultural companies: Crop and animal production, hunting and related service activities (2005-2008)

No		2005-2018	Total	1...9	10...19	20...49	50...99
1	Current ratio	Average	1.45	1.53	1.36	1.35	1.54
		Minimum	1.04	1.21	1.13	1.12	1.04
		Maximum	1.94	1.94	1.69	1.47	1.82
2	Quick ratio	Average	0.86	1.04	0.87	0.73	0.72
		Minimum	0.46	0.82	0.75	0.60	0.46
		Maximum	1.38	1.38	1.11	0.82	1.01
3	Cash ratio	Average	0.22	0.37	0.22	0.15	0.15
		Minimum	0.06	0.22	0.15	0.10	0.06
		Maximum	0.54	0.54	0.41	0.18	0.34
4	ROE	Average	0.09	0.15	0.08	0.07	0.06
		Minimum	-0.09	0.04	0.05	-0.09	-0.08
		Maximum	0.25	0.25	0.22	0.19	0.16

Source: authors' calculations based on ESA, 2021

The smallest agricultural companies have a relatively larger share of highly liquid current assets (cash and receivables and prepayments). However, large agricultural companies (50-99 employees) have relatively more stocks. Smaller companies have a slightly higher share of loans in current liabilities, so they have to maintain a larger financial buffer. The cash conversion cycle is longer for the smallest (1-9 employees) and the largest (50-99 employees) agricultural companies. Medium-sized companies (10-19 employees) have a shorter cash conversion cycle. Smaller companies have the longest receivables turnover, indicating that small companies allow buyers longer payment periods. Larger companies have a longer inventory turnover period, which is due to the fact that larger companies maintain a larger inventory.

Based on these results, it can be pointed out that smaller agricultural companies may find it more difficult to collect receivables from buyers for the production sold. Smaller companies have low market power and, in order to sell at all, they have to allow buyers longer payment periods. Therefore, they have to account for the relatively large volume of receivables and the relatively higher need for working capital. Thus, small agricultural companies have a more conservative working capital management policy. A more conservative working capital policy reduces the risks associated with the company's operations, which are usually higher for smaller companies.

A limiting factor for the analysis is that a better overview of the working capital management of agricultural holdings would be obtained if monthly data could be used. The analysis is based on the data of financial indicators of enterprises published by Statistics Estonia at the beginning and end of the year. For a farm, the activity of agricultural activities is low at the turn of the year, which is why the working capital indicators may be somewhat different during the season

Conclusions, proposals, recommendations

The analysis examined the working capital indicators in Estonian agricultural companies exploring the differences between larger and smaller companies.

Working capital management includes the question about the compromise between profitability and liquidity. Maintaining a higher level of current assets ensures higher liquidity, but reduces the company's chances of making a profit. Agricultural companies have a permanent focus on addressing the challenges of optimal inventory and working capital management. The results show that:

- 1) compared to large companies, the smallest agricultural companies have a relatively larger share of highly liquid current assets, less stocks in assets, and slightly higher share of loans in current liabilities;
- 2) small companies have the longest receivables turnover, indicating that small companies enable longer payment periods for buyers;
- 3) compared to medium-size companies, the money conversion cycle is longer for the smallest and the largest agricultural companies;
- 4) larger companies maintain a higher level of inventory, having longer inventory turnover period.

The following recommendations can be made to agricultural companies for working capital management.

- 5) It is necessary to all companies to ensure that sufficient working capital is available in a situation where sales revenue and profitability temporarily fall. This enables to procure production inputs for the following years, and avoid a situation where the production will remain low due to insufficient inputs.
- 6) It is important for larger companies to ensure that sufficient current assets, particularly cash, is available during a temporary downturn.
- 7) It is recommended for small companies to find ways to extend the payment terms to accounts payable, which reduces the share of interest-bearing liabilities in the structure of short-term liabilities.

- 8) Alternatives to finance working capital are needed in order to control the level of short-term liabilities. Financing working capital by providing additional financing from owners' equity is one option.

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DIGITALIZATION IN PUBLIC ADMINISTRATION INSTITUTIONS

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Abstract. There is no doubt that digitalization processes make positive effects on the development of a company as emphasized and evidenced by many research papers and studies. However, there are a few empirical research studies on digitalization in the public sector, particularly in public administration institutions. Therefore, the present research aims to identify and compare the level of digitalization in four national public administration institutions: the State Revenue Service, the Office of Citizenship and Migration Affairs, the State Social Insurance Agency and the State Employment Agency.

In Latvia, very good technical solutions and a broadband mobile Internet network are available, the number of Internet users increases all over the world every year, but are they widely used by public administration institutions to provide consumers with appropriate digital services?

The State Revenue Service has reached the highest level of maturity in digitalization, and the institution has also allocated the most funds from its budget to information technologies and the maintenance of their systems. The level of digitalization is low in the State Employment Agency and the Office of Citizenship and Migration Affairs. The public requires public administration services to be available digitally on a 24-hour/7day basis.

Key words: digitalization, public administration, e-services.

JEL code: H83; O30

Introduction

Digital technologies are not only a means of implementing a strategy for the modernization of society and the provision of services to it but also, to a great extent, determine the direction of change. At the beginning of the change initiation process, it is important to determine as clearly as possible whether the individuals of an organization wish to accept and implement the changes.

Public administration institutions change their ways of working to improve the provision of services, be more efficient and effective, and this process also involves digitalization. Digitalization in the public sector involves new ways of working with stakeholders, new services, new service delivery frameworks, as well as new forms of relationships. However, there are few systematic empirical research studies on how public administration institutions implement and manage their digital transformation in their daily practice and what results are achieved. Digitalization in public administration should be based on the user, his/her interests, as well as ease of use.

The present research aims to identify and compare the levels of digitalization in four public administration institutions of Latvia. To achieve the aim, the following specific research tasks were set: 1) to examine theoretical discussion on digitalization in public administration; 2) to compare the levels of digitalization in the State Revenue Service (SRS), the State Employment Agency (SEA), the Office of Citizenship and Migration Affairs (OCMA) and the State Social Insurance Agency (SSIA) in Latvia. The comparison of the institutions was performed employing the e-index and the digitalization assessment method developed by the authors of the present paper.

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Theoretical discussion: the factors contributing to the development of digitalization in public administration

Digitalization is the automation of manual processes following the conversion of analogue data into digital format (Ternes A., 2018). However, a digitalized company is defined as a company in which digital technologies have been introduced, and the company supplies a product or service by using service systems (Szalavetz A., 2020). Even though digital changes might seem to be occurring only in the private sector and government intervention is insignificant, new technological inventions become a means of managing the new dynamics of time and space through the Internet environment. Companies are very different during their life cycles and have different dimensions (Dosi G., Galambos L., 2013); therefore, technologies (innovations), such as renewable energy, are a crucial area of public policy to build strong infrastructure and a sustainable economic era. The third industrial revolution has created hundreds of thousands of new businesses and jobs, and horizontal and vertical collaboration is its key value (Rifkin J., 2011). In addition, the ability of government systems and national institutions to adapt to changes will determine their survival. If national institutions are able to adapt to and accept new changes, they will be able to compete and survive (Rose G., 2016). The role of knowledge and the need to develop it and get involved in lifelong learning programmes are also important. It has been found that through targeted training, any company and institution can increase its productivity by up to 30 %, with machines taking over standard tasks from employees and the employees performing more complex tasks (Matt T., Orzes G., 2020).

Change is often driven by dissatisfaction of managers with one or more aspects of the current situation (Damodaran L., Olphert W., 2006), yet today the main driver of change is the use of technological possibilities (Armstrong P., 2017) and focusing on systems rather than technologies themselves is the strategy of a modern manager (Schwab K., 2018).

Scientists P. Dunleavy and H. Margetts have developed a "Digital Age Governance" approach that assesses the organizational changes caused by technological progress. The authors assert that beginning from 2010, public administration has entered the second wave of reintegration, and the new paradigms of public management are influenced by technological changes in several ways, enabling public sector organizations to change. Technology by itself does not change organizations, rather the way of working and the technologies used to ease a process change work practices (Margetts H., Dunleavy P., 2013). It follows that the driver of change is not technologies but public pressure; however, the authors believe that the technologies that open up much greater opportunities and increase not only the quality of a service but also the supply speed and volume of it act as the main stimulus or "push".

Individuals, businesses and politicians experience technological changes in their environments, lives and jobs and expect public administration institutions to adapt accordingly and introduce similar technologies to provide their public services (Mergel I., Edelman N. et.al., 2019). It could be concluded that digitalization in public administration is mostly caused by external rather than internal needs, as the needs arise from overall technological progress and the demands of private sector organizations and the public to change public administration. Digitalization changes the relationship between public administration institutions and citizens as users of digital public services, as well as the relationships within the institutions themselves.

The scientific literature on the fundamental processes of change in national institutions that could be the result of applying digital transformation approaches refers to mostly related terms, such as e-government, digital government or transformative government. In e-government, the focus is placed not on creating new business models, but rather on making services more efficient and more accessible to

citizens, as well as shifting from offline to online service delivery and receipt. Research studies on e-government focus mostly on service delivery, as they aim to increase the efficiency of service delivery, while digitalization research studies involve analysing the internal and external environments (Margel I., Edelman N. et.al., 2019).

On the one hand, by generating and analysing large amounts of data on citizens, the new digital technologies can supply public services, and the citizens can interact with national institutions in a simple, fast, secure and non-corrupt way. On the other hand, scientific research indicates that the same advances in technology could be used for completely opposite purposes, such as restricting access to public services, restricting and controlling citizens' behaviour and tracking citizens' movement both offline and online (Lindgren I., Madsen O. C., 2019; Grinberga-Zalite G., Hernik, J., 2019).

The trends that undoubtedly affect digitalization in public administration institutions include the growing role of knowledge exchange and data compatibility, transformation in service delivery and integration, and a flexible organizational structure. Along with the changes, not only the performance of national institutions but also the feedback from the population are improved.

Possibilities of using digitalization and the assessment thereof

Research methodology

The empirical research identified the proportion of Internet users in the total world population and the current trend, as well as the situations with use of e-services in the European Union, which were compared using OECD data and the information provided by the European Commission. Further, the authors identified the level of digitalization in four public administration institutions of Latvia: the State Revenue Service (SRS), the Office of Citizenship and Migration Affairs (OCMA), the State Social Insurance Agency (SSIA) and the State Employment Agency (SEA). These are national institutions whose services are most often used by the population of Latvia and whose services are important to the public of various ages, genders, nationalities and income levels.

To assess and compare the levels of digitalization in the four public administration institutions, the authors employed the e-index and the digitalization assessment method. The data were obtained from the public data portal data.gov.lv, a report on the e-index for national institutions, a report on e-government monitoring published by the MEPRD, annual reports of national institutions and their websites. The data were taken for the year 2019, which was the year preceding the Covid-19 crisis, and it can be a starting point for the authors' further research.

The e-index represents a fact-based assessment of how actively and properly institutions use modern ICT, take actions to improve the quality and accessibility of services provided to citizens and businesses, as well as information on the efficiency and environmental friendliness of the institutions (Preparations for the 2019..., 2019). To obtain the total e-index for an institution, the sub-index of each criterion is calculated according to the following weights: provision of services 46 %; internal processes in the institution, inter-institutional cooperation 18 %; public relations and participation 12 %; customer service and support 12 %; publicly available data 12 %. A maturity level is identified for each criterion. There are five maturity levels to be calculated and entered into a maturity level matrix.

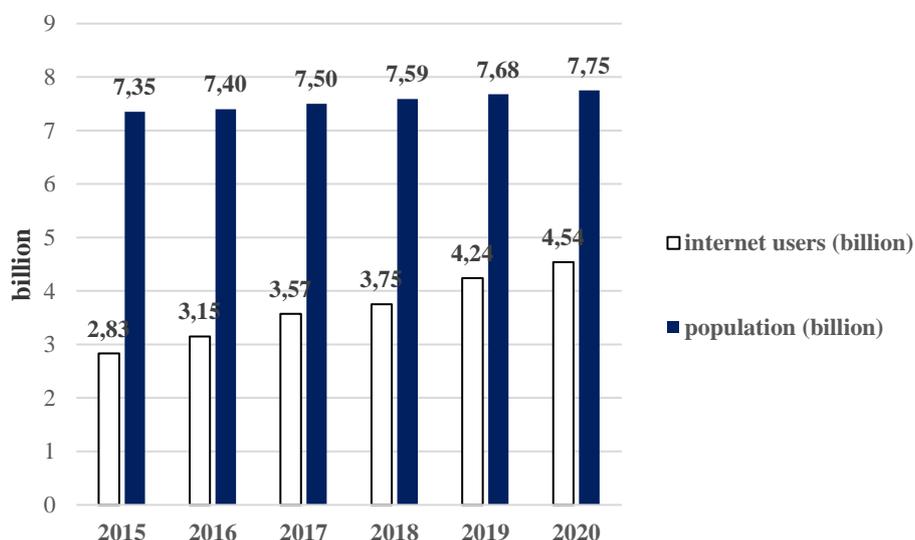
The digitalization assessment method developed by the authors is based on a method proposed by Georg Rasch. The digitalization assessment method focuses not on the improvements needed to reach the next level of maturity, which represents the basis of the e-index, but on the level of maturity already reached. The purpose of the e-index is to calculate the effectiveness of e-government in institutions and highlight shortcomings, while the digitalization assessment method proposed by the authors assesses the

level of digitalization. Five criteria (the same criteria as in the e-index) were selected, and the Rasch scoring approach was used to assign a score to each criterion on a scale from 1 to 3 points, with the maximum total score being 80. If an institution slightly meets a criterion, 1 point is assigned, but if the institution meets the criterion to a greater extent, it is assigned 2 or 3 points. Similarly to the e-index, the points assigned by the digitalization assessment method are converted to a percentage, where 80 points are 100 % (1 point is equal to 1.25 %). The authors of the paper show the total score, not the proportion of each criterion. To identify the level of digitalization for an institution using the digitalization assessment method, the authors distinguished five levels: Level 1 – very low (0-29 %); Level 2 – low (30-49 %); Level 3 – medium (50-69 %); Level 4 – high (70-89 %); Level 5 – very high (90-100 %).

The comparison of the public administration institutions also considered their expenditures on information technologies, maintenance of their information systems as well as computer equipment. The percentages of expenditures in total expenditure were calculated as well.

Research results

According to the CSB data, 76 % households in Latvia had an Internet connection in 2015, in 2020 this figure increased to 89.7 %. In recent years, Internet accessibility increased by 4 percentage points annually, while in 2016 compared with 2015 it increased by 1 percentage point. In 2020, 86.9 % of the total population used the Internet regularly (at least once a week). The main factor contributing to the use of digital technologies by public administration institutions was Internet accessibility and the digital skills of the population to use it. A comparison of the above figures with global statistics reveals that at the beginning of 2020, almost 60 percent of the world's population was online (Figure 1). Of the 7.75 billion people, more than 4.54 billion used the Internet, while social media users exceeded the 3.8 billion mark.



Source: authors' calculations based on Digital 2020: global digital overview

Fig. 1. Numbers of the population and Internet users in the world in 2015-2020, in billions

In the period 2015-2020, the population growth rate was quite steady, while the number of people using the Internet grew much faster, especially in 2017 when it increased by 13 percent compared with the previous year.

In 2015, approximately 20 billion devices worldwide were connected online, and more than 2.83 billion people worldwide used the Internet. It is projected that in 2030 this figure could reach half a trillion (Kemp S., 2020). At this rate, a level at which the number of Internet users is equal to the proportion of

the adult population might be reached over the next ten years. It should also be noted that the average Internet user gets younger, and at the same time the elderly build up their Internet skills. This is facilitated by new forms of payment (mobile or contactless payments), the Internet of Things, smart homes (e.g. automated lighting), smart mobility (automated traffic management based on air quality) or e-health (e.g. digital patient files) (Pfaffinger K. F. et.al., 2020). The period of the Covid-19 crisis gives a special "push" to the use of digital technologies both by individual households and by public administration organizations and institutions. The public is forced to build up digital skills in order to use digital services and tools, while public authorities need to design their ranges of services to be accessible and usable 24 hours a day, seven days a week, beyond their administrative capacity, in-person service and working hours.

An analysis of the digital services provided by public authorities in the public sector of the European Union and their use reveals that in 2019, 44 % of EU citizens retrieved information from public authorities' websites within 12 months, in 2015 this figure was 40 %. In 2019, the highest proportion of citizens who used the e-services provided by their governments was found in the age group of 25-34 years, followed by those aged 35-44. Denmark (89 %) and Finland (84 %) made the most use of this opportunity, while Romania (9 %) made the least use of digital opportunities, which could indicate that digitalization was underdeveloped in Romania. The situation in the Baltic States was as follows: Estonia (69 %), Latvia (58 %) and Lithuania (49 %) (E-government activities, 2020)

Latvia is one of the countries where the integration of digital technologies increased; however, according to OECD data, Latvia lagged significantly behind other OECD countries in terms of digital skills. Over the past two years in terms of development of e-government solutions, Latvia has fallen from 45th place to 57th place in the world, being ahead of only Romania among EU Member States. In 2019, Deputy State Secretary of the Ministry of Economics Raimonds Aleksejenko emphasized that the ICT sector was very important, as the digitalization of companies and public administration depended on it and currently the digitalization of public administration was too slow (Commission for Sustainable Development..., 2019). The quality of digital services supplied by public administration institutions is a hindering factor for digital growth.

Since 2014, the European Commission has been publishing the progress of EU Member States towards the digital economy and society. The DESI index, a composite set of indices showing the progress of EU Member States in the field of digitalization, takes into account: connectivity (fixed broadband coverage, mobile broadband coverage and prices); human capital (use of the Internet, digital skills, information and communication technology specialists); use of the Internet (use of content, communications and online transactions by the population); digital technology integration (business digitalization and e-commerce); digital public services (e-government and e-health) (European Commission, 2019). A comparison of the DESI index in 2018 and 2019 reveals that all EU Member States have improved their digital performance. In 2019, Latvia ranked 17th in relation to the level of digitalization. Such a low level among EU Member States could be explained by the poor digital skills of the population and the fact digital technologies in business are still used insufficiently.

Owing to the high-speed, especially fixed and mobile broadband networks and their wide availability, Latvia has made the greatest progress in the field of digital public services, taking 7th place, and in the field of connectivity, taking 8th place, as pointed out the European Commission. The advantages of Latvia are the advanced high-speed broadband 4G network, which covers almost 100 % households. This is a good prerequisite for digital public administration services to be accessible to citizens. But what is the range of such services?

Global experience shows that almost 73 % industrial innovations do not turn into successful industrial products, not because they are not technologically excellent, but because they do not meet the needs of the user. Latvia should develop the ability of companies to market services and goods that meet the needs of customers and consumers (Latvia 2030; Pelse M., Lescevic M., 2000) as stipulated by the Sustainable Development Strategy of Latvia. In 2019 in Latvia, there were about 180 various important information technology systems and more than 600 e-services available, which a person could use without visiting national institutions.

The quality of digital public administration services is a hindering factor for digital growth in the country as a whole. In Latvia, ICT governance is fragmented at the national level, namely, almost every public administration institution has an IT department, as well as this field is under the responsibility of several ministries.

On the central websites of the four public administration institutions, digital platforms were highlighted in only two: the SRS – the EDS (electronic declaration system) and the SSIA – E-services. An analysis of the total expenditures of the institutions reveals that in 2019 (Table 1), the SSIA and the SRS made the largest expenditures, whereas the OCMA made the smallest expenditure. In addition, the data show how much each institution spent on technologies that provided digital services.

One of the largest expenditures on digitalization relates to maintenance of information systems (IS), information technology (IT) services and hardware, communications and other office equipment. The highest proportion of the total budget spent on ensuring and maintaining digitalization, 13 %, was found for the SRS, which totalled almost EUR 18.5 million per year, followed by the OCMA with 4 %, the SEA with 2 %, while the SSIA spent only 1 % or EUR 661.4 thou.

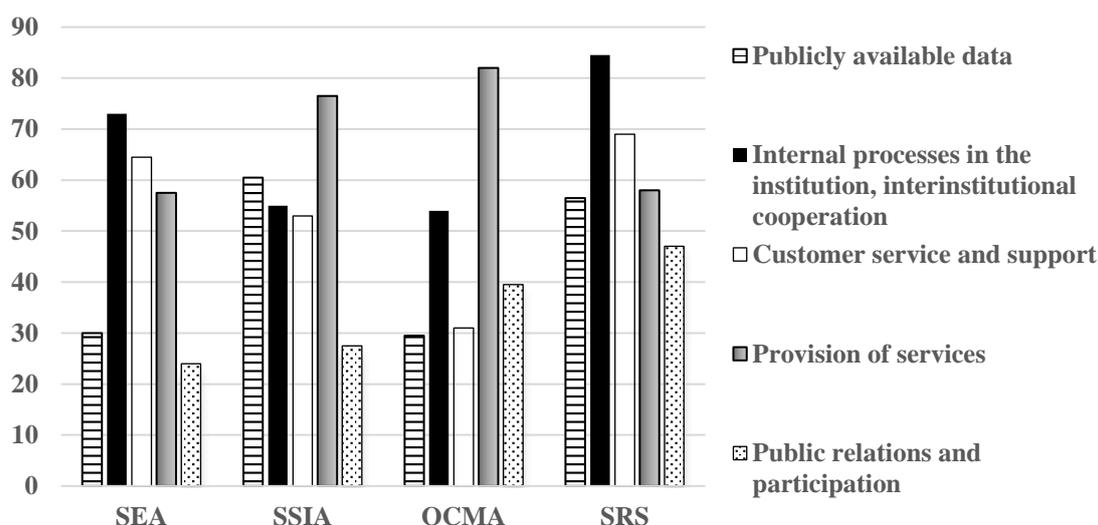
Table 1

Expenditures of the public administration institutions on IS, IT and computer equipment in Latvia in 2019

Expenditures	SRS	OCMA	SSIA	SEA
Total	123 206 313	25 417 922	217 087 830	32 705 580
IT, IS and computers	18 442 919	994 324	1 419 571	661 425
% of total	13	4	1	2

Source: authors' calculations based on government budget estimates and data from the SRS, the OCMA, the SSIA and the SEA, 2019

The availability of IT technologies is the basis for digital solutions in public administration. In addition to what the authors pointed out in the theoretical discussion, the ability and desire to use them are also important. The assessment of the four selected institutions according to the e-index is shown in Figure 2. The ratings in each criterion were quite different across the institutions. The SRS had the highest ratings in two criteria: internal processes in the institution and inter-institutional cooperation and customer service and support, the OCMA – in provision of services, the SSIA – in public data availability, while the SEA had not a single criterion that was rated the highest among the institutions.



Source: authors' construction based on the 2019 e-index

Fig. 2 E-index values for the selected public administration institutions by criterion in Latvia in 2019

The sub-indexes of the e-index show that, overall, the efficiency of digitalization was higher in the SRS, and the total for the SRS was also higher. However, public relations and participation was a criterion that was rated the lowest for all the selected public administration institutions, except for the OCMA whose publicly available data were even lower rated, which highlighted the main problem concerning digitalization in public administration.

The results of calculations and the final matrix for digitalization levels obtained by applying the digitalization assessment method are summarized in Table 2. A comparison of the public administration institutions by this method revealed that the highest rating of the level of digitalization was found for the SRS, 64 points or 80 %, which meant that a high level of digitalization was achieved by this institution. The SSIA achieved a medium level of digitalization, 64 %, while the OCMA and the SEA with 56 % had a low level of digitalization.

Table 2

Digitalization assessment results for the SEA, the OCMA, the SSIA and the SRS in 2019

Criterion (maximum score)	Public administration institution (score)			
	SEA	OCMA	SSIA	SRS
Public relations (21)	14	14	11	17
Customer service (16)	9	14	15	15
Publicly available data (13)	4	7	1	5
Provision of services (12)	8	8	10	11
Internal processes in the institution (17)	10	8	8	16
Total	45	45	51	64
Percentage	56 %	56 %	64 %	80 %

Source: authors' calculations based on a comparison of criteria and data.gov.lv., 2020

Most services were provided by the SRS, the institution processed more than 41 million services in 2019, various applications and requests were submitted not only electronically or in person but also sent by post or reported via telephone. So many services cannot be processed without its internal processes being

digitalized. The most important criteria of digitalization regarding internal processes are document processing, personnel training and ICT use possibilities. For example, OCMA personnel still used applications in paper format to apply for annual leave, while the other public administration institutions provided an electronic solution, such as Horizon Hop or DVS. With DVS, a faster flow of documents is possible and documents are signed with an electronic signature. One of the leaders in this category was the SRS with a score of 16 points out of 17. The OCMA and the SSIA were the least developed regarding the digitalization of internal processes.

Conclusions, proposals, recommendations

- 1) The causes of digitalization are technological progress and the public's desire for new, high-quality and modern services, and this process is facilitated by education. Digitalization in organizations and institutions cannot occur without technological progress and opportunities to use it; it is also necessary to have the desire to change, which is often stimulated by public pressure. National institutions should establish a range of public administration services, which are available 24 hours a day and 7 days a week, meaning that it is not the institution that sets its working hours but the service recipient chooses them.
- 2) As global Internet access increases, overall, digital services supplied by public administration institutions become more accessible and widely consumed. The number of Internet users in the world in 2020 reached 60 percent of the total population. Compared with the other EU Member States, Latvia made the greatest progress in the field of accessibility and connectivity of digital public services, which provided an opportunity for the development of digital services supplied by public administration institutions.
- 3) A comparison of the four public administration institutions of Latvia revealed that the more a public institution invested in IT and IS from its own resources, the higher the level of digitalization in this institution. On average, the SRS spent 13 % of its total budget on ICT maintenance, and technological development and the provision of e-services was one of its priorities. This was also evident in relation to digital maturity, as 85 % SRS internal processes were digitalized. The SRS achieved the highest level of digitalization and efficiency of digitalization among the analysed public administration institutions of Latvia, the level was low in the State Employment Agency and the Office of Citizenship and Migration Affairs, which might hinder their progress towards digital transformation.
- 4) The digitalization assessment method developed by the authors, compared with the e-index, yielded different results regarding the levels of digitalization in national institutions. This was mainly due to the fact that the digitalization assessment method also took into account the management of change at the institution with regard to the provision of services.

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DIFFERENCES IN FISHERY AND AQUACULTURE PRODUCTS, THEIR PRODUCTION AND SALE TECHNICAL REGULATIONS IN EURASIAN ECONOMIC UNION AND LEGISLATION AND PRACTICE OF THE EUROPEAN UNION

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Abstract. The mandatory requirements for the fishery and aquaculture products, their production and sale in force in the territory of the Customs Union of the Eurasian Economic Union (CU EAEU) arise from the regulatory and legal acts of the Eurasian Economic Union and its predecessor - the Customs Union - and apply in a package approach similar to the law of the European Union pertaining to the food safety area. The requirements of the EAEU technical regulations have been analysed taking into account that European exporting enterprises are first of all obliged to comply with the requirements of the listed EU regulatory and legal acts applicable to their production process and products. The aim of this paper was to run a comparative analysis on the mandatory requirements of the food legislation of the European and Customs Unions regarding fishery and aquaculture products, their production and sale. The issues of certification of certain product categories are analysed separately, the requirements for canned fish being highlighted. The analysis is relevant for all fish processing companies which may consider the possibility of starting export to the countries of the CU EAEU and are intended to reduce costs associated with products' entry into these markets.

Key words: fishery, aquaculture, legal framework, international trade, fish exports.

JEL code: F13, F42

Introduction

Currently, the issue of food safety remains principal both for end consumers and for regulatory institutions (Beulens et al., 2005; Trienekens and Zuurbier, 2008). The World Bank group in their analysis of some requirements of the European Union and the Customs Union food legislation (2015) highlight a joint responsibility of the state and industry for ensuring food safety. At the same time, sustainable production in the food sector for such comparatively small markets as Latvia is certainly associated with the constant expansion and retention of export markets.

Access to food export markets depends largely on the capacity of food companies to upgrade their levels of conformity with export market requirements (Weyandt et al., 2011; Kussaga et. al., 2013). The attention that food safety and consumer protection enjoy on the agenda of governments seeking to expand their trade links with other countries has been continuously growing. Likewise, food businesses interested in expanding their export destinations have to understand the quality and safety requirements of their target markets. Failure to meet conflicting demands of the export market (such as regulation, microbiological criteria, chemical standards, and inspection) can result in a reduced export potential, in particular product abandonment due to non-compliance with local legislation.

The Customs Union of the Eurasian Economic Union includes Russia, Belarus and Kazakhstan, which is a significant existing and potential market for the export of fish and aquaculture products produced in the EU, including Latvia. In this context, set of requirements for imported fish and aquaculture products is formed by "horizontal" technical regulations (TR) – TR CU 021/2011 "On food safety", TR CU 022/2011 "Food products in terms of their labelling", TR CU 005 / 2011 "On the safety of packaging", TR CU 029/2012 "Requirements for the safety of food additives, flavourings and other aids" - and the "vertical" technical regulation TR EAEU 040/2016 "On the safety of fish and fish products", the provisions of which should be considered as exclusively interrelated.

The lists of measurement methods used to confirm the compliance of products with the requirements of technical regulations are approved by the relevant decisions of the Customs Union Commission or the

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Board of the Eurasian Economic Commission. The lists of interstate and national standards containing requirements for products are approved by the same decisions; products manufactured in accordance with those are automatically considered to comply with the requirements of technical regulations and are not subject to increased supervision by the competent authorities.

The classification of types of fish food products regulated by the EAEU TR 040/2016 is provided at sections 1 and 2 of this regulation. There is no responsible body for issuing official clarifications and comments on the requirements of legal acts in the structure of the EAEU. All comments of the EAEU Commission are for informational purposes only and may be rejected by both the executive and judicial authorities of the EAEU member states.

The aim of this work was to conduct a comparative analysis on the mandatory requirements of the food legislation of the European and Customs Unions regarding fishery and aquaculture products, their production and sale. The purpose of this comparative analysis is to provide food processing companies with information on the specifics of EU and CU legal requirements, to help evaluate and expand their potential to meet these requirements and enter new export markets. Tasks of the research include analysis of the application of procedures based on HACCP principles, requirements for the use of particular ingredients in fish products, the information provided for the labelling of fish products, as well as the requirements for enterprises and foreign enterprises certification procedure for compliance with the EAEU technical regulations. The research implemented a qualitative research methodology based on the comparative analysis of the relevant EAEU and the EU regulations. The hypothesis of the study: "There are differences in the EU and EAEU regulations that should be considered by EU food processing companies willing to expand to relevant markets". All the differences in the requirements of the EAEU technical regulations discussed in this article are given taking into account that European exporting enterprises, first of all, are obliged to comply with the requirements of the internal EU regulations. The sources of information included legislation acts of EAEU and EU regulating import, production and sale of fishery and aquaculture products.

Research results and discussion

1. Requirements for the application of procedures based on HACCP principles

According to clause 2 of Art. 10 TR CU 021/2011, the manufacturer, while carrying out food production (manufacturing) processes related to the safety requirements of such products, must develop, implement and maintain procedures based on the principles of HACCP.

TR EAEU 040/2016 does not contain independent requirements for the development and implementation of procedures based on the principles of HACCP - it makes use of reference practice. Thus Art.13 requires fishery products to comply as well with the safety requirements set in TR CU 021/2011, and Art. 25³ requires the safety of products in the process of their production to be ensured through the functioning of the safety system (production control), while the particular requirements are contained in Art. 10 and Art. 11 TR CU 021/2011.

The technical regulations of the EAEU, unlike Regulation (EC) No. 852/2004 of the European Parliament and of the Council of 29.04.2004, do not provide for the drawing up of guidelines for the development and implementation of self-control systems at the supranational, national or industrial levels - therefore, all the requirements contained in them, must be executed literally. At the same time, supervisory authorities do not consider availability of an implemented food safety management system in accordance with ISO 22000 as proof that the requirements of TR CU 021 in terms of the production control system are met.

Also, unlike Regulation (EU) No. 852/2004, all requirements of TR CU 021/2011, including those for production control system, apply as well to organizations involved in the production of primary products, i.e., for example, to fishing vessels of coastal fishing, not processing the catch on their own.

The very principles of HACCP as set forth in Part 3 of Art. 11 TR CU 021/2011 differ from those stated in the standard CAC / RCP 1-1969. In particular, clause 3.5) does not require the initiation of corrective actions in case of violation of critical limits, but rather the establishment of a course of action - which is a broader concept and, obviously, involves actions related to the recall of unsafe products. The requirements of clause 3.6) do not relate to inspections of the production control system as such (using internal audits and other verification methods), but establish frequency of inspections for compliance with the requirements of technical regulations only for products going into circulation.

The list of mandatory procedures, the implementation of which within the framework of the production control system is required by TR CU 021/2011, includes:

- the procedure for selecting the technological production processes necessary to ensure food safety;
- the procedure for selecting the sequence and flow of technological operations to prevent contamination of raw materials and finished products;
- the procedure for determining the controlled stages of technological operations and products at the stages of their production (manufacturing) in production control programs;
- the procedure for monitoring raw materials, technological equipment, packaging materials, products used in the manufacture of products, as well as the products themselves;
- the procedure for monitoring the functioning of technological equipment;
- the procedure for documenting information on the controlled stages of technological operations and the results of product control;
- the procedure for observing the conditions of storage and transportation of products;
- the procedure for maintaining production facilities, technological equipment and implements used in the production process in a condition that eliminates product contamination;
- the procedure for selecting ways to ensure that employees comply with the rules of personal hygiene;
- the procedure for selecting methods and establishing the frequency of cleaning, washing, disinfection, disinsection and deratization of industrial premises, technological equipment and implements used in the production process;
- the procedure for maintaining and keeping documentation confirming the compliance of the manufactured products with the requirements of technical regulations on paper and (or) electronic media;
- the procedure for traceability of food products.

The established retention period for documents confirming the safety of raw materials is three years from the date of their issue. The retention period for the remaining documents confirming the compliance of the production control system with the requirements of TR CU 021/2011 is not legally stipulated.

2. Requirements for the use of individual ingredients in fish products

TR EAEU 040/2016 establishes the minimum content of fish ingredients only for several types of products - it is standardized in their definitions, Art. 4. These types of products include:

- products for baby food (8 – 18 % of muscle tissue of fish for products based on vegetable and fish products, 18 – 40 % - for products based on fish and vegetable-based products, over 40 % - for products based on fish products);

- preserves (not less than 65 % for preserves from salted fish, not less than 55 % - for preserves from other aquatic organisms and caviar);
- canned food (at least 50 %).

The content of edible salt is regulated only in preserves - it may not exceed 8 %. A controversial point is the production of preserves from raw materials subjected to heat treatment: such products are allowed according to Appendix 1 TR EAEU 040/2016, but are not allowed according to the definition of the type of product "preserves". At the same time, GOST 30054-2003 "Canned food and preserves from fish and seafood. Terms and definitions" included in the list of standards to TR CU 021 allows the production of thermally processed preserves.

The ranking of the types of products that have undergone dehydration has been established, depending on the residual moisture content - it is also stipulated in the definitions in Art. 4:

- dried products - no more than 20 %;
- dried and sundried products – more than 20 and no more than 30 %;
- sundried products - at least 30 %.

TR EAEU 040/2016 in Art. 16 bans manufacture and sale of products made from the following families:

- *Canthigasteridae* (toothfish);
- *Diodontidae* (hedgehog-fish);
- *Molidae* (moon fish);
- *Tetraodontidae* (four-toothed).

With regard to the use of food additives, in comparison with Regulation (EC) No 1333/2008 of the European Parliament and of the Council of 16.12.2008, CU TR 029/2012 contains the following different provisions:

- polyols (E420, E421, E953, E965, E966, E967, E968) are not permitted for use in any unprocessed products;
- citrates of sodium (E331), potassium (E332) and calcium (E333) are not allowed for use in unprocessed products;
- sulfurous acid (E220), sodium sulfite (E221), sodium hydrosulfite (E222), sodium pyrosulfites (E223), potassium (E224), potassium sulfites (E225), calcium (E226), calcium hydrosulfites (E227), potassium (E228) are allowed in the amount of a single norm for fresh and frozen crustaceans of the families *Penaeidae*, *Solenoceridae*, *Aristaeidae* in the amount of 300 mg/kg of edible part;
- 4-hexyleneresorcinol (E586) is not approved for use in the EAEU;
- dyes are not allowed in unprocessed products;
- the content of brown HT (E155) in semi-finished products cooked from crustaceans is allowed no more than 250 mg/kg;
- sorbic acid (E200) and potassium sorbate (E202) are not allowed for use in ready-made aspic dishes;
- the content of sorbic acid (E200), sodium sorbates (E201), potassium (E202), calcium (E203), benzoic acid (E210), sodium benzoates (E211), potassium (E212) and calcium (E213) in combination is allowed for use in boiled Crangon crangon and Crangon vulgaris at a level of 2000 mg/kg, including not more than 1000 mg/kg benzoates;
- sulfurous acid (E220), sodium sulfite (E221), sodium hydrosulfite (E222), sodium pyrosulfites (E223), potassium (E224), potassium sulfites (E225), calcium (E226), calcium hydrosulfites (E227), potassium

(E228) are allowed in the amount of a single norm for boiled crustaceans of the families *Penaeidae*, *Solenoceridae*, *Aristaeidae* in the amount of 270 mg/kg of edible part;

- sodium nitrates (E251) and potassium (E252) are allowed in salted herring and sprat and in marinade at the level of 200 mg/kg in terms of sodium nitrite;
- extracts of rosemary (E392) are allowed in a single norm – 150 mg/kg (per fat of the product) in terms of the sum of carnosol and carnosic acid;
- pyrophosphates (E450), triphosphates (E451), polyphosphates (E452) are not allowed for use in any salted fish, including the *Gadidae* family (saithe - *Pollachius virens* and pollock - *Theragra chalcogramma*), which is allowed by Regulation (EC) 1133/2008 as amended in 2019;
- stevioglycosides (E960) are not allowed for use in fish products;
- neotame (E961) is not approved for use in fish products;
- advantame (E969) are not allowed for use in the EAEU;
- amaranth (E123) is not approved for use in the EAEU;
- boric acid (E284) is not approved for use in the EAEU;
- sodium tetraborate (borax) (E285) is not approved for use in the EAEU.

3. Requirements for information submitted for labelling of fish products

The requirements for the labelling of fishery products are regulated by both TR CU 022/2011 and TR EAEU 040/2016 at the same time. The differences compared to Regulation (EC) No 1169 | 2011 of the European Parliament and of the Council of 25.10.2011 are as follows.

All information on the label, except as otherwise specified, must be in Russian.

Information about products is not meant to be communicated through verbal means. It should be noted, that the entire text of the marking must be displayed in a font with a lowercase letters' height of at least 2 mm.

The name of fishery products must necessarily include:

- the name of the type of product (refer to the list in clause 2a of TR EAEU 040/2016);
- zoological name of the used raw aquatic materials in Russian;
- type of cutting;
- type of processing (salted, smoked etc.). Processing according to TR EAEU 040 (clause 4, article II) includes "heat treatment (except for freezing and cooling), smoking, canning, maturation, salting, drying, pickling, concentration, extraction, extrusion or a combination of these processes." As per the same clause, products that have not been processed are classified as unprocessed (frozen, chilled, minced meat, a number of semi-finished culinary products etc.);
- Imitation information - for imitated products.

It is not allowed to indicate components in the product name if the product does not contain such components or products resulting from their processing. If the product contains a flavouring agent, then the name of the component replaced by this flavouring agent and not being part of the product may be included in its name using the words "with taste of" and (or) "with flavour of".

To determine zoological name of a type of raw material, the EAEU Commission proposes the following documents for guidance:

- Commercial fish of Russia (Gricenko, Kotljar, Kotenyov, 2006);
- Handbook on the chemical composition and technological properties of marine and oceanic fish (Bykov, 1999);

- Atlas of lifetime colouring of the cephalopods (portraits of cephalopods) (Alexeev, 2013);
- Guidebook-identifier of commercial and mass cephalopods of the World Ocean (Filippova et. al., 1997);
- Fish of the Atlantic (Hlopnikova, 2010);
- Atlas of distribution of fish and pisciform (drawings of fish, maps of ranges and comments) (Mikulin, Kotenyov, 2007);
- Illustrated guide to Decapoda of the Atlantic sector of Antarctica and adjacent waters (Anosov, 2012);
- A five-language dictionary of the names of animals (fish), Latin, Russian, English, German, French (Reshetnikov et al., 1989);
- Dictionary of names of marine food fishes (Berdichevsky, 1980);
- Order of the Ministry of Agriculture of Russia dated 16.10.2012 No. 548 "On approval of the lists of types of aquatic biological resources subject to industrial fishing and coastal fishing".

Should none of the listed sources contain the name of the species of interest in Russian, then the importer or manufacturer, in accordance with established practice, will address one of the branches of the All-Russian Institute of Fisheries and Economy (VNIRO) with an official request with a view to establish if Russian name corresponds to the available scientific name (Latin).

When specifying the composition of the product, within the mandatory data that the marking must contain:

- the presence of a vacuum (except for canned food);
- use of fish with spawning changes (in the production of canned food);
- information on freezing or refrigerating of products;
- the words "made from frozen raw materials" - for products made with the use of frozen raw materials;
- the words "ready-to-eat products" - for culinary products. Note that attention should be paid to the definition of the term set by Art. 4 TR EAEU 040/2016: fish culinary product - fish food products made with or without the addition of food components and (or) food additives, ready for eating after heat treatment or without it;
- canned food must contain the following marking applied by means of embossing or indelible paint: production date (six digits), shift number (one digit), fishing industry index (letter "P") with a gap of one or two characters between them;
- information about the ingredients obtained with the use of GMOs;
- the Eurasian Conformity mark on the EAEU market.
- immediately preceding indication of the list of components, there should be placed inscription "Composition";
- if the mass fraction of a constituent compound component is not more than 2%, it is allowed not to indicate the components included in it, with the exception of food additives, flavourings and their constituent food additives, biologically active substances and medicinal plants, components obtained with the use of GMOs and components, which are the most common allergens (clause 14, part 4.4 of article 4 of CU TR 022/2011 - there are differences from Appendix 2 of Regulation (EU) 1169/2011);
- when listed as part of the names of types of products, the names of some components can be replaced - see Appendix. 1 TR CU 022/2011;
- for products packaged using a modified atmosphere, the composition of such environment is indicated.

When specifying the quantity of products, the following differences should be noted:

- the net mass must be indicated without any exception, since the provisions on products subject to loss of mass or volume during storage do not apply;
- if the packaged product consists of several consumer packages with products of different types and names and (or) individual products of various names, then the name and quantity of products of each consumer package and (or) the name, number of pieces, or weight of each should be indicated on the group packaging of the packaged products;
- undefined indication of the quantity of packaged products and an indication of the range of values for the quantity of packaged products is not allowed;
- for frozen products, the net weight without glaze and the mass fraction of glaze are indicated as percentage.

The production dates of products are indicated using the words:

- "production date" indicating the hour, day, month with a shelf life of up to 72 hours;
- "production date" indicating the date, month, year with an expiration date of 72 hours to 3 months;
- "production date" indicating the month, year or date, month, year with an expiration date of 3 months and more.

After the words "production date", the date of product manufacture or the place where this date is applied to the consumer package is indicated. The words "production date" may be replaced by the words "manufacture date" or wording of the same meaning. In addition, for products packed outside the place of production the date of packaging is indicated.

When specifying the expiration date, the following words should be used:

- "best before" indicating the hour, day, month, with an expiration date of up to 72 hours;
- "best before" indicating the date, month, year, if the shelf life is from 72 hours to 3 months;
- "best until the end of" with the indication of the month, year or "best before" with the indication of the date, month, year if the shelf life is at least 3 months.

It is allowed to use the word "best" with indication of the number of days, months or years, or if the shelf life is up to 72 hours, the word "best" with indication of the number of hours.

The words "best before", "best", "best until the end" in the product labelling may be replaced by the words "expiration date", "use before" or wording similar in meaning.

Instead of the place of origin or country of origin of the product, the name and location of the product manufacturer and importer should be indicated. In this case, the officially registered name and location (address, including country) of the manufacturer are used. Should it appear not the same as the manufacturer's address, the address(-es) of the production(-s) is indicated too. Information on the name and location of the manufacturer of products supplied from third countries may be indicated in Latin letters and Arabic numerals or in the state language(-s) of the country of the food manufacturer location, provided that the name of the country is indicated in Russian.

In contrast to the requirements of the Commission Executive Order (EU) 2018/775 of 28/05/2018, the indication of the FAO catch area or inland water catch area is mandatory only for unprocessed products. In this case, an appropriate indication of the aquaculture origin of unprocessed products is mandatory.

Products packaged outside the place of their manufacture (except for the cases of food products being packaged in consumer packaging by retail stores) must contain specified information both on the manufacturer and on the packer of the product, including cases when the packaging was ordered by some other organization.

When indicating nutritional and energy value, the amount of vitamins and minerals may be indicated if they were added during production or if their native content is at least 5 % of the daily requirement in 100 g or 100 ml, or in 1 serving of products (refer to Appendix 2 to TR CU 022/2011, the differences are in the recommended nutrient standards).

The values of indicators of nutritional and energy value should be rounded as per the rules set out in Appendix. 3 TR CU 022/2011. Their indication may be accompanied by the words "average value".

In the manufacture of products from raw materials obtained from GMOs, GMO lines that have passed state registration in the EAEU countries must be used.

For products obtained with the use of GMOs, including those not containing DNA and protein, the following information must be indicated: "genetically modified products", or "products obtained from genetically modified organisms", or "products contain components of genetically modified organisms".

In such cases, next to the Eurasian Conformity mark, a marking sign of the same shape and size is applied in the form of the inscription "GMO".

The content of GMO not exceeding 0.9 % in products is considered an accidental or technically unavoidable impurity, and such products do not belong to food products containing GMOs. When labelling such food products, information as to the presence of GMOs is not indicated.

For products obtained from genetically modified microorganisms (GMM) or with their use, the following information is required:

- for those containing viable GMM - "The product contains viable genetically modified microorganisms";
- for those containing non-viable GMM - "The product is obtained using genetically modified microorganisms";
- for those freed from the content of technological GMM or for those obtained using components freed from the content of GMM - "The product contains components obtained with the use of genetically modified microorganisms."

In product labelling, information on the presence of GMOs is not indicated in relation to used technological aids made from or using GMOs.

For processed packaged products, no cases of omitting mandatory information from the labelling are allowed. If the area of the larger side of the consumer package does not exceed 10 cm², then

- name,
- production date,
- shelf life and storage conditions,
- quantity of products,
- the name and location of the manufacturer, as well as the name and location of the importer,
- recommendations or restrictions on the use of products,
- indicators of nutritional value,
- information on the presence of components obtained with the use of GMOs,
- The Eurasian Conformity mark a single sign of circulation on the EAEU market must be applied to the consumer packaging and (or) on the label and (or) a leaflet placed in each consumer or transport package, or attached to each consumer or transport package.

It is enough for the marking of the transport packaging in Russian to contain:

- product name,
- quantity of products,

- production date,
- shelf life,
- storage conditions,
- information allowing to identify the batch,
- name.

Before delivering products to the EAEU market, it is advisable to carry out an examination of the labelling.

4. Requirements for enterprises

Requirements for equipment, implements, transport, organization of production facilities and engineering systems, for the provision of energy carriers (water, ice, steam etc.) of coastal enterprises are regulated by TR CU 021/2011, which do not differ from the requirements of App. II of Regulation (EC) No 852/2004.

Requirements for the design features of production and processing vessels of various classes are specified in the EAEU TR 040/2016 and contain one significant difference compared to the requirements of Sec. VIII adj. III of Regulation (EC) No 853/2004 of the European Parliament and of the Council of 29.04.2004, namely: for vessels engaged in the production of chilled crustaceans and molluscs, no exception has been made in terms of minimum design solutions compared to processing vessels.

Technical regulations do not provide for and do not contain references to additional documents that determine the requirements for the design features of processing plants. In practice, supervisory authorities may impose requirements of national construction rules and regulations, aimed primarily at the safety of the construction and operation of structures, rather than at the sanitary and hygienic condition of production.

5. The procedure for certification of foreign enterprises for compliance with the technical regulations of the EAEU

In the public domain, to be specific, on the Russian Federal Service for Veterinary and Phytosanitary Surveillance website, there is no information on the foreign enterprises examining procedure for their production activities and products compliance with the requirements of the applicable EAEU technical regulations. Based on the common practice, the lists of importing enterprises are still prepared for the EAEU side by the competent national authorities of the exporting countries.

The possibility of engaging Russian expert commissions in the certification procedure survey should be discussed first on the level of the Russian Federal Service for Veterinary and Phytosanitary Surveillance regional administration of the planned delivery region. One should bear in mind necessity to carry out production of certain assortments and assortment groups of goods, taking into account the requirements of clauses 17, 18, 26 - 42 of the EAEU TR 040/2016, which provide a list of national GMP provisions.

6. Certification of certain categories of products for any standards \ GOST

Requirements for voluntary certification of imported products can only originate from retail chains - this is exclusively a civil law agreement and cannot be considered a widespread practice. There are no such requirements on the part of the regulatory authorities - a mandatory conformity assessment is enough, as defined by Ch. XI TR EAEU 040/2016:

- for unprocessed products - in the form of a veterinary and sanitary examination conducted by the Russian Federal Service for Veterinary and Phytosanitary Surveillance,

- for processed products - in the form of conformity declaration according to the diagram 4d,
- for products of a new type - state registration.

As per Art. 4 TR CU 021/2011, food products of a new type - food products (including food additives and flavourings) that were not previously used by humans for food in the territory of the EAEU, namely: with a new or deliberately changed primary molecular structure; consisting or isolated from microorganisms, microscopic fungi and algae, plants, isolated from animals, obtained from GMOs or with their use, nanomaterials and nanotechnology products; with the exception of food products obtained by traditional methods, which are in circulation and from practical experience are considered safe. Food products of a new type do not include food products manufactured according to well-known and already used technologies, which contain components, including food additives that are already used for consumption by humans, even if such products and components are manufactured according to new recipe.

State registration of a new type of product is termless and is carried out prior its initial commercial delivery to the customs territory of the EAEU by the territorial departments of the Russian Federal Service for Veterinary and Phytosanitary Surveillance at the location of the importer. The fact of state registration of a new type of product means that in future such food products are not subject to state registration by any other applicant and under other names.

Only a Russian person (importer) can be applicant when declaring, all tests must be carried out in a laboratory accredited by the Russian Accreditation and included in the unified register of EAEU conformity assessment bodies, using methods from the lists approved by the Decisions of the Customs Union Commission dated 09.12.2011 No. 880 and the EAEU Board No. 106 dated 29.08.2017.

Regarding the procedure for imported products testing with the aim of subsequent adoption of a declaration of conformity, a bilateral clarification was issued by the Federal Customs Service of Russia and Federal Accreditation Agency dated December 29, 2017.

In the event that product samples are imported into the territory of the EAEU for testing and the subsequent declaration of conformity adoption in order to extend its validity to deliveries under the concluded foreign trade contract, such samples must be declared as being subjected to the customs procedure for domestic consumption release. At the same time, a letter from the testing laboratory indicating the amount of products required to carry out the necessary tests is submitted to the customs authority. In the case of sampling from a commercial batch of products imported into the territory, such selection is carried out only by an act with the permission of the customs authority and on the basis of a letter from the testing laboratory indicating the required number of samples. As a rule, until the declaration is accepted, a commercial batch is not subject to release and is stored at the temporary storage warehouse.

It should be remembered that the list of safety indicators for any group of fish products in the EAEU is much wider in comparison with the EU requirements - this applies to both sanitary and hygienic and microbiological indicators, and the standardized levels and applied test methods are not equivalent. This also applies to the norms of nitrogen of volatile bases (clause 21 of the EAEU TR 040/2016), which is used as an indicator of the freshness of unprocessed products.

Taking this into account, it is advisable, before supplying products to the EAEU market to conduct a thorough expert study of the standardized indicators for a specific product and their determination methods.

7. Additional requirements for canned fish

Apart from the specific labelling requirements mentioned above, there are no additional provisions for canned fish production at onshore facilities. In terms of the production of canned fish on ships, there is a

requirement (clause 38 of TR EAEU 040/2016) to have on them laboratory equipment and personnel to carry out production control - but this only in connection with natural canned fish liver products.

Conclusions, proposals, recommendations

- 1) The Customs Union of the Eurasian Economic Union and the European Union have established strict control over the safety of food products from fisheries and aquaculture, their production and sale. However, to ensure food safety, fundamentally different legal frameworks, regulatory methods, systems and control procedures are used.
- 2) The technical regulations of the EAEU, unlike the European regulations, do not provide for the drawing up of guidelines for the development and implementation of own control systems at the supranational, national or industrial levels - therefore, all the requirements that they contain must be met literally. In particular, availability of ISO 22000 system is not a proof that the requirements are met.
- 3) The list of safety indicators for any group of fish products in the EAEU is much wider in comparison with the EU requirements - this applies to both sanitary and hygienic and microbiological indicators, while the standardized levels and applied test methods are not equivalent. Taking this into account, it is advisable to conduct a thorough expert study of the standardized indicators for a specific product and their determination methods before supplying products to the EAEU market.
- 4) The regulation of the use of food additives is significantly different. The list of prohibited food additives according to TR CU 029/2012 is much wider in comparison with Regulation (EC) No. 1333/2008 of the European Parliament and of the Council of 16.12.2008.
- 5) There are significant differences in labelling used for fishery and aquaculture products. It is advisable to conduct an examination of the labelling prior to delivery of products to the EAEU market.
- 6) Requirements for voluntary certification of imported products can only originate from retail chains - this is exclusively an agreement within the framework of civil law and cannot be considered a common practice.

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MARKET INTEGRATION AS A DETERMINANT OF AGRICULTURAL PRICES AND ECONOMIC RESULTS OF SMALL-SCALE FAMILY FARMS

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Abstract. Due to the specific features of the land factor, under market conditions, there is a tendency towards income deprivation of farms in relation to their surroundings. One way to improve this situation is to create a system of market institutions for farmer-recipient transactions. The issue of the position of the agricultural producer in the food supply chain is widely described in the literature on the subject. Nevertheless, practical analyses showing the real impact of the marketing position on economic results of farm are still rare. Therefore, the aim of this article is to assess the relationship between market integration and agricultural selling prices and, as a consequence, the level of global output and household income. The analysis is based on primary data from surveys of over 700 small-scale family farms in Poland. The choice of small-scale farms was deliberate, as these entities are the most discriminated against in the food supply chain. Explaining this process is key to improving the economic situation of small-scale farming and constitutes a premise for the objectives of agricultural policy and creating business strategy. The results of the research indicate that there is a positive correlation between the level of integration of an agricultural holding and sales prices for selected groups of agricultural products. This, in turn, leads to the improvement of economic condition of farms more closely integrated with the market.

Key words: small-scale family farms, market integration, agricultural prices, economic results, Poland.

JEL code: Q12, Q13, D23

Introduction

In the practice of agricultural activity, one can encounter the phenomenon of deprivation of small-scale family farms in relation to the closer and further economic surroundings. The problem lies in the ability to accumulate and conduct extended production, i.e. to produce food, while achieving income at a level that allows at least the replacement of fixed assets involved in the production and ensuring a fair payment of the farmer's labour (Poczta-Wajda A., 2016). A symptom of relative deprivation is the difference between incomes in the agricultural sector and other sectors of the economy, to the detriment of the first group. As indicated by Guth et al. (2020) agricultural gap ratio³ for EU countries in the years 2005-2015 accounted, on average, for 34 % including the payments under Common Agricultural Policy, and 131 % without payments. The scale of the disproportion is particularly strong in the new Member States as the ratio without subsidies in these countries is almost 50 % higher than in the EU-15 states. The deprivation of farms is based on specific conditions of the land factor, such as low price elasticity and income elasticity of demand for agricultural products, a large share of the random component shaping the volume of production (dependence on natural and climatic factors), limited mobility of invested assets, long period of capital return, higher than in other sectors the seasonality and cyclicity of supply and prices. These determinants influence the lack of income stability and difficulties in management at a high level of risk (Czyzewski A., Stepień S., 2017). Under these conditions, the economic surplus generated by agricultural producers, which is a condition for capital development (see: Piketty, 2013), does not meet the Pareto optimal allocation criterion in input-output flows. In the supply chain, it is captured partly by middlemen and processors and ultimately consumers. The implementation of broadly understood institutions of the agribusiness corrects these failures of the market mechanism. Only then will the economic rent encourage farms to provide services in the long term (Czyzewski B., Matuszczak A., 2016).

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3 Agricultural gap ratio = (average income per capita in national economy - average farm income per family work unit)/average income per capita in national economy.

The examples of institutions which eliminate the negative effects of the market mechanism in agriculture are coordinated systems of production and transactions of foodstuffs. In the outlined context, the coordinated production and sales systems refer to shortening the supply chain, establishing durable long-term relationships with contractors, creating integrated forms of distribution and developing vertical and horizontal integration. According to the adopted assumption, such institutions include all formal and informal rules governing human interactions (North D., 1990). They usually concern the conditions for transaction between buyers and sellers. When institutions run smoothly, they guarantee the continuity of the rules and mechanisms of transactions by reducing the uncertainty and risk of economic processes and providing greater predictability of stable prices and income (Hayami Y., Ruttan V. W., 1985). Thus, they can be seen as an expression of efforts to improve the economic well-being of farms. The creation of coordinated forms of activity is particularly important in relation to small-scale family farms. Smaller players participate in the distribution of food supply margin to an inadequate degree because of the disproportions of the bargaining power that individual entities have in the subsequent stages of the marketing chain. Small producers, which are the initial link in the supply chain, have limited opportunities to shape the terms of the transaction (Pazaj E., Dumi A., 2015). This type of situation is typical for the countries of Central and Eastern Europe. Hence, the aim of the paper is to determine the relationship between the market integration of small-scale family farms in Poland and their position in the supply chain expressed through the level of selling prices of agricultural products and, as a consequence, the size of global output and household income. The authors hypothesize that farms more closely integrated with the market achieve higher selling prices and, consequently, better economic results of their activities. The article also attempts to define selected features for farms with a different degree of integration, which to some extent revealed the premises of the market coordination process in the agricultural sector. The analysis is based on primary data from surveys of over 700 small-scale family farms in Poland. The choice of small-scale farms was intentional, as these entities are the most discriminated against in the food supply chain and they constitute the largest share of agribusiness entities. Explaining this process is a key to improve the economic situation of small-scale farming and determines a premise for the objectives of agricultural policy and creating business strategy. The study was carried out in three steps. The first was to estimate the individual 'index of market integration'. In the second step, farms were divided into three groups in terms of market integration level and an analysis of sales prices and economic results was carried out, divided into these groups. In the third stage, selected economic and demographic features of farms were indicated, taking into account the differentiation in terms of market integration.

Research results and discussion

1. Data set

Small-scale family farms in Poland were analysed due to the role they play in the agricultural sector. In our study, we adopted three parameters for determining the sample of tested units. The first is the physical size of the holding up to 20 ha of utilised agriculture area UAA. Farms with such an area cover 90 % of all farms in Poland (Statistics Poland, 2020). The second parameter is the economic size of a farm, according to the Farm Accountancy Data Network FADN typology, up to 25 thousand. euro of standard production SO⁴. According to the guidelines of the European Commission, farms with an economic size of up to EUR 8 000 are treated as very small (7 million in the EU), and up to EUR 25 000 as small (8.5 million) (European Commission, 2011; Eurostat, 2021). The third criterion is the share of at least 75 % of the

⁴ Standard Output (SO) is the five-year average of the production value at farm selling prices, expressed in euro per hectare of agricultural area or per animal head.

labour inputs of family members engaged in agricultural activities. The latter, apart from designating the family farm, is also aimed at eliminating from the survey those units which are formally classified as farms, but in practice live mainly from non-agricultural sources of income. This study is based on surveys conducted on a sample of 710 farms from 16 Polish provinces in the first three months of 2018. The data was collected in the form of direct interviews by agricultural advisors who work in the Polish FADN system. In the interview, a structured questionnaire was used, which contained four thematic question blocks: economic and social sustainability, environmental sustainability, market links, general farm features. For the correctness of the collected information, pilot studies were carried out prior to the main study. Ultimately, after the elimination of incomplete questionnaires, incorrectly filled out and containing outliers, 672 units were analysed.

2. Index of market integration

The index of market integration was calculated using the authors' own formula. The synthetic index was composed of the following elements: 1) share of the farm's market sales: the higher the share, the higher the value; 2) distribution channels for agricultural products: through an intermediary; to processing plants; to a wholesale or retail chain; in a marketplace; directly from the farm or through participation in fairs or the like: the fewer intermediaries, the higher the rating; 3) type of relation with the market when selling the agricultural products: sale without previously signed contracts; sale on the basis of short-term (financial year) contracts; sale on the basis of long-term or renewed contracts; sale within a producer group or cooperative; 4) subjective assessment of the farm's market position (bargaining power) in sales transactions: terms of the contract (price, date, place etc.) are determined by the buyer; I (the farmer) mainly determine the terms of the contract; the terms of the contract are determined together; 5) type of relation with the market when purchasing means of production: without formal contracts; from regular suppliers without previously signed contracts; from regular suppliers on preferential terms or under previously signed contracts; 6) subjective assessment of the farm's market position in purchase transactions (as for point 4). Each of the elements was scored from 0 to 1, so the total index was scored from 0 to 6 points. Finally, the index was scaled from 0 to 1.

The average integration index for all units was 0.57. Then the farms were divided into three groups according to the level of market integration. The first group in the range of 0-0.33 included 176 farms with an average index equal to 0.28. The second group in the range of 0.34-0.67 was the most numerous – 289 entities with an average index of 0.58. In the last group, there were 207 farms with an average index of 0.86.

Table 1

Analysed farms by the level of market integration index

Group of market integration	Number of farms	Average index of market integration	Median of the index of market integration
Group 1	176	0.28	0.30
Group 2	289	0.58	0.57
Group 3	207	0.86	0.84
Totally	672	0.57	0.58

Source: author's calculations based on the survey data N=672

3. Selling prices and economic results

Table 2 presents average selling prices of selected agricultural products for three separate groups of farms. The products for which there was a sufficiently large representation of farms were taken into account. It was assumed that the minimum number of units for each of the products and each group should be 20. As a result, data was obtained for 10 products – 7 types of crops and three types of livestock production. The data show a positive clear relationship between the degree of market integration and selling prices for 5 products - all meat and two crops. For milk, the difference is 25 % in favor of group 3, for pigs 15.1 %, for cattle 8.7 %. In the case of apples, the difference is 28.6 % and rapeseed - 12.1 %. In turn, for cereals and potatoes, the prices for all three groups of market integration level were similar. It can be assumed that this is the result of a different degree of market coordination of different agricultural sub-sectors. Cereals and potatoes are traditionally delivered by farms to the collection centres ad hoc without formal contracts. In the case of rape, milk, meat production or fruit production, transactions are more often formalized, hence the possibility of obtaining additional benefits by the contract parties, including higher selling prices for farms.

Table 2

Selling prices of selected agricultural products for the analysed farms divided into market integration level groups

Group of market integration	Prices*									
	Wheat	Triticale	Barley	Rye	Rape	Potatoes	Apples	Pigs	Cattle	Milk
Group 1	149	141	145	149	331	155	0.28	1.06	1.72	0.28
Group 2	151	139	143	143	357	156	0.31	1.09	1.74	0.30
Group 3	150	141	144	147	371	153	0.36	1.22	1.87	0.35
	Number of farms									
	Wheat	Triticale	Barley	Rye	Rape	Potatoes	Apples	Pigs	Cattle	Milk
Group 1	50	54	33	36	20	44	21	58	46	28
Group 2	112	62	56	105	68	59	24	71	55	47
Group 3	67	45	40	93	56	24	42	28	42	51
Total	229	161	129	234	144	127	87	157	143	126

*wheat, triticale, barley, rye, rape and potatoes – EUR/1,000 kg, pigs and cattle – EUR/kg, milk – EUR/l.

Source: author's calculations based on the survey data N=672

Taking into account the fact that for farms more integrated on the market, at least for some agricultural products, the selling price is higher, better economic results for this group can be expected. The reflection of prices is the production value, and its derivative is the farm income. Table 3 shows that in the case of the researched farms, both production and income increase along with the rise in the degree of market integration. The average production value per farm for group 3 is 34.4 % higher than for group 1, and for disposable income as much as 48.5 %. Higher incomes achieved by integrated farms mean that the share of support in income is lower than for less integrated groups, which makes the group 3 less dependent on external assistance. This may be important in crisis situations in the economy, when the scope of support decreases due to budgetary constraints. On the other hand, it should be noted that even in the third group of households, the income on the farm is only EUR 303 per month per family member, thus still approx. 15 % below the average income in Poland (Statistics Poland 2020).

Table 3

Economic results for the analysed farms divided into market integration level groups

Group of market integration	Annual production size (euro)	Monthly household disposable income (euro)	Support share in agricultural income
Group 1	9 451	204	44 %
Group 2	11 257	260	34 %
Group 3	12 709	303	31 %

Source: author's calculations based on the survey data N=672

4. Selected features of the research farms

Table 4 introduces several characteristics of farms separately for groups of market integration level. The first element, the farm area, varies between 12.4-13.4 ha of agricultural land. Contrary to the value of production, there was no correlation between the area and the level of integration. Thus, farms more integrated achieve higher production from a similar agricultural land area, obtaining higher land productivity indicators. This may be the result of higher selling prices (as demonstrated in sub-part 3) and/or better yield rates and animal slaughter performance. As for demographic characteristics there is no difference between groups in reference to the age of the farm manager. However, in the case of education, it can be noticed that it grows along with the increase in the degree of integration. Interesting are the results of the analysis from the point of view of non-professional activity of family members of the farm. It turns out that farms more integrated with the market are more involved in lifelong learning and cultural events. The above data may suggest that higher educated and more active agricultural producers stand out for a higher propensity to participate in coordinated supply chains.

Table 4

Selected features of the analysed farms divided into market integration level groups

Question	Group 1	Group 2	Group 3
Farm area, in ha of UAA	13.0	13.4	12.4
Age of the farm manager	49	48	49
Level of education*	4.2	4.7	4.9
Share of adult farm members in lifelong learning (courses, training, etc.), in %	49.4	59.4	63.5
Share of adult farm members attending cultural events (cinema, theatre, concerts, exhibitions etc.) in the last 12 months before the survey, in %			
• 5 times or more	1.3	7.8	10.4
• 3-4 times	16.9	16.5	20.3
• 1-2 times	27.3	35.1	35.9
• not at all	54.5	40.6	33.4

*education in the range of 1-7, where 1 - no education, 7 - higher education

Source: author's calculations based on the survey data N=672

The last analysed feature concerns the type of agricultural production. As table 5 shows there are six types of specialisation and mixed production. What draws special attention is the differentiated, for the three groups, share of farms with mixed production. In group 1 it is almost two-thirds, while in group 3 it

is less than 20 %. Therefore, market-integrated farms are more specialized in agricultural production. It is understandable that they look for special solutions for transactions of larger batches of goods. Mixed farms are less inclined to these activities due to the dispersion of production and lower sales scale of selected products. On the other hand, among group 3 there is a relatively high share of farms specialised in horticulture and permanent crops, i.e. sectors with a higher than average degree of market integration in Poland (Czyzewski A., Bieniek-Majka M., Czakowski D., 2018). The specialization in the production of granivores and milk production is also higher than in the other two groups.

Table 5

Production type of the analysed farms divided into market integration level groups

Production type (specialisation*)	Number and share of farms for a given production type					
	Group 1		Group 2		Group 3	
Field crops	25	14.2 %	116	40.1 %	63	30.4 %
Horticulture	1	0.6 %	7	2.4 %	21	10.1 %
Permanent crops	2	1.1 %	8	2.8 %	24	11.6 %
Milk	5	2.8 %	16	5.5 %	22	10.6 %
Herbivores	29	16.5 %	34	11.8 %	21	10.1 %
Granivores	2	1.1 %	14	4.8 %	18	8.7 %
Mixed production	112	63.6 %	94	32.5 %	38	18.4 %

**specialisation means that farm receives at least 2/3 of global output from a given type of production. If not, it is mixed farm*

Source: author's calculations based on the survey data N=672

5. Discussion

Overall, the results of the analysis indicate a positive relationship between the degree of market integration and the economic results of small-scale family farms in Poland. This connection has been confirmed in other studies, both at the level of European countries and for other regions in the world, e.g. Pendleton L. and Howe L. (2002), European Commission (2016), Arias P. et al. (2013). A positive correlation between farms' market integration and production volume was demonstrated in Romania, Bulgaria (Jambor A., 2013) and Poland (Golebiewska B., 2012). For the African continent, these results were confirmed by, among others, Kangile et al. (2020) and Oparinde and Daramola (2014). Kedaitiene and Hockmann (2002) justify the positive relationship between the market integration and value of agricultural production in Lithuania. They argue that larger batches of foodstuffs make it easier to sell agricultural products closer to the final consumer, while farms with lower production value use the services of intermediaries. This is a result of the fact that processors and traders are looking for producers who will provide them with a large and continuous supply of agricultural raw materials. Therefore, to create permanent and formal contacts in the supply chain, a minimum volume of produce is delivered (Pedro A. et al., 2013; Gani A. and Hossain E., 2015). White J. and Gorton M. (2011), analysing the agricultural sector in Moldova, Armenia, Georgia, Russia and Ukraine, indicate that during the transformation period, various forms of contracting between farms and food industry enterprises were developed, with higher dynamics for larger, in terms of production value, entities, while small-scale farms more often used spot type transactions. Other papers prove that higher market integration is conducive to obtaining higher selling prices of agricultural raw materials. Such analyses were conducted for countries of Eastern Europe and Central Asia (Hanf J. H., 2014), United States (MacDonald J. et al, 2004) and developing countries (Catelo M. A., Costales A. C., 2008). They all confirm the conclusions drawn in our study.

Apart from the scale of production, the level of market integration is connected with the degree of production specialization, as evidenced by Kahan D. (2013) and Djuric I. et al. (2018). The authors indicate that the lowest degree of connections with its economic surroundings was characteristic of farms with differentiated production (mixed). However, the closer market orientation leads farms to shift production from mixed farming to greater specialization. It can be assumed that the pursuit of family farms to specialize is an attempt to reduce the risk of selling agricultural products. Taking into account the fact that the food industry is interested in the supply of larger, homogeneous batches of goods, such action meets the expectations of processors and facilitates the establishment of permanent contracts.

The result of analysis for the feature 'farm area' are interesting. Theoretically, it can be assumed that the larger the area of the farm, the greater the scale of production and the stronger market integration (Key N., Sadoulet E., de Janvry A., 2000). Meanwhile, such a relationship was not confirmed in our study. Therefore, it can be concluded that in the case of family farms, it is not the area of the farm that correlates with market connection but the production volume and the level of specialisation. Moreover, due to the subjective scope of the study (small-scale family farms), the range of the 'farm area' was limited to 20 ha. It is therefore uncertain whether similar results would have been obtained if medium and large farms were taken into account.

Among the two demographic characteristics, the level of market integration rises among with the level of education. Thus, it can be concluded that obtaining vocational, general or higher education is an important factor stimulating farmers' participation in market processes. Moreover, farmers should seek knowledge on operating more effectively in the supply chain. Sales management is a process of decision-making that involves setting objectives, planning, implementing the plan and monitoring its outcome, which requires the farmer to have appropriate competences and qualifications. It is not enough for farmers to learn on the job from their day-to-day experience. Farmers should not only be good workers but also entrepreneurial and innovative (Kahan D., 2013). It is indicated that for agriculture in developed and developing countries, the level of education and human capital is strongly associated with higher levels of marketing productivity and with faster rates of adoption of new technologies (Turkalj D., Biloš A., Kelić I., 2015). Moreover, farmers' competences in management and marketing as well as personality traits, such as willingness to cooperate and active citizenship, motivate to create coordinated systems of transactions and participation in the short supply chain, which is supported by the belief about benefits for farm income (Charatsari C., Kitsios F., Lioutas E. D., 2020). In turn, the second demographic feature, the farmer's age, was similar for all groups of households. Based on the available research, it is difficult to unequivocally assess the relationship of this variable with farms' market integration. Some authors claim that older and more experienced farmers are able to make better production decisions, including those of a marketing nature (Czyżewski B., Sapa A., Kułyk P., 2021; Stanef M. R., 2012; Martey E., Al-Hassan R., Kowornu J., 2012; Hailua G., Manjureb K., Aymutic K. M., 2015). In contrast, other results indicate that young-age-headed farms are more eager to participate in the market than old-age-headed households (Kangile R. J. et al., 2020). Age may have a negative impact because young people might have a longer planning horizon and might be willing to take risks related to market transactions.

Conclusions, proposals, recommendations

- 1) Small-scale family farms play an important role in the sustainable development of rural areas. In addition to traditional, better-quality food, they provide a range of public goods of a social and environmental nature. However, for their viability it is necessary to provide appropriate economic conditions. One of the elements influencing the economic situation of farms is the level of their market

integration. The results of our analysis indicate, that more market-oriented farms receive higher prices of selected agricultural products and, as a result, higher production value and household income (although in relation to the non-agricultural sector, the latter remains still lower). They are also less dependent on external aid (subsidies from the UE common agricultural policy), which may be essential in the event of an unforeseen decline in support.

2) The study also demonstrates selected features of market-integrated farms. It turns out that they are more specialized in a specific type of agricultural production, managed by higher educated managers and willing to undertake extra-professional activity. On the other hand, the area of the farm and the age of the owner did not differ significantly between groups of farms with a different degree of integration.

3) The above conclusions constitute the basis for formulating recommendations for the support policy for small-scale farms, both at the European Union level (through the instruments of the common agricultural policy) and at the national level. This support should be deliberately targeted in a way that contributes to strengthening the bargaining power of small farmers. Some solutions are already present today, such as financing the activities of agricultural producer groups and industry organizations. However, the problem is the low awareness of the benefits of cooperation and the low tendency to participate in this type of relationship, hence the key becomes the education of farm managers through participation in training, courses, training etc., all the more so as, as research shows, education could have a positive effect on the level of market integration. Such events could be organized by agricultural advisory centres, agricultural unions, representatives of academic centres, and financed under rural development programs (2nd pillar of the common agricultural policy). It is a good idea to prepare the so-called 'best practices' handbook. Nothing influences the imagination of a farmer as much as indicating the measurable financial effects of market cooperation.

4) The effectiveness of households' activities is also determined by the appropriate combination of sales channels, which takes into account the so-called short supply chains, including direct and marketplace sales (Rucabado-Palomar T., Cuellar-Padilla M., 2020). The transaction processes should be supported by properly prepared technical infrastructure (including specially adapted warehouses) and agricultural product contracting systems. For the efficiency of contracting, the proposed solution is to introduce greater transparency of contracts between farmers and recipients of the raw material. It might be a good idea to create a standardized contract template with a price element that would protect both parties to the transaction. The combination of these elements can effectively support logistics processes in accordance with the 'just in time' principle (Crespi J. M., Saitone T. L., 2018; Bhattar et al., 2020).

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NEW DIMENSIONS IN THE DEVELOPMENT OF SOCIETY

REVIEW ON THE CONSUMERS' RESPONSE TO THE COVID-19 CRISIS IN LATVIA

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Abstract. The regulations for restricting the Covid-19 virus set by the Latvian government, which entered into force on March 13, 2020, caused significant changes in the operation of outlets and consumer behavior. At the onset of the emergency, Latvia, like many parts of the world, experienced uncoordinated collective behavior that could potentially lead to significant changes in food supply chains.

Therefore, one of the research directions of The National Research Program project "Towards the Post-pandemic Recovery: Economic, Political and Legal Framework for the Preservation of Latvia's Growth Potential and Increasing Competitiveness" (recovery-LV) (2020) was to find out how the Covid-19 crisis Restrictions have changed buyers' habits towards buying and consuming food. The article summarizes and analyses the research results of the content analysis, semi-structured interviews and survey conducted within the project. An analysis of the results shows that, as a result of the crisis, consumers are less likely to visit outlets, cook more often at home and choose more locally sourced food. It was concluded that the consumer agitation regarding the purchase of food products in 2020 was short-lived, which later returned to the usual limits of the habits of various socio-demographic groups of the population.

Key words: consumers' behavior; collective behavior; Covid-19 restrictions; food chains.

JEL code: P36, D12.

Introduction

The novelty and topicality of the study has been related to the study of consumer behavior in Latvia since March 13, 2020, when an emergency situation was established in the country with the aim to limit the spread of Covid-19. With the onset of various restrictions, consumer behavior changed dramatically and could develop in unpredictable directions. In the context of the theory of collective behavior, the restrictions introduced in March 2020 shook the order, creating insecurity and forcing citizens to act in conditions of high uncertainty. Restrictions directly affected food retailers through the introduction of hygiene requirements at trade areas, but the behavior of consumers was also influenced by the shift to remote working and online training, closed national borders and other factors. Crisis situations to some extent challenge existing habits and force to reconsider them. Therefore, the aim of this article is to look at relative short-term (2 weeks after the declaration of an emergency) and long-term (6 months after the declaration of an emergency) changes in consumer behavior regarding the purchase and consumption of food. The tasks of the research include the analysis of the results of theoretical literature and other similar research, the analysis of the results of content analysis and the survey of the Latvian population. Given the characteristics of the consumer society, it can be hypothetically assumed that the constraints of the Covid-19 crisis led to significant changes in the short term, but then returned to normal levels. The delimitations of the study are related to the fact that the results of the population survey on exactly such questionnaire questions before the crisis are not available. However, these limitations can be reduced by triangulation methods, namely, comparison with other similar studies in Latvia and abroad, as well as the use of different data acquisition methods.

The research methodology included a qualitative content analysis and a representative survey of the Latvian population. In July-September 2020, an analysis of publicly available sources of information was performed, including research results, expert opinions, statistics on consumer behavior during the Covid-19 crisis. Based on the results of the content analysis, 14 questionnaire questions were developed on consumer behavior in relation to the purchase and consumption of food. The survey was conducted by the research

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centre SKDS in November 2020. The sample size was 1013 respondents aged 18 to 75 years. In addition, 8 semi-structured interviews were conducted with various actors in the food chain (representatives of retail stores, fruit and vegetable growers, meat growers' associations).

The data analysis is structured according to the questionnaire, describing the main trends and, as far as possible, analysing the differences between demographic groups. The Kendall correlation test was made in order to determine possible correlations among 14 possible behaviors. The results of content analysis and the results of semi-structured interviews were also used to explain the results of the survey.

Theoretical issues of consumers` behaviour

A customer is defined as a person who identifies his/her need or desire, buys and uses the product or product in question. Customer behavior is defined as an important and ongoing decision-making process in the selection, purchase, use and evaluation of goods and services. In general, consumer behavior is aimed at increasing their satisfaction with the purchase and use of certain goods and services (Mehta et al., 2020). The needs and desires of customers, as well as their behavior are influenced by various internal and external factors, such as the popularity of a product, marketing activities, purchasing power of the population, seasonality, etc.

The restrictions caused by Covid-19 are an unprecedented and extraordinary case that changed customers' behavior. As sociologists note, the Covid-19 situation evokes associations with the following keywords of social theory: risk, fear, panic, crisis, trust, which manifested themselves in one way or another in customer behavior (Ward, 2020). Sociological interpretations of a pandemic touch on concepts such as fear, explanation and moralization, as well as recommended action (Monaghan, 2020), which applies not only to food purchases but to all areas of life. Namely, in times of uncertainty, the population develops fear and insecurity, which accordingly requires explanation and guidelines for action.

To theoretically analyse the topic of this study, sociological theories that explain crowd behavior and the system's ability to self-regulate were selected. Namely, the theory of collective behavior developed by the US sociologist Herbert Blumer describes the breakdown of important symbols of interaction or routine actions (in this case - traditional trade practices and customer behavior), which causes unpredictable and possibly uncontrollable behavior of individuals. As a result, individuals may experience new impulses or dispositions of action that the relevant social system is unable to ensure. Individuals experience an alarm, anxiety that leads to erratic, accidental, uncoordinated behavior. During the so-called circular reaction, certain forms of behavior can spread and become uncontrollable. Collective behavior or acting crowd is formed as a result of five gradual steps: 1) exciting event, which serves as a stimulus for further reactions, 2) milling behavior, which breaks down the boundaries between individuals, 3) emergence of a common object of attention, which gives purpose to individual behavior, 4) fostering of common impulses, 5) elementary collective behavior. Through collective excitement and social contagion, individuals "infect" each other with certain forms of behavior that can be at least spontaneous and atypical, as well as violent and destructive (McPhail, 2005).

In Latvia, the crowd's reaction to trade restrictions was caused by the announcement of the Government of the Republic of Latvia on the declaration of an emergency situation from March 13, 2020. With growing lack of knowledge and uncertainty, residents rushed to stores and bought basic necessities, as well as goods with a long shelf life. Despite information in the mass media that it is not desirable to crowd the trade areas and that the goods will be delivered in sufficient quantity and time, the behavior of buyers was uncontrollable. The government's announcement of restrictions on trade areas confused shoppers, which, despite the potential threat of illness, led to increased shopping among fears of store closures, leading to

a 7.1 % month-on-month increase in food consumption in March (Ministry of Finance, 2020). There was a shortage of cereal products in the shops, especially buckwheat, which was reported in the mass media and caused fear and the next reaction of the crowd among the population.

As can be seen, the usual behavior of customers was significantly influenced by uncertainty and fear of the future, but the reaction of the crowd is only one explanation for the situation. Given the fact that citizens acted independently and autonomously, without any particular reaction to formal statements by officials, it can be considered as a self-regulatory and self-reproducing system that makes autonomous decisions. This aspect of customer behavior is explained by Niklas Luhman's concept of autopoiesis in the context of systems theory. According to this concept, society is an abstract, self-regulating and self-sustaining system that is very complex in today's world and does not follow predictable order. Society as such functions independently of institutional processes, values, with an emphasis on communication in the system and subsystems (Dillon, 2020). If a company is considered to be an operationally closed, autonomous communication system, then processes and situations that cannot be managed or controlled must be taken into account. In some cases, it operates to some extent independently of government decisions or formal restrictions, maintaining its internal logic. It is this aspect that makes the analysis of consumer behavior binding, as the effects of the crisis are not in principle predictable.

Common trends in consumers' behaviour during Covid-19 crisis

Looking at the latest publications on the impact of the Covid-19 crisis in different countries, it can be concluded that the overall situation in 2020 was quite similar. Restrictions in connection with Covid-19, which began in China on January 23, 2020, gradually covered other countries, and consumer behavior can be assessed as replicated (Li et al., 2020). For example, in describing the situation in Canada, J. H. Hobbs notes that society was characterized by short-term self-perpetuating panic among shoppers and fears of significant disruptions in food supply chains. This led to increased purchases of cereals, frozen products, hygiene products and water, which in turn led to higher prices for the products concerned. Changes in food supply chains also led to the stoppage of the so-called HoReCa sector, restrictions on gatherings, and the transition to home cooking (Hobbs, 2020). For their part, US researchers note consumer concerns about the epidemiological safety of food and the consequent shift to local food purchases (McFadden et al., 2020). Elsewhere in the world, food consumption in some product groups also increased in March 2020, for example, consumption of frozen products in France increased by 63% year-on-year and consumption of packaged foods in Germany by 56 % (Deconinck et al., 2021). According to a survey conducted by the International Food Information Council in early April 2020, it is reported that only 11 % of consumers did not change their shopping habits and 19 % did not change their eating habits as a result of the Covid-19 crisis (Impact on Food ..., 2020). At the same time, it is acknowledged that the panic in food purchases is over and long-term shopping habits need to be assessed now (Roe et al., 2020).

Among the projected long-term changes in the functioning of food supply chains and consumer behavior, experts note a possible decline in household incomes, online shopping and shoppers' orientation towards local foods (Hobbs, 2020; Li et al., 2020). Long-term risks relate to social security, well-being, which can lead to poverty and greater isolation of certain marginalized groups (Deconinck et al., 2020).

Besides Covid-19 crisis, more modern approaches concerning food supply chains appear. For instance, they turn attention to 1) circular food supply chains trying to reduce food waste (Despoudi, Dora, 2020), 2) promoting a holistic approach to supply chain risk management (Shima, 2020), 3) ethical consumerism and its consequences (Umar, Wilson, Heil, 2017), 4) IT in agri-food food chains, green logistics, products traceability etc. (Iakovou et al. 2015).

Research results and discussion

The total results of the research consist of 3 parts: content analysis, population survey and interview analysis results.

Qualitative content analysis included analysis of publicly available information sources - statistical data, research results of various companies (mainly trade, but also production) and organizations, opinions of specialists and experts (for example, SIA "Maxima Latvija" study on Latvian shopping habits, JSC "Poultry factory Kekava" in cooperation with "Snapshots" on the impact of the emergency situation on the eating and food purchasing habits of the Latvian population, Covid-19 barometer survey conducted by the research company "Kantar"). Given the constraints of the crisis, it was important to analyse the purchasing structure, consumer activity in order to plan marketing activities and meet customer demand, as well as other consumption-related changes.

The analysis of publicly available data shows that it was easiest for shoppers in supermarkets to comply with the established social distance and other restrictions. For small shops, it was difficult and even impossible to implement the requirements of social exclusion during the Covid-19 restrictions. The change in consumer habits in shops is characterized by features such as an increase in demand for goods with a longer shelf life, such as flour which was bought twice as much, peas, pasta and various fruits. Demand for vegan products continues to grow during the pandemic, with sales of vegan pastries more than eightfold. Due to the large number of orders, new online stores have opened, the existing ones have also opened new delivery times due to increased demand - groceries can be ordered at midnight as well. Delivery took up to four days, but due to the influx of customers, the available time is not always convenient, sometimes additional delivery times were opened throughout the day. The volume of purchases in one purchase has increased; the average shopping basket weighed 25 kilograms before the crisis, but now - 40 kg. In Covid-19 conditions, the demand for the supply of farmers' market products by ordering them online and receiving them at home or at the place of trade has also increased.

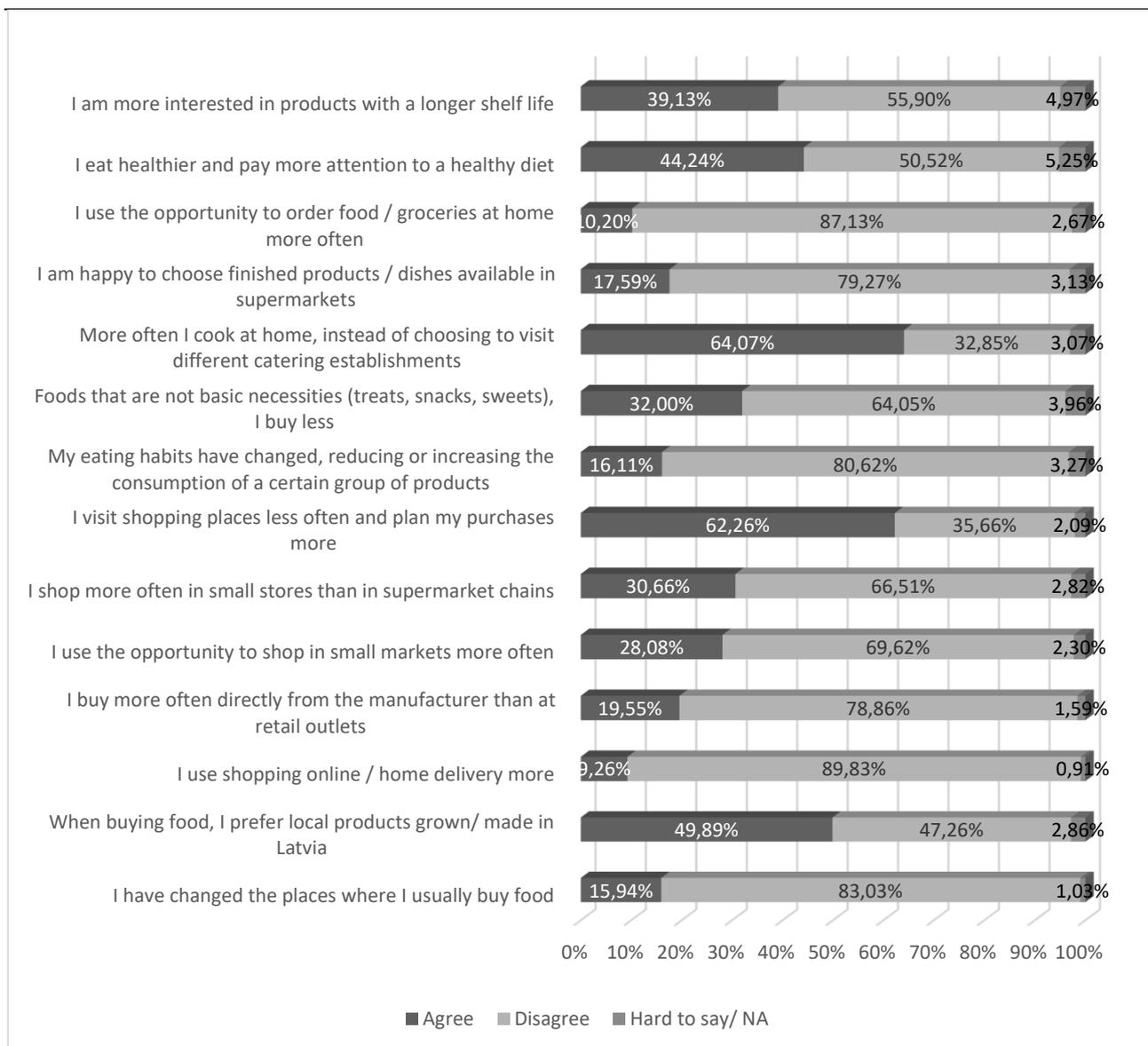
Data from internal surveys of retailers show that after the introduction of the state of emergency due to Covid-19, the most important criteria for more than a third of customers in the choice of stores became store cleanliness and Covid-19 precautions. More often than before, buyers chose a store according to the criterion "convenient shopping in the store" (wide aisles, conveniently located product sections). On the other hand, the criterion "on the way to / from work / educational institution" has decreased the most, because, taking into account the observance of self-isolation and work from home, it was no longer relevant for a part of the population. The data also show that after the introduction of the state of emergency in the country, four out of five shoppers started visiting stores less often, and a third admitted that the size of their purchases has increased.

The results of the study show that $\frac{3}{4}$ of the Latvian population has changed their food purchasing habits due to the Covid-19 pandemic, but $\frac{1}{4}$ admit that they plan to maintain the acquired new food purchasing habits in the long run. When reviewing daily habits before an emergency, $\frac{2}{3}$ of shoppers admit that they have changed their current shopping strategy - most often they have reduced the number of store visits, choose their shopping time more carefully and have significantly changed the composition of the food basket. It can be seen that the dynamics of purchasing products with a longer shelf life has increased; the share of finished frozen products in shopping baskets has increased. The results of the study suggest that changes in consumer behavior will have a long-term impact on the food industry, the variety of products supplied, which is closely linked to new needs and not only the growing need, but also the desire to cook more and more at home. The results of these studies are not applicable to the whole population; however,

they indicate the main trends of change, which is also confirmed by the survey data. Companies acknowledge that they are able to meet orders for certain products in part, for example, the demand for canned food has increased 15 times during an emergency, and this can be observed both in the domestic and foreign markets.

The impact of remote work on changes in the daily habits of the population is also indicated. In the past, the origin of goods was an important factor, mainly for consumers with an understanding of the principles of sustainable development, but now it is becoming more relevant for others: consumers around the world are more supportive of locally sourced products. Also, in Latvia, since March 12, 2020, when the state of emergency was declared for the first time in the country, the number of people who prefer the goods and services of Latvian companies has significantly increased. In addition, one in four is considering less frequent orders from the US and China. According to expert estimates, the habits of the Latvian population regarding the purchase of goods from Europe will remain approximately the same as before. More than half of people around the world and a little more than half in Latvia claim to eat healthier and try new recipes. However, only in the long run will it be possible to conclude whether these strategies for overcoming new conditions will turn into regular habits, as the constraints of general isolation have gradually been relaxed and people's daily lives are changing with it. There are three major changes in people's behavior around the world that will continue after the pandemic, and consumer goods and brands will have to adapt. Localism is becoming the general movement. For consumers who are aware of sustainability, brand sourcing and production strategies are an important factor. Now it is becoming relevant for a large number of other buyers.

The results of the survey on the change of shopping and eating habits of the population are shown in Fig. 1.



Source: author's calculations based on survey results (n=1013)

Fig. 1. Changes in shopping and eating habits of the population (%)

Changes in shopping habits. Of the 1 013 respondents, only 15.9 % have acknowledged the change in trade places where food is usually purchased, while 83.0 % of respondents have continued to buy food in their usual places of sale. Overall, 62 % of respondents have visited shopping places less often and planned their purchases more. Those respondents also tend to cook more often at home (Kendall test 0.410). A significant number of respondents (62.3 %) admitted that they visit shopping places much less often and plan their purchases more carefully. As residents visit sales outlets less often, it is natural that buyers (39.1%) are more interested in products with a longer shelf life. One third of respondents (30.7 %) more often shop in small stores than in supermarket chains, and 28.1 % of respondents more often use the opportunity to shop in small markets. The Kendall test reveals relatively high correlation between shopping in small markets and shopping directly from the manufacturer (0.443), as well as between shopping in small shops and small markets (0.423). In both cases, they are most often respondents living in Kurzeme and Vidzeme regions. However, the majority of respondents prefer supermarket chains (69.3 %) and large markets (69.6 %). Half of the respondents have given preference to products manufactured in Latvia when purchasing food products. Overall, this shows that a significant number of people have changed their shopping strategy to adapt to the new situation. The lowest number of

affirmative answers in the survey is about buying food in online stores (9.3 %) and ordering food (10.2 %), but here it should be taken into account that before the emergency, online shopping was even lower. However, according to the Kendall correlation test, respondents who are keen to ordering the food at home, also, more often shop through the internet (0.382).

Changes in eating habits. Although the overall results of the survey do not show a high percentage of the population who agree with the statement about the change of eating habits (16.1 %), there are several positive trends. 32 % of respondents admit that they buy less non-essential products, i.e., treats, snacks, sweets. There could be a twofold explanation: firstly, people pay more attention to food quality and health, and secondly, it could be related to the decline in income in times of crisis in part of society. 44.2 % of respondents show a very positive trend, acknowledging that they eat healthier, paying more attention to a healthy diet. According to the Kendall test, there is moderate correlation between the statements about eating healthier food and preferring shopping of local products (0.324). It means that respondents associate local food production with the healthy food. Also cooking at home means healthier food for the respondents (Kendall test – 0.394). More frequent cooking at home could also promote healthy eating habits. 64.1 % of respondents emphasize that they more often cook at home than visit various catering establishments, which shows that this is the dominant trend. Only 17.6 % of respondents are happy to choose finished products/dishes available in supermarkets. Regarding various changes in their habits, the most active were the residents with higher education, middle income, with at least 3 people in the household, Latvians, as well as managers of different levels. Residents aged 55-75 and respondents with higher education have relatively more often chosen products made in Latvia, while residents aged 18-34 have noted online shopping more often. Shops are relatively less visited and seniors limit their spending.

Age/gender-specific habits (e.g., women's tendency to lead a healthy lifestyle, young men's habits of eating out or ordering food at home, etc.) should also be taken into account, as well as factors influencing consumer choice apart from crisis constraints. For example, differences in store network infrastructure and available products in different regions of Latvia. In general, the results of the survey are in line with the trends described in the content analysis, but it is necessary to take into account how the situation will develop in the autumn of 2020 in the context of the crisis and beyond.

Interviews with various actors in the food chain mainly confirm the above-mentioned tendencies about changing customer habits (long-term storage of goods lasted all spring and summer, Latvian products were mostly preferred, certain product groups were purchased more intensively, such as sweets, alcohol). Retailers confirmed the increase in profits in small stores due to the growing demand for various goods. Companies with long experience had no problem building up product stocks or responding to customer demand for certain product groups. Retailers do not point to specific problems with food supply. Several businesses ordered certain products in bulk before the official start of the crisis. Latvian stores also benefited from the closure of the border with Lithuania, where Latvians often go shopping due to lower prices. The increase in the profits of small shops was facilitated by remote working, which led locals to shop at nearby shops.

The social "profile" of buyers has also changed - they are mostly people with good incomes, working in well paid places, who prefer product quality over quantity. For this reason, the range of goods was expanded during the crisis. Some innovations were also introduced in small stores - to reduce physical contact, ordering goods through WhatsApp was introduced, when the buyer sends a list of goods, the sellers pack everything and the buyer picks up the goods. As a result, time could be saved and there was no intensive contact. The advantage of small shops is flexibility in choosing and ordering goods. In general, there have

been no problems in the supply of goods; manufacturers and traders are accustomed to working in changing conditions; therefore, no particular effect of Covid-19 is noted. To a certain extent, the representatives of supermarkets express the opposite opinion, noting that already in January 2020 the income of the population decreased and they started to save money. Supermarket revenues fell due to the fact that people cooked more at home, planned spending more carefully, and bought the cheapest products. Until then, supermarket chains followed buyers' choices, for example by supplying quality vegetables, etc., afterwards measures had to be put in place to 'keep' buyers, for example by freezing prices. This situation was to some extent caused by the situation of remote work, as a result of which there was a decrease in trade in Riga, but an increase in other regions of Latvia.

Interviews with fruit and vegetable growers indicate that although many shops are not loyal to local products, at the same time there is a growing public desire to buy local fruits and berries. There has been a great deal of interest in berry and fruit picking in this summer of Covid-19, which indicates that there is a desire in the public to consume local fruit and berries. Consumers have been found to be more likely to buy longer-lasting products under Covid-19 risk conditions, but at the same time they have started to buy healthier products, according to a survey. According to press reports, fresh vegetables are one of the most sought-after products during the pandemic. However, it is pointed out that there is a decline in purchasing power, especially further from Riga, so more expensive fruits and berries, such as blueberries, are bought less.

Interviews with meat producers and meat processors also recorded a change in consumer habits during the Covid-19 crisis. Representatives of the Latvian Pig Breeders' Association confirmed that with the onset of the Covid crisis, the turnover/consumption of pork increased significantly, as people cooked more at home compared to the pre-crisis period. During the crisis, the shift to short food chains 'from farm to fork' increased, and it was also a very good support for rural families. Changing consumer habits allow home producers to slowly grow into normal businesses.

Representatives of the Beef Cattle Breeders' Association, on the other hand, said that due to Covid restrictions, households spend a lot of time at home, *"a big wave of appreciation of local meat is starting to appear."* Local demand is growing and the buyer is beginning to appreciate quality beef. These changes are affected by both the Covid-19 crisis and the change of generations, as well as more mobile communication between buyer and seller, buyer and manufacturer, thanks to the e-environment, which became significantly more used in times of crisis.

Conclusions

- 1) The changes in consumers' habits in sociology can be explained through the lens of crowd behaviour and society as a self-regulated system;
- 2) The results of the content analysis and the survey, and interviews reveal a number of common trends: increase of on-line shopping, prioritizing of local food and slight changes in the food supply chains that go in line with the worldwide trends;
- 3) There is correlation between several behaviors – cooking at home and eating healthier, shopping in small markets and shops as well as directly from the manufacturer. It allows to conclude that the structure of the food supply chain is changing gradually.
- 4) Consumers in Latvia rapidly adapted to the limitations and acted accordingly to uncertainties in the market demonstrating signs of the crowd behaviour, however, in a relative long-term perspective, changes in consumers' behaviour are more determined by socio-demographic factors and previously

accustomed practices. Also, such determinants like available finances and infrastructure must be taken into account;

5) All in all, Covid-19 crisis has been caused the re-assessment of existing purchasing and eating habits that has its potential to change the structure of the food supply chains.

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CHALLENGES OF DEPOPULATION IN LATVIA'S RURAL AREAS

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Abstract. The administrative territorial reform of 2021 in Latvia has changed the shape and structure of local municipalities. Previous studies have shown that disparities and challenges in terms of demographic development will be even more evident between the newly formed municipalities than they were prior to the reform, creating greater demographic risks for the rural areas. By using the available statistical information and geographically weighted regression models, this study aims to evaluate the demographic challenges in Latvia's rural areas and to determine main socio economic factors linked to the rural depopulation processes. Key indicators linked to the depopulation process are evaluated and discussed by the authors in the context of gender balance, development centre accessibility and other socio economic factors. Authors conclude that supporting and developing local industries, public services and infrastructure facilitating diverse employment options and equal opportunities for working age females is a paramount condition for slowing or reversing rural depopulation in the long term. Regional development centres in general and particularly those located in remote areas show little or no immediate effect on the population dynamics. However, these centres offer more diverse employment opportunities and essential social services, making them more attractive to working age females and households with children. Digitalisation and focus on location-independent employment and services is another important route to explore in the new rural development setting.

Key words: regional demography, depopulation, spatial modelling.

JEL code: J11, I38, R11

Introduction

According to the UN estimate, 2007 was the year when, for the first time, a number of the world rural population dropped behind a number of urban population (UN, 2018). In Latvia, it occurred in the year 1954 (CSB, 1961). In spite of higher fertility level in rural areas, due to rural-urban internal migration number of rural inhabitants continued systematically to decline and reached 601.5 thousand in 2020 or 31.5 per cent of the total population of Latvia (CSB, 2020). According to that figure, Latvia is not considered as highly urbanized country. Share of the world population living in rural areas as estimated by the European Commission is 15 %, but in Europe, it is 26.5 %. The European Commission combines satellite imagery with national census data to derive urban and rural populations based on its own standardized definitions. This result differs from UN figures, which are based on nationally defined urban definitions (Ritchie, H. and Roser, M., 2019). It should be noted that there is no universal criterion of urban or rural area (Dijkstra, L. and Poelman, H., 2014).

Lower level of education and health care, tradition of large children families led to rural excess fertility and mortality compared to townsmen during many decennials. In terms of demographic development, many European rural areas face socio-economic challenges. While some areas have good population development prospects, many are actually experiencing a serious population decline. The same applies to the rural municipalities of Latvia. Municipalities located outside the Riga city metropolitan area and lacking access to the development centres show persistent depopulation trends, which are linked to a multitude of socio economic issues. Literature sources show that key factor for demographic development in such areas is their attractiveness for young adults and families, as such territories mostly tend to lose these groups due to out-migration (Cipin I. et al, 2020).

The administrative territorial reform of 2021 in Latvia has changed the shape and structure of the local municipalities (Saeima, 2020). The new municipal structure may prove to be more robust and manageable,

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linking rural municipalities and their respective regional development centres. However, disparities and challenges in terms of demographic development will persist between the newly formed municipalities (Krumins J. et al, 2020). These changes necessitate a better understanding of determinants and consequences of depopulation processes in rural municipalities in order to evaluate the effectiveness of any potential future corrective or coping policy measures.

This study aims to evaluate the demographic challenges in Latvia's rural areas and to determine main socio economic factors linked to the rural depopulation processes.

By using available statistical information, geospatial data and geographically weighted regression models authors evaluate demographic indicators on the local level, while paying particular attention to the local socio economic. Statistical and geographical data used in this study come from Central Statistics Bureau of Latvia, State Land Service, Ministry of Environmental Protection and Regional Development datasets, as well as referenced studies on related topics.

It is important to highlight that there are two types of development centres recognised under the national regulations – centres of national significance and centres of regional significance. Considering the planned changes introduced under the administrative-territorial reform, for the purpose of this study such distinction is not critical. With this in mind, hereafter we label centres of both types simply as "regional development centres".

Research results and discussion

We begin this paper by describing the data used for this research and reviewing scientific literature dealing with various aspects of rural depopulation. In the second section proceed with statistical and geographical analysis of the main regional demographic trends within the pre-reform and post-reform administrative framework. Third section provides model-based assessment of these trends, placing them in the context of socio economic conditions and other local specifics.

1. Data and literature

Breakdown of the Latvia's population by urban and rural inhabitants is made by CSB according to their permanent place of residence. Urban population refers to those persons who live in cities and towns, i.e. in populated areas with at least 2000 resident population. In a number of historically developed cities, the population may be less than 2 000. Status of a city and town is assigned and cancelled by the Saeima with a law. All the rest is considered rural population (CSB, 2020a). But rural areas beyond borders of urban administrative territories are inhabited unevenly.

Table 1

Rural population in statistical regions of Latvia on 1 January 2020

Statistical region	Population In rural areas		Population in rural type territories (sparsely populated areas*)	
	Thousand inhabitants	%	Thousand inhabitants	%
Latvia [60,50] **	601.5	31.5	376.5	19.7
Riga city [-,-]	-	-	-	-
Pieriga region [16,12]	196.4	52.5	73.3	19,6
Vidzeme region [14,11]	103.3	56.2	80.3	43.7
Kurzeme region [11,7]	85.3	35.9	66.3	28.2
Zemgale region [8,12]	116.8	51.1	73.2	32.0
Latgale region [11,8]	99.7	39.0	82.9	32.4

* *Sparsely populated areas (experimental statistics): Territories outside cities, towns and densely populated areas with at least 500 inhabitants. Experimental statistics is produced by using new data sources and methods in making attempts to expand the range of statistics or the level of detail thereof based on the needs of data users.*

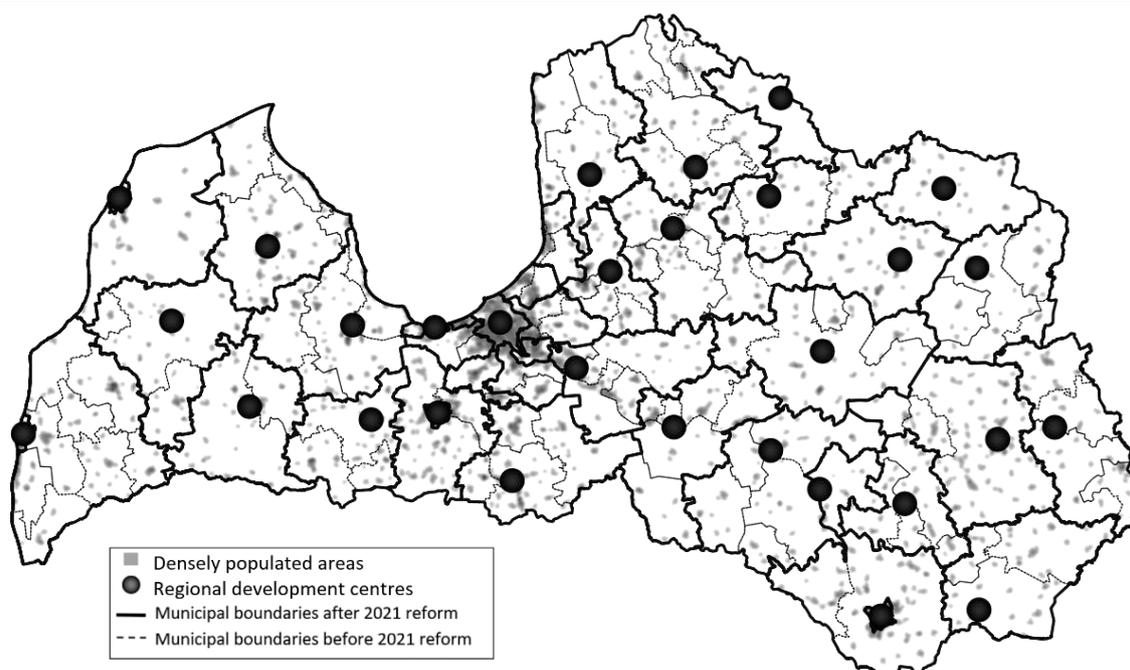
** *In brackets: number of counties (novads) with and without towns.*

Source: authors' elaboration based on CSB, 2021

Rural population has settled in more than 150 thousand farmsteads, more than 1500 small villages (each less than 40 inhabitants) and 1201 large villages, 21 of which exceed 2000 inhabitants and consist almost 60 per cent of whole rural population (Nikodemus, O. et al., 2018). Therefore, demographic characteristics of the total rural population are pure averages, depending on distances from capital city metropolitan area, development centres and population density. One of alternative ways to study rural population is to distinguish by experimental statistics the population in rural type territories or sparsely populated areas (Table 1). By using this approach, the number of rural population decreases by more than $\frac{1}{3}$, and its share in the total population declines to 20 per cent. Particularly significant is the decline of the share of rural population in Pieriga region by 33 per cent points.

The administrative-territorial reform has added new complexities to the regional socio economic and demographic landscape of Latvia. Even greater emphasis is placed on the regional development centres to guide and support their adjacent territories through transition process and facilitate distribution of support funding and other resources (CCC, 2020). Prerequisites of the reform have mandated a more logical population distribution among rural municipalities and better interconnection of rural municipalities with their respective development centres (Saeima, 2020).

Figure 1 shows the location of densely populated areas (see CSB, 2020b) and regional development centres overlain on the pre-reform and post-reform municipal boundaries.



Source: authors' elaboration based on CSB, 2020b; VARAM, 2021 and SLS, 2016

Fig. 1. Densely populated areas and regional development centres in Latvia in 2019 projected upon post-reform and pre-reform municipalities

From the data analysis perspective, this administrative rearrangement has created data challenges due to difficulties in linking statistical indicators and development history of pre-reform and post-reform territories. This problem was partially resolved by a meticulous recalculation of the available spatial data conducted in previous studies (Krumins J. et al., 2020). Available data for post-reform municipalities are still limited and cannot be used for model-based assessments.

For the deeper statistical and model-based analysis, we use various datasets on pre-reform municipalities provided by Central Statistics Bureau of Latvia, State Land Service and Ministry of Environmental Protection and Regional Development. We also rely heavily on previous studies and literature sources dealing with rural depopulation issues in Europe.

A comprehensive overview of the latest research trends addressing rural demographic development throughout Europe can be found in Population Europe Policy Brief No 27 prepared by Ivan Cipin, Sebastian Klüsener, Joaquin Recano and Magda Ulceluse (2020). This report indicates several very important points, some of them being particularly relevant to Latvia's rural areas.

For example, Sebastian Klüsener in his 2006 study on rural areas of Ukraine has suggested that rural regions in general tend to offer more and better employment opportunities for men than women (Klüsener S., 2006). This finding was recently corroborated by the European Parliament report developed by Ramona Franic and Tihana Kkovacicek (Franic R. and Kovacicek T., 2019). In addition, life course researchers have also found that spatial mobility unavoidable for many rural residents may conflict with other life domains such as family formation and fertility (especially for women), which in turn has negative demographic effects (Ruger, H. and Viry, G., 2017).

Aforementioned studies lead to the conclusion that the higher gender ratio (ratio of males to females in a population) promotes females to leave and younger males unable to form a family. The resulting imbalance in population dynamics lead rural areas to an older age structure along with more serious social, economic and demographic disparities (Hill, K., 2013). We will demonstrate validity of these arguments for Latvia in the next section of this paper.

Joaquin Recano (2017) proposes to group rural municipalities into three types according to their resilience and risks associated with demographic change. This approach may be easily adopted to the case of Latvia, using these criteria.

- Resilient spaces - certain demographic stability with population densities higher than the rural average and gender ratio is slightly greater than for country as a whole. The impact of emigration is less evident.
- Spaces of emigration have a small number of inhabitants and low population density, negative growth rates, a significantly higher gender ratio than the first group, a relative high level of ageing and major impact of emigration.
- Spaces at risk of irreversible depopulation - with characteristics at the extreme end of the scale: very small number of inhabitants, low population density and maximum ageing.

Furthermore, some authors argue that differentiation of various types of countryside is even more important than search for the definition of the rural against the urban, proposing different country-specific types of classification for rural areas (Stonawska, K. and Vaishar, A., 2018, Hasek, O., 2020).

In terms of possible solutions or mitigation measures to rural depopulation, literature sources provide several key directions for consideration. Most popular suggestions include facilitating stronger social ties (Ermisch, J. and Mulder, C., H. 2019) and improved commuting and digitalisation (Ruger, H. and Viry, G., 2017). Other studies suggest focusing specifically on gender-equal employment opportunities and family-friendly spaces in an attempt to avoid female out-migration from rural areas (Camarero, L. and Sampedro, R. 2016, Klüsener S., 2006).

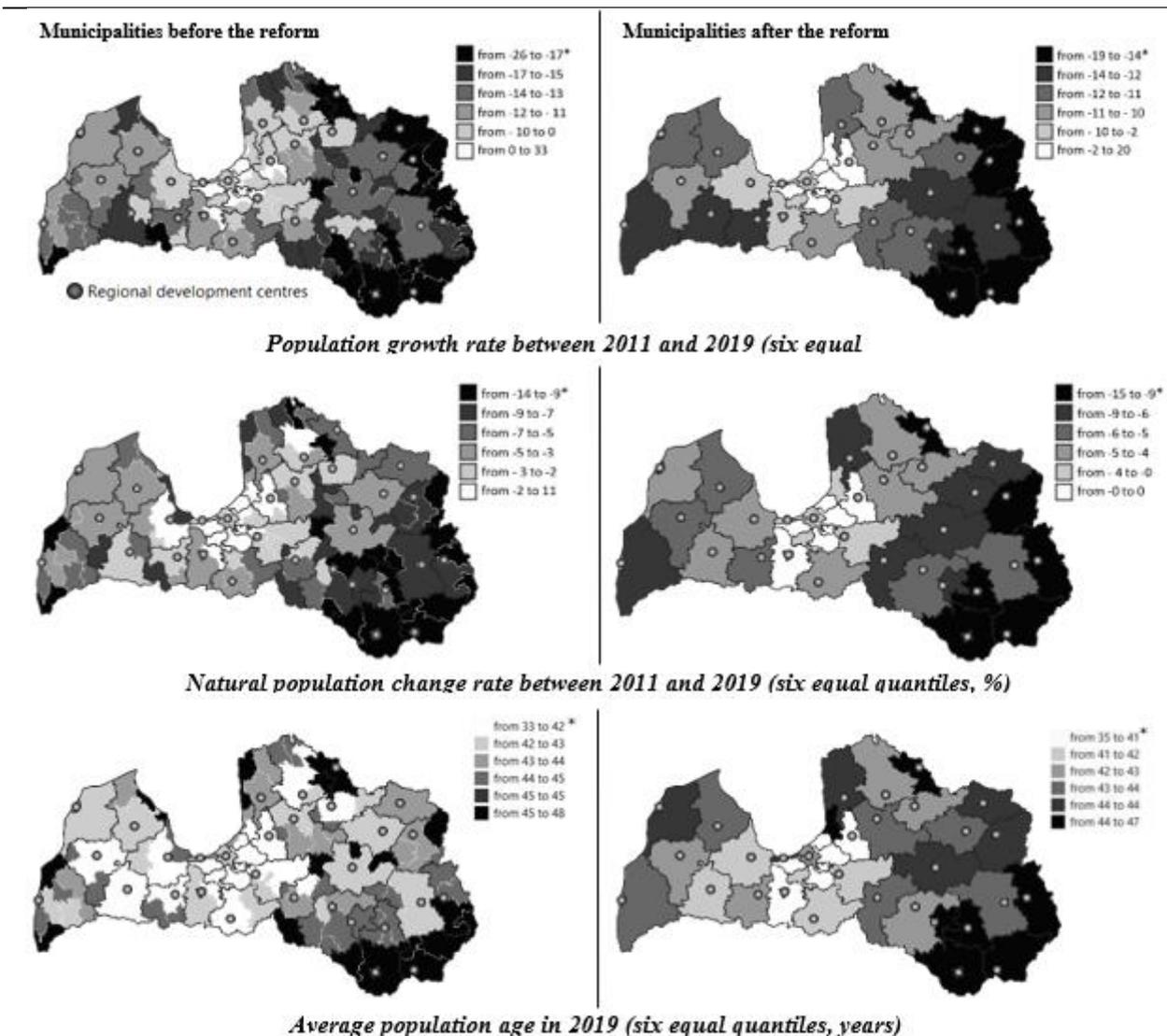
It is also worth mentioning that due to the regional differences in age and gender structures, some recent studies have identified rural areas as a special risk group for the negative effects of COVID-19 pandemic (Kashnitsky, I. and Aburto, J. M., 2020).

2. Demographic challenges before and after the reform

In this section, we provide statistical and geographical analysis of the regional demographic trends within the pre-reform and post-reform administrative framework, with a particular focus on rural municipalities lacking direct access to the regional development centres prior to the reform. Identified disparities are then discussed in the context of concepts found in the literature.

Figure 2 below shows several key regional demographic indicators for the pre-reform and post-reform municipal structures. Regional development centres are marked identically on all maps.

Most noticeably figures suggest that presence of the regional development centre as such does not seem to have a direct correlation with demographic processes in the adjacent rural regions. The core-periphery effect generated by the capital city Riga and several other major cities can be clearly observed as well, suggesting that accessibility, as well as social and economic diversity of the development centre are essential for the positive demographic impact (BiB, 2018).



* Upper interval boundaries included in the intervals

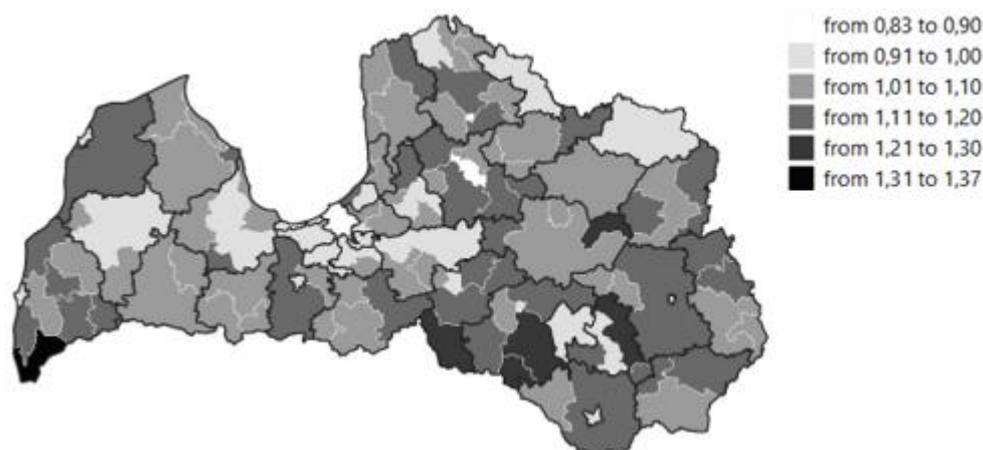
Source: authors' elaboration based on Kruminis J. et al, 2020; CSB, 2021; VARAM, 2021 and SLS, 2016

Fig. 2. Key regional demographic indicators for the pre-reform and post-reform municipal structures in Latvia (2011-2019 period)

Figure shows a classical core-periphery distribution of the demographic development trends, suggesting possible categorisation of the municipalities by the associated demographic risks as proposed by Joaquin Recano (2017) and Oldrich Hasek (2020). It is also noticeable that administrative-territorial reform has not affected this core-periphery setting, often merging municipalities facing similar demographic challenges.

Next, we test the concept found in literature regarding the role of gender ratio in the regional demographic processes. It is very important to note that the overall gender ratio in Latvian rural municipalities initially does not match any expectations based on literature review. However, once we account for the life expectancy difference between males and females in senior population groups, the figures match the predictions. For this reason, in this study we use the local gender ratios only for the working age population (hereafter referred as gender ratio).

Figure 3 shows corresponding gender ratios of working age population in 2019.



Source: authors' elaboration based on CSB, 2021; and SLS, 2016

Fig. 3. Working age population male to female gender ratio in Latvian pre-reform municipalities in 2019

Comparison of the results shown in Figure 3 with the maps provided in Figure 2 indicates that gender ratios in many local municipalities rather closely reflect the demographic disparities, as predicted by the literature. Some spatial spill-over effects can be observed around capital city and major development centres, where lower gender ratios in the city itself correlates with better demographic situation in the surrounding municipalities as well. This can be attributed to the classical spatial lag effect caused by population mobility. Most noticeable deviations from the predictions can be observed in rural municipalities located on the eastern border, where demographic development is hindered by several other socio-economic factors.

3. Social and economic factors of rural depopulation

In this section, we conduct a model-based assessment of several local socio-economic factors' and regional development centres' role in driving demographic change of rural areas. We use standard Linear Models (LM) to test direct causalities between indicators in municipalities. In cases where spatial spill-overs of the effects between neighbouring municipalities are likely, we also use Spatial Lag Models (SLM) and compare the results of both tests. Information on both model types and their applications for spatial and demographic research is well described in the literature and thus is not included in this paper (Ward, M. D. and Gleditsch, K. S., 2008, Dahs, A., 2017).

It should be noted that the models presented below are experimental in nature and rely on available limited spatially referenced datasets. In some cases, the indicators used in the model may not cover the same time frame.

Previous research on the topic (Dahs, 2017) has already established direct and spatially distributed links between demographic processes and several socio-economic indicators including income and employment. To control for these effects in the models, we use average wages in private sector and unemployment level data. In this study, we also add some new parameters reflecting the presence or direct proximity of a regional development centre (as dummy variable), gender ratios and shares of economically active individuals employed by the specific industry sectors (according to NACE classification). After the model calibration stage, only those industries showing statistically significant demographic effects were selected for the models. To determine the factors affecting gender balance, we use gender ratios as dependant variable in one of the models.

Figure 4 shows the uneven distribution of average wages in private sector in 2017 and the comparative shares of economically active individuals employed by selected industry sectors. Only private sector wages and the particular industries are shown, as these present much higher significance levels for the indicators under study.



Source: authors' elaboration based on CSB, 2020b; and SLS, 2016

Fig. 4. Average wages in private sector and shares of economically active individuals employed by selected industries in Latvian municipalities in 2017

The visually evident disparities in wage levels and industry roles across municipalities corroborates the feasibility of a further model-based assessment.

Table 2 provides selected results of the LM and SLM estimations featuring the effects of factors mentioned above on the regional demographic indicators – gender ratios, total population growth, net migration and share of residents below working age.

Table 2

Selected results of the experimental model estimations featuring effects of social and economic factors on the regional demographic indicators in all pre-reform Latvian municipalities during 2011 and 2019

Factors	Linear model (LM)				Spatial Lag Model (SLM)			
	Gender ratio (m/f) (2019)	Population growth (2011-2019)	Net migration (2011-2019)	% of pop. below work age (2019)	Gender ratio (m/f) (2019)	Population growth (2011-2019)	Net migration (2011-2019)	% of pop. below work age (2019)
Proximity of reg. dev. centre (2019)	-0.05087*** (0.01501)	-0.00650 (0.01715)	-0.01253 (0.01387)	0.43813 (0.54334)	-0.04510** (0.01439)	0.01100 (0.01411)	-0.00398 (0.01166)	0.75206 (0.50766)
Gender ratio (m/f) (2019)	-	0.01715 (0.14113)	0.23143** (0.08278)	-7.76133** (3.24365)	-	0.07695 (0.08380)	0.17986*** (0.06939)	-7.92187** (3.02104)
Average priv. wages (2017)	-0.00000 (0.00001)	0.14113*** (0.00005)	0.00019*** (0.00004)	0.00621*** (0.00181)	-0.00003 (0.00005)	0.00014** (0.00005)	0.00009** (0.00004)	0.00417* (0.00177)
Unemployment (2019)	0.00130 (0.00186)	-0.00503* (0.00203)	-0.00120 (0.00164)	-0.22363*** (0.06440)	0.00220 (0.00176)	-0.00240 (0.00173)	-0.00081 (0.00139)	-0.15642** (0.06457)
% employed in agriculture (2017)	0.38067*** (0.06510)	-0.16453* (0.08089)	-0.16040** (0.06539)	-1.79543 (2.56210)	0.37196*** (0.06139)	-0.08096 (0.06647)	-0.10745* (0.05511)	-1.12113 (2.38589)
% employed in ITC (2017)	-1.33164* (0.73485)	3.10859*** (0.81153)	2.61822*** (0.65603)	16.52690 (25.70370)	-1.60463* (0.71374)	1.74053** (0.67658)	1.62253** (0.55877)	1.63295 (24.13560)
Spatially lagged dependant variable	-	-	-	-	-0.28754* (0.11433)	0.59428*** (0.07689)	0.58496*** (0.08294)	0.33201* (0.10207)

Standard error values provided in brackets

*Statistical significance scale: 0 to 0.001: ***; 0.001 to 0.01: **; 0.01 to 0.05: *; 0.05 to 0.1: `.*

Source: author's calculations based on SCB, 2021

Model estimations confirm provisional observations about the limited role of regional development centres in the population number dynamics of the rural areas. However, both models show that presence or proximity of the regional development centres has significant positive effect on the gender ratio (i.e. making these areas more attractive to working age females). This corresponds to the findings of previous studies (Klüsener S., 2006), and may prove demographically important in the long-term perspective.

Gender ratio was found to be a significant positive factor for net migration and number of children. SLM model has also shown some limited but noticeable spatially distributed effect on total population change, which can be attributed to the population mobility. Unsurprisingly, average wages in private sector were found highly significant for all dependant demographic indicators except gender ratio, while unemployment level was shown to be the most significant explanatory factor for lower shares of population below working age.

Considering the two selected economic sectors, models indicate that information and communication technology (ICT) sector shows high positive impact on total population growth and significant impact on net migration, irrespectively of geographical location. This sector also has some impact on reduction of the gender ratio. On the other hand, agriculture as main employment option has clear negative impact on the gender ratio, total population growth and net migration. However, negative impact on total population growth and net migration was much less evident in SLM model, suggesting that population mobility between municipalities can alleviate some negative effects of limited employment choices.

Finally, spatial lag factor was found highly significant for total population growth and positive net migration. The role of spatial spill-overs was much lower for proportion of population below working age and gender ratio. This is a very important observation, considering the small size of municipalities under study. It clearly illustrates the negative impact of daily mobility on the natural population growth and family formation (Ruger, H. and Viry, G., 2017).

In summary, model results have shown that regional development centres in general and particularly those located in remote areas have little or no direct effect on the population dynamics. However, regional development centres offer more diverse employment opportunities and essential social services, making them more attractive to working age females and households with children. Income levels are most important in determining net migration flows, while stable and equal employment opportunities, as well as lower gender ratio, play crucial role in natural demographic change. Due to negative effects on family formation, unnecessary daily mobility should be minimised, particularly for the working age female population.

These findings outline a scale of challenges faced by reformed rural municipalities and their corresponding development centres. Based on the limited success stories (see Table 1) and model estimations (see Table 2), our advice would be to expand suburban areas of development centres to encompass bigger parts of their new municipalities. At the same time, it would be just as crucial to diversify employment opportunities at the regional development centres and improve their accessibility from their adjacent territories. Strong positive role of the ITC sector in the demographic development suggests that focus on location-independent employment and services is an important route to explore in the future rural development setting.

Conclusions, proposals, recommendations

- 1) Literature sources provide several key directions for addressing rural depopulation, including facilitating stronger social ties, improved commuting and digitalisation. Some studies suggest focusing specifically on gender-equal employment opportunities and family-friendly spaces to avoid female out-migration from rural areas.
- 2) Analysis confirms a core-periphery distribution of the demographic development trends in Latvian municipalities, suggesting possible categorisation of the municipalities by the associated demographic risks, as proposed by the literature. Administrative-territorial reform has not affected the overall core-periphery setting of demographic development.
- 3) Spatial and model-based analysis conform with the literature, showing that limited employment opportunities and increased spatial mobility associated with life in Latvia's rural areas may harm private life domains such as family formation and fertility, resulting in severe depopulation risks.
- 4) Regional development centres located in remote areas show little or no immediate effect on the population dynamics. However, these centres offer more diverse employment opportunities and essential social services, making them more attractive to working age females and households with children.
- 5) Supporting and developing local industries, public services and infrastructure facilitating better employment options and equal opportunities for working age females is a paramount condition for slowing or reversing rural depopulation.
- 6) Significant influence of the ITC sector in local demographic processes supports the idea that digitalisation, as well as focus on location-independent employment and services, will play major role in the future rural demographic development.

Acknowledgements

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READY FOR CHANGE? INTERLINKAGES OF TRADITIONAL AND NOVEL PRACTICES THROUGH PERMACULTURE

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Abstract. This paper is based on ongoing participatory action research in Latvia since 2016. The research was initially developed within the Marie Curie Innovative Training Network SUSPLACE and is further advanced by the Latvian Council of Science funded project 'Ready for change? Sustainable management of common natural resources (RFC)'. By using this approach, the researchers aim to, firstly, synthesise natural, climate science and economic systems evidence of the immense transformations required towards regeneration and, secondly, engage in active knowledge brokerage and societal change advancement. Authors encourage to limit the application of the abused term 'sustainable' as it has rather meant to 'sustain the unsustainable' across the last decades and to follow the logic of 'regeneration' instead.

The bridging of practices with the permaculture movement can be summarised in three broad groups of regenerative transformations to develop resilience against environmental breakdown – firstly, organic growing or gardening, secondly, ecological building, and thirdly, ecological lifestyle practices. These examples are arising both from particular collaborations with the selected permaculture homesteads as well as from the general environmental and social activism in Latvia.

A common expression claims that 'everything new is well forgotten old'. It resonates very well with the permaculture ethics and movement emphasising not forgetting yet critically assessing the long-developed skills and practices. This paper demonstrates that in addition to the challenging global aims, on the local level the success of permaculture depends on its ability to be deeply embedded in localities and revive cultural, local practices that people feel a connection to.

Key words: permaculture, regenerative transformations, environmental breakdown, degrowth.

JEL code: Q5 Environmental Economics

Introduction

'When long-established systems break down, they often do so in many different ways at the same time. Our economy and society depend on a lot of things working right, all the time: cheap and reliable flows of energy, a stable climate, fertile soils, abundant fresh water, productive oceans, an intact, diverse ecology, high levels of employment and a cohesive culture. These are all in trouble.' (Fleming, 2016: 3)

The first year in the Covid-19 pandemic is a catalyst for the breakdown of our long-established systems (Spash, 2020). The research team had posed the questions about the awareness of change and readiness for change already in 2019 application for the currently implemented research project RFC. The change we meant was primarily about the societal response to the ongoing environmental breakdown. Pandemic is just another milestone on this path, partially driven by the human encroachment of the natural world and increased spread of zoonotic diseases (Sansonetti, 2020).

We live in an era of environmental breakdown that is a direct outcome of the modern scientific and technological process – side-effects of our development (Beck, 2009). Interdisciplinary research is showing how these side-effects are manifesting in many aspects of human societies. Critique and evidence have been provided already since the mid-20th Century with influential books like 'The Great Transformation' (Polanyi, 1944), 'Limits to Growth' (Meadows et al., 1972) and 'Small is Beautiful' (Schumacher, 1973), each different in their approach but all strongly emphasizing the incompatibility of infinite growth with prosperous long-term development.

Since those early sustainability-oriented authors and movements more work has followed in describing fundamental flaws for long-term sustainability, but almost none of the negative trends exceeding planetary

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boundaries (Steffen et al., 2015a) have been reversed and instead, the problems have only expanded (Steffen et al., 2015b, Ceballos et al., 2017, Bendell, 2018, IPCC, 2018, IPCC, 2019, IPBES, 2019, Dasgupta, 2021). Human progress side-effects cannot be solved while remaining in the same hegemonic paradigm of progress, modernity and development based on neo-classical economics, neoliberal capitalism, free market, the panacea of technological solutions, and infinite growth. There are almost no countries in the world, where GDP growth would not be among the primary country development target indicators. Widely popularised alternatives like 'Green economy' and 'Green growth' introduce some changes, but are not challenging the essential aspects of such hegemony (Spash, 2012) and are not decoupling economic growth from environmental degradation (Fletcher & Rammelt, 2016, Parrique et al., 2019). The problems present at all scales of human societies are interlinked and long-term regeneration can be achieved if development actors will contribute to mindset shifts away from the paradigm hegemony (D'Alisa et al., 2014, Gopel, 2016). The term 'sustainable' likewise is a part of the same paradigm that it is possible to painlessly combine the economic growth aim with social and environmental sustainability. 'Sustainable development' framework is proposed for more than three decades, but the climate change and other socio-ecological disruptions make redundant the reformist approach to sustainable development and related fields of corporate sustainability that has underpinned the approach of many professionals (Bendell, 2018).

One of the ways in the direction to transcend the paradigm hegemony is the international permaculture movement. The term itself was formulated in the 1970s by Bill Mollison and David Holmgren (1978). Initially, it was focused on the agricultural aspects as in 'permanent agriculture', however, by the early 1990s permaculture already has been redefined as '...a design system for creating sustainable human environments. The word itself is a contraction not only of permanent agriculture but also of permanent culture' (Mollison & Slay, 1991). The core ethics of permaculture are threefold: 'Earth care, people care and fair share' (Holmgren, 2002). That relates closely with the discussion in environmental philosophy and ethics about the risks associated with anthropocentrism leading to ecosystem degradation and resource exploitation (Keller, 2010).

It is essential to see permaculture not as a revolutionary novel approach to farming or living, but as an overall framework that brings together many diverse environmental ideas in a coherent pattern. Permaculture as both philosophical and practical framework is establishing itself as reliable for transformative action (Henfrey, 2018) and part of the success is the ability to bridge the traditional and novel practices, exemplifying hopeful alternatives or 'real utopias' (Wright, 2010) capable of challenging dominant economic paradigms. Many of the practices in permaculture design are aiming for regeneration as indicated in the sub-title 'Principles and pathways beyond sustainability' (Holmgren, 2002) and re-appearing throughout the 12 core permaculture principles. Regenerative implies the focus on not generating problems in the first place and regenerating the negative impacts social and economic practices in places have made so far – aiming to leave a better world for future generations (Lyle, 1994). This paper demonstrates the examples of regenerative aspirations and the development of societal alternatives within the permaculture movement in Latvia. Through this, the central research question is explored on how permaculture in Latvia supports regenerative transformations and bridges traditional and novel practices.

Materials and Methods

'There are two relevant meanings of growth:

- 1) *The natural development of an immature system or organism to maturity.*
- 2) *A pathology in which a mature system or organism continues to grow.'* (Fleming, 2016: 127)

This paper is based on ongoing participatory action research in regeneration-oriented initiatives in Latvia beginning in 2016. Essentials for action-oriented, transformations and climate change research, summarized on the basis of individual and collective outputs in a two-year collaboration of almost 50 scientists (Fazey et al., 2018) are reflected in much of our work. The essentials recommended are based on the expressed need for 'massive upscaling of research that can rapidly enhance learning about transformations' with particular focus areas on transformations to low-carbon, resilient living, on 'how to' practical knowledge, seek to transcend current thinking, acknowledge the value of alternative roles of researchers and the scientists conclude that 'the most critical question for climate research is no longer about the problem, but about how to facilitate the transformative changes necessary to avoid catastrophic climate-induced change' (Fazey et al., 2018: 55). Such essentials indicate that research approaches themselves need to undergo fundamental changes if they want to contribute to regenerative transformations.

This research project has a strong emphasis on participatory action research and therefore it is crucial not to fall into the trap of empiricism; the implicit ontology risks confusing the 'empirical' with the 'real' domain. When projects are fundamentally based on the knowledge, needs, and interests of stakeholders, they primarily rely on empirical information provided by project participants. As argued by Sayer (2000), 'Observability may make us more confident about what we think exists, but existence itself is not dependent on it' (p. 12). This can lead to vulnerability of describing the reality within the dominant development paradigms, using the same language, and imagining the same desirable actions based on hegemonic perceptions of development. Meaningful new dimensions in the development of society require a framework like degrowth provides, indicating what 'actual' and 'real' development trends and future risks must be taken into account to design more specific empirical work and stimulate the development of more regenerative transformations at multiple levels of society. These challenges are related to previously described challenges of normativity and ethics in action-oriented research to achieve regenerative transformations, because then research cannot primarily rely on empirical information from participants, but need to relate it to biophysical limits inevitable in regenerative transformations.

The regenerative approach is closely related to the body of work produced in the degrowth tradition, particularly the key book 'Degrowth. A Vocabulary for a new era' (D'Alisa et al., 2014), offers a frame that connects diverse ideas, concepts, and proposals (Demaria et al., 2013) that together frame the impossibility of infinite growth. '[Degrowth] calls for the decolonization of public debate from the idiom of economism and for the abolishment of economic growth as a social objective. Beyond that, degrowth signifies also a desired direction, one in which societies will use fewer natural resources and will organize and live differently than today. 'Sharing', 'simplicity', 'conviviality', 'care' and the 'commons' are primary significations of what this society might look like' (D'Alisa et al., 2014: 3).

However, degrowth has no ambitions to become a one-dimensional ideology and path for everyone to follow. People in the movement understand that its name and core critique originate in the overdeveloped 'Global North', where 'further economic growth [...] no longer improves health, happiness or measures of wellbeing' (Pickett & Wilkinson, 2009: 172). While in 'Global South' degrowth might be a less appealing term for a movement, other similar movements are emphasising the same qualities and different long-term perspectives from the current global hegemony ('Ubuntu' in South Africa, 'Buen Vivir' in Latin America, or 'Ecoswaraj' in India). Degrowth is largely about building alliances across the world and showing the multiplicity of paths that can be taken to achieve better future societies that are conscious of the limits of global biophysical reality. 'The foundational theses of degrowth are that growth is uneconomic and unjust, that it is ecologically unsustainable, and that it will never be enough. Moreover, growth is likely to be

coming to an end as it encounters external and internal limits' (D'Alisa et al., 2014: 6). Therefore, the degrowth framework provides an all-rounded complex perspective on the 'actual' and 'real' domains as in the Critical Realism ontology – all of it affects our 'empirical' human perception of the world and actions we are likely to take, regardless of how conscious we are of our actions (Archer et al. 1998, Bhaskar et al., 2010).

An action-oriented approach merging these roles enables an in-depth involvement in the ongoing projects and communities in Latvia that have a regenerative potential to serve as examples for a wider population. In the context of development paradigm critique in this research, it is important to re-politicize action-oriented research and to emphasise 'dialogic engagement with co-researchers, and the development and implementation of context-appropriate strategies oriented towards empowerment and transformation at a variety of scales' (Kindon et al., 2007: 2).

In Central and Eastern Europe and Latvia, there is a strong sense of failure of communism, fragile democracies, people who are often disillusioned and it makes it very difficult to involve people in social movements, especially if they can be linked to communism as is the risk in case of social and environmental justice left-oriented ideas or frameworks beyond right-left political spectrum like permaculture or degrowth.

Therefore, it is a very complex challenge in Latvia for anyone willing to adapt or adjust some of the ideas, language, and practices of global movements towards sustainability or regeneration; for example, permaculture, agroecology, regenerative agriculture, food sovereignty, degrowth, transition towns, all of which are encompassing the types of 'real utopias' that could be worked towards in the settings of Latvia. Such actions risk being labelled as reversing the development trend towards the genuinely difficult times of recent history and therefore discrediting any such attempts. However, through appreciation of old practices and folk traditions as well as strong relation to global movements, social activism, and evidence-based understanding of planetary challenges, the permaculture movement in Latvia is developing itself as one of the guiding frameworks for alternative actions.

This paper provides insights into participatory action research attempts in the particular circumstances of Latvia – researching the ongoing processes and leading or co-creating multiple activities since 2016:

- 2 internationally recognised Permaculture Design Certificate (PDC) courses in 2017;
- diploma in Applied Permaculture process initiated in 2018 and first Diploma holder graduated in 2020;
- plans for PDC course in Latvian tailored to local needs in 2021;
- 5 annual permaculture festivals with multiple lectures and practical workshops (100-180 people in attendance of each from 2016 to 2020);
- >10 Rocket Mass Heater (RMH) practical workshops;
- 6 successful project applications and implementation;
- >10 national-level radio appearances on permaculture, climate change, and degrowth;
- >10 university guest lectures in four different Latvian universities to students of economics, management, sociology, agriculture, and eco-technologies – about interdisciplinary science, permaculture, degrowth, and participatory action research;
- >10 public lectures in various settings, for example, annual discussion festival LAMPA;
- Elgars Felcis leading the Latvian Permaculture Association (LPA) as its chairman since 2016;
- both authors leading the multifunctional open permaculture homestead 'Zadiņi' and foundation 'Zadiņi' since 2018.

Co-created events and activities are providing diverse sources of information and data:

- photos and video material of events and daily work;
- in-depth insights into the day-to-day operation of permaculture activists and homesteads (including recorded interview and discussion material);
- evaluation material from workshop participants (quantitative and qualitative);
- overall development of in-depth insight about the people interested in permaculture practices and their steps towards regeneration – from multiple workshops, seminars and permaculture festivals.

However, the aim of the participatory action research process is not only to document some of the actions based on people's claims in interviews or discussions but predominantly to contribute to regenerative transformations in the society through the co-creation of activities, events, workshops, and longer-lasting collaborative networks as summarised above.

Moreover, following, observing, and engaging with Latvian permaculture homesteads is useful in this work because of their ongoing practical application of regenerative aspirations. For the research, the most active permaculture homesteads within the broader permaculture movement were selected that demonstrate leadership and ambition to promote simpler and more regenerative lifestyles as individuals and encouraging communities in their network. Summative criteria for selection of such places and their regenerative potential:

- 1) mature, longer-term functioning places – proven their resilience in organisational hardships beyond the first couple of years of existence;
- 2) a high degree of autonomy – independence in aims, practices, diversified income streams, and/or a potential to increase self-subsistence;
- 3) bottom-up – developed in a bottom-up process by individuals, families, or communities;
- 4) regeneration-oriented – have a high environmental awareness and are aspiring to further increase their regenerative capacity;
- 5) providing example and inspiration for change – are recognized by wider society and organize events, workshops, and other educational processes for the general public.

In summary, our engaged researchers' roles and alternative roles such as Elgars being the chairman of the LPA leads to in-depth collaboration with the described permaculture farms which involves different combinations of local, regional, and international actions which are merging traditional and novel practices. Firstly, co-organisation of events, facilitating discussions and practical work. Secondly, co-leading actions within the LPA with them as key members of the association. Thirdly, co-writing of project applications and implementation of the projects to foster regenerative activities and use of permaculture principles and practices.

Research results and discussion

The bridging of practices within the permaculture movement can be summarised in three broad groups of regenerative transformations – firstly, organic growing or gardening, secondly, ecological building, and thirdly, overall ecological lifestyle practices. These examples are arising both from particular collaborations with the selected permaculture homesteads as well as from the general environmental and social activism in Latvia.

The identification with the first group is the most widespread in Latvia – the majority of permaculture enthusiasts admit that they have first come across permaculture in relation to gardening practices and only then have discovered other wider aspects of it. More active early organic farmers in Latvia in the early 2000s have come across permaculture as a set of practices in an experience-exchange trip to Austria,

but a common attitude among farmers is that permaculture is a suburban practice, but not for consistent food production. Gardening and farming practices emphasised in permaculture focuses on nature and biosphere mimicking – for example, companion planting, natural pest control, agroforestry, and ground covers in different forms or mulching. On the spectrum of alternative farming practices to industrial farming, permaculture lies next to agroecology, organic and biodynamic agriculture that all share several similar features and have influenced each other over time. Even no-till or reduced tillage practices prevalent in the permaculture movement are becoming picked up by the Latvian Organic Farmers Association and other farming groups. Other common land management practices in permaculture – key-line design and holistic management – at the moment have only the first attempts to be adapted to Latvian settings.

Multiple permaculture enthusiasts and organic farmers are attempting to repeat some of the practices of Richard Perkins, a British farmer working on a farm in Sweden (Ridgedale Permaculture) in more Northern latitudes than Latvia. His advice is appealing because of the similar climatic conditions and intensive social media presence and success stories. Latvian Rural Advisory and Training Centre (LLKC) consultant, Latvian permaculture association (LPB) member has organised two Richard Perkins' lectures in Latvia in 2015. Furthermore, his self-published books 'Making Small Farms Work' (2016) and 'Regenerative Agriculture' (2019) are good examples indicating the close links between 'permaculture', 'regenerative agriculture' and other practices in the wider agroecological movement. Within the LLKC there is a growing recognition of permaculture as a part of the alternative spectrum towards regenerative practices and reduction of the risks and side-effects that industrial agriculture is producing.

Secondly, ecological building practices in Latvia have an alive and lasting heritage with log building as a classical feature of Latvian countryside with log building companies and master craftsmen working on them also nowadays (for example, the professionally marketed 'Northmen Guild' and their carpentry and log building courses), often combined with traditional roofing materials – thatched reed roofs and wood shingles. Permaculture activists are keen in cherishing all such heritage, but they do make few additions with straw bale and cordwood building techniques, reciprocal roofs, tiny 'hobbit houses' as well as with the introduction of Rocket Mass Heater wood-burning ovens. The latter was first built in Latvia in 2013 and since then at least 50 such heaters are built, many of them in open workshops where people are invited to participate for free or low cost to help the host build the oven and simultaneously learn the skills themselves. The Facebook group 'RMH in Latvia' ('Rakeskrasns Latvija') since its establishment in late 2017 has expanded to 2400 followers in early 2021. RMH is a good example of a product that is difficult to commercialize regardless of its high burning efficiency, low emissions, low wood consumption, and cheap construction costs, particularly if materials are re-used, upcycled from other sources and the oven is at least partially self-built. For example, the cost of materials for one RMH in Latvian circumstances can be between 200 and 300 € in 2021. Because of their features, RMH are appreciated by a wider population, including those not particularly focused on ecology, regenerative practices or permaculture, but strong in self-building and technical skills. Sometimes it serves as the entry point to understanding how the ecological building is a part of a broader lifestyle approach. For example, it is the main reason for some people to attend the annual permaculture festival where they get to know more about the permaculture movement and other practical lifestyle alternatives.

Thirdly, overall lifestyle changes is a more ambitious step, but permaculture proves to be a useful set of guiding ethical and practical principles for environmentally friendly, ecological, sustainable or other similar description people might prefer to use. Furthermore, there are still such people who are not using some or any of such descriptions, but their lifestyles in many ways resemble permaculture framework – particularly among the rural population. In essence, that is the role of permaculture – instead of claiming

to be the new, innovative, or revolutionary way, it rather is a systemic framework to learn from past knowledge and experiences. For example, zero-waste principle is long included as one of 12 permaculture principles (Holmgren 2002), but around it develops a more recent separate movement and development of zero-waste shops in several Latvian cities.

In permaculture, there are useful reminders that higher levels of self-sufficiency and independence is also a political act and contribute to the decentralisation of power socially, politically, economically, and technically. However, it is rarely perceived as such in Latvia, because of self-sufficiency predominantly being related to forced past hardships and underdevelopment (Dzenovska, 2012). For example, climate change perception as an environmental threat in Latvia is among the lowest in the EU. However, among permaculture activists, such awareness of climate change and other aspects of environmental breakdown is much higher, which provides an additional stimulus for actions to consciously adapt to the growing impacts of these breakdowns.

Permaculture homesteads – key nodes in the permaculture movement in Latvia

In the following paragraphs, the permaculture homesteads will be shortly described based on the criteria mentioned in the methods section and then demonstrate how they are operating as key nodes in the wider permaculture movement activities in terms of ecological growing, building, and living in Latvia and internationally.

Permaculture homestead 'Lejas Variceni'

The smallholding is led by a Latvian-German family since 2011 and they are also leading the local NGO 'Smiltenei un Latvijai' ('For Smiltene and Latvia'). During these years they have rapidly developed their homestead, hosted more than 150 voluntary workers and multiple workshops on building RMH stoves, straw bale building techniques, and hosted the third Latvian Permaculture Festival in August 2016. In 2017 they hosted two Permaculture Design Certificate courses (PDC) and co-organised the fourth and fifth Latvian Permaculture Festivals in 2017 and 2018 together with other active LPA members. In 2018 they started co-hosting Diploma in Applied Permaculture process in Latvia in order to train permaculture trainers and spread the movement further nationally and regionally. In 2020 the farm owner defended his 10 applied permaculture project portfolio and became the first Diploma holder in Latvia and the Baltics who can further teach and grant PDC certificates. There are plans for a PDC course first time fully in Latvian in 2021.

To sum up, 'Lejas Variceni' is considered as a place with a regenerative potential because it:

- 1) Developed continuously since 2011, therefore it has proven its resilience in organisational hardships beyond the first couple of years of existence.
- 2) Have diversified streams of income and self-subsistence – social work in being a host-family in German 'Wellenbrecher' organisation (until 2020), part-time teaching in a school or private teaching, permaculture farming and animal husbandry, organisation of workshops, occasional EU Cohesion Fund project writing and implementation.
- 3) Was founded by a family in 2011 after transitioning their lives from corporate employment in Germany through several steps towards the current permaculture homestead management in Latvia.
- 4) Have regeneration aspirations at the core of their operation – concerning permaculture design principles and expanding understanding of global climate change pressures.
- 5) Have achieved popularity among people interested in permaculture in Latvia, Estonia, and abroad as well as receiving voluntary workers from all around the world. A key sign of success is the willingness

of people to return to subsequent workshops and events and frequent mass media interest in various newspapers and TV programs.

Permaculture homestead 'Ganeni'

The family running the homestead are also the leaders of the NGO 'Kulturys studeja Speiga' ('Kulture study Speiga') that is active in attracting funding for the development of rural communities, involving the local community and presenting advantages of permaculture principles in farming and lifestyle. The homestead and foundation have been the hosts of the first two Latvian Permaculture Festivals in 2014 and 2015, as well as have organised several workshops, for example, 'Build your house yourself' workshop in log house building in May 2016 and 'Make your own roof yourself' workshops of timber frame constructions and wooden roof shingle making and laying every year since 2017.

To sum up, 'Ganeni' is considered as a place with a regenerative potential because it:

- 1) Developed gradually and demonstrated resilience in adapting to various difficulties throughout the years since 2007.
- 2) Have diversified streams of income and strong self-subsistence – permaculture farming and animal husbandry, organisation of workshops, regular project implementation for popularisation of environmentally friendly lifestyles and alternative farming practices.
- 3) Was founded by a family in 2007 as 'back-to-the-landers', soon starting to follow some permaculture principles and aiming to prove that it is possible to live happy lives in the Latgale region country-side that are generally perceived as the least developed territories of Latvia.
- 4) Have regeneration aspirations at the core of their operation – concerning permaculture design principles and reducing dependency on monetary exchange.
- 5) Have achieved popularity among people interested in permaculture in Latvia and elsewhere, hosted numerous workshops, volunteers, and works to strengthen the nearest local communities in the Latgale region.

Open homestead 'Zadini'

'Lejas Variceni' farm owners are close partners and supporters to the emerging 'Open homestead Zadiņi' ('Atverta Saimniecība Zadini'). This is a relatively recent development, first conceptualised in 2017 and inhabited by multiple families since 2018. It includes the management of the 90ha property of an American-Latvian environmental justice and climate change activist in the USA, who is willing to dedicate her Latvian property to serve as a common pool property ('commons') in supporting young people in Latvia for alternative thinking, growing, building and living practices. The foundation 'Zadini' was established in 2019 with the aim to be the organisation managing the property in the future.

To introduce the project and place, the fourth Latvian Permaculture festival was organised there in August 2017. Furthermore, a Rocket Mass Heater and natural paints workshop was organised in November 2017, another RMH workshop in April 2018, 'Activist burnout academy' in June 2018, part of the 'Diploma in applied permaculture design' course, multiple other smaller events for Latvian and international audiences and the fifth and seventh annual Permaculture festivals in August 2018 and August 2020. The latter two were co-organised with the support from 'Lejas Varicēni' and 'Ganeni' owners, other active Latvian permaculture association members as well as several Latvian environmental organisations and social and environmental activists.

As scientists and activists, the authors have taken the lead in the project, acting as the trusted people between the landowner and people joining the open farm and cooperating with the 'Lejas Varicēni'

homestead. In early 2021 there are already 12 permanent inhabitants (seven adults and five children) in 'Zadiņi' and the homestead is open for potential new members.

To sum up, 'Zadiņi' is considered as a place with a regenerative potential because it:

- 1) Is in the process of developing and has generated national recognition in the general public and mass media. Furthermore, strong links are established with the local community and school.
- 2) Have diversified skill-sets of participants (agriculture, forestry, herbalism, mechanic, construction, project management, etc.), multiple streams of personal and collective income, and strong potential for future self-subsistence. Regular weekly meetings are held to steer further development, practices, and projects.
- 3) Developed by a group of 'back-to-the-landers' willing to change their lifestyles and becoming 'part of a solution' not 'part of the interlinked ecological, social and economic problems'.
- 4) Environmental and social regeneration aspirations are central, using the multiple skills, permaculture framework, deep ecology, social work, and other inspirations.
- 5) In the relatively short period since the foundation 'Zadiņi' inhabitants have already organised multiple events, workshops and hosted many groups from schools, regional NGOs, mass media, and people interested in exploring the experiences or possibilities to join as community members.

The overarching theme that enables the multi-stakeholder involvement is the openness for others to learn what is done in these farms and how the owners can inspire and empower others in the reception of voluntary workers, aspiring back-to-the-landers, permaculture enthusiasts, and journalists. Indeed, since 2016 permaculture-related activities and places increasingly more often appear on local and national radio, TV, and Youtube channel episodes as well as on newspaper and journal articles.

Many of the projects within the LPB are written and implemented by some or all of the above-mentioned farm representatives. Sometimes projects are submitted directly through LPB, but on other occasions through the NGOs that are led by the homestead owners. They together with a wider circle of active LPB members form a very resourceful group trying to secure support for the ideas that advance rural regeneration and social resilience through permaculture practices. One of the keys to their success is the ability to simultaneously be very deeply embedded in the local region with its stakeholder network, but at the same time being different and partially through permaculture bringing in some novelties that in turn becomes appealing for others in the region. Their embeddedness is what makes others to pay attention and appreciate the work they do. For example, like in the 'OFF-GRID' project, when there was a recognition about the need to advance renewable energy sources in Latvian regions and the EU LEADER 'Local Action Group' (LAG) invited and consulted the project application on the novel, sustainability-related issues knowing the interests and expertise of the homestead owners.

Conclusions, proposals, recommendations

- 1) In conclusion, our analysis of environmental breakdown evidence emphasizes the need to move beyond the usual paradigms of 'sustainability' or 'sustainable development'. Their track record since 1980ties shows that economic growth and associated resource throughput growth has been prioritised at the cost of social and environmental degradation. The trends are genuinely disturbing. Therefore, the authors propose to follow the logic of the concepts of 'regeneration', 'regenerative transformations', and 'degrowth' as the necessary guiding pathways internationally and in Latvia at the current point in history.
- 2) This article explains how the permaculture framework aligns with the overall regenerative paradigm while including a diverse range of people in Latvia – from cities, small towns, aspiring

'back-to-the-landers', people already in rural regions and each group finds some application of different aspects of permaculture. Permaculture fits the rapidly internationally growing rhetoric that unprecedented transformations are necessary as soon as possible to have a liveable Planet Earth.

3) The authors have explored the role and pathways of participatory action research for regenerative transformations. Both the analysed existential risks and such co-creative research methodologies are novel in the Latvian academic community. Hopefully, that will contribute to awareness, readiness, and resilience to ongoing changes and further meaningful research on that. Participatory action research in Latvia demonstrates that in addition to the challenging global aims, on the local level the success of permaculture depends on its ability to be deeply embedded in localities and revive cultural, local practices that people feel a connection to.

4) The aforementioned permaculture practices in gardening/farming, eco-building, and ecological lifestyles demonstrate that regenerative transformations cannot arise only from individual choices, but instead through a larger social change and revived values of commonality. In the Latvian permaculture movement, diverse events are providing practical examples, know-how, and encouraging further changes in their lives and mutual collaboration.

5) Doreen Massey (2005) also has argued that the local continuously constructs the global and people and places are not just victims to global structuring processes but have agency and capacity to act. Even if people are not explicitly interested in regenerative transformations, degrowth or climate change mitigation, cultural and local practices can still provide an entry point for them. Through these common fundamentals, gradual change, adaptations, and novel practices can be introduced that hopefully will lead to more regeneration instead of the current degeneration of all Planet Earth life support systems.

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STUDYING ADOPTION OF CRYPTOCURRENCIES AND BLOCKCHAIN TECHNOLOGY IN THE BALTIC STATES

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Abstract. The paper aims to analyse adoption of cryptocurrencies and blockchain technology in the Baltic States in the context of regional competitiveness. To achieve the aim, the following tasks are set: 1) to investigate crypto activity and crypto regulation, 2) to analyse blockchain applications and policy actions beyond crypto space, 3) to investigate interconnections between blockchain adoption and regional competitiveness. The study employs methods of descriptive statistics and content analysis. The study concludes that Estonia's leadership in the majority of regional competitiveness indicators correlates with its leading position in blockchain adoption not only in Baltic States, but also worldwide, specifically in the area of e-government. Lithuania shows an overall competitive position in blockchain adoption in fintech area. In contrast, Latvia significantly lags behind Estonia and Lithuania in terms of regional competitiveness and adoption of blockchain technology, which is weakened by the regulatory unclarity for virtual asset service providers and the lack of supportive actions from the government for blockchain innovation and its further adoption within and beyond crypto-space.

Key words: blockchain technology adoption, cryptocurrencies, virtual assets.

JEL code: O33

Introduction

The most prominent use case of blockchain technology implementation up to date are cryptocurrencies and virtual assets, however blockchain technology applications span far beyond crypto space with disruptive and transformational effects on transactional relationships in digital environment. Hence, blockchain technology is seen by various scholars as a general-purpose technology (Yli-Huumo et al., 2016) an institutional technology (Davidson et al., 2018) and a foundational technology (Iansiti and Lakhani, 2017) due to its potential capabilities to transform economic models and public administration functions.

The EU Digital Single Market Strategy aims to improve access to digital goods and services, forming an environment in which digital networks and services can thrive and increasing the level of digital skills that are necessary for a comprehensive digital society (A Digital Single..., 2015). Under its framework a European Blockchain Strategy was developed by the European Commission, which underlines that blockchain is a transformative technology for Europe as it has potential to revolutionise data sharing practices, transform industries and cross-border public services, create a citizen-centric digital society and contribute to the economy through creating jobs and bringing economic value (European Blockchain Strategy..., 2021). Policy actions and activities include financing of blockchain innovation and start-ups, creating political partnerships across EU member states through the European Blockchain Partnership, promoting a pan-European legal certainty, contributing to international blockchain standards, supporting blockchain skills development of Europe's citizens and interacting with the community (European Blockchain Strategy..., 2021).

Given the political agenda of the European Union, it is important to study if blockchain adoption correlates with the level of regional competitiveness. Wintjes and Hollanders (2020) see that region's competitive position is dependent on the following factors:

- Accessibility to knowledge;
- Capacity to absorb knowledge;
- Capacity to diffuse knowledge and technology.

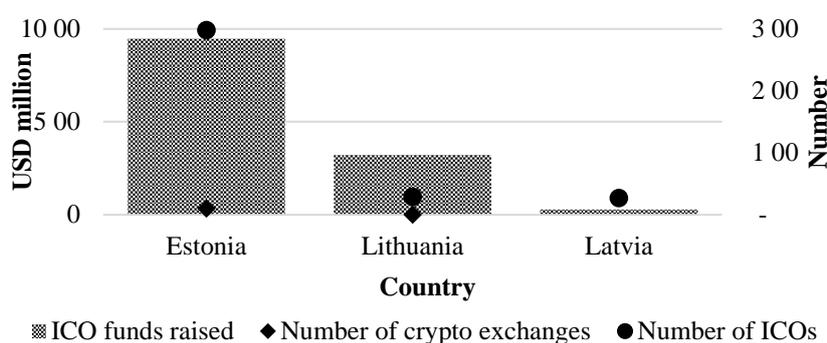
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This paper aims to study interconnections between blockchain adoption and regional competitiveness in the Baltic States. For that, it is necessary to analyse blockchain adoption pace in the Baltic States in the area of cryptocurrencies and beyond and its relation to regional competitiveness. This paper applies methods of descriptive statistics for outlining crypto-activity and regional competitiveness indicators and content analysis for describing blockchain applications in each country and analysing interconnections with regional competitiveness.

Research results and discussion

1. Analysis of crypto-activity in the Baltic States

As demonstrated by the figure 1 funds raised through initial public offerings (ICOs) in Estonia and Lithuania are considerably bigger than in Latvia.



Source: author's construction based on data from Stats and Facts..., 2020; List of All..., 2020

Fig. 1. Crypto activity in the Baltic States

In global rating Estonia takes the 7th place, Lithuania takes the 11th place and Latvia takes the 34th place by ICO funds raised (Stats and Facts..., 2020), which reflects that Latvia considerably lags behind Estonia and Lithuania. Although in terms of number of ICOs Lithuania and Latvia are on the same level with 29 and 27 ICOs accordingly, Lithuanian crypto entrepreneurs have been far more successful than Latvian entrepreneurs and have managed to attract ca. 10 times more funds through ICOs (USD 323 million and USD 28 million accordingly). Crypto activity correlates with cryptoregulatory ranks of both countries – Lithuania takes the 4th place in the world, whilst Latvia takes only 81st place (Blockchain Regulations..., 2020).

Interestingly, Estonia takes after Lithuania with the 14th place according to cryptoregulatory ranking, however it attracted ca. 3 times more funds through ICOs (USD 946 million) and conducted ca. 10 times more ICOs (298). In Estonia, activities with cryptocurrencies and virtual assets require a specialized license since 2017. In Lithuania, activities with cryptocurrencies and virtual assets require a specialized license since 2019. In Latvia, no license is required to conduct activities with cryptocurrencies and virtual assets, which indicates regulatory uncertainty in Latvia comparing to other Baltic countries, hence, a lower cryptoregulatory rank. In all three countries virtual asset service providers must comply with the relevant European and national regulations on anti-money laundering and prevention of terrorist financing.

Estonia also shows leadership in the number of crypto exchanges in the Baltic States – 34 crypto exchanges in comparison to only one in Lithuania and none in Latvia (List of All..., 2020). This tendency can be explained by the fact that Estonia was the first country in the Baltic States, which started to actively attract crypto projects by utilizing its digital nation image. Estonia responded very quickly to new trends and increasing interest in cryptocurrencies and was one of the first countries in the world to introduce crypto regulation. Due to the full digitalisation of public services and the launch of the E-residence program

in 2014, which allowed digital entrepreneurs to start and run an online business remotely (The New Digital..., [n.y.]), incorporating a company operating with cryptocurrencies in Estonia was possible remotely from anywhere in the world. Due to low competition in the world at that time, almost 1 300 cryptocurrency licenses were issued in Estonia by 2019 (Estonian Financial Intelligence Unit, 2019).

Estonia was also the first country in Baltic States to introduce respective ICO guidelines hence benefitting from early ICO activities. Financial regulator in Estonia published ICO guidelines in 2016, whilst Lithuania and Latvia published them only in 2017 and 2019, accordingly. ICO guidelines outline explanations in which cases tokens issued through ICOs would not require a specialized authorisation from the financial regulator and in which cases tokens would be classified as financial instruments and, hence, must be compliant with relevant regulations such as co-investment, financial securities or crowd-funding laws.

2. Analysis of blockchain adoption beyond crypto space in Estonia

Estonia differentiates between blockchain technology application in crypto space and beyond, specifically within e-government services. A national digitalization policy serves as the basis for adoption of blockchain technologies in Estonia. For example, in 2007 an electronic voting and in 2014 an e-Residence programme were launched. Hence, a blockchain technology logically continues the overall digitalisation policy of the state. In addition, following a cyber attack on government data repositories in 2007, Estonia developed a cyber security strategy and a cryptographic algorithm Keyless Signature Infrastructure (KSI), which was later integrated with blockchain technology and used in several Estonian e-government services (Security and Safety..., [n.y.]).

Blockchain technology has been used in Estonian e-government systems since 2012 and is currently being implemented in six government registers: the health care register, the property register, the business register, the succession register, the digital court system and the state newspaper (PwC, 2019). Interoperable databases of the national data exchange layer X-Road are being gradually secured using blockchain technology, adding an extra layer of security to the system. Within the Estonian e-government systems blockchain technology ensures the integrity of data, systems, and processes, as well as the control and verification of data generation time.

For the Registry and Information Systems Centre (RIK), which provides a digital environment for integrated e-government services in Estonia, the main value added of blockchain technology is the ability to check large amounts of data regularly and quickly and to ensure that there have been no malicious data changes. As a result, national registries become faster and more efficient because there is no intermediary in data exchange. Hence, the RIK can channel its resources to the control of the system instead of acting as intermediary. The likelihood of fraud discovery also increases.

The EU Agency for large-scale IT systems and the NATO Cooperative Centre for Excellence in Cyber Defence are based in Tallinn, which indicates Estonia's global and European leadership in digitalization and cybersecurity aspects. In addition, Estonia is considered to be one of the most advanced users of blockchain technology in Europe in the provision of public services with the aim of increasing cyber security and process transparency.

The best-known blockchain technology developer in Estonia is Guardtime, which operates since 2007 and developed a KSI algorithm, which was subsequently integrated with blockchain technology and is currently being deployed by a number of e-government registries. In a nutshell, a KSI blockchain implements large-scale data authentication without the need for a centralized authority. In 2016, the

Guardtime project announced a partnership with the E-Health Foundation aiming to protect medical records (Blockchain Startup to..., 2016).

In 2015, Estonian government e-Residency program in partnership with Bitnation project piloted blockchain-based public notary services for e-residents, including birth certificate, marriage registration, and some commercial contracts (Bitnation to Offer..., 2015). Bitnation notary services can be used from anywhere in the world.

Blockchain technology experimentation took place also in the financial services sector. For instance, an LHV Bank in partnership with ChromaWay piloted the Cuber Wallet, which operated based on the open protocol of Coloured Coins rooted in the Bitcoin blockchain. Cuber Wallet allowed users to store private keys on their smart devices as well as sending and receiving EUR transfers instantly and without any commission.

AS Eesti Väärtpaberikeskus, which belongs to the NASDAQ OMX Group, piloted a blockchain-based e-voting system for shareholders' meetings in Estonia, enabling shareholders to participate in the voting process remotely.

Estonia also intended to launch its blockchain-based digital currency, Estcoin, in a form of cryptocurrency, so that e-residents could invest directly in Estonia with the aim of increasing trust in blockchain technology. However, the the European Central Bank forbid this initiative because the only legal currency in the Eurozone is the euro.

Estonia has all the prerequisites to integrate the entire national IT infrastructure with blockchain technology - high development of digital economy, high public trust in e-services, experience in development of state e-government services, X-Road data exchange layer, ICT knowledge, small population and widely used identification through ID cards. Existing e-government solutions already allow Estonia to save up to 2 % of GDP per year (European Parliament..., 2017).

3. Analysis of blockchain adoption beyond crypto space in Lithuania

The Bank of Lithuania facilitates blockchain technology innovation and adoption in the field of fintech. In 2018, the Bank of Lithuania introduced a pilot project of an LBChain Sandbox (LBChain..., 2020) in order to establish a technological foundation for fintech start-ups to develop and test blockchain-based applications in the digital environment, which is monitored and managed by the Bank of Lithuania.

The projects that participated in the first pilot stage of the LBChain project included a blockchain platform for green bonds issuance, a blockchain-based regulatory reporting solution and a blockchain-based digital bank. At all three stages, 11 fintech start-ups from 8 countries implemented blockchain simulation in a regulatory environment managed by the Bank of Lithuania. After three phases of experimentation, the LBChain project was officially launched in the fourth quarter of 2020.

Adamonis (2020), LBChain's project manager notes that based on feedback received from financial institutions, the Bank of Lithuania focused its piloting activities within the LBChain project on permissioned blockchain systems rather than on public blockchains, therefore the LBChain was built on the basis of Corda and Hyperledger Fabric.

As a result, the LBChain project facilitated cooperation with educational institutions, attracted foreign investment and expanded technological capabilities of the Bank of Lithuania through blockchain-based integrations. It also shows the clear desire of the Bank of Lithuania to attract more international blockchain start-ups, facilitate cooperation between private and public sectors and raise public awareness about blockchain-based solutions. Govina (2018), an executive director of the financial sector supervision service at the Bank of Lithuania, underlines that awareness about crypto-currencies and demonstration of

blockchain-based use cases in the field of fintech are pre-requisite for facilitating further adoption of blockchain technology in Lithuania.

Adamonis (2020) also mentioned that the Bank of Lithuania plans to start development of the LTChain – a blockchain-based platform for applications beyond the financial services sector. Within the LTChain project, the bank will work closely with other government institutions and will aim to attract non-fintech start-ups from such industries as healthcare, transportation and energy.

In addition to the rapid regulatory response and the LBchain initiative promoted by the Bank of Lithuania, it also attracts the attention of blockchain developers by issuing the world's first digital collection coin based on blockchains dedicated to the signing of the Lithuanian Independence Act, which happened on February 16, 1918 (Digital Collector Coin..., 2020).

The coin has a face value of € 19.18 and has a rectangular shape similar to a credit card. The image of the coin consists of 36 500 pixels - about the same number of days have passed since the Act was signed. It is planned to issue 24 000 tokens, each of which will have a picture of one of the 20 signatories. The tokens will be divided into six activity categories with 4 000 pixels each. Potential buyers will receive six tokens randomly. In order to receive a physical silver coin, they must collect tokens from all six categories. Although the coin is not a legal currency, it provides international visibility to the blockchain-based solutions developed in Lithuania, serves as a marketing tool for the Lithuanian blockchain ecosystem to attract global technology start-ups, and allows the Bank of Lithuania to test blockchain-based solutions in the field of fintech.

Moreover, the Vilnius Blockchain Centre was established in 2018 as a part of an international network with centres in Shanghai and Melbourne (About Us..., [n.y]). Apart from acceleration programs, co-working opportunities, blockchain community-building and education activities, it helps European blockchain start-ups to reach the Asian and Australian markets, and vice versa. Egle Nemeikstyte, Executive Director of the Vilnius Blockchain Centre, underlines that the Ministry of Finance of the Republic of Lithuania politically and practically supported this initiative, as it began with the creation of blockchain-based financial instruments in order to fund the project, which contributed to establishing legal certainty, which is significant for implementation of blockchain-based projects (Rukovoditel' blokchejn-centra ..., 2018).

4. Analysis of blockchain adoption beyond crypto space in Latvia

In 2018, the Ministry of Finance of the Republic of Latvia issued a report 'On adaptation of information systems for receipt and processing of electronic invoices for tax administration', in which it defined several proposals to promote adoption of blockchain technology in Latvia (Finansu Ministrija, 2018).

- It is important to develop a consistent vision and a national strategy for facilitating blockchain innovation and adoption, and a specialized system should be gradually developed on the basis of which transactions registered in the blockchain would be considered as legally valid.
- Support for IT companies operating in the blockchain field should be encouraged, but at the same time, the incorrect association of this IT field with cryptocurrencies and virtual assets and unjustified restrictions should be reduced.
- To assess the potential of blockchain technology in improving public administration services, to identify obstacles to the adoption of blockchain technology, to prepare proposals for support activities for blockchain technology and to establish an expert working group under the Ministry of Economics. One of the tasks of the working group would be to investigate these issues and to prepare proposals for the

use of blockchain technology in the private and public sectors with the emphasis on efficiency and security aspects.

In 2019, the Ministry of Economics of the Republic of Latvia issued a report 'On examples of the use of blockchain technology, perspectives and further actions to promote the development of the field' with the aim to evaluate prospects of potential blockchain technology applications in the public sector, to formulate further activities to promote blockchain technology adoption in Latvia, as well as to evaluate legal and technological considerations referring to blockchain technology (Ekonomikas Ministrija, 2019).

In order to define potential blockchain technology applications in the public sector, a working group was established, which comprised of experts from various ministries, government agencies, industry associations and companies, including Latvian Blockchain Association. As a result of the working group's activity, two potential pilot projects were identified (Ekonomikas Ministrija, 2019):

- Register of Enterprises sees the added value of a blockchain technology in relation to the maintenance of the register of Limited Liability Companies' (SIA) participants as according to estimates there is around 25-30 thousand such cases per year.
- The Ministry of Economics sees the added value of a blockchain technology in relation to combatting shadow economy and considers development of a technical solution in cash registers and other devices for trade data transfer to the State Revenue Service (SRS) by applying a blockchain technology.

On 16 July 2020 the Ministry of Economics issued a report 'On possibilities of using blockchain technology in cash registers and other devices for the reduction of the shadow economy', mainly setting out economic rationale for potential blockchain technology integration with cash registers and other electronic devices (e.g. smartphones and other smart devices), which will likely be included in supervisory activities of the SRS. According to the Ministry of Economics, the development of such blockchain-based technical solution will allow for reliable online trade data transmission to the SRS and will considerably prevent data abuse and fraud and will serve in the objective interests of all parties (Ekonomikas Ministrija, 2020). At the same time, the Ministry of Economics acknowledges that Latvia does not have a clear vision on how to develop or purchase blockchain-based solutions, as well as no overall vision on adaptation of existing information systems in order to ensure their further compatibility with blockchain solutions (Ekonomikas Ministrija, 2020). Based on the considerations, described in the report, the Cabinet of Ministers decided that an inter-institutional working group, which in works on adaptation of information systems for receipt and processing of electronic invoices for tax administration within the framework of a cash registers reform should also consider the application of blockchain technology for data registration in cash registers and develop a concept solution by 1 March 2021.

The Ministry of Economics considers it necessary to update the discussion on the cash register reform to the technological solutions and IT infrastructure of the 21st century, namely, solutions that would strengthen the SRS monitoring capabilities and ensure a proportionate financial and administrative burden to entrepreneurs in order to ensure compliance with the requirements set for them (Ekonomikas Ministrija, 2020). The potential solution is expected to reduce the shadow economy and the costs associated with the certification and maintenance of cash registers, as well as improve the ease of doing business through obtaining real-time tax data from merchants.

The Latvian Blockchain Association advocates for public policy to recognize the 'existence of cryptocurrencies and the role of the blockchain technology in the array of industries'. Although the association contributed to the first report of the Ministry of Economics issued in 2019, it has not yet resulted

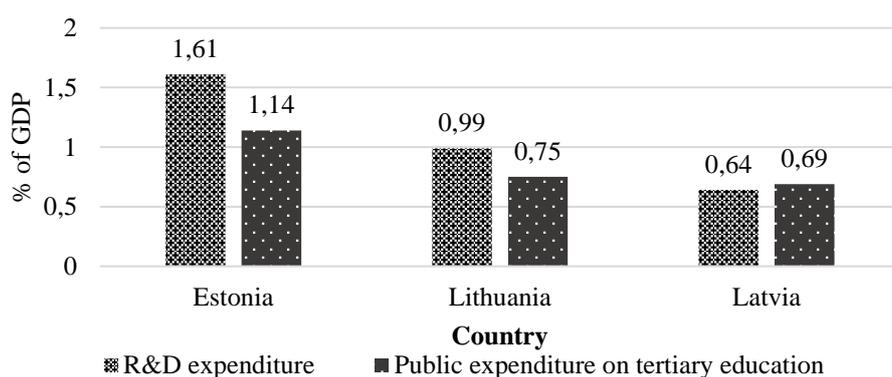
in definite public policies, support actions or regulations. As at the date of this study, 'consistent vision and national strategy', 'support for IT companies operating in the blockchain field', 'support activities for blockchain technology', 'proposals for the use of blockchain technology in the private and public sectors' mentioned in the Ministry of Finance (2018) have not yet been developed yet.

Since blockchain technology is a prominent technology applied in fintech innovations, it is important to see, if it is somehow supported by the financial regulator. Having analysed the available public information, it can be derived that there are no blockchain-specific support activities in the fintech field in Latvia, despite that strategic directions of the Financial Capital Markets Commission (FCMC) cover support for fintech solutions as well as promotion of financial system innovations through such instruments as innovation sandbox, which offers implementation of a specific testing plan agreed with the FCMC prior to the launch of a fintech solution (Innovation Sandbox, [n.y.]). In comparison to the blockchain sandbox created by the Bank of Lithuania, an innovation sandbox in Latvia does not offer a digital environment and is rather focused on simulation of a standard reporting process.

5. Analysis of interconnections between blockchain technology adoption and regional competitiveness in the Baltic States

The analysis outlined in previous sections concluded that the levels of adoption of blockchain technologies both in the crypto space and beyond are the highest in Estonia, followed by a globally competitive level of blockchain adoption in Lithuania (especially in the field of fintech) and a rather weak level of blockchain adoption in Latvia. It is therefore important to analyse the interrelationship with regional competitiveness indicators in order to understand the possible causes of such disparities and any associated economic consequences.

As the innovation and adoption processes of blockchain technologies are clearly based on the use of a knowledge resource supported by the concept of the knowledge economy and by empirical evidence of blockchain technology adoption models all over the globe, support for R&D and education is likely to be linked to blockchain adoption. As shown in the figure 2, Estonia has the highest R&D expenditure and public expenditure on tertiary education as a percentage of GDP, and Latvia has the lowest values.

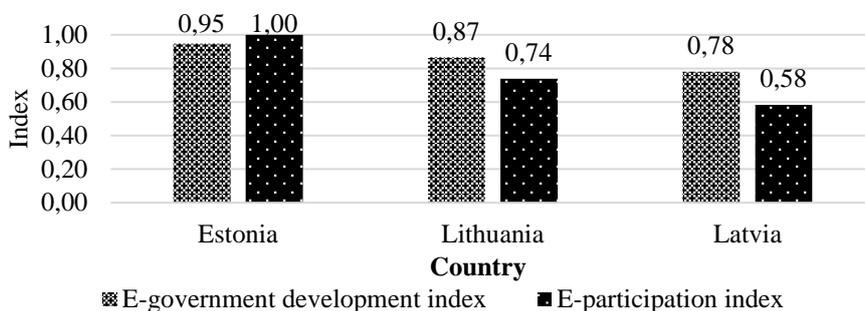


Source: author's calculations based on Gross Domestic Expenditure..., 2019; Public Expenditure on..., 2017

Fig. 2. R&D expenditure and public expenditure on tertiary education as % of GDP in the Baltic States

With regard to overall level of blockchain adoption in crypto space and other blockchain application areas a similar trend can be noticed, so the author considers that R&D activities and education would have a rather logical link to blockchain adoption. However, the author also assumes that correlation does not yet mean causality, as many other factors may have a clearer effect on blockchain adoption, such as clear state policies and related practical support for blockchain innovation and adoption that exist in Estonia and

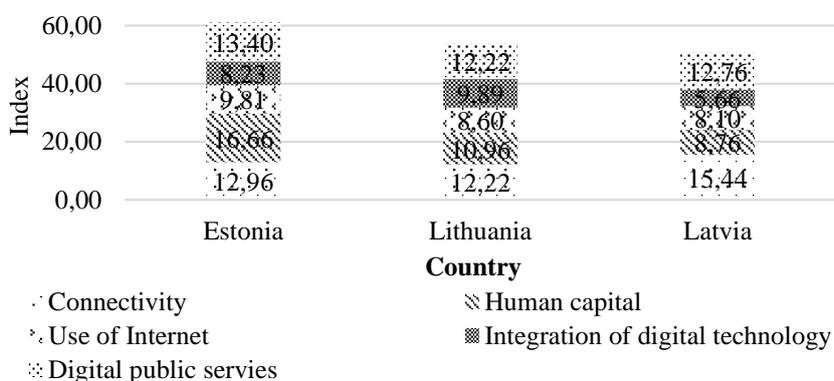
Lithuania and do not exist in Latvia. As shown in figure 3, Estonia has the highest levels of e-government and e-participation in Baltic States, supported by its digitalisation policy actions, including application of a blockchain technology in e-government registers.



Source: author's calculations based on Country Data, 2020

Fig. 3. E-indices in the Baltic States

Thus, it can be concluded that the adoption of blockchain technology is directly related to the level of e-government and e-participation, as it is technologically able to create the necessary system of trust between government and citizens through ensuring efficient and secure data exchange procedures. It is possible to observe the digital progress of the Baltic states through the components of the Digital Economy and Society Index. As figure 4 shows, Estonia demonstrates the highest DESI index among three countries - 61.07 compared to 53.89 in Lithuania and 50.71 in Latvia, and the human capital component contributes the most to the difference.



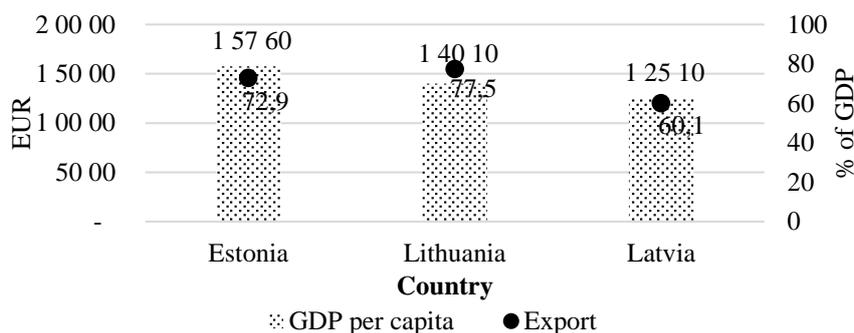
Source: author's calculations based on DESI by Components, 2020

Fig. 4. DESI index by components in the Baltic States

Human capital refers to the digital skills of the population and the number of ICT professionals (DESI by Components, 2020). Both indicators are needed in the digital transformation process. This trend is in line with the trend in Estonia's higher spending on R&D and tertiary education. There is an evident correlation between the DESI index and the e-government and e-participation indices. Although Latvia demonstrates the lowest DESI index, it shows the highest Connectivity component, which refers to the uptake of fixed and mobile broadband services. However, as the cases of Estonia and Lithuania show, other factors, such as a clear policies and skills and competencies of political leaders and citizens, may play a greater role in driving the digital transformation process and adopting blockchain technology in various areas of potential application.

As figure 5 shows, Estonia has the highest GDP per capita among three countries, which can be explained by cost savings and efficiencies supported by higher e-government and e-participation indices,

as well as more digitalized economy through facilitating digitally oriented support measures, including adoption of blockchain technology.



Source: author's calculations based on Exports of Goods..., 2019; Real GDP per Capita, 2019

Fig. 5. Real GDP per capita and exports as % of GDP in the Baltic States

Lithuania shows the highest level of exports among the Baltic states, which can be explained by the determined action of Lithuanian policy makers in attracting global technology companies, especially in the field of fintech, where it is common to utilize modern technologies, including various blockchain-based solutions. Consequently, various technology enterprises, that promote fintech solutions, contribute to technological exports, taking into account that fintech solutions are often targeted at global markets. Also, additional jobs are created in the local market as foreign companies require local talent to develop and promote various fintech solutions that stimulates economic growth. Thus, adoption of blockchain technology likely has a direct and indirect impact on GDP and exports.

Conclusions, proposals, recommendations

- 1) Estonia is the leading country in the Baltic States measured by the majority of regional competitiveness indicators, which is supported by its pioneering approach and higher levels of adoption of blockchain technology among three countries.
- 2) Latvia significantly lags behind Lithuania and Estonia in terms of regional competitiveness and adoption of blockchain technology, which is weakened by the regulatory unclarity for virtual asset service providers and the lack of supportive actions from the government for blockchain innovation and its further adoption within and beyond crypto-space.
- 3) The author concludes that the reason for Latvia's technological backwardness in comparison to Estonia and Lithuania are due to the reasons described below:
 - Lack of blockchain competencies of employees at ministries and government agencies, especially referring to the development of appropriate economic, governance and cooperation models for blockchain technology adoption.
 - A rambling approach to blockchain experimentation instead of a strategic vision within the view of overall digital transformation of a country, considering integrations with other technological priority directions and associated impact on the national economy.
 - Lack of initiative by government institutions to consult with blockchain experts or to contract a preparation of a comprehensive study on adoption of blockchain technology within the national economy to professional service providers.
 - Lack of initiative of the Latvian Blockchain Association to get involved in public policy consultation processes.

- 4) Estonia's and Lithuania's experiences in adopting blockchain technology in the fields of e-government and fintech, respectively, can serve as a foundation for Latvian policy makers to define and implement relevant supporting actions for blockchain adoption in Latvia.

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CHANGES IN FAMILY STRUCTURE IN LATVIA: TRENDS AND CHALLENGES

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Abstract. Nowadays, we can observe various changes in family structure, which lead to the need to change the traditional understanding of the family. These changes can be explained by the prevalence of the globalization process in society, which have affected almost all spheres of life, including the family institute. Within the article, based on the analysis of statistical data and literature, the current trends of changes in family structure and related challenges will be described. When analysing changes in family structure, it is necessary to focus on both - structural and qualitative changes, which were reflected in the composition of families, trends in marriage registration, as well as in relationships between family members. The most characteristic changes show increase of such families with children where cohabiting partners are living together without registering the marriage as well as decreasing amount of nuclear families and increasing amount of single-parent families. This trend leads to other qualitative changes in family structure - several challenges of social policy because single-parent families often face different problems related to effective functioning of the family. For example, single-parent families with children are more often at risk of poverty than nuclear families, as well as face various types of problems in meeting the needs of the family. Social policy planners, when designing support for families with children, should take into account the specifics of single-parent families and provide them support according to the needs of these families, without waiting when families will fall into the social risk category.

Key words: family, nuclear family, single-parent family, family structure, changes.

JEL code: J12

Introduction

Globalization has brought many different changes in all areas of life, including changes in family life. The family is the most important social institute, which is responsible for the reproduction of society and the socialization of the new generation in accordance with the needs of society. In order for a family to be able to perform its functions effectively, it must be stable and able to meet the needs of the family. Traditionally, it is the nuclear family, which includes father, mother and children, that is considered stable, but in today's changing world, the form of the nuclear family has long since ceased to be the most popular. This is also confirmed by statistics. In Latvia, at the beginning of 2020, the number of families with minor children has significantly decreased, but the number of single-parent families with children has increased. In 2011, 232.7 thousand families with minor children lived in Latvia, of which 38.9 % were single-parent families, but at the beginning of 2020 - only 220 thousand such families, of which 54.7 % had single parent with one or more minor children. The increase in single-parent families is related to several factors - Latvia has the highest divorce rates in the European Union (3.1 divorces per 1 000 inhabitants per year in 2019, where almost half of the cases involved minor children (Latvijas statistikas gadagramata..., 2021), high extramarital births (about 40 % of children are born out of wedlock each year), as well as high emigration (more than a quarter of the emigrants are men aged 25-44, of whom $\frac{1}{3}$ were married) (Pieaug neregistrēta kopdzīve..., 2013).

The aim of the article is to reflect the structural and qualitative changes of families with minor children, the related trends and challenges. The used research methods are the analysis of scientific literature and statistical data. In Latvia, some important statistical data on the structure of families are available mainly from the results obtained during the Census in 2011, so this is a reason for included statistical data in the article by 2011.

The reflected trends in family structure suggest that traditional, implemented over time, family policy activities in the field of family support need to be reviewed and changed in line with changes in family

structure in society, because single-parent families with minor children face the highest material deprivation compared to other types of families and have the highest poverty index (Nabadzibas riska indekss..., 2020).

1. Characteristics of changes in family structure

The family is the primary and most sustainable social institution, which is important for both the individual and society as a whole, as a predetermined social unit including all members of society. The concept of "family" is widely used in everyday life, most people feel the meaning of "family", an intuitive understanding of the concept is sufficient for everyday communication and activities. Within sociology, "family", like the social reality it embodies, is a complex and controversial concept, the definition of which has become a topical issue in modern sociology, raising the question: who and what is called family, and more and more relatives are being replaced with the support of close relationships of people unrelated by blood. In modern society, the family is experiencing significant social changes linked to globalization, industrialization, urbanization and secularisation.

In today's society, it is difficult to define the concept of family, each approach looks at the processes that define the boundaries of relationships and families in relation to what we include in the family and what it should be.

Traditionally, the family is defined as a group of people with whom we can be biologically connected and with whom we feel a kinship (P. McNeill..., 2003: 26).

Family institute provides a definition of the family, emphasizing one of the three important aspects of the explanation of the family:

- family structure in both qualitative and quantitative contexts;
- functional interaction of families with society;
- internal interactivity of family members (mutual relations of family members, communication, interaction) (Collins, R. ..., 1995).

The article will pay more attention to the presentation of family structure issues.

The division of family structure envisages typology of families according to various features; for example, according to the composition of the family, families are divided into nuclear (mother, father and children) families, one parent (or single-parent) (one parent and child or children) families, as well as extended (in addition to parents and children there are other family members, such as grandparents) families (Collins R.,..., 1995). Although nuclear families have long been losing popularity in Europe and have been replaced by single-parent families, for example in the United Kingdom in 1971 92 % of families were nuclear families, compared to 78 % in 1993 and 74 % in 2000, but in 2001 only 23 % of families were nuclear because of the rapid increase in single-parent families (McNeill P. ..., 2003:27). In Latvia, also nuclear-type families have lost their popularity over time (Table 1). According to statistical data, in 2011 in Latvia, 61 % of all families with minor children were nuclear families, while in the 2020 only 45 %.

For a variety of reasons, there are a large number of single families, and this number continues to grow. The increase in single families can be explained not only by the high number of divorces, but also by the difficulties in creating a healthy family life, which is related to the qualitative changes of the family. Increasingly, cohabiting partners, choosing to live together without marriage, are aware of the possibility of raising children alone, as evidenced by statistics. Comparing single-parent families in 2011 by composition with single-parent families in 2020, it can be concluded that single-parent families consist mainly of mothers with children – in 2011 86 %, but in 2020 – 85 % of all single-parent families. According to statistical data, in 2020 there is a slight increase of single parent - father's - families by one percent

(Table 1). From the statistics, it can be concluded that the main responsibility for raising children is still taken by mothers.

Table 1

Nuclear and single-parent families in 2011 and 2020

Year	Families with children, number	Nuclear families, number and %	Single-parent families with children, number and %	From all single-parent families:	
				Single mother families, number and %	Single father families, number and %
2011	232 728	143 194 (61 %)	90 534 (39 %)	78 157 (86 %)	12 377 (14 %)
2020	220 000	99 725 (45 %)	120 272 (55 %)	102 501 (85 %)	17 771 (15 %)

Source: author's calculations based on data of Central Statistical Bureau of Republic of Latvia, Type of family nucleus in regions, cities under state jurisdiction and counties at the beginning of the year 2011 and 2020

According to the information provided in Table 1, not only the family structure according to the composition of their members has changed over time, but also the total number of families with children – in 2020 there were 5.5 % fewer families with children than in 2011. Changes in the family structure also reflect the rapid growth of single-parent families – in 2011, single-parent families in Latvia accounted for 39 % of the total number of families, but in 2020 - already 55 % of the total number of families. The reflected tendencies are related to the high number of divorces in Latvia, as well as to the tendency not to register marriages. There is no data available about divorces in 2020. According to statistics, the number of registered marriages has fallen, especially in the last four years. In 2019, 12 861 marriages were concluded in Latvia, whereas 5 971 marriages were divorced. The number of marriages per 1 000 inhabitants comprised 6.7 and the number of divorces 3.1 (Table 2). In 2020, 10 723 marriages were registered in Latvia, which is 2 138 marriages less than in 2019.

Table 2

Number of marriages and divorces in Latvia

Indicator	2017	2018	2019	2020
Number of marriages	13 150	13 058	12 861	10 723
Number of divorces	5943	5967	5971	Not available

Source: author's calculations based on data of Central Statistical Bureau of Republic of Latvia, Divorces and marriages in regions, cities and municipalities by Territorial unit, Indicator and Time period, 2017-2020

There are several reasons for the declining trend in marriage registration, and the author mentions the change in values in society as the main reason - members of society no longer attach as much importance to marriage as before, so cohabiting partners no longer feel pressure from society to register their cohabitation. Of course, economic reasons and experience gained in the socialization process can also be mentioned as a reason for not registering a marriage, but they are not decisive in the author's opinion (marriage registration is not so expensive as to make people to avoid marriage registration). The decline in the number of marriages leads to a trend towards fewer children in the family and one of the reasons can be unstable family structure. Today's society is characterized by one child in the family. There are various reasons for this trend:

- the family is limited by economic conditions;
- marital instability;
- any illness of the spouse;
- changes of value system (Collins, R. ..., 1995).

As statistical data shows in 2011 there were 17.4 % families with one child, 8.1 % families with two children, but only 2.6 % families with three and more children from all families in total (with and without children) (Table 3). The statistical data shows, that at the beginning of 2020 there were 14.5 % families with one child, 9.1 % families with two children and only 3.6 % families with three and more children from all families in total (with and without children) (Table 3). According to statistics, from 2011 to the beginning of 2020, the number of families with children has decreased, while the trend that reflects the superiority of one-child families over families with two, three or more children, remains unchanged. It can be concluded from the above that taking into account the numerous activities carried out by the state with the aim to improve the demographic situation of the state, however, the trends show the slow results of these measures.

On the one hand this tendency reflects the situation that adult family members don't feel secure and stable in society to grow up more than one child, but on the other hand families have high standards for living that is difficult to realize with more than one child as well as the high percent of non-registered relationships between cohabiting partners create the uncertainty in relations.

However, the fact that cohabiting partners do not register their cohabitation does not mean that they do not have a family; for example, in 2011, 15.3 % of cohabiting partners had not registered their cohabitation, but were raising minor children.

Table 3

Households (families) by number of children (%) 2011 and 2020

Indicator	Families without children	Families with one child	Families with two children	Families with three or more children	In total all families in Latvia
Families with minor children in 2011, %	71.9	17.4	8.1	2.6	100
Families with minor children in 2020, %	72.8	14.5	9.1	3.6	100

Source: author's calculations based on data of Central Statistical Bureau of Republic of Latvia. Households by number of children (per cent), 2005 – 2020

From the above it can be concluded that the concept of "family" has a social meaning, which can change along with the social changes of the society. The definition of the family has also changed as a result of social change, as the concept of the family needed to be extended to include family members who are not related by kinship or biological ties: the family is made up of people who think of themselves as part of the family, whether or not they are linked by blood or marriage, and who regularly care for each other (Mannan H...., 2003)

As the analysis of the literature shows, in connection with changes in family structure, it is possible to distinguish two types of changes that families have "experienced" - structural changes and qualitative changes.

Structural change in families is associated with undergone massive change; more family forms are now acceptable. Much of the evidence for such change comes from government statistics on births, marriage and divorce. When describing the structural changes in families, it is important to mention the changes related to the decrease in the birth rate, the decrease in the number of marriages and the increase in divorces, as well as the desire of individuals to live alone (separately from their relatives), the desire to live together when the children have already left parents' home or have not yet been born, as well as with the spread of the mixed family type, which envisages living with children from another marriage / cohabitation (McNeill P. ..., 2003:32). Structural change in families has marked another negative trend - prevalence of unstable family structure - due to the increase in the number of divorces, there is a high probability that a new cohabiting partner may enter the family in an unforeseen period of time - for the child stepfather or stepmother as well as other family members (stepbrother or stepsister). This trend can lead to negative qualitative changes in the family, such as unfavourable treatment of children by stepfathers or stepmothers, even the possibility of various types of violence. According to the 2019 report of the State Inspectorate for Protection of Children's Rights of Republic of Latvia, during 2019 hotline calls were received from children suffering from abuses by stepfathers, stepmothers, as well as stepbrothers or stepsisters: *"... stepmother often insults a girl, cursing. She has tried to talk with her mother and also with father, but nothing has changed."*, *"... Stepbrother regularly beats and tweaks, but the mother does not react and does not stand for the daughter..."*, *The girl is confused about the fact that she can't decide where to live - whether with her mother or father"* (Valsts bērnu tiesību..., 2019). The unstable family structure often leads to different psychological problems between family members as well as to different kinds of violation that can decrease the family functioning. It can be concluded from the above that changes in family structure are related to the "entry" of various new problems into family life, to which social policy planners and implementers should respond by providing support activities with a aim to improve family functionality. The sphere of social services for families should be developed in accordance with the qualitative changes in the family structure related to changes in the relationship between people in the family.

The evidence here is much less clear cut. When describing the qualitative changes in the family structure, it is necessary to mention equal positions between husband and wife, the relationship between children and parents is no longer so close, because parents have to earn money and are often forced to work in several jobs, leaving no time to raise children. Sociologists (Peter Saunder) emphasize that this has contributed to the spread of social problems in the field of juvenile delinquency, especially in the context of single-parent families (McNeill P. ..., 2003:32). The negative impact of these changes is also observed in Latvia, as evidenced by the analysis of statistical data on juvenile convictions. Children in single-parent families are at high risk of poverty, social exclusion and mental health disorders, and criminal offenses are more often committed by minors growing up in a single-parent family: in 2018, 304 children were detained and placed in the State Police Department, of which 177 children were from single-parent families (Nepilngadigo noziedzība ...2019). Parents who raise children alone, on the other hand, experience emotional stress and often have difficulty fulfilling their role. Another trend is that more and more members of society support the coexistence of homosexuals and are more tolerant of extramarital and premarital sexual relations. The trends shown are not only a change in the values of society, but also an understanding of the concept of family and marriage: members of society increasingly no longer see family and marriage as an intimate union. From the information provided, it can be concluded that changes affecting families affect the daily lives of families, as well as society as a whole, so the negative consequences of these changes should be analysed and the causes of these consequences should be addressed, involving policy makers and implementers of various sectors. One of the ways to support families in difficulty is to set up a

support system that meets the needs of modern families, providing not only financial support for families, but also various types of rehabilitation services. As statistics show, single-parent families, more than other types of families by composition, face financial difficulties and the risk of poverty.

2. Trends and challenges of structural and qualitative changes in families in Latvia

As mentioned in the article above, the family is in a constant state of change. Changes also permeate everyday family life, such as changes in the roles of women and men in the emphasis on gender equality in society or in the status of children, with children increasingly enjoying a dignified status linked to the development of children's rights (McNeill..., 2003). In this context, it can be concluded that all types of families are experiencing various structural P. changes due to wider structural and qualitative changes. For example, single-parent families face financial difficulties more than nuclear with one or more children (Table 4).

According to statistics, single-parent families have a higher index of material deprivation. Although it has decreased over time from 64.5 % in 2011 to 29.1 % in 2019 that could be explained by economic situation in the country, but it has remained consistently higher than for other family types throughout the period covered by the analysis. Material deprivation index shows the tendency that single-parent families with children have the similar financial circumstance with nuclear families with 3 and more children. In turn, the lowest index of material deprivation is for a nuclear family with one child, which confirms the trend of modern change discussed above for women to give birth less in order to promote material security.

Material deprivation is closely linked to the at-risk-of-poverty index. Analysing the type of family most at risk of poverty, it can be concluded that single-parent families are most at risk of poverty: although compared to 2011 (41.5 % of all families at risk of poverty are single-parent families) the risk of poverty has decreased to 30.6 % in 2019, however, it maintains a high trend compared to other types of families (Table 5).

Table 4

Material deprivation index of the families with children, (%)

Year	Single-parent families with child/children	Nuclear family with one child	Nuclear family with two children	Nuclear family with 3 and more children
2011	64.5	38.4	37.7	64.4
2016	40.5	18.8	16.3	32.8
2017	33.1	11.8	12.5	23.9
2018	31.9	9.4	11.9	27.5
2019	29.1	7.2	8.7	18.2

Source: author's calculations based on data of Central Statistical Bureau of Republic of Latvia, Material deprivation rate among persons (%) by Indicator and Time period

Comparing the poverty risk trends of nuclear and single-parent families, it can be concluded that nuclear families with one child are least exposed to the risk of poverty, which is also confirmed by data on material security.

Table 5

At risk of poverty rate by family type (%)

Indicator	2011	2016	2017	2018	2019
All families with children	20.7	16.3	16.5	14.3	15.6
Single-parent family with children	41.5	34.3	32.6	26.2	30.6
Nuclear family with a child	16.8	13.4	12.1	16.2	12.2
Nuclear family with two children	18.7	14.4	10.2	11.1	12.8

Source: author's calculations based on data of Central Statistical Bureau of Republic of Latvia, At-risk-of-poverty rate by household type (%) by Household's type and Time period 2011 – 2019

Due to the high risk of poverty, single-parent families are also exposed to other risks to family functions, such as constant emotional stress due to material deprivation, as well as excessive participation in paid employment in order to earn as much as possible. This, in turn, results in the neglect of children, as well as a careless attitude towards meeting their needs. As a result, single-parent families are in the most vulnerable situation, which requires the immediate involvement of the state and local governments through the implementation of various measures. However, despite the different forms of relationships and the broadening of the definition of family, among policy planners and implementers, the traditional concept of the family remains strong (Schadler C., 2016). This is also evidenced by the analysis of regulatory enactments in the field of social policy, as single-parent families are not identified as a priority group of support, considering that all families should be supported equally, paying attention to the material situation of families without assessing the capacity of families to function effectively.

Conclusions and recommendations

- 1) When analysing aspects related to the family life, it is no longer possible to use the traditional definition of families, which describes the family as a group of relative members because family life has become more diverse in various respects both in terms of family composition and in terms of the family affiliation of family members.
- 2) When analysing changes in family structure, it is necessary to focus on both structural and qualitative changes in families, which are reflected to the composition of families, trends in marriage registration, in the role implementation of family members as well as in the relationships between the family members.
- 3) As the trends reflect, not only nuclear but also the total number of families with children is decreasing in Latvia. Single-parent family type is becoming more and more popular not only in Latvia, but also in other European countries.
- 4) According to the analysis of statistical data, the number of partners living in unregistered cohabitation with children is rapidly increasing. That leads to unstable family structure. An unstable family structure is associated with experiences that involve living together with new family members, who do not always develop a favourable and family-friendly relationships.
- 5) Single-parent families with children are more often at risk of poverty than nuclear families, as well as face various types of problems in meeting the needs of the family.
- 6) Social policy planners and implementers, when designing and implementing support for families with children, should take into account the specifics of single-parent families and provide them with support according to the needs of these families, without waiting when families will fall into the social risk category.

7) Gaining experience in working with statistical data available in Latvia, it can be concluded that for analysing information related to family structure, statistical data on families are incomplete, for example, a large part of the data presented for 2011 cannot be found for another period after 2011 for the year. Also, the information on the structure of families by family composition is also very fragmentary. Consequently, it can be concluded that in order to be able to qualitatively analyse the processes related to family welfare and, based on them, to improve social policy activities, it is necessary to pay more attention to the development of access to the statistical data in Latvia.

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BURNOUT DURING THE COVID PANDEMIC: A CASE OF THE SOCIAL SERVICES SECTOR IN LATVIA

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Abstract. The paper analyses the results of an online survey of 443 social services sector employees carried out in October and November 2020 in Latvia. The survey was aimed to measure the impact of the pandemic on the social services sector, i.e. how social services were delivered, whether restrictions imposed have any effect on a given service (form, quality, quantity) as well as how social services sector organizations and employees coped with the pandemic both at organizational and psychological levels. A short version of the burnout measure developed by Ayala Malach-Pines was used to estimate the burnout level among social services sector employees. The survey results indicate that about one third of the surveyed employees are exposed to a high risk of burnout. Contrary to other studies, burnout has no relationship with the number of clients (a proxy variable for workload) served in a given institution. Burnout is more likely associated with factors related to the methodological, technical support and overall working conditions in one's organization.

Key words: burnout, social services sector, COVID pandemic.

JEL code: I38

Introduction – the research problem and theoretical approach

Israeli psychologist Ayala Malach-Pines views burnout as "a state of physical, emotional, and mental exhaustion" (Malach-Pines, A., 2005, p. 78). The understanding of burnout is a basis for the empirical analysis in this study. Burnout among social services sector employees is an acute problem identified in many countries (McFadden, P., Manthorpe, G. & Mallett, J., 2018; Lizano, E. L. & Barak, M. M., 2015; Holmes, M. et al., 2021; Kavaliauskiene, V., & Balciunaite, R., 2015; Antonopoulou, P., Killian, M., & Forrester, D., 2017; Valba, E., Toros, K., & Tiko, A., 2017; Kim, B., Liu, L., Ishikawa, H., & Park, S. H., 2019; Cohen-Serrins, J., 2021).

There have been a number of studies measuring burnout among social workers before the COVID pandemic. Most studies indicate that burnout among social workers is commonplace. They also provide a range of explanations for such a phenomenon. For example, the findings of a UK Burnout National Survey in 2015 conclude that: "Work-load has a major impact on well-being, feelings of working within or beyond capacity which seem likely to impact on the quality of service delivered" (McFadden, P., Manthorpe, G. & Mallett, J., 2018, p. 1215). A survey of 193 social workers in child protection services in the UK reveals that about 20 % of the surveyed reported elevated stress. This stress is linked to one's perceived work overload and role conflict as well as a lack of supervisor support and job autonomy (Antonopoulou, P., Killian, M., & Forrester, D., 2017, pp. 48-49). Similar conclusions come from a systematic literature review on child protection social work where the authors confirm that "a major contributor to burnout is workload and staff being stretched beyond capacity" (McFadden, P., Campbell, A. & Taylor, B., 2015, p. 1558).

A longitudinal study on public child welfare workers in Southern California suggests that "workplace experiences such as the level of support or training in the workplace influence burnout, which subsequently influences worker well-being" (Lizano, E. L. & Barak, M. M., 2015, p. 26). A more recent survey carried out with 170 care workers at long-term care facilities in Hawaii confirms that social support is negatively and significantly associated with burnout and there is a need to develop policies to reduce it (Kim, B., Liu, L., Ishikawa, H., & Park, S. H., 2019, p. 57).

Drawing on semi-structured interviews with 26 child protection workers in Estonia, researchers found that one of the major barriers for a more successful family engagement in the context of assessment in

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child protection practice is high workload of employees that creates burnout (Valba, E., Toros, K., & Tiko, A., 2017, p. 5). In their qualitative research study using structured interviews with social workers in child care homes and day care centres, Lithuanian scholars Kavaliauskiene and Balciunaite identified that: "the occupational burnout syndrome is more affected by the organisational (heavy workload, psychological discomfort at work, etc.) than by the individual factors" (Kavaliauskiene, V., & Balciunaite, R., 2015, p. 35).

A very few studies have been so far carried on burnout among social workers in Latvia. They are mostly bachelor and master theses with small samples focusing on particular institutions (Leonenko, D., 2007; Rudzate, E., 2010; Zaharane, A., 2009). A notable exception is a study carried by Lana Barizikova (2020). Her master thesis was aimed to measure burnout levels among 120 social workers in larger cities in Latvia. She used the Maslach burnout inventory to identify the emotional exhaustion, personal achievement and depersonalization components of burnout. Most respondents in her study have average levels of burnouts in these three components (Barizikova, L., 2020, p. 45). Barizikova also finds that higher levels of burnout have no statistically significant relationship with one's caseload, length of service at a given organization and age. She also identifies that emotional exhaustion correlates with a higher job insecurity (Barizikova, L., 2020, p. 58)

There are only some studies published in peer reviewed journals measuring the effect of the COVID pandemic on the well-being of social workers. A recent study of 181 social workers in the US found that they experienced average levels of burnout. The study also stresses the need for organizational support to mitigate the effects of the pandemic on the wellbeing of staff members (Holmes, M. et al., 2021). Cohen-Serrins in his study on the impact of COVID-19 in the US social services sector noted that: "Social work in particular represents a profession where COVID-19 has magnified the initiates and impacts of occupational stress. Social workers operate on the macro-level navigating complex systems, advocating for underserved or underrepresented clients while also providing direct clinical interventions" (Cohen-Serrins, J., 2021, p. 259). In other words, the COVID pandemic is expected to magnify the existing problems and increase a risk of burnout among social workers.

This study is aimed to measure the burnout of social services sector employees in Latvia and thus contribute to the ongoing debate in academic literature how the COVID pandemic affects the social services sector and what accounts for higher levels of burnout among its employees. No study on such a scale has been carried out during the COVID pandemic in Latvia.

Data and methodology

This paper analyses the results of an online survey of 443 social services sector employees carried out in October and November 2020 in Latvia. 2409 e-mail addresses were obtained from various public sources (institutional websites, Register of Social Service Providers) to send an invitation letter to take part in the survey. The attained response level is 18.3 %, which is an average level. A recent article by Van Mol indicates that "a response rate below 10 % is not uncommon for web surveys" and "web surveys generally get a 6 to 15 % lower response rate compared to other survey modes" (Van Mol, C., 2017, p. 318).

The survey was aimed to measure the impact of the pandemic on the social services sector, i.e. how social services were delivered, whether restrictions imposed have any effect on a given service (form, quality, quantity) as well as how social services sector organizations and employees coped with the pandemic both at organizational and psychological levels. A short version of the burnout measure developed by Ayala Malach-Pines (Malach-Pines, A., 2005) was used to estimate the burnout level among social services sector employees. This tool requires little space on a questionnaire and little time for administration

and analysis (Malach-Pines, A., 2005, p. 79). Its reliability and validity have been tested in a number of studies in different countries and cultures (Malach-Pines, A., 2005, p. 86).

The burnout measure includes 10 questionnaire items, for example, on how often a respondent feels tired, hopeless, depressed or disappointed with people at work. Respondents were asked to use a seven-point scale (from 1 indicating "never" to 7 - "always") to indicate their feelings about their job. The obtained burnout score is a simple arithmetic mean of the aforementioned 10 items. A score up to 2.4 indicates a very low level of burnout; 2.5 to 3.4 identifies danger signs of burnout; 3.5 to 4.4 – burnout; 4.5 to 5.4 - a very serious problem of burnout. A score above 5.5 requires immediate professional help (Malach-Pines, A., 2005, p. 88).

Empirical results

To get a broader context of the survey and its results, Table 1 is included to provide detailed information about the makeup of the sample. A typical respondent was a 45-54 years old social worker with at least college degree. She (most social workers are women) has worked for more than 5 years at a given organization. More likely, it is a social service providing services and support for local people in smaller municipalities in Latvia. There are a very few social carers and supporting staff members in the sample, which is a shortcoming of this study. They are likely to be more exposed to the effects of the COVID pandemic (a close proximity to clients) and thus might have a higher burnout risk. The recruitment of the respondents via e-mails might account for such an outcome.

Table 1

Main characteristics of the sample

Socio-demographic characteristics	%	Socio-demographic characteristics	%
Age		Seniority level	
Up to 24	0.2	Organizational manager/board member	17.4
25-34	13.4	Department/branch manager	19.6
35-44	20.2	Specialist/social worker/administrative clerk	53.0
45-54	32.4	Assistant/social carer/other supporting staff	4.1
55-64	28.8	Others	2.1
65+	5	Refusal to answer	3.9
Educational level		Type of organization	
Less than college degree	3.9	Municipal institution/agency	76.4
At least college degree	62.5	Non-governmental organization	12.7
Master level degree	33.6	State institution/agency	8.4
Length of service in the organization			
Up to a year	5.3	Private sector operator/individual entrepreneur	2.0
1-2		Place of service delivery*	
	10.3	Riga	25.5
3-4	15.8	Republic cities	19.5
5+	68.6	Other municipalities	61.2

*Some organizations provide services in more than one municipality, N=443

Source: author's calculations based on an online survey of 443 social services sector employees in 2020 in Latvia

The answers to the questionnaire items included in a short version of Ayala Malach-Pines' burnout measure are presented in Table 2. Most respondents sometimes or often feel tired or disappointed with people at work. A significant number of social services sector employees feel depressed and have difficulties sleeping. There are a few respondents who feel trapped and worthless at work. As pointed out above, the obtained burnout score is a simple arithmetic mean of the items presented in Table 2. A technical note. The answers of the respondents with missing responses are not included in the following calculations.

Table 2

Questionnaire items measuring burnout among social services sector employees (%)

Burnout indicators	never	almost never	rarely	someti mes	often	very often	always
Tired	0.9	3.4	13.6	43.2	28.0	10.0	0.9
Disappointed with people	5.0	8.7	24.1	41.3	16.1	4.8	0.0
Hopeless	18.9	23.3	26.6	25.2	4.4	1.6	0.0
Trapped	33.4	21.0	22.6	13.4	5.8	3.2	0.7
Helpless	20.9	24.3	23.2	22.2	6.9	2.5	0.0
Depressed	11.7	21.6	29.6	27.3	7.8	2.1	0.0
Physically weak/Sickly	17.7	26.0	30.6	20.0	3.7	1.6	0.2
Worthless/Like a failure	28.0	31.3	23.6	14.4	1.6	1.2	0.0
Difficulties sleeping	12.3	21.8	24.4	27.1	9.3	3.7	1.4
"I've had it"	19.1	22.8	18.7	26.3	7.8	5.1	0.2

n=422

Source: author's calculations based on an online survey of 443 social services sector employees in 2020 in Latvia

The survey data indicate that about one third of respondents experienced high levels of burnout (Table 3) as defined by Malach-Pines. Unexpectedly and somewhat surprisingly, the data analysis does not reveal that the burnout level is associated (no statistically significant relationship was found) with such factors as a number of clients served in a given organization, available funding and staff during the pandemic. Unfortunately, no follow up questions were asked about one's caseload (a number of clients to work directly with) that would be a more precise measure of one's workload. Furthermore, no significant relationship was found in regard to one's seniority level and a type of organization where he or she is employed. Similarly, one's age and length of service have no relationship with one's burnout level.

Table 3

Burnout levels among social services sector workers

Burnout level	%
a very low level of burnout	29.6
danger signs of burnout	38.6
burnout	25.1
a very serious problem of burnout	5.7
requires immediate professional help	0.9

n=422

Source: *author's calculations based on an online survey of 443 social services sector employees in 2020 in Latvia*

What factors can be associated with higher levels of burnout then? These are more likely to be what American psychologist Frederick Herzberg called hygiene factors in his two-factor theory (Alshmemri, M., Shahwan-Akl, L. & Maude, P., 2017). Working conditions, supervision, organizational policies, administrative and technical support are those hygiene factors that are essential to get one's job done.

To make the following analysis more accessible, the author divided respondents in three categories by burnout levels, i.e. a group with low level of burnout (with the burnout score up to 2.4), those having danger signs of burnout (with the score between 2.5 and 3.4) and those with high levels of burnout (with the score above 3.5).

Respondents were asked to estimate the preparedness of their organization to tackle the pandemic, for example, whether they view organizational methodological/professional support as good, average or poor. Those with higher levels of burnout tend to look at training of employees, technical support, working time organization and methodological/professional support less favourably than others. In turn, those with low level of burnout are more likely to indicate that, for example, working time organization or working time planning at their organization were good during the pandemic (see Table 4). It should be noted though that these are self-assessments. No follow up questions were asked about concrete examples of preparedness. However, it is safe to argue that these answers at least partly reflect differences in how various organizations prepared for the pandemic.

Table 4

Organization's preparedness to tackle the pandemic by burnout levels (%)

Characteristics of preparedness	good	average	poor
Training of employees*			
low level of burnout	71.3	26.2	2.5
danger signs of burnout	55.9	40.4	3.7
burnout	48.4	46.0	5.6
Technical support**			
low level of burnout	66.1	32.2	1.7
danger signs of burnout	51.6	42.2	6.2
burnout	37.4	44.3	18.3
Working Time Organization/Working Time Planning***			
low level of burnout	81.2	15.4	3.4
danger signs of burnout	62.7	31.1	6.2
burnout	46.9	42.2	10.9
Methodological/professional support****			
low level of burnout	78.6	21.4	0.0
danger signs of burnout	62.2	31.4	6.4
burnout	52.0	41.5	6.5

* $\chi^2(4, N = 409) = 14.2, p < .001$

** $\chi^2(4, N = 410) = 34.1, p < .001$

*** $\chi^2(4, N = 406) = 31.3, p < .001$

**** $\chi^2(4, N = 396) = 21.9, p < .001$

***** "hard to say" answers not included

Source: author's calculations based on an online survey of 443 social services sector employees in 2020 in Latvia

Work safety and job insecurity during the pandemic are also associated with one's burnout (Table 5). Those respondents who agreed with the statements such as "My workplace is equipped to ensure a sufficient distance between employees and the client" or "I have a separate room for working with the client" tend to have lower levels of burnout. They also tend to feel more secure in fulfilling their job responsibilities and less often feel afraid to get sick of COVID-19 after contact with their colleagues or clients. In contrast, those with high levels of burnout less often indicate that they have a sufficient distance between employees and the client and more often feel insecure.

Table 5

Work safety and the effect of the pandemic on one's work by burnout levels (%)

Questionnaire items by burnout levels	Agree	Rather agree	Rather disagree	Disagree	Chi-square/ n/ p-value
My workplace is equipped to ensure a sufficient distance between employees and the client					
low level of burnout	63.6	22.0	9.3	5.1	45.4
danger signs of burnout	42.4	42.4	12.0	3.2	409
burnout	34.6	27.8	22.6	15.0	<.001
I have a separate room for working with the client					
low level of burnout	68.1	20.4	9.7	1.8	23.2
danger signs of burnout	49.0	26.1	10.5	14.4	391
burnout	45.6	24.0	11.2	19.2	<.001
I feel less secure in fulfilling my job responsibilities					
low level of burnout	14.4	33.1	28.8	23.7	45
danger signs of burnout	30.1	37.9	18.3	13.7	401
burnout	44.6	39.2	10.8	5.4	<.001
I'm afraid to get sick of COVID-19 after contact with the client					
low level of burnout	11.4	27.2	30.7	30.7	37.4
danger signs of burnout	19.6	32.7	28.1	19.6	396
burnout	33.3	35.7	25.6	5.4	<.001
I am afraid to get sick of COVID-19 after contact with my colleague					
low level of burnout	12.8	23.9	32.5	30.8	24.3
danger signs of burnout	14.2	33.5	29.0	23.2	402
burnout	21.5	40.0	30.0	8.5	<.001
I can protect myself from getting COVID-19					
low level of burnout	24.2	49.2	23.3	3.3	28.3
danger signs of burnout	19.9	39.7	34.0	6.4	403
burnout	11.8	35.4	34.6	18.1	<.001

*Degree of freedoms – 6

**"hard to say" and "not applicable" answers not included

Source: author's calculations based on an online survey of 443 social services sector employees in 2020 in Latvia

It is hard to establish a causal link given the sample size (a small sample size limits the measurement of the effect and interplay of various factors) and a limited number of follow up questions included in the questionnaire but these results clearly identify a relationship between the so-called hygiene factors and burnout. Working conditions, organization and safety have a strong relationship with burnout. A safe and well-equipped workplace coupled with good management and professional support result in a lower level of burnout.

Discussion

This study indicates that one third of social services sector employees are experiencing high levels of burnout. Most respondents have average levels of burnout though, which is consistent with other studies elsewhere (Barizikova, L., 2020; Holmes, M. et al., 2021).

Contrary to what other studies suggest (McFadden, P., Manthorpe, G. & Mallett, J., 2018; McFadden, P., Campbell, A. & Taylor, B., 2015; Kavaliauskiene, V., & Balciunaite, R., 2015; Valba, E., Toros, K., & Tiko, A., 2017), this study does not confirm that burnout is associated with one's workload. Questionnaire items indicating a number of clients served in one's organization and available staff during the pandemic have no relationship with one's burnout. It should be noted that the questionnaire used in the study do not include more precise questions about one's caseload and detailed characteristics of clients (age, sex, family status etc.). These questions might have given a more precise measurement of workload.

No significant relationship was found in regard to one's seniority level and a type of organization where a respondent is employed. Furthermore, one's age and length of service have no relationship with one's burnout level. Similar results have been obtained in Barizikova's study in 2020 in larger cities in Latvia (Barizikova, L., 2020).

This study confirms the results of some studies (Lizano, E. L. & Barak, M. M., 2015; Kim, B., Liu, L., Ishikawa, H., & Park, S. H., 2019) that support and training influences burnout. Those respondents that assessed the training of employees and professional support as good are more likely to have lower levels of burnout. In turn, poor training and support are more often linked with higher levels of burnout among employees.

At last, this study indicates that work safety and working conditions are closely linked to burnout during the COVID pandemic. Social services sector employees feel more secure and less exhausted in a well-equipped workplace where a sufficient distance between employees and the client is ensured. Higher levels of burnout are characteristic to those organizations where employees feel insecure and unprotected from the COVID. No study has been identified that confirms the aforementioned findings.

Conclusions

- 1) The author uses the burnout measure developed by Ayala Malach-Pines to estimate the burnout level among social services sector employees during the COVID pandemic in Latvia. No study on such a scale has been carried out so far.
- 2) The data obtained from an online survey of 443 social services sector employees in the autumn of 2020 indicate that about one third of respondents are exposed to a high risk of burnout. Most respondents are experiencing average levels of burnout, which is consistent with other studies.
- 3) Contrary to previous studies, this study does not confirm that burnout is associated with one's workload. No significant relationship was also found in regard to one's age and length of service, seniority level and a type of organization.
- 4) Good training, working time organization, professional and technical support are linked to a reduced risk of burnout. Employees that feel secure and protected are less likely to experience burnout. These aspects have been emphasized in other studies as well.
- 5) Overall, working conditions and safety are better predictors of burnout than other factors. Thus these findings are a valuable addition to academic debate and literature.

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POPULATION INVOLVEMENT IN DEALING WITH LOCAL COMMUNITY PROBLEMS IN THE RURAL AREAS OF LATVIA

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Abstract. The public prefers to express their opinions on the development of the surrounding area, make assessments and comments, as well as participate in surveys. However, the involvement of the public itself in improving the immediate surroundings and in solving the problems of its fellows is not always sufficient. The research aims to determine whether there are differences in public involvement in addressing municipal problems across various population groups within a municipality. The paper presents the results of an extensive survey. The research considered problems within one municipality in Latvia – Jelgava municipality – and analysed the rural territories located in the immediate vicinity of the centre of the municipality as well as those being the furthest from the centre.

The results of the research revealed that young people were most satisfied with their lives in their municipality if their places of residence were closer to the centre of the municipality. The ability to influence the decisions of one's own local government was highly valued by residents in the age group from 26 to 44 years in the rural territories that were in the immediate vicinity of the centre the municipality, yet this possibility was most often rated as weak among the youth living in the most remote rural territories from the centre of the municipality. Population involvement in solving a problem relevant to the society was the most frequently used way when the population requested a municipal employee to solve this problem. A large segment of the society in rural areas admitted that they did nothing, and this passivity was also evident in the group of young people who lived further away from the centre of the municipality. The involvement of the population in national-level public activities across all age groups and territories was quite equal, as the active population were involved in Saeima elections, campaigns for collecting signatures and donating various things.

Key words: society, municipality, public involvement, community, rural areas.

JEL code: P35, P25

Introduction

The 2017 exploratory opinion of the European Economic and Social Committee states that it is necessary to regain the trust of the population in the Member States of the European Union. To achieve it, the approach of community-led local development needs to be applied, which allows for integrated local development, as well as the involvement of citizens and their organizations in addressing current problems. Civil society actors should be perceived as partners, and local young people should be much more involved in community activities.

In 2021 in Latvia, a local government reform is going to be implemented, thereby reducing the number of local governments from 119 to 42, which means that the centres of municipalities move away from the residents' places of residence. The current issues are how the public currently rates the work of their local governments and how actively they themselves get involved in addressing problems important to their local communities. The research aims to determine whether there are differences in public involvement in addressing municipal problems across various population groups within a municipality. The research carried out a survey, and the problems were analysed based on the opinions of the respondents across different age groups.

No extensive research on Jelgava and Ozolnieki municipalities has not previously been conducted. The research was done in cooperation with the association Rural Partnership "Lielupe" under the EEA and

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Norway Grants 2014-2021, the programme Active Citizens Fund. The programme was designed to strengthen the culture of democracy and civic awareness through implementing participatory and educational activities.

Research results and discussion

At the EU level, the concept of society includes three interrelated dimensions: relationships between residents: mutual trust, social network formation, social diversity acceptance; rooting or belonging: confidence in national institutions, an understanding of justice and strong connection with the state; an understanding of the common good: residents' sense of responsibility for their fellows and willingness to help or solidarity, respect for general societal rules and civic/political participation.

Public participation could be defined as the voluntary and lawful activities of individuals with the aim of influencing decision-making in public administration. It is accompanied by a dialogue between the institutions and the public. In a developed democracy, this dialogue is represented by the active involvement of the public, the highest degree of which is participation in decision-making. The purpose of public participation is to ensure that decisions taken by public administrations are in line with the needs of the public, explained in a timely manner and comprehensible to those whom they apply to. There are a number of benefits of public participation that are overall aimed at improving the quality of legal regulation.

The public administration closest to the population is the local government. A local government is a local administration which, through bodies of representatives elected by citizens – city or municipality council – and authorities and institutions established by them, ensures the performance of the functions prescribed by law, as well as the performance of tasks assigned by Cabinet according to the procedures specified by law, and local government voluntary initiatives, observing the interests of the State and of the residents of the relevant administrative territory (On Local Governments, 1994). Several research studies have emphasized the importance of public involvement. The purpose of participation is to ensure that the community itself, which is best aware of the local conditions, provides the municipality with a solution that best suits the interests of sustainable development in the area.

Research studies on the European Union's regional policies emphasize the role of local communities and the importance of their activities. A special programme – LEADER – has been implemented for several decades to develop communities and increase their capacity. One of the basic principles of the LEADER approach is the bottom-up approach, in which the initiative comes from local people, involving them in identifying and tackling problems in their area.

At the beginning of 2021, the Guidelines for a Cohesive and Active Society for 2021-2027 were adopted in Latvia. The guidelines focus on three courses of action: strengthening the national identity, developing a civic society and social integration with the aim of making the population of Latvia more knowledgeable and more active in cooperating and participating in the development of the country (Par saliedetas un ..., 2021). One of the priorities of the national medium-term policy document NDP 2027 is a "united, secure and open society", as mutual trust among citizens is strongly linked with their cooperation and participation skills, which could be achieved through developing civic education and public awareness of democratic processes in the country, including decision-making procedures and the role of a civic society in a democracy (NDP 2027, 2020).

The role of public involvement has been discussed in research papers from a number of perspectives, assessing both the benefits and challenges and determining the importance of strengthening democracy and the civic society. Cooperation between communities has been discussed by Dave G., Freichs L. et al., 2018., while collective cooperation in solving social problems from the business perspective has been

discussed by Stefan Gold, Judy N. Muthuri and Gerald Reiner. Public involvement is not always direct, and it could be subordinated to the goals of an individual's economic activity, yet it serves the development of the surrounding area, for example, in the field of tourism (Grinberga-Zalite G., Vitolina Z et al., 2017). The role of cooperation among the population, their involvement in the sustainable exploitation of natural resources is the main object of research. Cumming Gabriel, Campbell Lisa, Narwood Carla et al. (2021) have found that people care about their places. We need engagement approaches that reflect and amplify that. Improving the practice of stakeholder engagement, using such techniques, has the potential to help reliably improve resource management outcomes around the globe. Researchers in Latvia have also addressed this problem. Paula L. and Kaufmane D. have concluded that community activities for the preservation of natural resources can be seen as a system that focuses on the rational interaction between local human activities and the environment, seeking to ensure the integrity of specific natural sites and participation in both restoration and rational use of natural resources (Paula L., Kaufmane D., 2020).

Global territorial development goals and the role of local communities, especially public organizations, have been discussed by Olivier Boiral, Inaki Heras-Saizarbitoria, Marie-Christine Brotherton (2019) emphasizing that the lack of educational infrastructure and low enrolment in schools tend to fuel poverty, isolation, and feelings of exclusion among indigenous peoples. However, before addressing more global problems, the basic needs of every citizen should first be met, and they need to be listened to. In addition, the population in a certain area is not homogeneous, and each of the population groups has its own preferences and different needs. Young people focus on how to spend their time in an interesting and meaningful way, whereas seniors are more interested in maintaining their health (Garcia Alexandra A., West Ohueri Chesi et al., 2021).

Young people's trust and belonging to the local community has been researched by scientists at the Institute of Sociology in Taiwan, and the young people's sense of belonging to their territory has been researched by scientists at the University of Bologna (Cicognani E., Martinengo L. et al., 2014.; Chang C.-Y., Wu C.-I., 2020). Nowadays, there is a stereotype about young people as an indifferent part of society who do not care about what is happening around them and who do not get involved in tackling societal problems, which could be characterized by the phrase "do not touch me!", yet at the same time, there are very responsible and active young people who overturn this assumption. The involvement of seniors in social activities, however, is determined by two kinds of factors: personal factors such as age, health status, education, lifestyle, and environmental factors, including the physical and social environment, such as access to public transport, social security etc. (Dahan-Oliel N., Gelinas I. et al., 2008).

A summary of the opinions of scientists reveals that as regards public involvement in solving problems important to the population and the development of a territory, community involvement in development is influenced by many factors such as democratic traditions and societal experience, the distribution of power and the exchange of knowledge between the social agents involved in development processes, the availability of resources and the skills to use them (Paula L., 2019), while the "top-down" approach often prevails in communication between citizens and local governments, which is often based on power relations, is one-sided and formal (Kruzmetra Z., Bite D. et al., 2018). Active public involvement in solving problems important to the society is an important force for shaping government policies aimed at creating a sustainable local community.

Research methodology

The present research on the involvement of the public in solving problems and in decision-making in their municipality was based on a survey. The research object was four rural territories of the current Ozolnieki and Jelgava municipalities: Livberze, Ozolnieki, Vilce and Eleja, which on 1 July 2021, after the municipal election, will be amalgamated into one municipality – Jelgava municipality. A rural territory is a territorial unit of a municipality in Latvia. In Latvia, a municipality consists of several rural territories or of rural territories and a town; therefore, a rural territory represents a territorial unit in the administrative division of a municipality. There is a total of 13 rural territories in Jelgava municipality and three rural territories in Ozolnieki municipality. The choice of the four rural territories was determined by the need to identify whether the level of public involvement across different groups of the population differs, depending on the location of the rural territory in the municipality. Ozolnieki and Livberze rural territories, located in the immediate vicinity of the municipality centre – Jelgava city – border it, while Vilce and Eleja rural territories are located further away from the municipality centre, and the territories have no direct border with Jelgava. The centre of Jelgava municipality and leading municipal institutions are located in the city of Jelgava, which is the fourth largest city in Latvia.

The survey was conducted from November 2020 to February 2021. The number of respondents in each rural territory was proportional to the total population, representing 5.2 % of the target population. The total sample size was 456 respondents. Questionnaires and answers to the questions asked were obtained both in face-to-face interviews and via the Internet by using the application docs.google.com, as well as by requesting the population to express their opinions through filling in the questionnaires. The information about the opportunity to participate in the survey was published on the websites of the rural territories, as well as on the project platform kopdare.lv (we create, do and grow together). The public was informed at the launch event of the project. The survey data obtained were grouped, processed in Excel. The survey distinguished four age groups: young people 16-25, young middle-aged people 26-44, middle-aged people 45-64 and the retirement generation aged over 65 years (senior citizens).

Research results

Jelgava un Ozolnieki municipalities are among the central municipalities of Latvia, and the centre of the newly formed municipality – Jelgava – is located 45 km from the capital city of Riga. Information on the rural territories is summarized in Table 1.

Table 1

Locations of the rural territories analysed, their populations, areas and distances to the centre of the municipality and the capital city in 2020

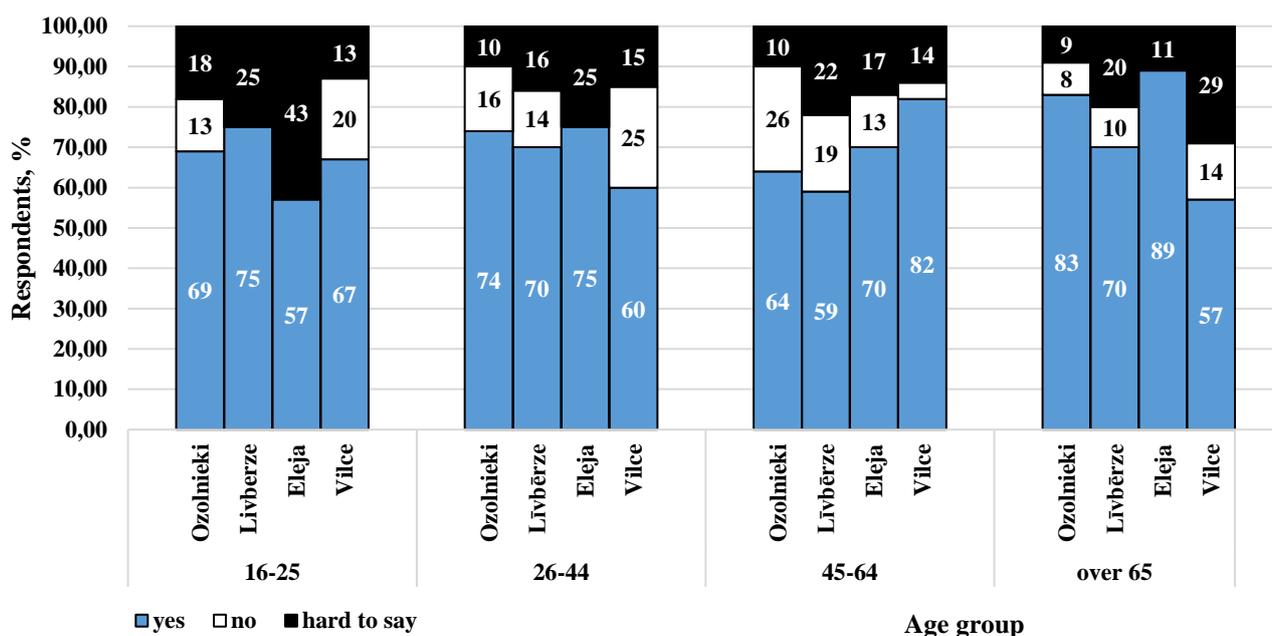
Rural territory	Territory borders on municipality centre	Population	Area, km ²	Population density people/km ²	Distance to Jelgava, km	Distance to Riga, km
Ozolnieki	yes	4154	7.88	527.15	6	37
Livberze	yes	1971	146.40	13.46	15	60
Eleja	no	1897	66.80	28.39	28	68
Vilce	no	1413	127.17	11.11	40	80

Source: authors' own compilation based on data on Jelgava un Ozolnieki municipalities, CSB 2020

Ozolnieki rural territory is the most populous one, relatively more young families live in it, and it is located the closest to the capital Riga where many of its residents also have jobs. Good transport

infrastructure is available – both rail and motorways. Livberze and Eleja rural territories have good road infrastructure, as well as railway infrastructure that is not used for passenger transport. Vilce rural territory is located the farthest from the centre of the municipality and the capital Riga, while railway infrastructure is not available in it.

The satisfaction of residents with the work of their local governments is shown in Figure 1. The residents could rate it on a scale from "fully satisfied or satisfied" that is designated by "yes" to "rather dissatisfied or dissatisfied" that is designated by "no", while those for whom it was difficult to rate the work of the local government could choose the reply option "hard to say".

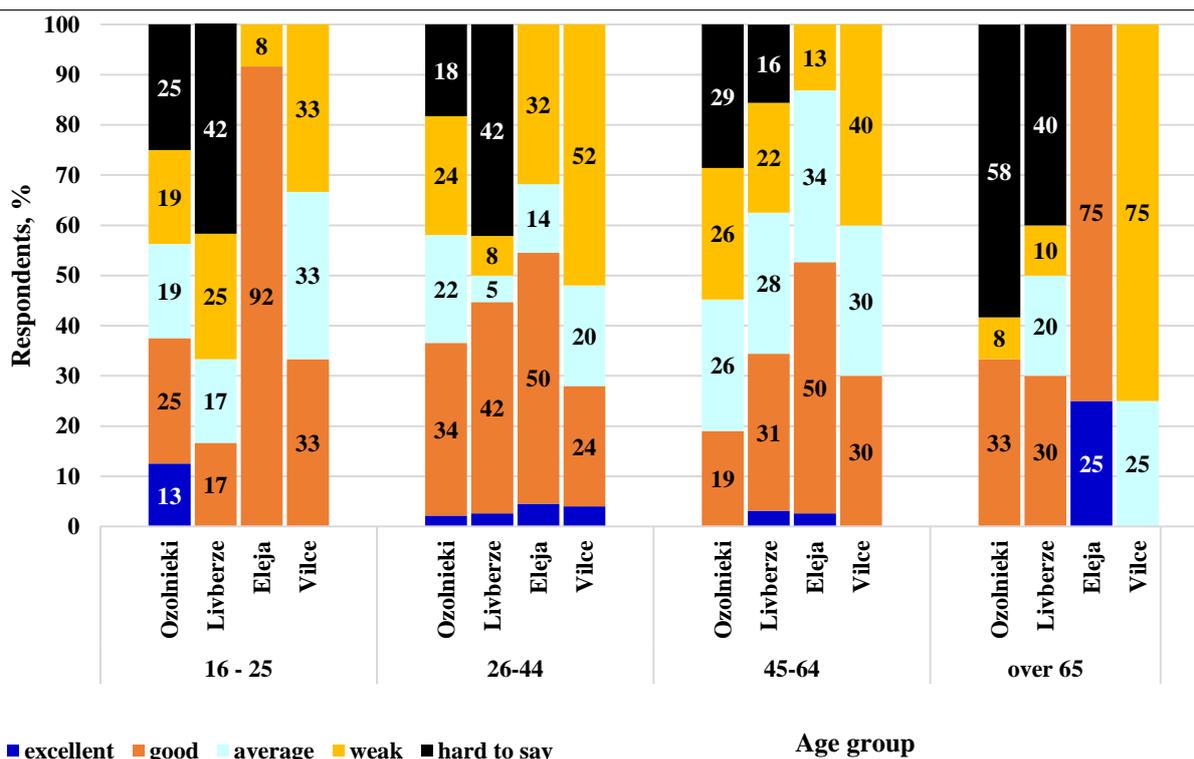


Source: authors' construction based on the survey data, 2021

Fig. 1. Percentage breakdown of respondent replies to the question about resident satisfaction with the work of their local governments by rural territory and age group

The level of satisfaction with life in the rural territories, which was influenced the work of the local government, was overall rated as positive across all the age groups, and most of the population rated it as good. Two age groups could be emphasized with regard to the locations of the rural territories. Young people were more satisfied with the work of their local governments in the rural territories located the closest to the centre of the municipality, 69 % in Ozolnieki and 75 % in Livberze, than in the rural territories located the furthest, only 57 % in Eleja and 20 % in Vilce. The second age group was the middle generation aged 45-64, and the satisfaction with the work of the local government was higher in the most remote rural territories, 70-82 %. However, the residents satisfied the most with the work of their local government were found in Eleja rural territory in the age group over 65 with 89 % of the total respondents, while in the second most remote rural territory Vilce, senior citizens were the least satisfied: 14 % were not satisfied, while 29 % had no opinion at all.

Figure 1 summarized the attitudes of the residents to and their ratings of the work of the local government, its institutions, the council and the executive body of the municipality, but how much can the residents themselves influence it? Are local residents involved in municipal decision-making and do they have an opportunity to influence the decisions? The results of the survey on these issues are summarized in Figure 2.



Source: authors' construction based on the survey data, 2021

Fig. 2. Percentage breakdown of respondent replies to the question about an opportunity for residents to participate in municipal decision-making by rural territory and age group

The opportunity to get involved in municipal decision-making was rated on average higher in the middle-aged groups, i.e. those aged 26-44 and 45-64. The opportunity was rated lower in the group of young people living in the rural territories located the closest to the centre of the municipality than in the most remote rural territories. The participation of the elderly in municipal decision-making was very different, with 30-33 % respondents living in the rural territories the closest to the centre rating this opportunity as good. The situation was completely different in remote rural territories: in Eleja senior citizens rated this opportunity as only good or even excellent, whereas in Vilce 75 % rated it as weak, and in this rural territory the elderly rated overall municipal performance as the lowest.

The researched assessed the activity of the population in the last three years, and totally two categories of activities were put forward: "for the benefit of society", i.e. the activities for solving the problems of another individual or population group in the municipality and "national level activities" representing various kinds of activities (Table 2).

Table 2

Population activity during the last three years, frequency of Top 3 activities

No.	Activities to solve the problems of societal groups in the municipality	Frequency	Various activities in the last three years	Frequency
	<i>for the benefit of society</i>		<i>national level activities</i>	
1	Meeting with a local government deputy	0	Participation in national elections	15
2	Meeting with a local government official	9	Signing up for an initiative on manabalss.lv	13
3	Meeting with a Saeima deputy	0	Voluntary work	0
4	Meeting with a national institution employee	0	Holding a picket	1
5	Meeting with a sectoral minister	0	Participation in a picket	0
6	Participation in public consultation	6	Participation in joint work	1
7	Collection of signatures in the municipality	5	Donation of things	7
8	Participation in municipal elections	14	Donation of food	1
9	Involvement in local level administration	1	Donation of money	6
10	Participation in online voting	6	Ethical, environment-friendly principles	2
11	Purchase of goods/services produced in the municipality	1	Involvement in not a single field of activity	2
12	Participation in not a single activity	4		

Source: authors' construction based on the survey data, 2021

The Top 3 activities for each age group and in each rural territory are summarized in Table 3. In order to make the table easier to read, each the same activity and its No. from Table 2 was coloured in different colours.

Table 3

Top 3 activities carried out by residents in Ozolnieki, Livberze, Eleja and Vilce rural territories during the last three years

Age group	Ozolnieki			Livberze			Eleja			Vilce														
	<i>for the benefit of society</i>	<i>national level activities</i>		<i>for the benefit of society</i>	<i>national level activities</i>		<i>for the benefit of society</i>	<i>national level activities</i>		<i>for the benefit of society</i>	<i>national level activities</i>													
16 - 25	6	8	10	1	2	7	8	10	12	1	2	9	8	9	10	1	2	4	6	7	12	1	2	9
26-44	2	6	8	1	2	7	7	8	10	1	2	9	2	6	8	1	7	8	2	7	8	1	2	9
45-64	2	6	8	1	2	9	2	8	12	1	2	7	6	8	12	1	2	10	2	7	8	1	2	9
over 65	2	10	*	6	7	11	2	8	10	1	2	11	2	8	*	1	7	10	7	8	11	1	2	7

Note: figures in the table correspond to No. from Table 2 for each activity category

Source: authors' construction based on the survey data, 2021

Overall, there were quite small differences in public participation in public activities at the national level between age groups and the locations of the rural territories, and mostly residents in rural areas were active in the choice of national legislative power – participated in parliamentary elections – and were ready to express their views through signature campaigns, e.g. on manabalss.lv. The next most popular group of activities was "donation campaigns", donating both various things (not food) and money. In addition, donating things was popular across all the age groups, whereas donating money was preferred by young people and the working population.

To get involved in tackling the needs of an individual or a larger segment of society in the rural territories analysed, the most active residents preferred to choose their local government – they participated in municipal elections, except for young people in the remote rural territory of Vilce. The second most common activity was a meeting with a municipal official to address current problems. However, this activity was not popular among young people. The third most popular group of activities was participation in a public

discussion on a problem and/or a collection of signatures, although the activities had a locally specific "frequency" at the rural territory level, which was most likely determined by the fact that such activities were carried out in the municipality.

Conclusions, proposals, recommendations

- 1) Scientific research studies have recognized that the involvement of citizens in addressing problems of public importance is a significant force. It also contributes to a stable and effective local government, satisfied residents and cooperation-driven development in the territory. It is also emphasized that the social activism of local communities and each individual is influenced by their traditions, experience, skills and knowledge as well as other factors, yet a lack of education can contribute to social isolation and exclusion. It is pointed out that each age group has its own needs and interests.
- 2) The research results showed that young people were most satisfied with their lives in their municipality if their places of residence were closer to the centre of the municipality. Although they did not overestimate their ability to influence local government decisions, yet in remote areas the young people even rated this opportunity as weak.
- 3) The opinions of the elderly differed and were in the range from strongly positive to negative, and for some of them it was difficult to judge what was happening in the municipality at all, and the opinions were mostly influenced by local events in the municipality.
- 4) The ability to influence the decisions made by the local government was highly rated by residents aged 26 to 44 in the rural territories located in the immediate vicinity of the centre of the municipality. However, those representing the middle generation aged 45 to 64 and living in the rural territories located the furthest from the centre of the municipality were more satisfied with the work of the municipality.
- 5) There were small differences in the involvement of the public in solving their local problems across various societal groups within a municipality. Overall, the activity of the public focused on expressing an opinion: voting in an election, participating in surveys and polls, collecting signatures, or participating in donation campaigns (things and money). Several residents in rural areas noted that they were not active and did not participate in any social activities; this was observed across all the age groups, except for the young middle generation aged 24-44, who were the most socially active segment of the population in the rural territories.

Acknowledgements

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EMPLOYMENT IN THE AGE GROUP 50+ IN THE BALTIC STATES AND ITS CHANGES IN RESPONSE TO COVID-19

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Abstract. The objective of the study is to examine the patterns of the employment of older people in Latvia, Estonia and Lithuania over the recent decade and the changes brought about by the first wave coronavirus pandemic in spring 2020.

The study is based on the Eurostat statistical data as well as the microdata from the recent wave of the Survey of Health, Ageing and Retirement (SHARE). Particular attention is paid to the data collected in SHARE Wave 8 COVID-19 Survey conducted in June-August 2020 in 26 European countries and Israel via computer-assisted telephone interviews. Questions examined how people aged 50 years and older coped with socioeconomic and health-related impact of COVID-19.

During the last decade, participation of older age groups in labour market is gradually growing with the increase of the statutory retirement age and life expectancy. Employment rates in the pre-retirement and post-retirement age groups are comparatively high in Latvia and other Baltic States as contrasted to the EU averages, especially among women. Despite of relatively worse health status, people in the Baltic countries also demonstrate the highest share of respondents with willingness to work even upon reaching pension age. In 2020, the COVID-19 had relatively mild impact on it. The branches with traditionally high share of workers aged 50+ (education, healthcare, agriculture, administrative services) were least affected by lockdown measures.

Key words: employment, COVID-19, Baltic States, retirement, elderly, remote work.

JEL code: I15, J14, J21

Introduction

As a result of ageing process in the Baltic countries and Europe, elderly workers have become an important part of labour market. Moreover, reports published by the European Commission have highlighted the significance of older people remaining in employment and the necessity for policies in Member States to adapt their reformed pension systems and ensure incentives to postpone the age at which people withdraw from labour force (European Commission, 2019).

To support employment of the elderly, all Baltic States implement vocational and lifelong learning activities to provide possibility for older people to adapt to labour market and enhance their skills. Labour laws in these countries also oblige employers to prevent the age-based discrimination ensuring longer employability of the elderly. However, elderly people might encounter difficulties in finding a new job or keeping the current one as employers tend to have a prejudice that older workers might not be as productive as younger employees; they are less flexible for changes and it is more problematic for them to expand their skills to different sectors (Bussolo et al., 2015). Nevertheless, prolonged employment will improve for most people their well-being and will be beneficial (Calvo, 2006).

During last years, there have been projects in all three Baltic States emphasizing employability and healthy ageing of elderly people, such as 'Development of Comprehensive Active Ageing Strategy for Longer and Better Working Lives' in Latvia and 'Increasing Employment for 2014-2020' in Lithuania. These programmes include the measures aimed at enabling older workers to remain longer in the labour market. In Estonia, 50+ employment has been one of the priorities on public policy agenda for a long time already, represented in such policy documents as 'Welfare development plan' and 'Lifelong learning', in addition, particular parts of the 'Strategy 2035' emphasize the engagement of elderly people in labour market.

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Furthermore, there have been developed a special scheme for retraining 50+ people in labour employment. It is important to assess changes in employment as one of the solutions for the consequences of aging population is engagement of elderly workers in the labour market (Maestas and Zissimopoulo, 2010).

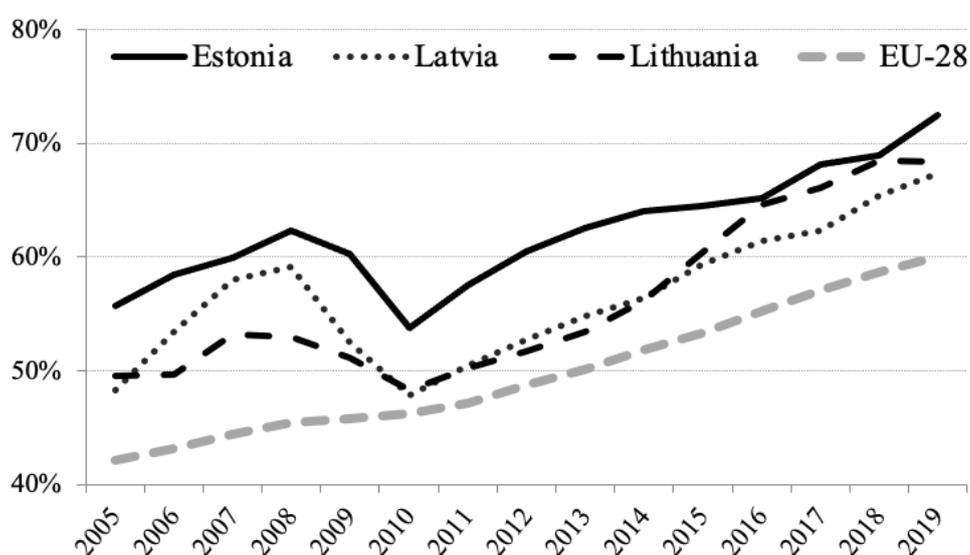
The quantitative analysis in the study is based on the Eurostat database indicators and SHARE Wave 8 COVID-19 Survey conducted in June-August 2020 in 26 European countries and Israel via computer-assisted telephone interviews (Börsch-Supan, 2020). Questions examined how people aged 50 years and older coped with socioeconomic and health-related impact of COVID-19. The methods of descriptive statistics were applied in order to compare the influence of the first coronavirus wave on employment in older age groups in Latvia and across Europe.

Research results and discussion

The first part of this section is focused on the analysis of employment trends over the last decade among the older population in Estonia, Latvia, and Lithuania against the background of the EU averages. The second part deals closer with the health indicators in the age group 50+ and studies the relationship between health status and employment rates. And, finally, the third part looks at the impact of the first wave of COVID-19 (in spring 2020) on employment in the Baltic states, comparing them to other countries that participated in the SHARE survey.

1. Employment rates

The employment rates in the older age groups of population have been steadily increasing over the last decades. In the pre-retirement ages (i.e. in the age group 55-64 years) they were constantly growing with the exception for the economic crisis years 2009 and 2010, when employment rates dropped drastically in all age groups (Fig. 1). The deepest fall and the slowest recovery were observed in Latvia. The pre-crisis levels were restored in 2013 in Estonia and Lithuania, and in 2015 in Latvia and the rates continued their raise. The employment rates referred to in this paper are the percentages from total population in respective age groups (and not from the active population) in order to make the numbers compatible with other sources.

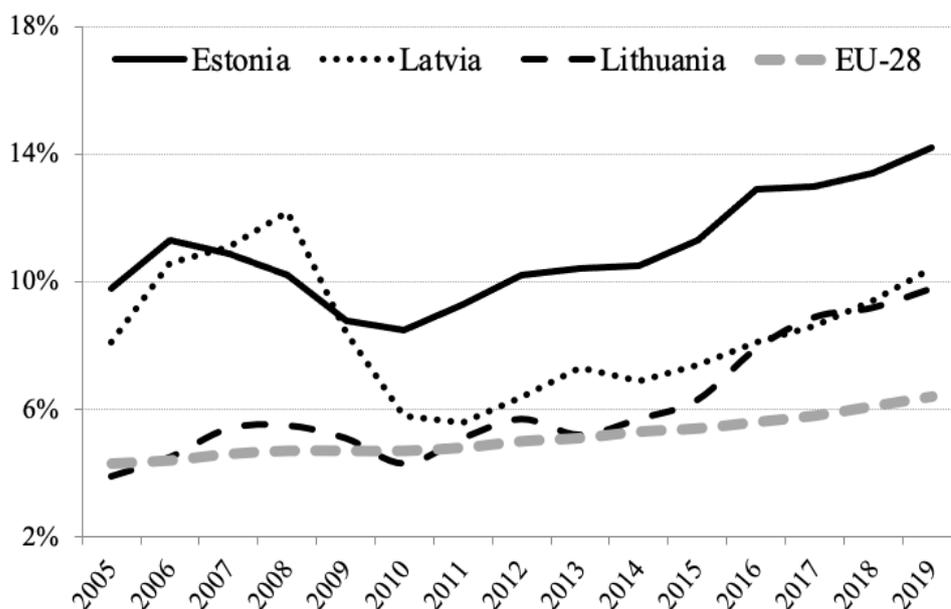


Source: Eurostat [lfsa_ergan]

Fig. 1. Employment rates in age group 55-64 in the Baltic States and EU-28 in 2005-2019

Overall, over the 15-year period the employment rates augmented by 17 percentage points (p.p.) in Estonia, and by 19 p.p. in Latvia and Lithuania. It can be seen from the figure, that the pace of the growth is in line with the EU average (which raised by 18 p.p.), however, all the time being above the average EU-28 values. To a great extent, the constant increase is due to gradual increase of the statutory old-age retirement age that took place in all three Baltic countries and that is not yet completed (Rajevska, 2020). On the other hand, Baltic populations are ageing faster than most of European nations and labour supply in younger age groups is limited. Therefore, older workers face less competitive pressure from younger generations, and employers are also hiring them for positions that are held by younger workers in other countries.

However, labour participation rates were also increasing in the age group that was not mandated to work, i.e. those aged 65 years and older (Fig. 2). Naturally, the rates are much lower than in the pre-retirement group, but, again, are considerably exceeding the EU averages (more than twice in Estonia and almost twice in Latvia and Lithuania). The most impressive increase is seen in Lithuania – 6 p.p. in 15 years, followed by 4 p.p. in Estonia and 2 p.p. in Latvia (which is close to the average EU-28 ratio). In Latvia, after the sharp decline in 2009-2010, the pre-crisis high rates have not been restored still.



Source: Eurostat [lfsa_ergan]

Fig. 1. Employment rates in age group 65+ in the Baltic States and EU-28 in 2005-2019

Thus, one has to conclude that Baltic people work more intensively in their old years than most of their same-age peers from other European countries and their involvement into labour market steadily increases.

2. Healthy life years

Different approaches can be applied to characterise and compare health condition of elderly population in different countries. One of the most commonly used is the Eurostat indicator called Healthy Life Years (HLY). It measures the number of years that a person of a certain age is still expected to live in a healthy condition, it can be also expressed as a share (percentage) of the total remaining life expectancy. HLY is a health expectancy indicator which combines information on mortality and morbidity. The data required are the age-specific prevalence (proportions) of the population in healthy and unhealthy conditions and

age-specific mortality information. A healthy condition is defined by the absence of limitations in functioning/disability. The indicator is calculated separately for men and women. The indicator is also called disability-free life expectancy (DFLE).

As can be seen from the Table 1, the healthy life indicators in all three Baltic States were considerably below the EU average and, contrary to the European trend, did not demonstrate any signs of improvement, as practically all values in 2018 were lower than in 2009. Lithuania performed better than the other two countries, while Latvia lagged behind in respect of both men's and women's health expectancy. In the oldest age group, Latvian numbers did not even reach halves of the EU averages.

Table 1

Healthy life years at 50 and at 65 among men and women in the Baltic States and EU-28 in 2009-2018

			2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
HLY at 50	men	EU28	17.3	17.6	17.5	17.4	17.5	17.4	18.4	19.1	19.2	19.2
		Estonia	12.8	12.4	12.2	12.0	12.0	11.5	12.1	12.7	12.8	12.1
		Latvia	11.4	11.9	12.0	12.9	10.9	10.3	10.6	10.7	10.0	10.5
		Lithuania	14.0	14.2	14.1	13.4	13.9	14.3	12.4	13.1	13.6	13.7
	women	EU28	17.6	18.3	17.9	17.9	17.8	17.8	19.0	19.9	19.9	19.8
		Estonia	14.4	14.4	14.0	13.5	13.6	13.9	13.3	15.9	14.5	13.9
		Latvia	13.2	13.5	13.0	15.2	11.5	11.9	11.2	12.0	11.0	11.9
		Lithuania	16.0	16.5	16.4	15.8	16.0	16.0	14.5	14.9	15.2	15.4
HLY at 65	men	EU28	8.4	8.7	8.5	8.5	8.5	8.6	9.4	9.8	9.8	9.9
		Estonia	5.6	5.3	5.6	5.4	5.1	4.9	5.3	5.5	5.7	5.6
		Latvia	4.7	4.8	4.7	5.3	4.0	4.0	4.1	4.4	4.1	4.2
		Lithuania	6.1	6.4	6.2	5.6	5.9	6.1	5.0	5.6	5.7	5.6
	women	EU28	8.4	8.8	8.6	8.5	8.6	8.6	9.4	10.1	10.1	10.0
		Estonia	5.4	5.5	5.7	5.5	5.7	6.0	5.3	7.0	6.1	5.8
		Latvia	5.7	5.5	5.0	6.4	4.2	4.6	4.0	4.5	4.2	4.7
		Lithuania	6.8	6.7	6.7	6.1	6.3	6.1	5.5	5.6	5.6	6.3

Source: Eurostat [hlht_hlye]

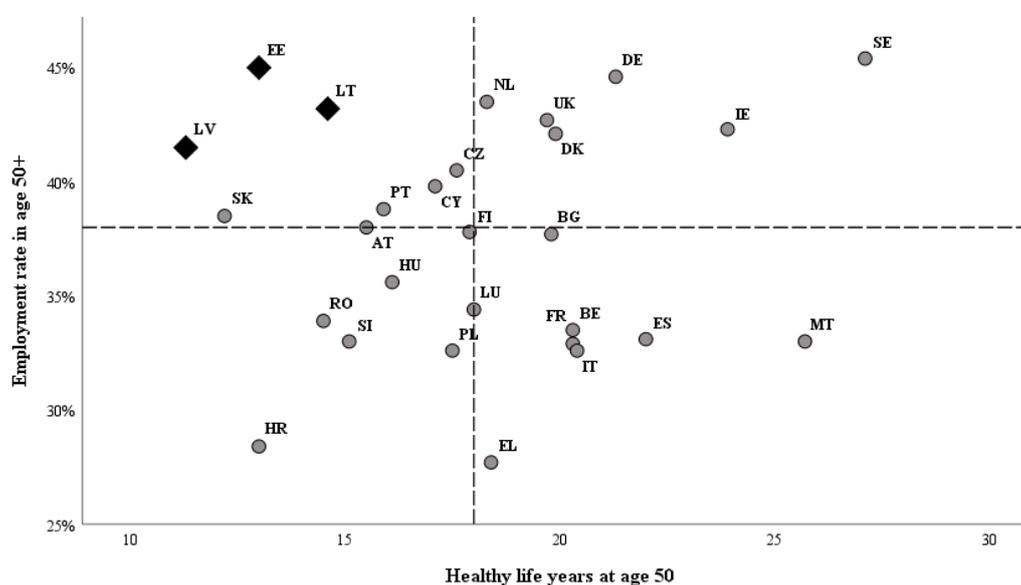
Looking at these numbers from a somewhat different perspective, as to what share of the remaining life is expected to be disability-free, one has to state with regret, that the Baltic States are at the bottom of the European list, as well. In 2018, Latvia had the lowest HLY at the age of 50 years as a percentage of total life expectancy – 43.4 % for men and 37.6 % for women. In Estonia, these indicators equalled 45.4 % (men) and 41.1 % (women) and in Lithuania – 54.7 % (men) and 47.4 % (women). It was also quite below the EU-28 average: 63.1 % (men) and 56.9 % (women). The best performer is Sweden with 83.9 % of HLY among men and 76.7 % among women.

Even wider gap between the Baltic people and most of the Europeans can be observed in the oldest age group: less than one quarter (24.9 %) of the remaining life of an average Latvian woman who turned 65 was expected to be healthy; the respective proportion was somewhat higher (29.5 %) for an average

Latvian man of the same age, but in absolute years his remaining life was considerably shorter (14.1 year compared to 19.0). The HLY percentage of the total life expectancy in Estonia constituted 28.1 % (women) and 35.7 % (men), and in Lithuania – 32.2 % (women) and 38.9 % (men). EU averages were 46.7 % (women) and 54.3 % (men), with Sweden having the highest rates of 73 % (women) and 81.4 % (men).

It should be expected that the ongoing COVID-19 pandemic and the complications caused by the infection will worsen HLY indicators in the Baltic states, as well as in all of Europe.

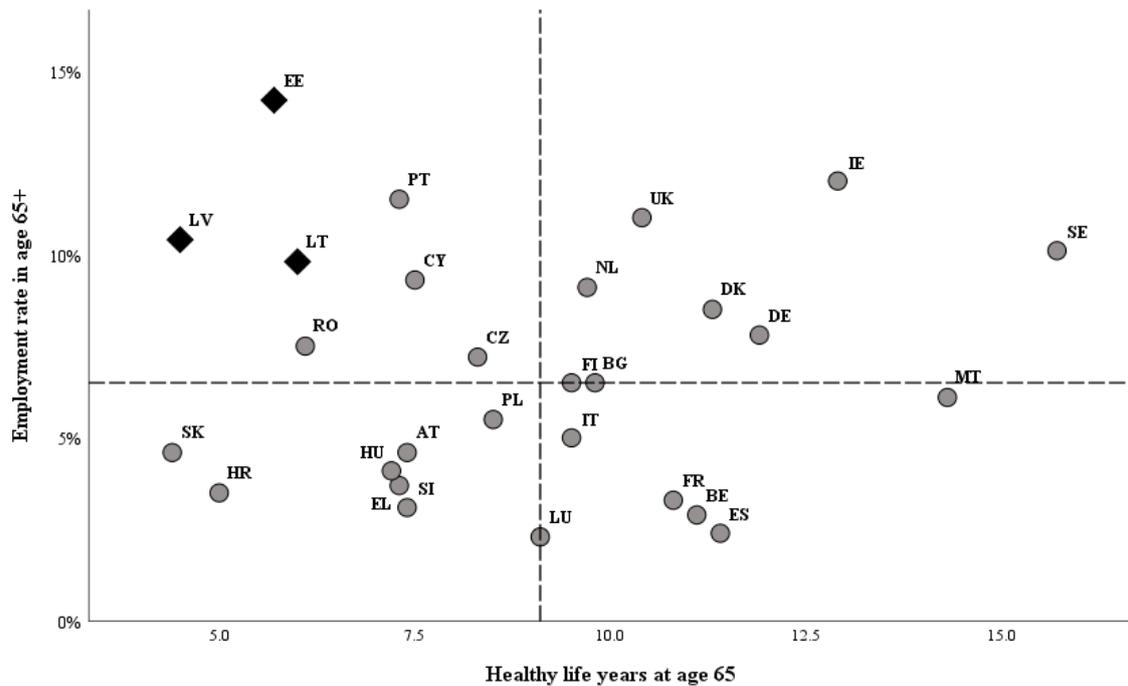
At the macro level - the level of countries - there is no correlation between the level of health of the elderly population and the degree of their involvement in the labor market, both before and after reaching the statutory retirement age. This is demonstrated in Figures 2 and 3. The graphs are divided into four quadrants by median values on both axes: the vertical line corresponds to the median value of the healthy life years indicator at ages 50 (Fig. 3) and 65 (Fig 4), and the horizontal line corresponds to the median value of the employment rate among the population of this age and older.



Source: Eurostat [lfsa_ergan for 2019, hlth_hlye for 2018]

Fig. 3. Employment rates in age group 50+ and health expectancy at 50 in EU countries

On both plots, Estonia, Latvia and Lithuania are located in the most upper-left corner of the plot as the countries where health characteristics of the elderly populations are below the median, while employment rates are above the median. Except for the Baltic States, for both age groups this quadrant includes Portugal, Cyprus and Czech Republic. The opposite combination, namely, long healthy lives accompanied by low employment rate, can be find in Spain, France, Malta, Belgium and Italy. Nordic countries, such as Sweden and Denmark, are characterized by long healthy lives and high employment rates among the elderly. The Netherlands, United Kingdom, Germany and Ireland are in this sector also. Finally, the quadrant with poor health and low employment is represented by Croatia, Hungary, Slovenia and Poland.



Source: Eurostat [lfsa_ergan for 2019, hlth_hlye for 2018]

Fig. 4. Employment rates in age group 65+ and health expectancy at 65 in EU countries

On the micro-level, however, the relationship between the health condition and employment is pronounced. Using the SHARE developed questionnaires, on individual level, health status can be evaluated by respondents' self-assessment (an ordinal five-point scale from "poor" to "excellent", the variable "caph003_") and its relationship with being in employment (the variable "caep805_") can be analysed. According to the data from the most recent SHARE survey (8th wave, data collected in 2020), practically all countries demonstrate statistically significant positive correlation between employment and health status. The strength of the relationship, however, was quite weak, in some countries even close to negligible. The Baltic States had the highest correlation (point-biserial non-parametric Spearman's correlation coefficient were calculated): Latvia – 0.402 (and it was the only country where the coefficient exceeded 0.4), Estonia – 0.394 (the second highest value), and Lithuania – 0.348. There were only two other countries with coefficients above 0.3: Slovakia (0.387) and Israel (0.314). Most of the participating states had the respective coefficient between 0.2 and 0.3, and seven countries (the Netherlands, Spain, France, Belgium, Luxembourg, Switzerland, Malta and Portugal) even between 0.1 and 0.2. Thus, it seems that for the elderly in the Baltic States physical ability to work is closer related to their employment than it is in other parts of Europe. On the one hand, it may indicate an insufficient number of inclusive job places for people with health problems. On the other hand, it may be caused by a stronger need in work as a means of making ends meet in the absence of satisfactory social protection for the elderly (Rajevska, 2016).

In the European Working Conditions Survey (EWCS) in 2015, the respondents were asked about their "ideal" retirement age. On average, slightly less than 20 % of all workers (both among men and women) in the EU-28 answered that they would like to work until 'as late as possible' (Eurofound, 2017). There was, however, considerable variation in the share of such workers across the EU, ranging from less than 3 % of women in Malta to 43 % of men in Estonia and Latvia. Estonian and Latvian women also demonstrated twice higher willingness to work than average female workers in the EU. Lithuanian respondents also returned considerably higher rates than the EU averages. On the opposite side of the

scale, there were countries with less than 10 % of workers disposed to continue their careers as long as possible – Malta, France, Sweden, Luxembourg, Greece, Spain and Finland. People in these countries enjoy long healthy life expectancy and generous old-age pensions and prefer not to remain in employment upon reaching the official retirement age.

A closer link between employment and health in the Baltic countries may also mean more pronounced effects of COVID-19 on employment rates in older age groups in the future. The long-term effects of the new coronavirus (as well as the long-term stress caused by the restrictions imposed) on health and work capacity of the elderly are not yet known, but in the light of the statistics reviewed, such an outcome is not unlikely.

3. COVID-19 and employment among the older population

When COVID-19 broke out, 37.1 % of all Latvian respondents aged 50+ were employed or self-employed. Similar proportions are observed in other two Baltic States (38.0 % in Lithuania and 41.8 % in Estonia). When comparing these numbers with the corresponding Eurostat indicators based on the EU Labour Force Survey (LFS) one can note that Eurostat returns higher employment rates in the age group 50+ for 2019: Latvia – 41.5 %, Lithuania – 43.2 % and Estonia – 45.0 %. This is also true for many other countries: Germany has 44.6 % in Eurostat compared to 40.1 % in SHARE, Poland – 32.6 % in Eurostat and 30.7 % in SHARE, France – 32.4 % in Eurostat and 31.1 % in SHARE, etc. Fewer countries have a difference in the opposite direction (e.g., Sweden, Denmark and Finland). This can be explained by dissimilar methods of selecting the respondents into national samples as well as discrepant weighting algorithms. Looks like the Eurostat data is more representative in terms of employment rates, because the LFS is particularly focused on the labour market processes which is not the case with SHARE. However, we believe that SHARE data can be safely used analysing how the respondents' employment situation was affected by the Covid outbreak.

By the time of the survey (July-August 2020), due to the first wave of COVID-19, only 6 % of Latvian respondents who were employed or self-employed before the outbreak reported that they experienced "unemployment, laid off or business closed". The other two Baltic countries returned higher rates: 10 % in Estonia and 18 % in Lithuania (due to considerably stricter lockdown conditions than in Latvia). The strongest impact was suffered by older workers in France (39 %), Greece (36 %) and Cyprus (35 %).

As concerns the work place since outbreak, for the absolute majority of Latvians (75 %) there were no changes, and they continued to work at their usual work place. This is the second highest ratio after Bulgaria, where 80 % of respondents remained at their usual work places. The respective proportions were equal to 62 % in both Estonia and Lithuania. Overall, in 16 countries more than half of the respondents kept working at the usual work place, while in 11 countries there were less than 50 % of such workers. The smallest shares of unchanged workplaces were observed in Luxemburg (27.2 %), France (30.7 %) and Italy (36 %).

Meanwhile 9.8 % of participants in Latvia, 14.9 % in Lithuania and 17.1 % in Estonia started to work from home only. Respective proportions ranged from 5.6 % in Bulgaria to 29.9 % in Luxembourg. Combining working from home with usual work place was less frequent in the Baltic States: 9.2 % of the employed respondents in Latvia, 8.6 % in Lithuania and 11.7 % in Estonia.

Most of the employed experienced neither a reduced nor increased number of working hours: only 6.6 % of Latvian participants had their working hours reduced which is the smallest proportion in all participating countries, and 7.6 % faced an increased work load. The share of people with reduced working hours was higher in Estonia (17.5 %) and Lithuania (13.7 %); the highest levels across the countries was in

Switzerland (39.1 %), France (37.0 %) and Spain (32.0 %). Quite surprisingly, the highest rates of people whose working hours not decreased, but increased were observed in the same countries: the highest in France (24.7 %), followed by Spain (23.8%) and Switzerland (20.5 %). The smallest share of such workers was in Romania (3 %). In Estonia, increased working hours were reported by 7.1 %, while in Lithuania – 10.6 %.

Despite the fact, that in Latvia only a small part of the respondents started to work remotely, they were forced to change everyday habits. Companies that made changes in their daily routines and whose employees started working remotely needed to analyse not only the technical aspects, but also the aspects of being able to ensure all labour protection requirements. It is important to define in legal acts what a remote work is and what conditions must be ensured in case if the employee is working remotely, but it is also particularly important to ensure compliance with the safety and ergonomic working environment requirements, especially for employees in the age group 50+. The employer has an obligation to provide an appropriate working environment if the employee performs work at the employer's premises, but the employer must also comply with the same requirements if the employee performs the work remotely. It is particularly important to ensure the compliance with the labour protection requirements during the remote work, since an inappropriate working environment may cause serious health damage to people in the age group 50+.

During the first wave of the COVID-19, the legal framework for employment relationships did not include definition of the remote work, except the general possibility for the employer to agree with the employee on the place where the work is carried out.

On July 1st, 2020, the amendments to the Labour Protection Law came into force and, together with these amendments, the legal clarification of the concept of "remote work" was also included. Moreover, these amendments determined, that an employee who works remotely, in a cooperation with the employer is assessing the risks of the work environment. However, these amendments do not fully resolve all legal issues related to remote work. Currently, the legislator is developing amendments to the Labour Law on the coverage of employee costs of remote work, also including clarification and a common understanding of the concept of remote work within the meaning of the Labour Law. In the current situation with the spread of the virus of COVID-19 and in a proactive assessment of future prospects, the legislator must continue to modernise the legal framework, specifically by considering how to effectively ensure the enforcement of labour protection requirements.

Speaking on purely quantitative indicators of employment, in general, the first wave of the infection outbreak affected the employment of older population in the Baltic states to a lesser degree than in many other European countries. An ongoing, more severe and prolonged second wave of the infection with stricter lockdown measures in all three Baltic countries will undoubtedly have a more devastating immediate impact on employment in all age groups. And the long-term effects of the disease and the stressful situation will worsen the health of workers, in particular, the oldest ones, which will also have an impact on their working careers in the future.

Conclusions, proposals, recommendations

- 1) Promoting active and healthy ageing has become a prominent part of political agenda in the Baltic States in the recent decade, as evidenced by the adoption of special programs and the allocation of funds. The employment rates among the population of pre-retirement and retirement age are steadily increasing in all three countries. Compared to their peers from other European countries, older people in the Baltics are indeed more active, but less healthy.

2) While at the micro level within the studied countries, the association between health status of individuals and their involvement into employment is statistically confirmed, and in the Baltic States the association is the strongest in Europe, comparing countries to each other at the macro level this correlation disappears.

3) High participation of older age groups in labour market in Baltic States was almost unaffected by the first wave of COVID-19 in spring-summer 2020. The proportions of those workers who experienced unemployment, laid off or closure of business were considerably lower than in the countries most hit by the infection; the same is true also for less expressed changes in the number of working hours. The branches with traditionally high share of workers aged 50+ (education, healthcare, agriculture, administrative services) were least affected by lockdown measures in the Baltic countries.

4) Although the prevalence of remote work from home in Latvia was lower than the European average, this issue requires more regulation as the existing legislation lacks provisions on remote work and does not therefore ensure protection of workers' rights and health. When employees are working remotely, it is the obligation of the employer to ensure that the environment of employee is compliant with all requirements set out in the legal acts, which is particularly important for employees in the age group 50+ who are much more vulnerable to disabilities.

5) In the current situation of the continuing spread of the COVID-19 and in order to ensure proactive assessment of potential bottle-necks in the future, legislators must make every endeavour to modernize legal framework to effectively ensure the enforcement of labour protection requirements.

6) The close link between employment and health in the Baltic countries means more pronounced effects of COVID-19 on employment rates in older age groups in the future. The long-term consequences of the infection and prolonged stress caused by the restrictions imposed on the health and work capacity of the older populations should be carefully monitored and investigated.

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OPENING OF NEW ELECTION POLLING STATIONS: THE EFFECT ON TURNOUT AND DIASPORA VOTING PATTERNS

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Abstract. Opening of additional polling stations in foreign countries has been brought forward as a method to raise the turnout of diaspora voters in Latvian parliamentary election, and the number of polling stations abroad during last four elections has almost doubled. In this article, the author tests the argument that the increase in the sheer number of polling stations and the expansion of territorial coverage is an election parameter in foreign countries with the potential to raise the election turnout. In sharp contrast to a popular argument and the academic debate, the results of the Latvian data analysis show that opening of new polling stations did not meet the intended goal and cannot be regarded as an effective method for raising the diaspora voter turnout; the means must be sought in other factors of election organisation and voter behaviour. To compare data of voter behaviour in foreign countries in four separate parliamentary elections and to determine tendencies in diaspora voting patterns, the deviation of the elections outcome in foreign countries from the general national results are analysed by the help of calculation model that uses the Voting Outcome Coefficient. The article outlines that the third and fourth wave of emigration have introduced a new tendency of extreme stratification in the results between the Latvian Association of Regions (2014), KPV LV (2018) and the rest of the political parties. The article also analyses the deviation of the elections outcome in the new polling stations from the vote share in particular foreign countries by the help of Polling Station Coefficient, and concludes that in the 13th Saeima election, all newly opened polling stations were beneficial for KPV LV as results in all of them were proportionally even better than the list's overall results in a particular country.

Keywords: parliamentary elections, diaspora, turnout, polling stations.

JEL code: C51, D72.

Introduction

The low number of polling stations in foreign countries as well as generally poor territorial coverage are considered as predominant factors for the low turnout of the Latvian diaspora in parliamentary election. Therefore, opening of additional polling stations abroad has been brought forward as a method to raise the turnout (Riteniece, K., 2014). In parallel to the recent - third and fourth - waves of emigration, which started in 2008 and 2013 respectively, the number of polling stations in foreign countries has almost doubled: from 64 polling stations in the 10th Saeima election in 2010 (Central Election Commission, 2010a) to 121 polling station in the 13th Saeima election 2018 (Central Election Commission, 2018a).

In this article, the author provides analysis on the issue of opening new polling stations in foreign countries as a method to raise the turnout of diaspora voters, as well as the deviation of votes cast for election lists when compared to overall results in particular country and the deviation of votes cast specifically in the new polling stations with the objective of characterising and determining tendencies of diaspora voting behaviour.

The selected time period corresponds to the third and fourth wave of emigration and therefore covers four elections – the 10th Saeima election in 2010, the early parliamentary election after dismissal of 10th Saeima in 2011, the 12th Saeima election in 2014 and the 13th Saeima election in 2018. With the third emigration wave, Europe became the main destination point, and it is estimated that, during this period, 160 thousand people left Latvia, and of these more than 120 thousand moved to European Union countries (Central Statistical Bureau of Latvia, 2020; PMLP, 2018). In 2020, the size of the Latvian diaspora population is estimated in a wide range from 204 thousand up to 506 thousand people in total depending on the data source, methodology and definition of the diaspora (Hazans, 2020). In their policy planning

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documents, the Latvian Cabinet of Ministers uses data where the Latvian diaspora numbers around 373 thousand people (Par planu darbam ..., 2021). The lack of precise data concerning the actual size of the Latvian diaspora in the era of dynamic regional and global mobility, as well as the existence of differing calculation methodologies, which emphasize the theoretical debate about the problematics of estimation of the content and size of the diaspora, are two issues within the purview of the research conducted, and the case of Norway, which is described in this article, illustrates it, in particular. In this research, the data sources about the size of diaspora are mixed. The Eurostat data is used as a basis for calculation, but where not available – the data of the Office of Citizenship and Migration Affairs of the Republic of Latvia (PMLP) is utilised. Combining the fact that Europe is the prime destination of the third and fourth emigration wave and the data about the largest Latvian diasporas in the world (Eurostat, 2020), four countries have been selected for case studies – United Kingdom, Ireland, Germany, and Norway.

Although data and analysis about election results in polling stations abroad is available for each election, the analysis about diaspora voting behaviour specifically in newly opened polling stations has not been provided so far. In this article, the proportion of such votes in comparative relation to the overall results in United Kingdom, Ireland, Germany, and Norway, is analysed.

Hypothesis No. 1 of the research: opening of new polling stations in foreign countries in Latvian parliamentary elections as a method to raise the turnout has not been effective.

Hypothesis No. 2 of the research: in the new polling stations in foreign countries in Latvian parliamentary elections, the distribution of votes cast for particular election lists is disproportional to overall results in a particular country.

The aim of the research is to identify whether opening of new polling stations in foreign countries in Latvian parliamentary elections raise the turnout of diaspora voters, and to find out whether the distribution of votes cast for the lists of candidates in the new polling stations is proportional to overall election results in a particular country.

Research tasks: 1) to analyse Latvian parliamentary election results in the United Kingdom, Ireland, Germany and Norway since 2010; 2) to test the correlation between the increase of the number of polling stations and election turnout in these countries; 3) to calculate the deviation of votes cast for election lists from overall results in particular country in the new opened polling stations; 4) to analyse whether there are differences in the voting pattern in the new polling stations in regard to overall election results in a particular country.

Research methods: statistical and election data analysis, data comparison, synthesis for selecting and grouping the election data and statistical data, case studies, empirical research, literature review. Information and data were derived from various sources: the Central Election Commission, Eurostat, PMLP, the Central Statistical Bureau of Latvia, the Ministry of Foreign Affairs of the Republic of Latvia, analytical reports, publications and research related to the themes of elections and diaspora.

The novelty of the research is: 1) to test the argument that the increase in the sheer number as well as the territorial coverage of polling stations is an election parameter in foreign countries with the potential to raise the election turnout of the Latvian diaspora; 2) to calculate the proportional differences from the overall results in a particular country for election lists in the new polling stations and to determine the specific voting pattern in the new polling stations.

Research results and discussion

1. The size of the diaspora, the number of polling stations, and their correlation to the voter turnout

The most dramatic increase in the size of Latvia's diaspora can be observed in the United Kingdom, where the size of the Latvia's diaspora has risen almost 10 times: from 10 thousand people in 2010 to 118 thousand people in 2018. In Ireland, in the selected time period the diaspora remained constant in size with around 22 thousand people. In Germany, the diaspora increased from 13 thousand people in 2010 to 34 thousand people in 2018. In Norway, the size of Latvia's diaspora increased from 3 thousand people in 2010 to 11 thousand people in 2018 (Table 1). The number of polling stations in these countries has increased as follows: from 3 to 19 in United Kingdom, from 1 to 4 in Ireland, from 1 to 9 in Germany and from 1 to 4 in Norway (Table 1). Although it does not correspond proportionally to the growth of the size of the diaspora, the geographical coverage or "the net" of polling stations has been improved over the years. This aspect has a theoretical potential of increasing the voter turnout in elections, and this argument has been used in Latvia in public discourse (Riteniece, K., 2014), as well as in academic sources in theoretical discussions about the methods and means of increasing the voter turnout (Brady et al., 2011).

Table 1

Changes in the size of the diaspora and the number of polling stations in Latvian parliamentary elections in the United Kingdom, Ireland, Germany and Norway (2010-2018)

Year	Country	Size of diaspora	Number of voters	Number of polling stations
2010	United Kingdom	9 835*	5 839	3
	Ireland	21 815	2 166	1
	Germany	12 699	4 535	1
	Norway	2 757	246	1
2011	United Kingdom	16 739	10 059	7
	Ireland	21 296	4 001	2
	Germany	7 184	5 303	5
	Norway	4 878	545	1
2014	United Kingdom	90 279	27 759	15
	Ireland	15 696*	10 337	4
	Germany	26 600	8 090	7
	Norway	9 424	1 166	2
2018	United Kingdom	118 452	51 500	19
	Ireland	21 070	14 021	4
	Germany	34 123	14 060	9
	Norway	11 118	2 756	4

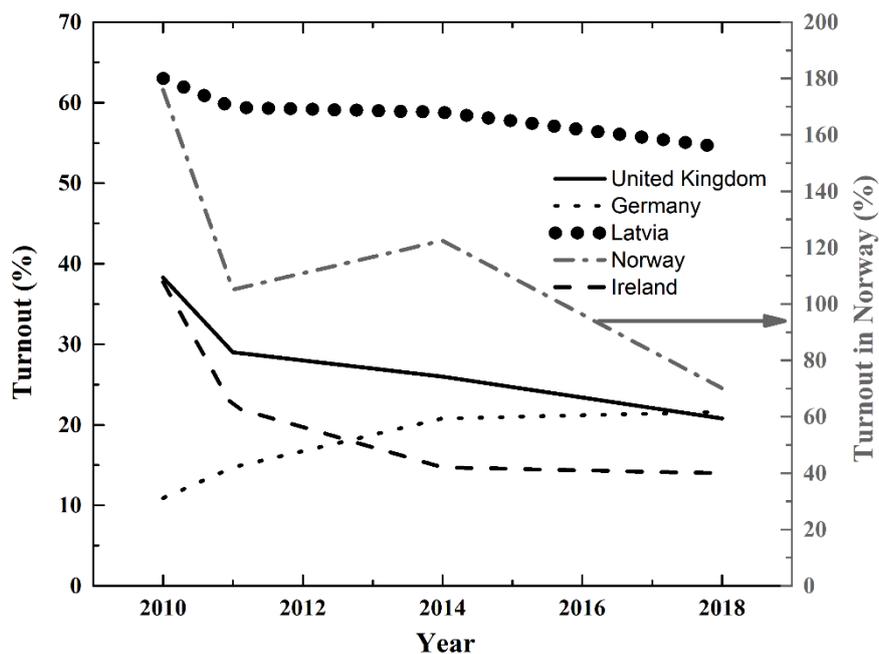
* PMLP data

Source: author's calculations based on Central Election Commission 2010a, 2011a, 2014a, 2018a; Eurostat 2020; PMLP 2010, 2014, 2017, 2018.

Nevertheless, the analysis shows that growth in the number of polling stations and the extension of territorial coverage of the polling stations in foreign countries, which might improve the accessibility to the elections, lower the individual costs of political participation and therefore lead to higher voter turnout, has

actually not resulted in increasing participation in elections. The absolute number of citizens participating in elections, in the context of the fast-growing size of diaspora, of course, has risen, but the proportion of votes cast has, in sharp contrast to expectations (Riteniece, K., 2014), decreased; the single exception is Germany (Fig. 1). In Germany, the voter turnout has constantly increased, starting at an exceptionally low rate of 10.9 % in 2010 and reaching 21.6 % in 2018, which nevertheless cannot be regarded as a high indicator of participation.

Analysis reveals a problem with the Norway data which must be addressed separately and features the problematics of availability of precise data about the size of the diaspora in the context of dynamic mobility of workforce. The voter turnout in this country is estimated 176 % in 2010, 105 % in 2011, 123 % in 2014 and 70 % in 2018 (Fig. 1). Such results indicate that, in Norway, the actual number of individuals in the diaspora and persons entitled to vote is much bigger than officially estimated. Among the possible reasons are transnational or "fluid" lifestyles (Hazans, 2020), ambiguous definitions of the "diaspora" (Hazans, 2013; Goldmanis, 2015), as well as the possibility to live and work in Norway up to 3 months in a year without registering with police. The data shows that the combination of afore-mentioned factors, which encumber and cloud the estimation of the size of the actual diaspora and actual number of Latvian citizens abroad on the day of parliamentary elections, is especially visible and prominent in the case of Norway, and this tendency is not confined to one year (Fig. 1). All the same, there is no positive correlation that can be determined between the number of polling stations and voter turnout in the case of Norway.



Source: author's calculations based on Central Election Commission 2010a, 2011a, 2014a, 2018a.

Fig. 1. Title. Diaspora voter turnout (2010-2018)

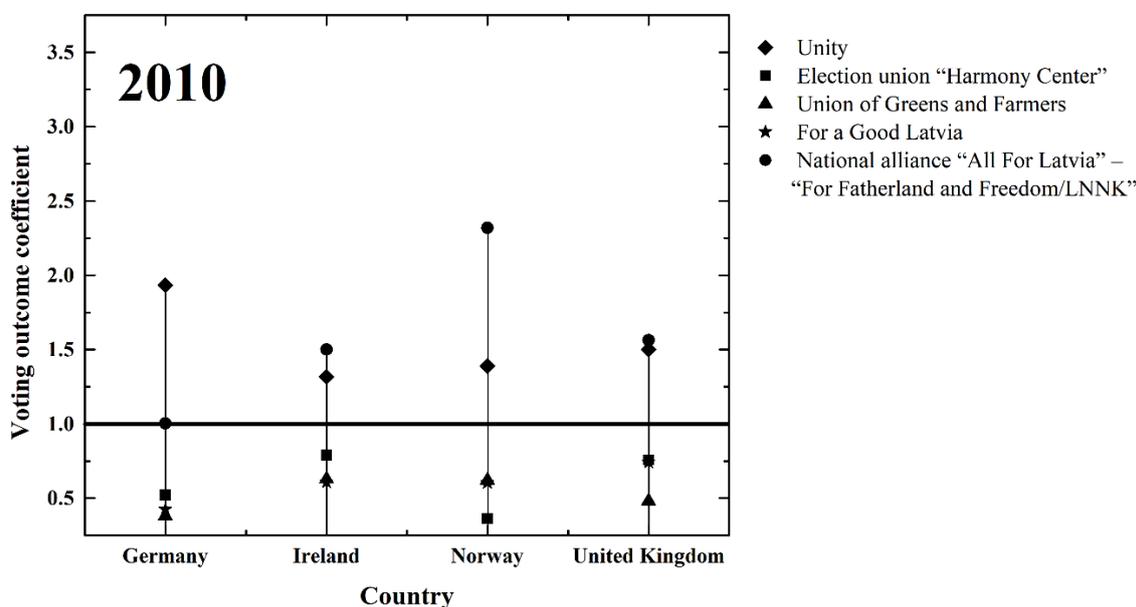
Although voter turnout in the diaspora decreases (except for the case of Germany) and a negative correlation can be observed, the opening of new polling stations cannot be regarded as the cause of this tendency, of course. The reason for low turnout in the diaspora, most likely, is the same as observed nationally – overall political apathy and a general decrease of voter turnout. Moreover, the "profile" of parliamentary elections within the diaspora is clearly regarded as insufficiently attractive and relevant. In comparison, in the so-called Language Referendum of 2012 (the referendum on the Draft Law "Amendments to the Constitution of the Republic of Latvia", that provided for adding the condition about Russian as the second official language in Latvia), the overall turnout in foreign countries was 72.71 %

(Central Election Commission, 2012), and in United Kingdom and Ireland voters travelled long distances to polling stations and even stood in line up to 4 hours to cast their votes (Jauns.lv, 2012), which clearly indicates the difference in the perception of voters in the case of different events.

Therefore, the argument that opening of new polling stations as a key election parameter in foreign countries increases the political participation and diaspora turnout, is not supported by the data. This method generally has not been effective in reaching the goal of increased turnout, and a positive correlation can be observed only in one single foreign country (Germany). From the point of view of democratic principles, the opening of additional polling stations in foreign countries and expansion of the net of polling stations supports the idea of "moving closer to citizens". Nevertheless, the methods to reach the aim of higher voter turnout must be sought in other factors of election organisation and voter behaviour.

2. The voting behaviour of the diaspora in foreign countries

Election data shows that diaspora voting behaviour differs from general national results, and these differences change over years, thus building specific voting behaviour patterns and tendencies. To determine the deviation of the elections outcome in foreign countries from the general national results, the Voting Outcome Coefficient was introduced in the research. This calculation model shows the proportion by which election outcomes differ from the national outcome for all elected lists of candidates and allows for the comparison between four parliamentary elections and in four countries. The point of reference '1' indicates the national election result for a particular list of candidates, while deviation below or above this point is the proportion of the difference in the voting outcome in a particular country for a particular list of candidates. The model allows for the comparison of the data proportionally and the determination of tendencies in diaspora voting patterns.

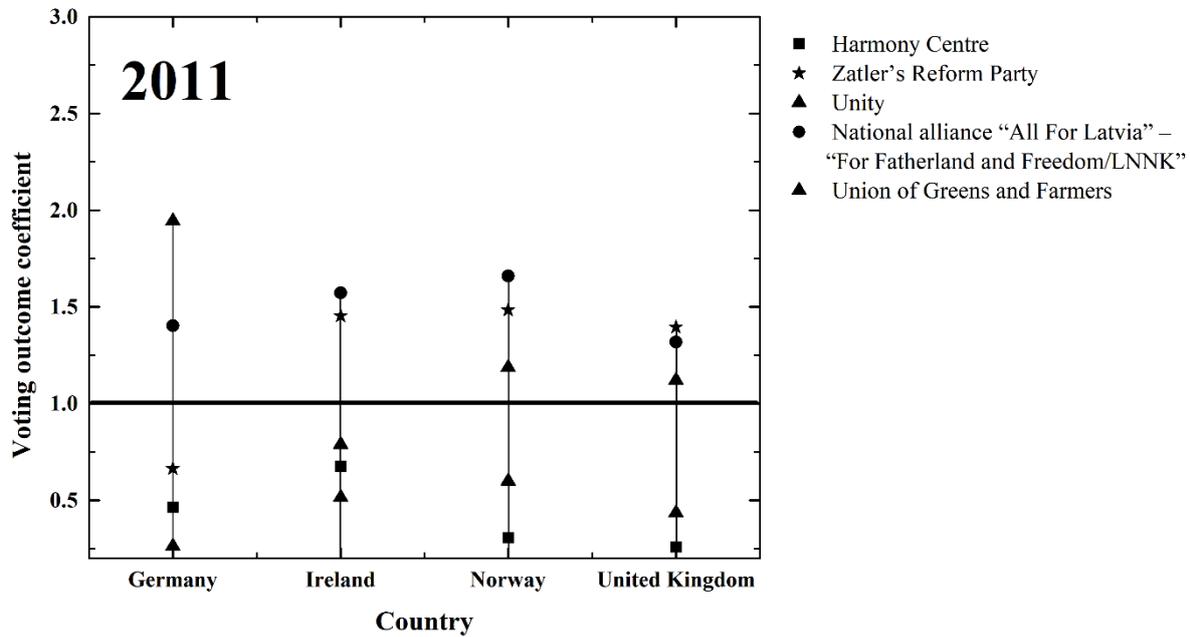


Source: author's calculations based on Central Election Commission 2010a, 2011a, 2014a, 2018a.

Fig. 2. Voting Outcome Coefficient in foreign countries (2010)

Data from the 10th Saeima election shows that two electoral lists had proportionally better election results – Unity and the National alliance, while three remaining (elected) lists reached much lower results in diaspora voting than was witnessed altogether nationally (Fig. 2). The Union of Greens and Farmers and Harmony Center (which has participated in other elections with slightly different names of electoral lists,

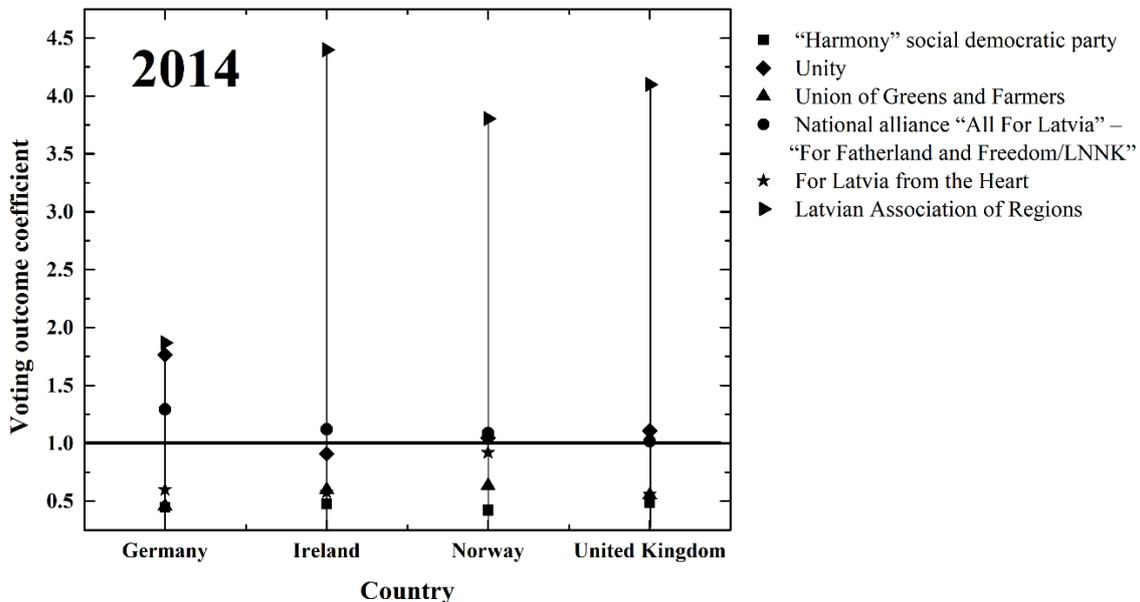
but all include the word "Harmony"), both have been re-elected also in all subsequent elections, but have maintained this tendency of having a low Voting Outcome Coefficient in the diaspora (Fig. 3-5).



Source: author's calculations based on Central Election Commission 2010a, 2011a, 2014a, 2018a.

Fig. 3. Voting Outcome Coefficient in foreign countries (2011)

The data of the 11th Saeima election indicates the previous tendency of higher Voting Outcome Coefficients for the Unity and National alliance (Fig. 3). With this election begins the tendency for Unity to lose the electorate in Ireland: the coefficient falls from 1.3 in 2010 to 0.8 and 0.9 in 2011 and 2014 respectively, till reaching the lowest point of 0.4 in 2018 (Fig. 2-5).

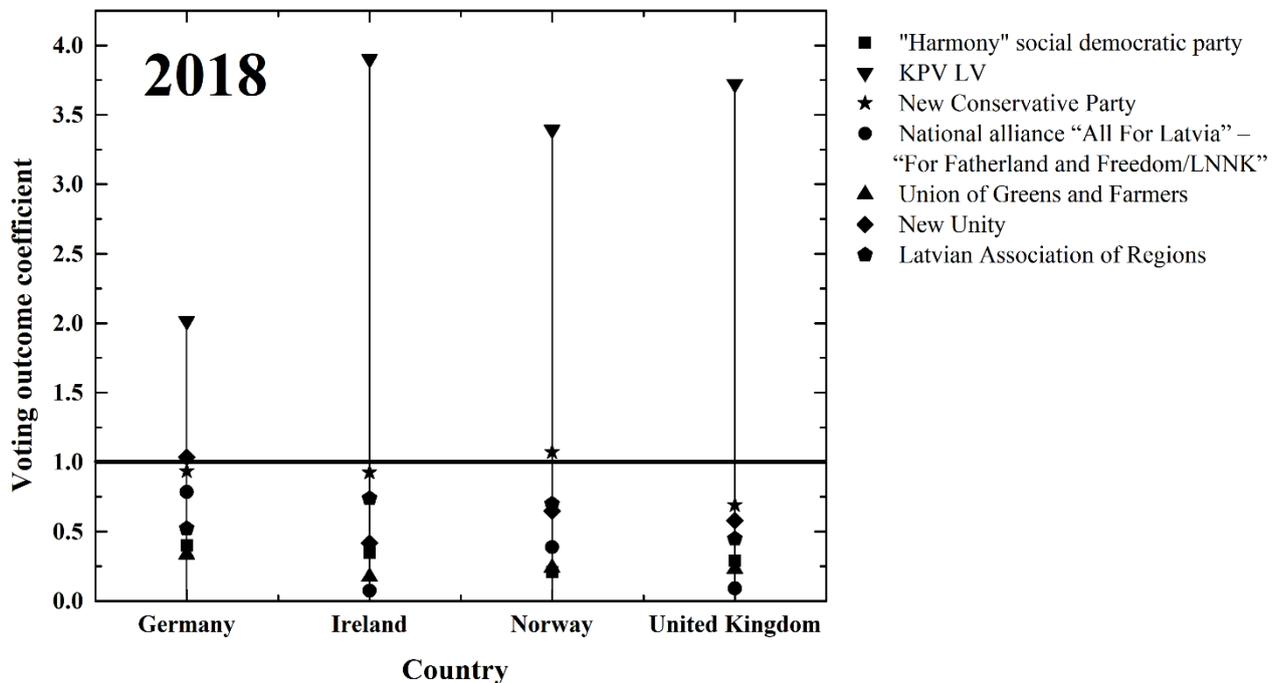


Source: author's calculations based on Central Election Commission 2010a, 2011a, 2014a, 2018a.

Fig. 4. Voting Outcome Coefficient in foreign countries (2014)

The data of the 12th Saeima election presents two new tendencies. First, one newcomer – the list "Latvian Association of Regions" - achieves an exceptionally high Voting Outcome Coefficient. If, in the previous elections, the lists with better results in foreign countries fluctuated in the coefficient value range

between 1 and 2, then the Latvian Association of Regions in 2014 reached the coefficient value of 1.9 in Germany, 3.8 in Norway, 4.1 in United Kingdom and the high value of 4.4 in Ireland (Fig. 4). Second, the curve of the coefficient of Unity and the National Alliance strongly flattens, and both lists lose their profile as parties for which the diaspora votes intensively.



Source: author's calculations based on Central Election Commission 2010a, 2011a, 2014a, 2018a.

Fig. 5. Voting Outcome Coefficient in foreign countries (2018)

The previously observed tendencies continue growing in the 13th Saeima election. It must be noted, that Mr. Artuss Kaimins, the leader of the Latvian Association of Regions in 12th Saeima elections, together with some other like-minded left the party and established a new party "KPV LV", which continued the tendency of achieving remarkably high Voting Outcome Coefficients in foreign countries in 2018 (Fig. 5). It must be noted that the electoral list "The Latvian Association of Regions" which participated in the 13th Saeima election cannot be regarded as the same as the one which participated in the 12th Saeima elections because of fundamental change in leadership, personalities and programmatic goals, although the name of the list remained the same. Because of this peculiarity, the Latvian Association of Regions has been included in the illustration of the 13th Saeima election data, although it did not get any seats in the parliament. This tendency deepens in the next election even more (Fig. 5).

The data from the 13th Saeima election shows extreme stratification in the results between KPV LV and the rest of the political parties. It shows visibly higher proportional results for KPV LV in the diaspora, and, in Ireland, the Voting Outcome Coefficient is almost four times bigger than the national results, and predominantly lower results in the group of other electoral lists which secured the seats in the parliament. The New Unity and the National Alliance lost their profile of "diaspora parties", while, at the same time, KPV consolidated the profile reached by the Latvian Association of Regions in the previous election.

3. The voting behaviour of the diaspora in the new polling stations in foreign countries

The calculation of Voting Outcome Coefficient indicates a tendency of disproportionately high results for the Latvian Association of Regions (in 2014) and KPV LV (in 2018) compared to the national results, the research analysed the voting pattern in the new polling stations for both parties against overall election

results in a particular country. To determine the data deviation in particular polling station against the overall voter support in particular country, the Polling Station Coefficient was introduced in the research. The point of reference "1" indicates the election result for KPV LV in a particular foreign country, while deviation below or above this point – represents the proportion of difference in the voting outcome in a particular polling station.

Table 2

Polling station coefficients for KPV LV in 13th Saeima election (2018)

Country	Poll.st. status	Polling station	Vote cast in the polling station (%)	Polling Station Coefficient
Ireland	New	Balbrigen	63.5	1.1
		Waterford	64.6	1.2
	Old	Limerick	62.6	1.1
		Dublin	46.1	0.8
United Kingdom	New	Burton	68.4	1.3
		Liverpool	70.0	1.3
		London (2)	26.5	0.5
		Margate	69.8	1.3
	Semi-new	Manchester	46.5	0.9
		Guernsey	50.0	0.9
		Birmingham	59.1	1.1
		Boston	68.8	1.3
		Bristol	51.1	1.0
		Derby	52.2	1.0
	Old	Edinburgh	41.0	0.8
		Mansfield	63.5	1.2
		Newry	65.4	1.2
		Peterborough	71.2	1.3
		London	23.7	0.4
		Bredford	62.1	1.2
Straumeni		64.6	1.2	
Norway	New	Kristiansand	53.5	1.1
		Alesund	51.4	1.1
	Semi-new	Bergen	46.4	1.0
	Old	Oslo	47.9	1.0
Germany	New	Munster	46.6	1.6
		Freiburg	34.2	1.2
	Semi-new	Bremen	35.9	1.3
		Kunzelsau	31.2	1.1
	Old	Dusseldorf	36.1	1.3
		Frankfurt am Main	27.8	1.0
		Hamburg	20.4	0.7
		Munich	21.9	0.8

Source: author's calculations based on Central Election Commission 2018a, 2018b.

The data from 2018 shows that, in the new polling stations, the tendency of stratification of the results between KPV LV and the rest of the electoral lists is even stronger than in 2014. If in the old and the so-called semi-new (established in the previous elections) polling stations the Polling Station Coefficients are mixed, then in all the new polling stations the coefficients for KPV LV are higher than 1 (with only one exception – the second polling station in London) (Table 2).

In the 12th Saeima elections, when the tendency of election data stratification in foreign countries against national results was milder than in the 13th Saeima election, the Polling Station Coefficient for the Latvian Association of Regions was also less pronounced than for KPV LV in the 13th Saeima elections. In 8 of 13 newly opened polling stations, the results were higher than the results in the particular country (author's calculations on the basis of the Central Election Commission data, author's calculations based on Central Election Commission 2010a,b, 2011a,b, 2014a,b, 2018a,b). Nevertheless, in those polling stations where the coefficient was lower than 1, the deviation was not very strong and was close to the results in the particular foreign country – from 0.7 up to 0.9.

In the diaspora, voters voted disproportionately more for the Latvian Association of Regions (in 2014) and KPV LV (in 2018), which can be regarded as the same political force. This tendency of disproportionate voting is even stronger in all newly opened polling stations in the foreign countries observed (the Polling Station Coefficient in all of them is high).

Conclusions, proposals, recommendations

- 1) Hypothesis No. 1 is proved: opening of new polling stations in foreign countries in the last four Latvian parliamentary elections cannot be regarded as an effective method for raising the turnout.
- 2) In 2018, the stratification of the election results (the Voting Outcome Coefficients) between KPV LV and the rest of lists became extreme. Proportionally, there are visibly higher results for KPV LV, and predominantly lower results in the whole group of other electoral lists.
- 3) Hypothesis No. 2 is proved: the newly opened polling stations were beneficial for the Latvian Association of Regions (in 2014) and KPV LV (in 2018). In 2018, all new polling stations, with only one exception, gave KPV LV proportionally better election results than in the foreign countries examined (the Polling Station Coefficient in all new polling stations was higher than 1).
- 4) To raise the voter turnout in foreign countries, the author recommends allowing voters in foreign countries to choose among all five constituencies instead of the present regulation which establishes that the Riga constituency also includes the electorate residing outside of Latvia. Strengthening of voters' regional identity can also have a positive impact on strengthening the diaspora's ties with Latvia, and on promoting democracy and voter turnout.

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