Latvia University of Life Sciences and Technologies

Faculty of Economics and Social Development

25th International Scientific Conference

ECONOMIC SCIENCE FOR RURAL DEVELOPMENT 2024

16-17 May 2024, Jelgava, Latvia

ECONOMIC SCIENCE FOR RURAL DEVELOPMENT

Proceedings of the
International Scientific Conference

No 58 Circular Economy: Climate Change, Environmental Aspect, Cooperation, Supply Chains

Efficiency of Production Process and Competitive of Companies

Integrated and Sustainable Regional Development

New Dimensions in the Development of Society

Rural Development and Entrepreneurship

No 58
Jelgava
2024

ISSN 2255-9930 on line
ISBN 978-9984-48-433-4 (E-book)
DOI: 10.22616/ESRD.2024.58

Abstracted / Indexed (proceedings will be submitted for evaluation by): AGRIS, CAB Abstracts, Crossref, EBSCO Academic Search Complete, EBSCO Academic Search Ultimate, EBSCO Central & Eastern European Academic Source, EBSCO Discovery Service, Web of Science CPCI (Clarivate Analytics), Google Scholar, Primo Central (ProQuest-ExLibris).
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Time schedule of the conference

Preparation of the proceedings and organization: January 2024 – May 2024

Conference: 16-17 May 2024

Researchers from the following higher education institutions, research institutions, and professional organizations presented their scientific papers at the conference:

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Editors, authors, and reviewers, within the International Scientific Conference „**Economic Science for Rural Development**" are to be fully committed to good publication practice and accept the responsibility for fulfilling the following duties and responsibilities, as set by the *COPE Code of Conduct and Best Practice Guidelines for Journal Editors of the Committee on Publication Ethics* (COPE).

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Foreword

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 16—17 May 2024 are published in one thematic volume:

No 58 Circular Economy: Climate Change, Environmental Aspect, Cooperation, Supply Chains
Efficiency of Production Process and Competitive of Companies
Integrated and Sustainable Regional Development
New Dimensions in the Development of Society
Rural Development and Entrepreneurship

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

CONTENTS

CIRCULAR ECONOMY: CLIMATE CHANGE, ENVIRONMENTAL ASPECT, COOPERATION, SUPPLY CHAINS

Proceedings of the 2024 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" No 58
Jelgava, LBTU ESAF, 16-17 May 2024, pp. 12-19
DOI: 10.22616/ESRD.2024.58.001

NATURAL RESOURCE TAX AS AN INSTRUMENT FOR SUSTAINABLE ENVIRONMENTAL GOVERNANCE

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Abstract. To contribute to a more efficient use of resources and the transition to a circular economy by reducing the amount of landfill waste, environmental tax policies need to be well thought out. The research aims to assess the use of environmental taxes for fostering the circular economy. All EU Member States use taxes to solve environmental governance problems; however, the tax revenues as a percentage of GDP tend to decrease, which indicates that GDP growth outpaces an increase in taxes. Environmental taxes mainly consist of energy and transport taxes, while the proportion of pollution and resource taxes is relatively lower. To achieve environmental governance goals, both tax collection and tax relief are simultaneously used to contribute to waste and packaging management and reduce environmental impacts. Increasing tax rates alone is not enough to reduce the amount of landfill waste, and more attention should be paid to educating the population and increasing the role of local governments in sustainable environmental governance.

Key words: environmental governance, environmental taxes, natural resource tax, household waste.
JEL code: Q58, Q53

Introduction

Natural resources on the Earth are constrained, and because of economic activity, they tend to slowly deplete. In contrast, the number of people and the amount of waste in the world tend to increase. In recent years, the circular economy has received increasing attention worldwide, as it represents a way to overcome the current production and consumption pattern based on the ever-increasing use of resources and an increase in the amount of waste. The circular economy aims to increase the efficiency of resource use, with a special focus on urban and industrial waste to achieve a balance between the economy, the environment and society (Ghisellini et al., 2016).

Based on the research problem, the authors put forward a hypothesis that natural resource tax is one of the instruments in sustainable nature governance, yet it is not a sufficient one. The research aims to assess the use of environmental taxes for fostering the circular economy. Accordingly, the following specific research tasks were set: 1) to examine trends in environmental as well as pollution and resource tax revenues in Latvia and other EU Member States; 2) to analyse the distribution of environmental tax revenues and the changes therein in Latvia; 3) to analyse the impacts of natural resource tax on a decrease in the amount of landfill household waste in Latvia. The research employed the monographic method – a review of scientific literature – and a quantitative method – statistical analysis. The research covered a period from 2016 to 2021, while an analysis of household waste involved a period from 2006 to more accurately identify the trends.

Research results and discussion

Natural resources are consumed 1.7 times faster than nature can generate the resources. This is also evidenced by the "Earth Overshoot Day" – it is the day when the global population have used up all the resources intended for the year and borrowed the resources from the coming years; in 2020 it was 22 August, in 2022 – 28 July (Lin et al., 2021). This is one of the reasons why it is necessary to abandon the linear economic model and shift to the circular economy model. The basic elements of the circular economy are the reduction of the overall use of materials and the reuse of products by extending their life cycles through repairing, refurbishing, remanufacturing, recycling, and recovering the materials in the

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production and use processes. In addition, the circular economy is operationalised at several levels: at the micro level they are products, companies and customers, at the meso level – eco-industrial parks and economic sectors, while at the macro level – the region, the country and beyond (Milios, 2021).

The transition to a circular economy is a complex process that requires extensive multi-level and multi-stakeholder engagement and could be facilitated by appropriate policy interventions. Given the role of a well-balanced set of policies that includes a variety of complementary policy instruments, the EU Circular Economy Action Plan (COM (2020) 98 final) includes a section about "getting the economics right" that encourages the broader application of economic instruments. This contributes to a comprehensive taxation system applied throughout the life cycle of a product, which includes a tax on raw materials and resources, reuse or repair tax relief and a tax at the end of the life cycle of a product (Milios, 2021).

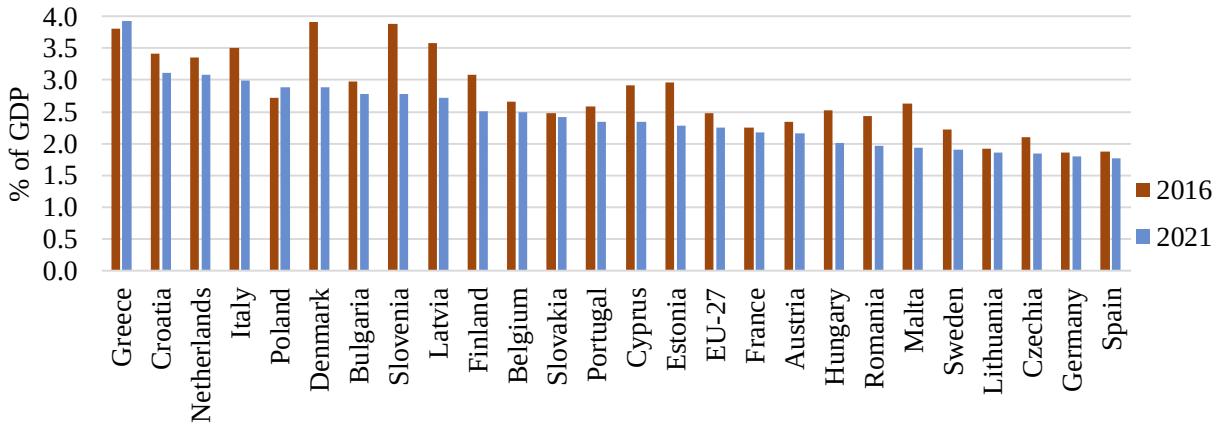
When designing policy measures, natural resource tax is an important factor in supporting the implementation of circular economy measures, as the tax can provide a financial incentive for companies to adopt more sustainable business practices (Hondroyiannis et al., 2024). Most of the natural resource taxes imposed on damaging activities were not initially intended for this purpose but to increase the revenues for the government budget (Freire-Gonzalez et al., 2022). However, in recent decades, the application of natural resource tax has been aimed at correcting negative externalities, which force polluters to pay for creating negative impacts on the environment as damage to the public good (Vence, Lopez Perez, 2021). Environmental taxation is one of the most important instruments among many policy measures, as it acts as a "compulsory" tax on significant pollution such as sewage, waste, noise and waste to preserve the ecological environment. If the intensity of environmental tax collection is too low, it is not enough to realize the protection of the ecological environment; however, if the intensity is too high, it might have a distortion effect on the development of related industries (Hua, 2024). The authors agree with this conclusion because too high taxes can hinder the development of resource-intensive industries, as well as increase illegal activities in the use of resources, environmental pollution and waste disposal.

A circular economy taxation system is a comprehensive fiscal policy approach that targets each stage of the life cycle of a product through various policy interventions. It involves three life cycle stages: production, product use and waste management. Each stage uses a different taxation approach to more accurately reflect the desired resource efficiency outcome (Milios, 2021). Several economic instruments are used to implement the principles of the circular economy: taxes, tax relief and subsidies. The environmental taxation system consists of raw material resource tax, reuse or repair tax relief and waste tax at the end of the life cycle of a product. Milios suggests imposing a raw material resource tax at the production stage, which could be applied at the raw material extraction stage, as well as at the first industrial process and also at the final consumption stage. Taxing raw materials can increase demand for secondary materials if they are as easily available as primary materials. It is also important to set a proper tax rate to balance the price difference between unprocessed materials and secondary materials. At the second or product use stage, according to Milios, tax relief is needed for reuse or repair services, e.g. a reduced value-added tax rate for repairs could increase consumer desire to buy repair and maintenance services. The purpose of tax relief is to encourage reuse, thereby increasing the life cycle of products, which results in significant material and energy savings. At the final stage, the author proposes a waste hierarchy tax, which is progressive, i.e. it gradually decreases as landfilling decreases (Milios, 2021).

Landfill tax is widely used in EU Member States, which is of great importance in improving waste management practices in the Member States. This allows significant amounts of waste to be diverted from landfills to waste management following the principles of the waste management hierarchy, which is the

main principle of EU waste management (Milios, 2021). The waste management hierarchy defines the prioritization of waste management options according to environmental and resource efficiency aspects: waste production prevention, preparations for reuse, recycling and other kinds of regeneration and disposal (Directive 2008/98/EC of the European Parliament …, 2008).

Across EU Member States, environmental tax revenues as a percentage of GDP vary significantly (Figure 1). In 2021, the lowest revenues were collected in Spain (1.8%), while the highest in Greece (3.9%), followed by Croatia and the Netherlands (3.1%). Among the Baltic States, the highest revenues were collected in Latvia (2.7%), followed by Estonia (2.3%), which was higher than the EU average (2.2%). In Lithuania, the revenues from environmental taxes were lower (1.9%). However, overall, the revenues from environmental taxes as a percentage of GDP tended to decrease in EU Member States from, on average, 2.5% in 2016 to 2.2% in 2021, as well as in the Baltic States: in Latvia (3.6% and 2.7%, respectively) and Estonia (3.0% and 2.3%), and only in Lithuania they were relatively constant (approximately 1.9%) (Eurostat, 2023). Overall, this trend shows that in most EU Member States, GDP growth outpaced an increase in the revenues from environmental taxes.



Source: authors' construction based on European Commission data

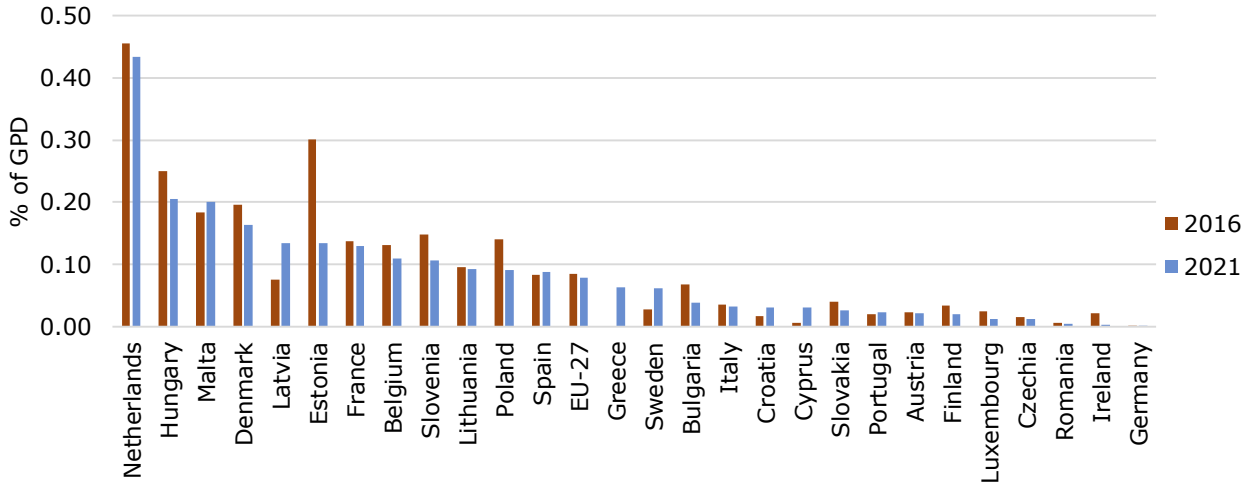
Fig. 1 **Environmental tax revenues in EU Member States in 2016 and 2021, as a % of GDP**

The proportion of environmental tax revenue in total tax revenue also varied widely across EU Member States. On average in the EU, the proportion decreased from 6.2% in 2016 to 5.5% in 2021, while in four Member States (Greece, Bulgaria, Croatia and Latvia) the environmental tax revenues made up more than 8% of the total tax revenue. However, the role of environmental taxes is less significant in economically advanced countries with higher GDP per capita. The lowest proportion of environmental taxes was reported in Luxembourg, Germany, Sweden, Spain and France, i.e. less than 5% of the total tax revenue (Eurostat, 2023).

Environmental taxes include not only resource and pollution taxes but also energy resource and vehicle taxes. The distribution of tax revenues also varies significantly across EU Member States. In 2021, the energy tax revenues as a % of GDP were the highest in Greece (3.1%), Poland (2.6%) and Bulgaria (2.5%). A relatively high proportion was reported also in Latvia (2.2%), which was higher than the EU average (1.8%). However, the proportion of vehicle taxes was higher in Slovenia (1.9%), Poland (1.8%) and also in Latvia (1.7%), which exceeded the EU average (1.1%).

The proportion of resource and pollution taxes was relatively low in all EU Member States, yet the differences between the Member States were significant (Figure 2). The highest revenues from the taxes as a % of GDP were reported in the Netherlands (0.434%), Malta (0.205%) and Hungary (0.201%). Latvia

(0.134%) was in fifth place, Estonia (0.133%) was in sixth place and Lithuania (0.093%) was in 10th place; however, in all the Baltic States it was higher than the EU average (0.079%). Environmental and pollution tax revenues as a % of GDP have been decreasing in the last few years in most Member States and also on average in the EU. Moreover, according to Eurostat data, the most significant decrease was reported in Estonia (from 0.301% in 2016 to 0.133% in 2021), and Latvia has surpassed its neighbouring countries because in Latvia, the proportion has increased (from 0.075% to 0.134%, respectively). The most significant increase in resource and pollution tax revenues as a % of GDP in 2021 compared with 2016 was reported in Greece, Latvia, Sweden and Cyprus, i.e. the increase outpaced GDP growth.



Source: authors' construction based on European Commission data

Fig. 2 **Taxes on pollution and resources in EU Member States in 2016 and 2021, as a % of GDP**

In absolute terms in Latvia, the total environmental tax revenue increased until 2018 (Table 1), while in 2019 it decreased by 8.4% or EUR 82.4 million, but then it gradually increased again. However, in 2021 it had not reached the 2017 and 2018 levels. The change in the proportion of tax revenues was more significant in recent years, i.e. the proportion of energy resource tax revenues tended to decrease (from 85.2% in 2016 to 81.9% in 2021); however, the proportion of pollution and resource tax revenues tended to increase (from 2.1% to 4.8%, respectively). Besides, the proportion of pollution and resource tax revenues in the total tax revenue also tended to increase (from 0.24% to 0.43%, respectively), even though the proportion of environmental tax revenues tended to decrease overall (from 11.7% to 9.0%, respectively). This means that labour and consumption tax revenues increased faster than environmental tax revenues in Latvia.

Table 1

Environmental tax revenues and their proportion in total tax revenue in Latvia

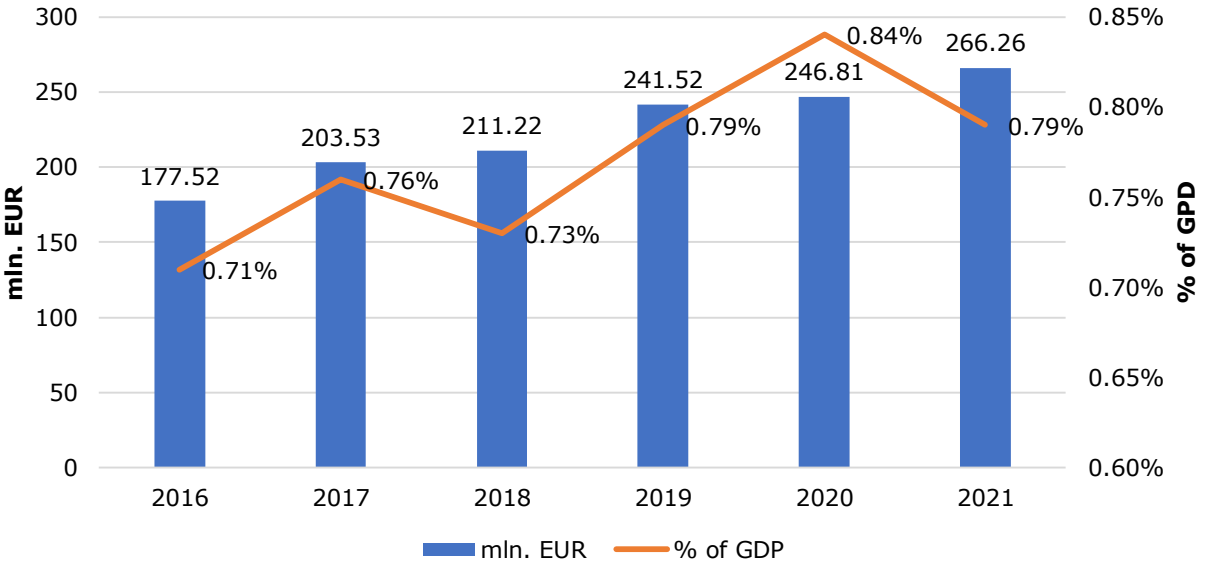
Indicator	2016	2017	2018	2019	2020	2021
Energy resource tax revenues, million EUR	773.2	801.8	835.5	752.1	759.5	750.9
Transport tax revenues, million EUR	115.7	112.9	115.8	116.4	119.2	122.5
Pollution and resource tax revenues, million EUR	19.0	26.9	31.4	31.8	35.5	44.0
Changes in pollution and resource tax revenues compared with the previous year, %	*x*	*41.6*	*16.7*	*1.2*	*11.8*	*23.8*
Total environmental tax revenue, million EUR	907.9	941.5	982.7	900.3	914.2	917.4
Changes in total environmental tax revenues compared with the previous year, %	*x*	*3.7*	*4.4*	*-8.4*	*1.5*	*0.3*
Proportion of energy resource tax revenues, %	*85.2*	*85.2*	*85.0*	*83.5*	*83.1*	*81.9*
Proportion of transport tax revenues, %	*12.7*	*12.0*	*11.8*	*12.9*	*13.0*	*13.4*
Proportion of pollution and resource tax revenues, %	*2.1*	*2.9*	*3.2*	*3.5*	*3.9*	*4.8*
Proportion of environmental tax revenues in total tax revenue, %	*11.7*	*11.2*	*10.9*	*9.6*	*9.8*	*9.0*
Proportion of pollution and resource tax revenues in total tax revenue, %	*0.24*	*0.32*	*0.35*	*0.34*	*0.38*	*0.43*

Source: authors' calculations based on Official statistics of Latvia data (2024a)

A faster increase in pollution and resource tax revenues is also expected in the future in Latvia. Amendments to the Natural Resources Tax Law stipulate an increase of tax rates and make new items taxable from 1 July 2024: tobacco product filters, textile products, wet wipes, balloons and other plastic-containing products (Amendments to the Natural Resources Tax..., 2023). As regards the extraction of natural resources, natural resource tax (NRT) rates were increased in 2024 and an increase is planned for 2026 as well.

In Latvia, the purpose of the NRT Law is to promote an economically efficient use of natural resources, limit environmental pollution, reduce the production and sale of environment-polluting products, contribute to the introduction of new, environment-friendly technologies, support the sustainable development of the national economy, as well as fund environmental protection measures (Natural Resources Tax..., 2005). Importantly, the transition to a circular economy could be facilitated by instruments that can interact, which requires a comprehensive policy framework. In Latvia, significant NRT relief is also granted to achieve environmental governance goals. This relief is an important instrument for the development and implementation of environmental policy goals, thereby providing a considerable incentive for introducing a waste and packaging management system for environmentally harmful goods and preserving a cleaner environment in the long term. The NRT relief system was created with a specific goal - to meet the obligations of Latvia regarding meeting the requirements of EU directives in the field of waste management and to implement the principle of extended producer responsibility (Ministry of Finance, 2022). The producer extended responsibility scheme is an aggregate of measures upon implementation of which a producer of goods bears financial or financial and organisational responsibility for efficient management of the waste of its goods and packaging placed on the market (Natural Resources Tax…, 2005).

In Latvia, the size of NRT relief increased every year, reaching EUR 266.26 million in 2021, which was EUR 229.9 million or six times more than the total NRT revenue in that year (Figure 3). The size of NRT relief also increased if expressed as a % of GDP (from 0.71% in 2016 to 0.79% in 2021).

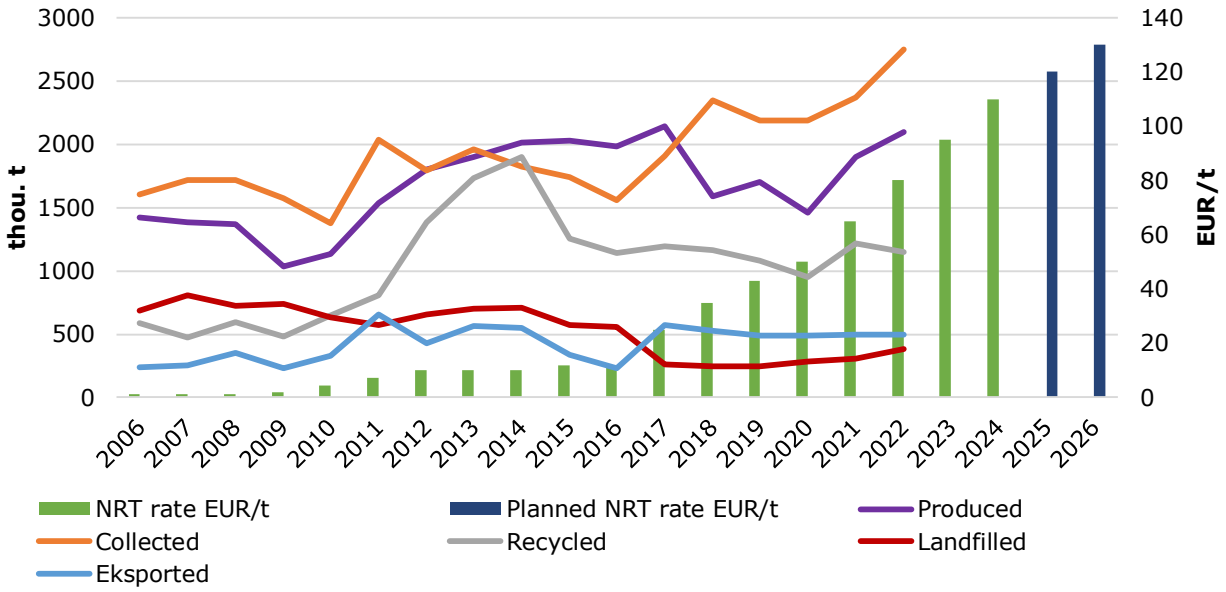


Source: authors' construction based on Ministry of Finance data, 2023.

Fig. 3. **Size of natural resource tax relief in Latvia in 2016-2021, mln. EUR, % of GDP**

The Ministry of Finance of the Republic of Latvia states that NRT relief is effective because, in the last five years, more than 90% of the total amount of packaging or environmentally harmful product waste was managed through the extended producer responsibility system (Ministry of Finance, 2022). Thus, the goals of recycling and regeneration of waste packaging or environmentally harmful goods set in the relevant regulatory acts and the European Union directive stipulating that the regeneration level should be at least 60% were achieved, while Latvia already reached a rate of 65.2% in 2021 (Eurostat, 2023).

However, achieving the long-term goals of environmental governance also requires a continuous increase in taxes on environmentally harmful activities. To reduce the amount of landfill household waste, the NRT rate for waste disposal in Latvia has been increased every year throughout the period of analysis since 2016 and an increase is planned for the future as well. To assess the progress that has been made in this area, Figure 4 shows Official statistics of Latvia data for a longer period, i.e. from 2006. The data clearly indicate that the amount of waste produced tended to increase. It should be positively viewed that the amount of collected waste tended to increase. Moreover, since 2017 it has been larger than the amount of waste produced, which means that previously produced waste was also collected. Waste recycling, even though unbalanced, still shows an increasing trend, which allows the amount of landfill waste to be reduced as well. However, the amount of landfill household waste significantly decreased only in 2017, possibly owing to the doubling of the NRT rate from 12 EUR/t in 2016 to 25 EUR/t in 2017, as well as other measures, which involved increased waste sorting, education of the population and promotion of collective consciousness. In 2017, amendments to the Waste Management Law entered into force, which established stricter prerequisites for sorting household waste. In addition, the export of waste also increased from 229 thou. t in 2016 to 574 thou. t in 2017 or 2.5 times. The shutdown of the Liepaja metallurgical plant in 2016 had a significant impact on an increase in waste exports, as scrap metal was no longer processed in Latvia, but was sorted and exported to Turkey, Southeast Asian countries and China. All these measures together made it possible to significantly reduce the amount of landfill household waste from 558 thou. t in 2016 to 262 thou. t in 2017 or by 53%.



Source: authors' construction based on Official statistics of Latvia data (2024b) and Natural Resources Tax Law

Fig. 4 **Amounts of household waste (thou. t) and tax rates for waste disposal in Latvia (EUR/t)**

However, a slight decrease in landfill waste continued in Latvia for only 3 years and, since 2020, it has increased again, despite the annual increase in the tax rate. This was also partially affected by a decrease in waste exports caused by the restrictions imposed during the COVID-19 pandemic.

The NRT rate for household waste disposal was significantly increased from 1.06 EUR/t in 2006 to 110 EUR/t in 2024, and an increase in the rate by 10 EUR/t per year is also planned for the following years. As the NRT rate increases, the waste management tariff also increases and, consequently, the interest of households and companies is increased both in reducing the amount of waste produced, in sorting waste and reducing environmental pollution, as well as in introducing new environment-friendly technologies into the companies, and most importantly, in reducing the amount of landfill waste. Increasing tax rates on natural resources contributes to circular economy policies that observe the principles of reuse, reduction and recycling; as a result, natural resources and energy are consumed less, and waste recycling is increased.

However, increasing the NRT rate alone does not give a sufficient result, and more attention should be paid to the education of the population, especially the young generation, as well as increased fines for not sorting waste. Besides, as shown in Figure 4, the amounts of both produced and collected waste tended to increase, whereas the amount of recycled waste did not increase as fast.

For better environmental governance in Latvia, changes are also being planned in the current distribution of NRT revenues related to natural resource extraction and environmental pollution, including waste disposal, between the national and local government basic budgets. Of the total tax revenue related to household waste disposal, 60% goes to the national basic budget and 40% to the budgets of local governments in whose territory the waste is landfilled. In 2025, however, the above-mentioned distribution of budgets is going to change, and 50% will go to the national government, 30% to local governments and 20% to municipalities included in the respective waste management region (Natural Resources Tax..., 2005). Besides, with the latest amendments to the NRT law, local governments have more responsibility for waste management, as well as the law clarifies the purposes on which the local governments can spend NRT revenue, thereby increasing the role of municipalities in sustainable environmental governance.

Conclusions

1) According to the scientific literature, environmental taxes are one of the instruments that promote sustainable environmental governance and the transition to a circular economy.

2) All EU Member States use tax revenues to solve their environmental governance problems. In 2021, the total tax revenue spent on this purpose was on average 2.2% of GDP in the EU and 2.7% of GDP in Latvia; however, the proportion tended to decrease, which indicated that GDP growth outpaced an increase in tax revenue.

3) Environmental taxes mainly consist of energy resource and transport taxes, and the proportion of pollution and resource taxes is relatively lower – in 2021, the EU average was 0.079%. However, the proportion of the taxes increases every year. Significantly higher pollution and resource taxes were in the Netherlands (0.434%), Latvia (0.134%) was in fifth place among EU Member States and in first place among the Baltic States.

4) In 2021 compared with 2016 in Latvia, pollution and resource tax rates have been increased several times, the revenue from the taxes has increased more than 2.3 times, and their proportion in total tax revenue has also increased.

5) To achieve the environmental governance goals, both NRT collection and NRT relief are simultaneously used to contribute to waste and packaging management and reduce environmental impacts.

6) Increasing the NRT rate alone is not enough to reduce the amount of landfill waste, and more attention should be paid to educating the population and increasing the role of local governments in sustainable environmental governance.

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Proceedings of the 2024 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" No 58
Jelgava, LBTU ESAF, 16-17 May 2024, pp. 20-31
DOI: 10.22616/ESRD.2024.58.002

TRANSITIONING TOWARDS SUSTAINABLE AGRICULTURE IN THE BALTIC COUNTRIES – STRATEGIC AND REGULATORY FRAMEWORK ASSESSMENT

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Abstract. The agricultural sector in the Baltics has undergone significant transformations since gaining independence from the Soviet Union, transitioning from centrally planned systems to market-oriented approaches; and now, initially focused on increasing productivity and achieving self-sufficiency, agricultural policies in the Baltic countries has shifted towards environmental sustainability and climate resilience, aligning with the objectives of the European Green Deal. However, transitioning from conventional farming practices to more sustainable methods presents challenges for policymakers and farmers alike, necessitating a thorough examination of existing regulations and their effectiveness in promoting environmentally friendly practices. This study aims to analyse the strategic and legal aspects of sustainable agriculture in the Baltic countries, with a focus on field crop production. Two main tasks have been formulated: first, to identify key strategic and legal factors influencing sustainable agriculture in alignment with the EU strategies, and second, to conduct a case study investigating these factors' impact on sustainable agriculture in the Baltic States, particularly how they align with the EU sustainability goals.

The conclusions drawn from the analysis emphasize the importance of sustainable land management practices in mitigating environmental impacts and fostering agricultural resilience. While Estonia demonstrates average to good ratings across soil, water, air, and biodiversity factors, Latvia and Lithuania face challenges, particularly in soil condition and air pollution. However, it is concluded, that despite the progress, there is an urgent need for further evaluation and adaptation to address specific challenges, such as soil degradation, biodiversity loss, and increasing emissions from agricultural activities.

Key words: sustainable land management, Baltics, policy, regulations, agriculture.
JEL code: Q18, Q53

Introduction

The three Baltic countries - Estonia, Latvia, and Lithuania - have undergone significant transformations in their agricultural sectors since gaining independence from the Soviet Union in the early 1990s. Following decades of centralised planning and collective farming under the Soviet rule (Federal Research Division, 1996), these nations embarked on a path of market liberalisation, privatisation, and integration into European and global markets. Initially, their agricultural policies aimed at dismantling collective farms, privatising land and enterprises, and adhering to the European Union (EU) standards. The focus was on increasing productivity, modernising infrastructure, and achieving food self-sufficiency. However, the introduction of the European Green Deal in 2019 marked a shift, setting ambitious goals for climate neutrality, biodiversity conservation, and sustainable food systems by 2050. This recalibrated the Baltic countries' agricultural policies towards greater emphasis on environmental sustainability, climate resilience, and ecosystem conservation. Consequently, policymakers now strive to align their agricultural strategies with the Green Deals objectives, investing in measures to promote biodiversity, reduce carbon emissions, and enhance agricultural resilience. However, policymakers also find themselves at a crossroads due to the need for many farmers, who previously operated under the Soviet-era practices and switched to a more productive approach in the following two decades, to transition to new, more sustainable methods with the new EU Strategies (Zalmane, 2024). This significant shift in farming practices has sparked discussions and distrust within the system, further complicating policy making efforts.

In this context, understanding the effectiveness of existing regulations in promoting sustainable agriculture in the Baltic countries is crucial. There is a need to investigate the implementation and

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enforcement of these regulations, identifying opportunities and challenges in aligning agricultural policies with the goals of the European Green Deal.

Therefore, **the aim** of the study is to analyse the strategic and legal aspects of sustainable agriculture in order to determine their effectiveness in fostering the transition towards environmentally friendly farming practices, **focusing on field crop production**. To achieve the aim, two **tasks** have been set:

1) to identify the main strategic and legal aspects affecting sustainable agriculture in the Baltics according to the EU strategies;

2) to carry out a case study, where the main strategic and legal factors impacting sustainable agriculture in the Baltic States will be investigated, paying particular attention to how they align with the EU's sustainability goals towards agriculture.

Research results and discussion

1. Countries' comparison and description of the EU strategic and regulatory base

1.1. The Baltic countries' characteristics

All three Baltic countries - Estonia, Latvia and Lithuania - are located in the temperate climate zone, where the climate is significantly influenced by the Baltic Sea. Despite the fact that they are characterized by a relatively short vegetation season, as well as a high level of humidity in the hottest months of the year and distinctly cold winters (HELCOM, 2021), agriculture is a widely developed industry in the Baltic region. Of the total land area, agricultural land in the Baltics occupies approximately half of the total area, while the other half is occupied by forests. The fact that agricultural production plays a significant role is also shown by the percentage within the gross domestic product, where, for example, Latvia ranks first among the countries of the EU with a share of 5%, where the average for the EU-27 in 2022 is 2.2% (Global economy, 2024). Also, an important indicator is that, despite the fact that the total agricultural land in Estonia and Lithuania has been slightly decreasing in recent years (Table 1), the arable land areas have a tendency to increase, which indicates an active acquisition of agricultural land directly for production, which is expected to be influenced by the establishment of uncultivated land for production, as well as the use of perennial grass areas in the production of field crops.

Table 1

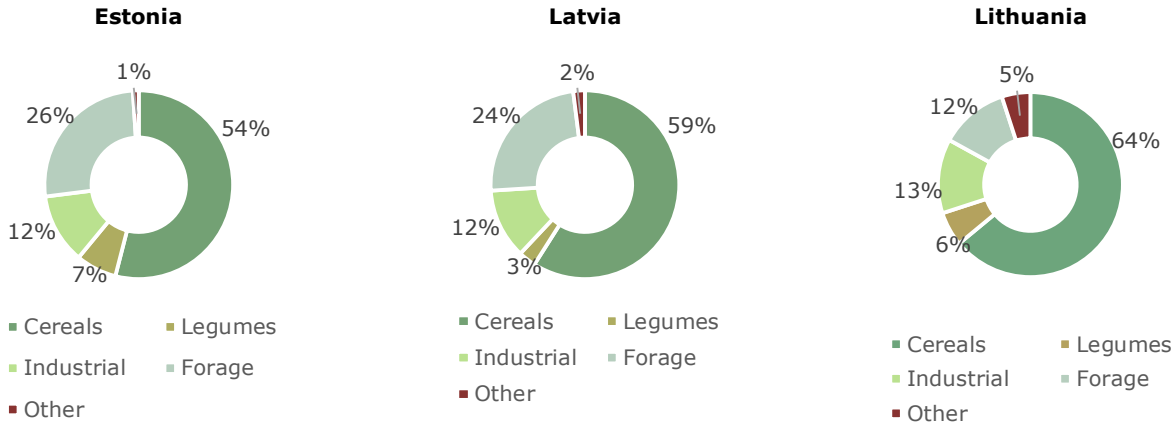
Main indicators of agriculture in the Baltic countries

	Estonia			Latvia			Lithuania		
	2015	**2020**	**2022**	**2015**	**2020**	**2022**	**2015**	**2020**	**2022**
Utilised agricultural area (UAA), thous. ha	993.6	975.3	986.2	1884.8	1969.0	1970.4	3006.0	2942.8	2911.3
Arable land, thous. ha	669.7	694.4	707.3	1229.8	1333.5	1356.7	2172.0	2249.4	2292.5
Organic area of UUA, thous. ha	155.8	220.8	231.0	231.7	291.2	297.0	213.6	235.5	271.3
Organic area of UUA, %	15.7	22.4	23.4	12.3	14.8	15.1	7.1	8.0	9.3
GDP from Agriculture, %	2.9	2.1	2.5	3.5	4.0	5.0	3.4	3.5	4.0
Proportion of persons employed in the agri sector, %	3.9	3.0	2.6	7.9	7.2	6.8	9.1	5.7	5.5
Number of farms	**	11369	**	**	68983	**	**	132076	**

Source: author's construction based on Statistics Estonia; Official statistics of Latvia; Official statistics portal of Lithuania
** ***no data***

Indeed, arable farming serves as the cornerstone of agriculture in the Baltic countries, where cereals, including winter and spring wheat, barley, and oats, dominate approximately half of the cultivated land.

Over the past two decades, there has been a notable increase in the cultivation of winter and spring oilseed rape. However, certain regions, particularly in Estonia and Latvia, face challenging soil properties and climatic conditions, leading to a decline in oilseed rape cultivation in specific regions. Besides field crops, the cultivation of vegetables, potatoes, and fruits and berries also holds significance in the agricultural landscape.



Source: author's calculations based on Statistics Estonia; Official statistics of Latvia; Official statistics portal of Lithuania

Fig. 1. **Structure of crop area in the Baltic States in 2020**

Beside arable crop cultivation, also livestock farming plays a pivotal role in agricultural sector in Baltic states, encompassing dairy farming, pork and beef production, and poultry farming. However, for the scope of this discussion, the focus is on arable crop cultivation, leaving livestock farming beyond current exploration. But it is crucial to note that both livestock and arable crop cultivation contribute to different emissions factors (Latvia's Informative Inventory…, 2022). It is essential to research emission factors, because they allow to identify which agricultural activities contribute most to greenhouse gas emissions, guiding efforts to reduce environmental impact (Table 2).

Table 2

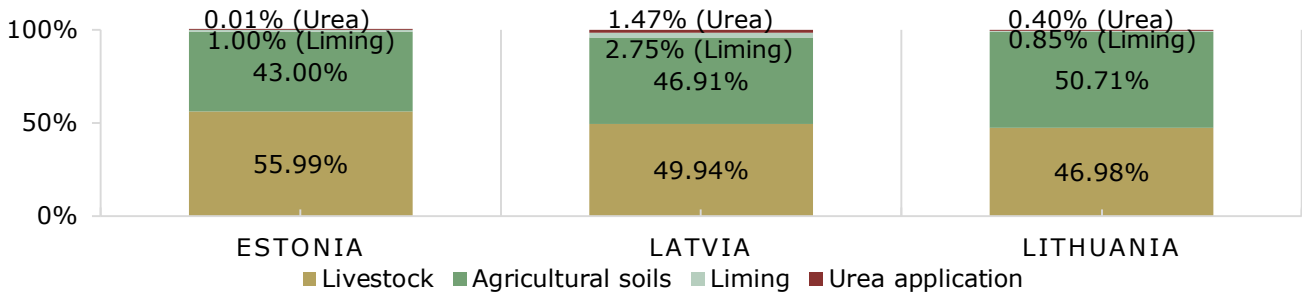
Emission factors in the Baltic States and their share from agricultural activity

	Estonia		Latvia		Lithuania	
	2015	**2020**	**2015**	**2020**	**2015**	**2020**
NH_3, total, Gg	10.94	9.65	16.08	15.96	39.75	39.61
- NH_3, agri, %	93.12	93.46	86.22	86.24	95.87	95.59
NMVOC, total	21.52	23.89	35.74	35.78	50.20	45.94
- NMVOC, agri, %	21.62	19.04	23.56	22.63	27.97	25.95
NO_x, total, Gg	30.63	23.24	37.76	32.86	57.48	52.67
- NO_x, agri, %	12.93	15.65	18.51	21.19	18.13	21.02
$PM_{2.5}$, total, Gg	6.65	5.14	16.47	16.82	9.20	7.30
- $PM_{2.5}$, agri, %	4.16	4.89	2.74	2.91	4.84	5.05
SO_2, total, Gg	36.17	11.08	3.59	3.52	15.32	11.27
- SO_2, agri, %	0.35	0.80	6.73	9.36	0.80	1.15

Source: European Environment Agency's database

Although in general, the data show that emissions tend to decrease in the examined countries since 2015, agriculture is still one of the main emitters among all sectors, where their increase can be

observed. The main agricultural air polluters, such as methane (CH_4) and nitrous oxide (N_2O) are greenhouse gases that significantly contribute to climate change. These emissions primarily stem from livestock farming, manure management, and fertilizer use in crop production.



Source: author's construction based on European Environment Agency's database

Fig. 2. Structure of emission sources in agricultural sector in the Baltic States in 2020

In 2020, in all three countries all the emissions from agricultural sector are mostly divided between livestock and agricultural soil management. Comparing agricultural emission accounts from 2015 to 2020, it can be observed, that the overall sector's emissions have increased in Estonia and Latvia, but declined in Lithuania (Table 3).

Table 3

Changes in emission factors from the agricultural sector in the Baltic States comparing 2015 and 2020, (Gg CO_2 equivalent)

	Estonia			**Latvia**			**Lithuania**		
	2015	**2020**	**%**	**2015**	**2020**	**%**	**2015**	**2020**	**%**
Livestock	828.91	878.84	*+6.0*	1152.98	1123.83	*-2.5*	2382.12	2117.73	*-11.1*
Agricultural soils	621.93	675.03	*+8.5*	972.34	1055.61	*+8.6*	2094.01	2285.74	*+9.2*
Liming	9.04	15.73	*+74.0*	19.94	61.87	*+210.3*	19.25	38.18	*+98.3*
Urea	0.03	0.13	*+378.3*	6.21	9.10	*+46.6*	42.26	66.10	*+56.4*
Total	**1459.91**	**1569.74**	***+7.5***	**2151.47**	**2250.41**	***+4.6***	**4537.64**	**4507.75**	***-0.7***

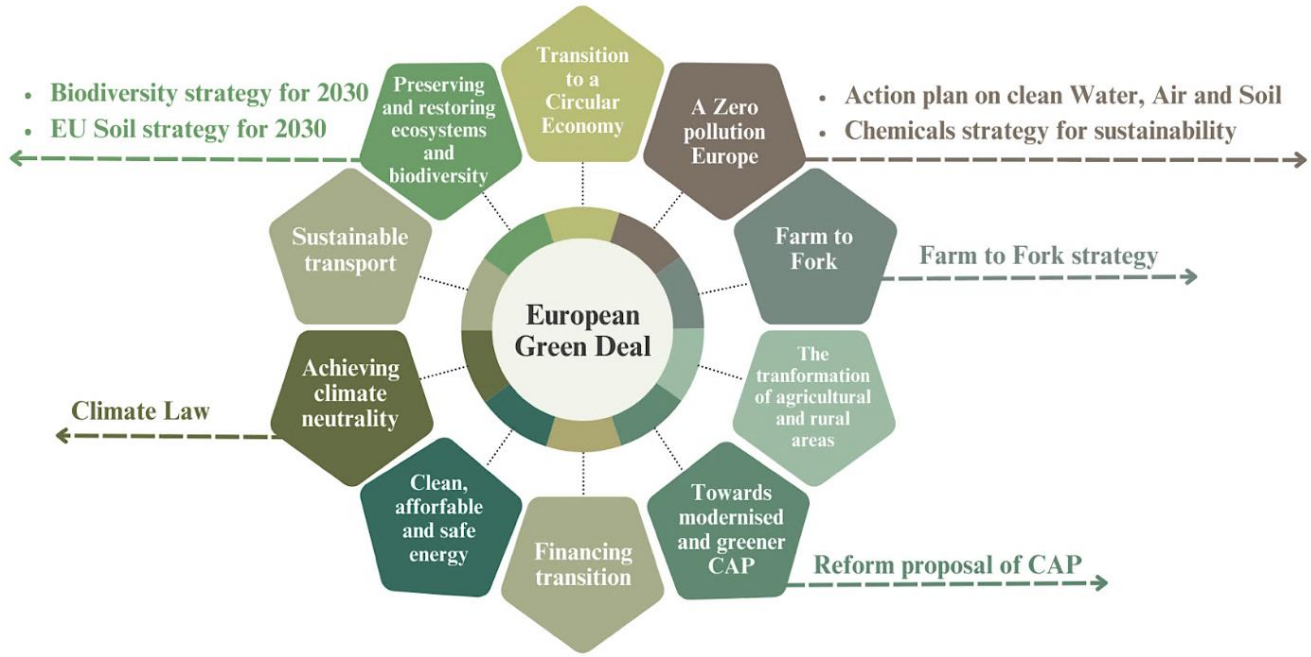
Source: author's construction based on European Environment Agency's database

Since at least one half of the emissions in the entire Baltic region comes from the management of agricultural land and, assuming that these emissions will continue to increase as a result of both – arable land increase and farm productivity, it is essential to understand the most effective approach how to lower total emissions from such agricultural operations.

As members of the EU, the Baltic countries are subject to the EU regulations and directives governing agricultural practices. Compliance with EU standards is essential to ensure access to EU funding, maintain market access, and uphold environmental and food safety standards, where ensuring alignment between national agricultural policies and EU regulations holds paramount importance for fostering the long-term sustainability and competitiveness of the Baltic agricultural sector. Additionally, evaluating the implementation of sustainable land management practices (SLM) across various EU strategic and regulatory frameworks provides valuable insights into the effectiveness of policy measures, where such assessment facilitates comparisons between national strategies and EU goals, showing how effectively countries are progressing towards achieving their sustainability targets and enhancing the overall resilience of their agricultural systems.

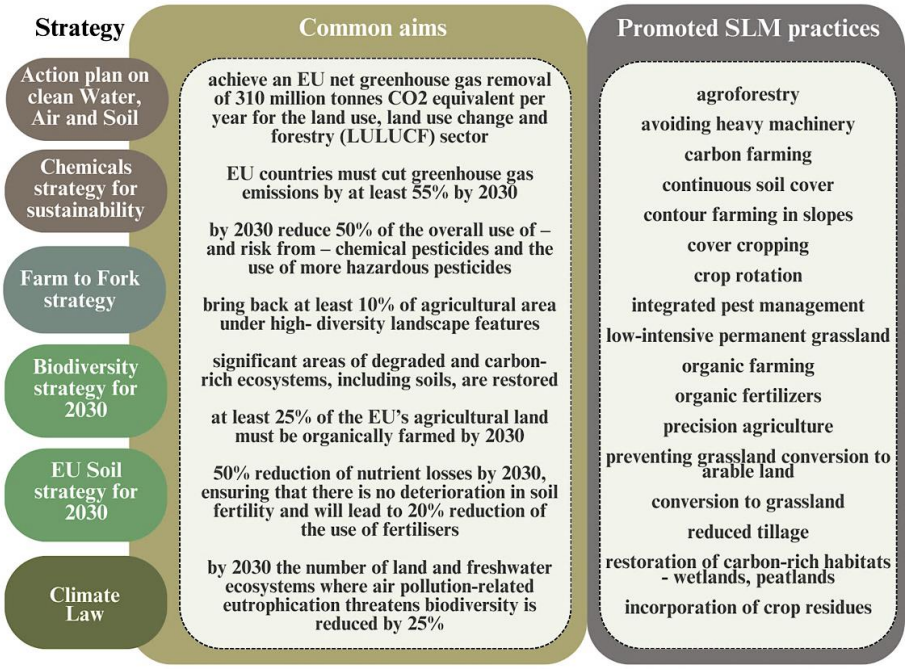
1.2. EU strategic and regulatory framework

In the continuation of this subsection, the EU's strategic and regulatory framework for sustainable land management will be examined, where the cornerstone strategy for Europe, the **European Green Deal**, introduced by the European Commission in December 2019, stands as the EU's principal strategy for achieving climate neutrality and advancing sustainable development. This initiative aims to reshape the EU into a more environmentally conscious and resilient economy, while also upholding principles of social equity and economic prosperity. At its core, the European Green Deal strives to curb greenhouse gas emissions, foster renewable energy sources, transition to a circular economy, safeguard biodiversity, and promote sustainable practices in agriculture and food systems (European commission, 2019) (Fig. 3). It includes measures for various sectors such as energy, construction, finance, transportation, agriculture, where, considering SLM within agricultural scope, most relevant strategies and targets for the sector comes from five different key actions (Fig. 4).



Source: author's construction based on (European Commission., 2019)

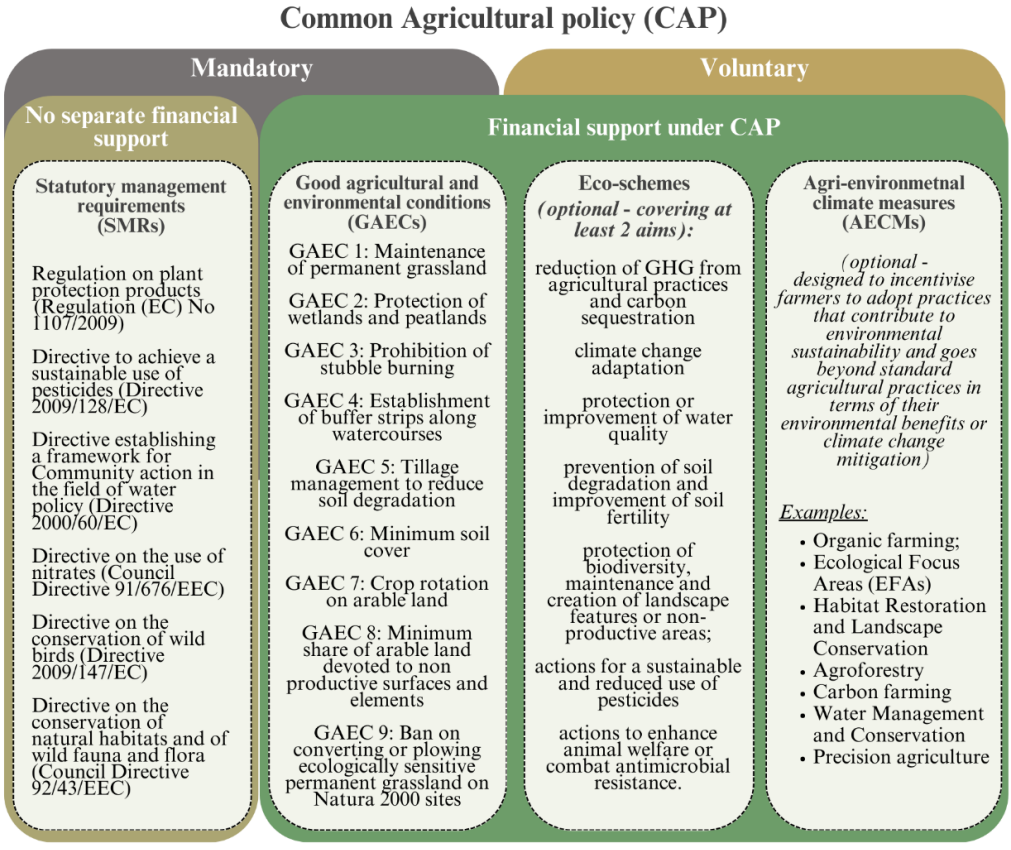
Fig. 3. **The main directions of the European Green Deal and their relevant strategies for agricultural sector**



Source: author's construction

Fig. 4. **The European Green Deal strategies relevant for SLM, common aims and promoted agricultural practices**

The EU pursues its set goals through a mix of regulatory frameworks, financial incentives, research, and partnerships, with the Common Agricultural Policy (CAP) serving as a primary tool (European commission, 2023). CAP integrates mandatory measures – directives, regulations, and voluntary measures to advance sustainability in agriculture and land management across Member States (Fig. 5).



Source: author's construction based on (European Parliament…, 2021)

Fig. 5. **Framework of the Common Agricultural Policy (CAP)**

The CAP consists of several parts where, in order to receive more significant financial support, it is necessary to integrate more agricultural practices in line with the EU's goals. For example **statutory management requirements** (SMRs) are mandatory for every farmer nevertheless they receive the financial support under CAP or not, and SMRs include such measures which are binding for every farmer who operates in the sector. Most of the time requirements in directives and regulation are implemented in national legislation. If farmer decides to apply for financial support under CAP, he/she must correspond to *conditionality* or, in other words, respect a set of basic rules. Conditionality includes the previous mentioned SMRs and also **good agricultural and environmental conditions** (GAECs). In order to receive even more significant financial support, every Member State, according to the guidelines, develops voluntary measures, where, if farmer corresponds to SMRs and GAECs, it is possible to implement one or various different **eco-schemes** and **agri-environmental climate measures** (AECMs).

CAP is one of the oldest and most significant policies of the EU, having been established in 1962 (Gabel, 2024). It is usually designed for exact time period, where the current CAP is designed for 7 years period – 2 transitional years from 2021 to 2022 and the main period from 2023-2027 prioritizing a more democratic approach, ensuring that each Member State can tailor it to their specific needs and goals (European Commission, 2018). This design empowers countries to implement policies that resonate with their agricultural sectors while fostering greater participation and decision-making at the local level. Additionally, the CAPs flexibility allows for the adaptation of strategies to diverse regional contexts, promoting a more inclusive and responsive agricultural policy framework across the EU.

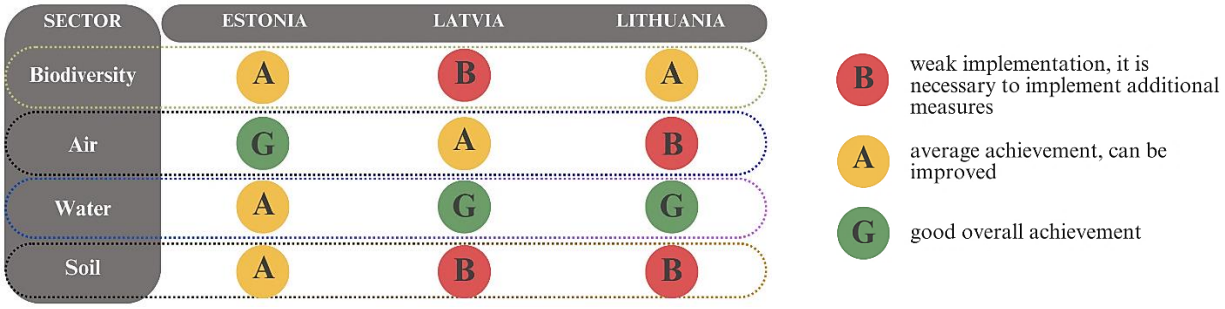
It is essential to evaluate how the Baltic States, unified since their independence from the USSR, individually implement CAP and its alignment with their sustainability goals, alongside assessing how local legislation supports these endeavours.

2. Case study and comparative analysis

The case study and comparative analysis will be carried out based on both the Commissions national evaluation and recommendations for the development of the CAP, where, by comparing the recommendations with the comparison of the countries discussed in the first chapter, the achievements and shortcomings of each country in the implementation of sustainable practices will be evaluated, as well as the CAP developed by all three Baltic States, considering also the implemented regulations in the national legislation that correspond to the legal basis of the SMRs.

2.1. Risk factors' assessment

European Commission, in the end of the 2020, came up with recommendations for CAP implementation for every Member State (European Commission, 2020), where each country was analysed in depth taking into account various objectives – food security, environment and climate change actions, socio-economic and rural area strengthening, knowledge sharing and innovation fostering. Based on this evaluation and observing country characteristics, risk factors that are defined in connection with sustainable land management were identified, as well as their current state was evaluated (Fig. 6).



Source: author's construction

Fig. 6. **Assessment of thematic sectors in relation to the fulfilment of climate and environmental requirements in the Baltic States**

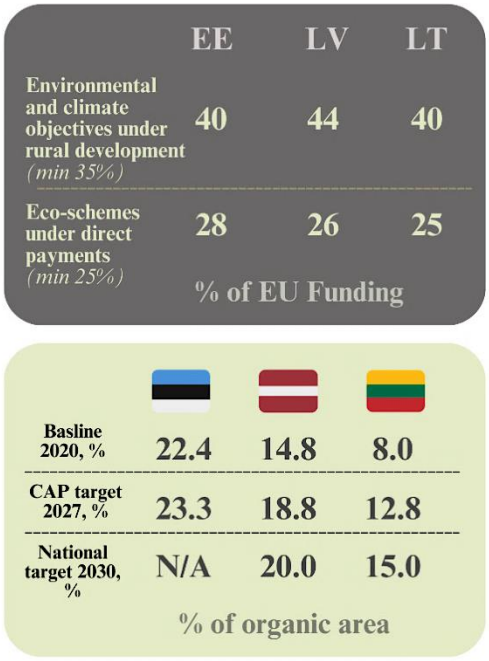
Taking into account the characteristics of the countries and the analysis of the Commission's recommendations, *four sectors* exposed to risks from soil management were distinguished. The direct impact can be observed on the condition of the *soil*, which secondarily affects the quality of *water* and *air*, as a result also affecting the overall *biodiversity*. The **soil** condition on average is weak, which is influenced by intensive tillage, where conventional practices are used in 88% of arable land in Lithuania, 91% in Latvia, while a more positive indicator is in Estonia - 54%, respectively. This is also reflected in the indicators of soil organic matter and CO_2 content in the soil - in Latvia and Lithuania it is below the EU average 43.1 g/kg CO_2 (LT – 25 g/kg CO_2, LV – 36 g/kg CO_2), while in Estonia it is higher – 51 g/kg CO_2. In addition, it is necessary to improve soil coverage in winter – in Estonia there are about 28% of soils without coverage in the winter period, while in Latvia 30% and in Lithuania at least half of the areas. This, in turn, significantly affects the leaching and run-off of nutrients, polluting **water** resources, which can be observed as nitrate pollution in water bodies, however, compared to the EU average, these risks are considered low in the Baltics, with the exception of a slightly increased risk in Estonia, where increased eutrophication is observed in the Baltic sea coastline and is characterized as a result of polluting activities. Soil coverage, reduced tillage and crop rotation are also solutions to **air** pollution, where the main emission factors are ammonia and nitrous oxide from tillage and intensive use of organic and inorganic fertilizers. Currently, in compliance with the binding emission reduction targets, Estonia fulfils its obligations, while Latvia and Lithuania are slightly behind; however, taking into account the forecasts, the modelled development shows that in the long term, as productivity increases in all countries, emissions tend to increase, which means that attention must be paid to the risk mitigation. As a result of the listed factors, **biodiversity** also needs to be significantly improved – the bird index in the countries has significantly decreased, as well as the state of natural habitats, which, mainly from the perspective of soil management, is affected by intensive soil cultivation, transformation of grasslands, also wetlands and peatlands, so as a solution are mentioned the management and return of such areas, as well as the increase of natural landscape elements, especially in intensively managed regions.

2.2. Cross-country analysis

The CAPs of all three countries (European commission, 2023), as well as their national targets and regulations (Riigikogu, 2019; Republic of Latvia, 2014; Order on the…, 2012), were used for the cross-country analysis. First of all, when evaluating the national level legislation, all countries have integrated binding directives under SMR measures, which include restrictions on the use of both synthetic and organic fertilizers, especially by introducing a calendar restriction, where it is forbidden to spread organic fertilizers during the winter period, on average from the end of November to the middle of March , as well as use synthetic fertilizers on frozen or too wet soil. All countries have also included a limit for

applying up to 170 kg ha^{-1} N per year with organic fertilizers. Similarly, in all countries, a Nitrate Vulnerable Zone (NVZ) has been determined, where in Estonia and Latvia it is in part of the territory, but in Lithuania it has been established in the entire territory of the country, thus forcing the agricultural sector to pay special attention to activities leading to nitrate pollution.

Countries' total CAP funding for environmental and climate goals is in line with the recommendations of the European Commission, where in most cases the minimum mark is exceeded (Fig. 7).



Source: author's construction based on (European commision, 2023)

Fig. 7. **The proportion of the EU funding distribution in the Baltic States and indicators of organic target areas**

GAECs	ESTONIA	LATVIA	LITHUANIA
GAEC 1: Maintenance of permanent grassland	29.05 %	24.64 %	25.83 %
GAEC 2: Protection of wetlands and peatlands	from 2024	from 2025	from 2024
GAEC 3: Prohibition of stubble burning	included	included	included
GAEC 4: Establishment of buffer strips along watercourses	3 m and around irrigation ditches	3 m	3 m
GAEC 5: Tillage management to reduce soil degradation	included	included	included
GAEC 6: Minimum soil cover	50%	55-65%	55-65%
GAEC 7: Crop rotation on arable land	included	included	included
GAEC 8: Minimum share of arable land devoted to non productive surfaces and elements	4%, 3% if other measures	4%	4%, 3% if other measures
GAEC 9: Ban on converting or plowing ecologically sensitive permanent grassland on Natura 2000 sites	included	included	included
Additional:			
GAEC 10: Drainage system maintenance	not included	included	not included

Source: author's construction based on (European commision, 2023)

Fig. 8. **GAEC requirements in the Baltic States**

When evaluating GAEC measures, all three countries have behaved relatively similarly, choosing the same categories of measures and/or derogations. They have a goal of a proportion of grass in the range of 21 to 30%, national regulations have included a ban on burning straw residues, there are measures to limit tillage on slopes, a requirement for crop rotation has been introduced, as well as a ban on ploughing in Natura 2000 areas. The GAEC 2 measure will be implemented until the mapping of such areas will be developed, as well as the GAEC 6 requirement, compared to other EU member states, is lower than 80% due to short vegetation period and Nordic location. Estonia has introduced an additional requirement for buffer strips, while Latvia has adhered to the 4% limit in the introduction of landscape elements, and has also introduced an additional GAEC 10 requirement for the maintenance of drainage systems (Fig. 8).

When evaluating national goals regarding organic agriculture, a positive mark is that all countries have set more ambitious goals at the national level in relation to the Commission's set target (Fig. 7). However, when evaluating the Baltic States Eco scheme and Agri-environment and climate measures, it can be seen that Estonia, despite the fact that it has the highest indicator in terms of organic areas, has planned support measures for both conversion and maintenance of already existing areas in both measures. Lithuania has not established a support system for the transition to organic farming under the AECC measures, but has maintained support for existing organic areas. In contrast, Latvia has implemented support measures for transition areas and certified areas only under eco-schemes (Fig. 9; Fig. 10).

Eco-schemes	ESTONIA	LATVIA	LITHUANIA
In total	5	6	9
• *relevant to SLM*	*4*	*5*	*6*
Fertilisation	included	included	included
Soil conservation practices	included	included	included
Organic farming	included	not included	included
Landscape and biodiversity	included	included	included
Wetlands and peatlands	not included	not included	included
Grassland and grazing	not included	included	included
Precision agriculture	not included	included	not included

Source: author's construction based on (European commision, 2023).

Fig. 9. **Implemented Eco-schemes in the Baltic States according to their thematic purpose**

Agri-environment-climate commitments (AECC)	ESTONIA	LATVIA	LITHUANIA
In total	12	12	6
• *relevant to SLM*	*7*	*5*	*3*
Fertilisation and Soil amendement	included	included	included
Soil management	included	not included	not included
Crop rotation diversification	included	not included	not included
Landscape	included	included	not included
Water management	included	included	not included
Grassland and grazing	included	included	included
Precision agriculture	not included	not included	not included
Organic farming	included	included	included

Source: author's construction based on (European commision, 2023).

Fig. 10. **Implemented Agri-environment and climate measures in the Baltic States according to their thematic purpose**

Evaluating measures implemented by countries through Ecoschemes and Agri-environment and climate measures, it can be seen that sustainable soil management and relevant practices are an essential part of most measures – in Ecoschemes they are included in almost every measure, while in agri-environment measures, judging according to the total number, such practices are included in at least half of them. Looking at the focus of each country, it can be seen that there is a relatively small orientation towards precise agricultural technology support, which could be explained by the fact that such practices are resourceful, and the countries have not implemented strict measures for the restoration of wetlands and peatlands, which could be explained by the already mentioned lack of mapping within GAEC 2 measure.

In addition, by analysing the set priorities with the previously discussed risk factors (Fig. 6), it can be concluded that Estonia's overall indicators are optimal and, taking into account that there is a tendency in pollution increasing from soil management, as well as the reduction of biodiversity associated with this risk, the introduced measures are considered optimal, since most of the measures related to soil cultivation have been implemented, except for the support for precision technologies, which could, however, significantly improve integrated nutrient management in the long term, which is one of the priorities within the CAP. In the case of Lithuania, a somewhat opposite trend is observed, where the greatest focus is on Ecoschemes, still including measures related to biodiversity. Taking into account that in Lithuania the crop sector is the most intensive within the Baltic background and active production takes place there, as well as the risk factors are soil and air, while biodiversity is satisfactory, the approach with a focus on Ecoschemes is rational, however, here support for precise technologies could address nutrient targeted supply where needed (Patel et al., 2023). Finally, Latvia has maintained a middle path, introducing both Ecoschemes and agro-environment targeted measures, which clearly coincide with the risk factors, which are soil and biodiversity. And although a moderate approach has been introduced, evaluating the Commission's recommendations, which were focused on crop rotation and wetland and peatland management, these goals are not reflected in the measures.

Conclusions

1) The agricultural sector significantly contributes to the economies of the Baltic countries, with Latvia ranking the first among the EU countries in terms of the agricultural share of GDP (2022 – 5%), thus highlighting its importance within the region.

2) Even though there has been a slight decrease in emissions since 2015, it is forecasted that with productivity increase, emissions from the agricultural sector, particularly methane, ammonia, and

nitrous oxide, will remain a concern and will continue to increase, thus contributing to climate change and environmental degradation

3) The implementation of sustainable land management practices is defined as one of the most essential approach for mitigating environmental impact and fostering agricultural resilience, with a focus on reducing emissions, enhancing biodiversity, and improving soil health.

4) The European Green Deal and the Common Agricultural Policy (CAP) serve as crucial frameworks for guiding sustainability efforts in the Baltic countries, emphasizing the need for alignment between the national agricultural policies and EU regulations to achieve long-term sustainability goals.

5) When evaluating the natural risks related to soil cultivation and agricultural production in four different sectors - soil, water, air and biodiversity, Estonia has an average to good rating in all factors, while in Latvia weaknesses are soil condition and biodiversity, and in Lithuania – soil condition and air pollution.

6) While progress has been made in integrating sustainability measures into agricultural policies, there is a need for further evaluation and adaptation to address specific challenges, such as soil degradation, biodiversity loss, and emissions reduction, which has a negative tendency to increase especially from agricultural land management.

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Proceedings of the 2024 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" No 58
Jelgava, LBTU ESAF, 16-17 May 2024, pp. 32-40
DOI: 10.22616/ESRD.2024.58.003

THE ROLE AND TECHNIQUES OF GREEN ACCOUNTING IN SUSTAINABLE BUSINESS PRACTICE

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Abstract. By highlighting the importance of green accounting techniques in encouraging sustainable business practices, this research delves into their evolution, definitions, and implementation - starting with a review of green accounting's origins and development, the paper explores several academic meanings of the term before focusing on how it has helped bring social and environmental costs and benefits into traditional financial accounting. Additionally, it differentiates between environmental accounting and green accounting- highlighting the differences in their respective spheres of influence; financial accounting, management accounting, and external reporting are all part of green accounting, which is a systematic approach to accounting that aims to improve both financial and environmental consequences. Green accounting procedures have a favourable effect on financial performance and environmental transparency, as the paper shows empirically and then it goes on to analyse green accounting implementation in sustainable company operations. To aid in decision-making and encourage environmental sustainability - it also presents a conceptual model for green accounting that incorporates multiple indices. Lastly, the research highlights the significance of being sensitive while implementing green accounting methods and suggests more research to create practical tools that take stakeholder viewpoints and environmental hazards into account. In sum, the research shows that green accounting is essential for businesses to be more eco-conscious and for sustainable development initiatives to progress.

Key words: green accounting, environmental impact, sustainable business practices, green accounting conceptual model, green accounting implementation.

JEL code: D29, L29, L60, L69

Introduction

The topic of green accounting, which has gained a lot of attention since the society is raising concerned with the effects of the economy on the environment, is explored in the introduction of the research study. By highlighting its function in offering a holistic perspective of economic operations whilst factoring in environmental costs, this research highlights the relevance of green accounting in the modern setting. This paper's primary objective is to investigate how green accounting has developed through time, what it means and how it fits into sustainable business practices, it seeks to clarify the significance of green accounting in fostering sustainable development and improving the long-term financial viability of businesses and nations by reviewing relevant literature and research.

Several important questions are addressed by the research, such as: how has green accounting changed throughout the years and what defines it? When comparing environmental accounting with green accounting, what are the key distinctions and how can sustainable company practices make use of green accounting techniques?

According to the theory, green accounting is vital because it shows how economic activities affect the environment, which then helps companies and politicians make more sustainable decisions. The argument is backed up by the research, which uses a literature review to examine different definitions, frameworks and methods of green accounting. Contributing to the understanding of green accounting and its implications for sustainable development, the study tries to methodically examine research findings and discussions.

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Research results and discussion.

1. Definition of green accounting

A variety of organisations, including corporations, universities, government agencies that oversee accounting and trade groups, have taken an interest in environmental statistics since the mid-1980s, however there is no agreed-upon definition of "green accounting" according to a survey of recent scientific articles. While addressing comparable issues many writers provide varied definitions of green accounting and some popular explanations of "green accounting" are as follows.

- Green accounting is defined by Zabala-Iturriagagoitia et al. (2021) as a "framework for measuring, reporting and enhancing the environmental and social performance of an organisation." To help organisations make informed decisions that line with economic, environmental and social objectives- they suggest green accounting, which takes a complete approach to accounting by incorporating the social and environmental costs and benefits of economic operations.
- According to Mishra et al. (2020), it is "an accounting process aimed at capturing the economic, environmental and social impacts of an organization's operations." The authors also stress the significance of green accounting in promoting sustainable business practices and reducing negative social and environmental impacts.
- When it comes to incorporation with financial accounting, Blanco et al. (2021) define green accounting as a "management tool integrating environmental and social considerations into financial accounting to promote sustainable development" - they emphasise how it helps organisations understand the social and environmental impacts of their decisions and how to implement sustainable practices.

All the writers acknowledge green accounting's value as a method for revealing and evaluating the social and environmental impacts of economic activity, but they differ on the precise features that make it unique. Sustainable business practices are promoted, and crucial information is provided to policymakers to aid in policy creation.

2. Evolution of green accounting

Much has changed in the field of green accounting throughout the previous two decades; increasing numbers of individuals are becoming aware of the negative effects that economic activities have on the environment, and as a result - the need for green accounting has grown and traditional accounting methods did not incorporate environmental expenses at first. According to Lopes and Costa (2019), the concept of "green accounting"—which refers to accounting methods that take into consideration the advantages and costs to the environment—emerged in the 1980s and Weidema and Wesnaes (1996) pointed out that government mandates and voluntary efforts have both contributed to the development of green accounting.

For green accounting, a watershed moment came with the 1987 publication of the Brundtland Report, which pushed for the merging of ecological and financial concerns; the idea of sustainable development, first proposed by Elkington (1994), is based on this research, and stresses the need to balance economic, social and environmental issues.

A great deal of green accounting concepts and approaches have surfaced in the time thereafter - in order to determine how economic activities affect the environment, organisations like the United Nations System of Integrated Environmental and Economic Accounting (SEEA) lay out guidelines (United Nations, 2012). Similarly, techniques have been developed to measure the effect that goods and services have on the environment (ISO, 2006).

The growth of green accounting is evidence of an increasingly widespread agreement that businesses should account for the damage they do to the environment; green accounting is already seen as crucial for sustainability-focused researchers, regulators and enterprises, and its importance is only going to grow as more and more individuals become more environmentally conscious.

3. Differences between green accounting and environmental accounting

The environmental effects of businesses are not only studied by green accountants, but also by environmental accountants; green accounting differs from environmental accounting in its emphasis - despite their shared relationship. Research studies have concluded following variations of the two, which are listed below.

- When it comes to environmental concerns, environmental accounting takes a more holistic approach than green accounting does, since it focuses only on positive aspects (Bartolomeo et al., 2017).
- Green accounting focuses on quantifying the advantages gained from environmental efforts, such decreased emissions and improved energy efficiency, as opposed to environmental accounting's broader evaluation of environmental problems and their costs (Cucari et al., 2017).
- Environmental accounting includes not only environmental, but it also includes the socioeconomic aspects of sustainability, in contrast to green accounting's exclusive focus just on the environmental factors alone (Becchetti et al., 2019).
- Green accounting is such an approach to financial reporting, that is proactive and future-oriented, thus encouraging sustainable activities and solutions rather than solely analysing environmental issues (Jadhav and Dhingra, 2019).
- The phrase "environmental accounting" refers to a more general idea, which combines both ecological and financial considerations. In such concept - the good and the negative environmental impacts of a business are calculated, analysed and summarised incorporating data on pollution, greenhouse gas emissions and natural resource depletion, among other environmental impacts, into financial reporting - is an important part of this process.
- Green accounting is a subset of environmental accounting, that focuses on measuring and disclosing how a company's operations help the environment; it entails putting a dollar amount on the positive activities that companies undertake for the environment, such as reducing emissions of greenhouse gases or saving natural resources.

Table 1

Comparison of environmental accounting vs. green accounting

Environmental accounting vs. green accounting			
	Environmental accounting	**Green accounting**	**Author**
1	A comprehensive approach that includes both the negative and positive aspects of the environment	Green accounting only focuses on the positive aspects	*Bartolomeo et al., 2017*
2	Environmental accounting includes the cost of environmental impacts and the benefits of environmental activities	Green accounting is a subset of environmental accounting that measures the benefits of environmental activities	*Cucari et al., 2017*
3	Environmental accounting is a broader concept that encompasses social and economic dimensions of sustainability	Green accounting focuses solely on environmental dimensions	*Becchetti et al., 2019*
4	Simply accounting for environmental impacts	Green accounting is more proactive and future-oriented, it focuses on promoting sustainable practices and solutions	*Jadhav and Dhingra, 2019*

Source: author's conclusions based on the selected authors' articles

The above study concludes, that while there are some general parallels between green accounting and environmental accounting, their scope and focus are very different - while green accounting is narrowly focused on the advantageous environmental effects of a company's actions, environmental accounting often tends to be broader.

4. Systematization of green accounting types and techniques

According to Eccles and Serafeim (2013), the term "green accounting" refers to a variety of accounting techniques for managing a company's environmental costs, benefits, and performance. Financial accounting, management accounting, and external reporting are the three systematized categories into which green accounting methods and practices can be divided (Daub et al., 2016) as follows.

1) Accounting for the environment: accounting for the environment combines environmental costs and benefits into financial accounts. According to Schaltegger and Bennett (2017), environmental costs can either be internal (such as managing waste and pollution) or external (such as regulatory fines and taxes). Energy savings, product innovation, and eco-efficiencies are only a few examples of environmental advantages (Sharma and Sinha, 2018).
2) Management accounting: businesses adopt green accounting strategy to mitigate their impact on the environment. Life cycle costing (LCC) and activity-based costing (ABC) are two examples of managerial accounting methods, that aim to improve efficiency and identify the factors which contribute to environmental costs (Grabara, 2016). Expenses over a product's whole life cycle, from raw material extraction to disposal, can be better identified with the use of LCC method, in contrast to ABC method, which focuses on particular activities and processes.
3) External reporting: through sustainability reports and announcements, businesses can communicate their environmental initiatives to companies' stakeholders and as Erulkar et al. (2018) suggests - sustainability reporting serves 3 key purposes: to showcase environmental accomplishments to customers, to facilitate performance tracking and to identify areas for improvement. Environmental announcements can enhance stakeholder engagement in discussions about environmental management strategies and can promote greater transparency regarding the company's environmental impact.

Several research studies emphasize the significance of diverse types and different approaches to green accounting practices in attaining business sustainability goals. One such example is the study by

Santos et al. (2017), which showed how green accounting improved financial performance of companies. "When it comes to informing stakeholders about environmental performance - sustainability reporting is crucial" - states Eccles and Serafeim (2013). Businesses can enhance self-awareness of their environmental effect whilst at the same time discovering ways to improve - by incorporating financial accounting, management accounting and external reporting into their day-to-day operations, and this will also help in promotion of sustainability reporting. A greater emphasis on long-term sustainability and more sustainable corporate practices are achieved implementing such holistic strategy as this one.

5. Implementation of green accounting techniques in sustainable business practice

The importance of green accounting approaches in encouraging ecologically conscious company operations has significantly grown in past years, since green accounting methods help companies to track, report and to control their environmental effect, whilst at the same time revealing opportunities to cut costs and boost output (Singh and Gupta, 2017). Advantages of using green accounting techniques have been highlighted by multiple research articles, for example one such article concluded, that companies employing green accounting procedures had better financial performance, according to Santos et al. (2017), who studied the effect of these approaches on Brazilian businesses; data from this research points to a favourable relationship between environmental management and financial success for companies. In a similar manner - Hassan and Marimuthu (2018) investigated the potential of green accounting to persuade Malaysian companies to use sustainable reporting standards and it was found, that companies using green accounting practices were more likely to include data on their environmental effect in their annual reports, which suggests, that when it comes to environmental performance - these methods could improve transparency and accountability.

Gandolfo and Lima (2015) also noted that businesses can improve their environmental reputation, satisfy legal requirements and reap financial rewards from using green accounting approaches and a rise in both stakeholder involvement and customer loyalty may result from this. In general - green accounting helps businesses become more eco-conscious and sustainable by tracking their spending and revenue to find ways to cut down on waste while simultaneously increasing efficiency and reaping financial benefits in the long run.

6. Conceptual model for green accounting

In this research paper, various literature on green accounting and sustainable business practice has been identified. The aim of this research is not only to sum up various literature sources on green accounting but also to analyse these sources and as a result of such analysis - to give a variety of perspectives related to environmental management and accounting measures, that aid in developing a decision-making tool for businesses to adopt sustainable accounting measures and consequently demonstrate superior environmental performance. It is clear from the conducted research, that there has been relatively little empirical research on the topic of green accounting, with the majority of studies being qualitative ones. The construction of an accounting system that has been empirically proven, will make it possible to identify the environmental performance of various businesses and organizations, according to the research's findings.

The focus of currently available studies is sustainability rather than offering companies any tangible metrics by which to make budgetary decisions. The majority of the author's development measures for indices connected to organizational sustainability and lifecycle production are qualitatively feasible. The use

of these indices could aid in determining corporate sustainability levels. Tools that link project acceptance to profitability and sustainability are still being developed.

The decision-making processes that cover the business, social and environmental procedures of the corporation, are directly related to the maintenance of productivity, diversity, ecological balance, and equity across generations. Sustainable management is the name of the management strategy that firms use. As it takes into consideration the various externalities that are present, sustainable accounting has advantages over standard measurements. This sort of accounting makes it possible to effectively identify the cost-benefit ratio for risk management, adjustment charges, overhead costs, and disclosure notes in order to provide better sustainable practices. By combining sustainability and ecosystem value, it has been discovered that the significance of sustainable accounting is connected to the greening of national income accounts. National income serves as the primary source of data regarding the current state of the country's economy, making it a common indicator of how well a country is performing in comparison to others. However, this income account has a variety of environmental treatment-related traps. The cost to the environment and the eventual internalization of costs for external consequences have increased in response to growing government and consumer pressure. If electricity costs are monitored and regulated, they are seen as contributing to overhead accounting. According to this research, the analysis and discussion of potential sustainable accounting measures are connected to financial metrics, costs, income, cash flow, the flow of relevant energy, and costs associated with energy. Implementing Environmental Management Accounting (EMA), which aids in presenting a decision-making system for firms with regard to measures encouraging greater environmental performance by establishing efficient cost assessment structures, is crucial to making this possible. So, by taking these steps, firms can exhibit stronger products, plans, and investments in their future products.

7. Key factors for creating a conceptual model.

A conceptual model must be developed to create a framework on top of which regulations and guidelines may be established and put into place to make the industry more environmentally friendly. A model's framework needs to take a variety of factors into account. Some of these considerations include the firms' obligation to protect the environment, the threats to it, the connection between and impact of various industries on the environment, and how to assess that impact. Aspects of other models that have been the subject of prior research by other authors may be incorporated into the conceptual model.

As an example, Heba Y. M. and Yousuf (2010) looked at the ideas associated with ecological accounting. In their study, they looked into ways to develop the idea of environmental reporting so that the government might use it and hold companies more accountable for their externalities. The methods they employed would be useful for quantifying the environmental impact. Cullen's (2010) approach provided effective cost allocation techniques to improve cost accounting metrics, which in turn would help management make decisions and provide greater disclosure. Some of these models served as the foundation for the creation of a template that is described in the next section.

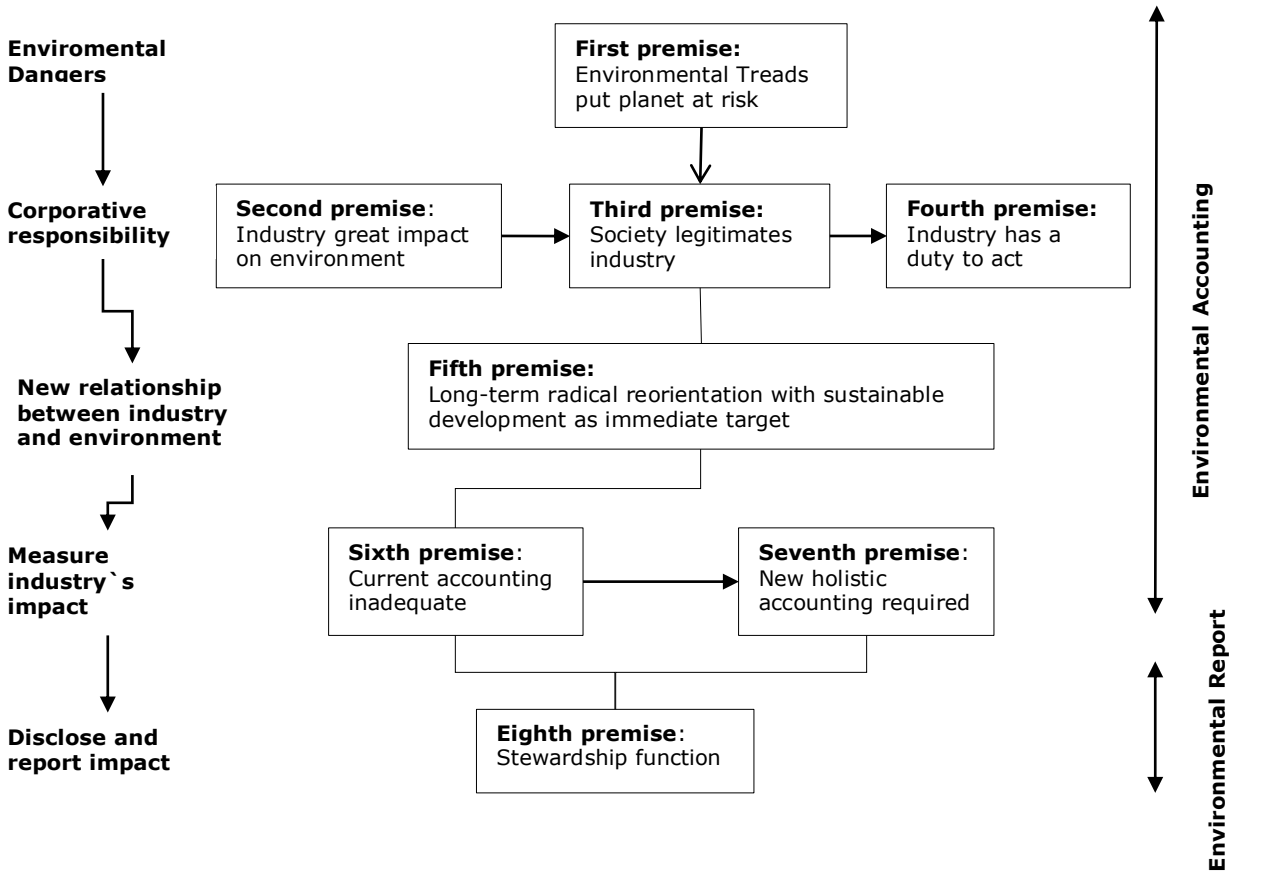
Conceptual model template

This paper is set forth in the context of a substantial body of research that addresses green accounting measures. It is evident from the information gathered from earlier publications that a multi-layered model with eight distinct indices has been identified. The purpose of this model is to offer an original perspective on the various aspects of green accounting while remaining open to the potential influence that other

models may have. This model intends to promote discussions about business attitudes toward environmental sustainability as well.

Table 2

A conceptual model for green accounting



Source: author's compilation based on Michael John Jones (2010)

CONCLUSIONS

The current work has examined the diverse approaches taken by various researchers in their individual investigations of environmental responsibility and sustainability. The socioeconomic conditions, especially in emerging and underdeveloped countries, are very diverse, as are the business reasons for implementing social and environmental accounting. Even if projects are very profitable and effective, accountants and managers might not accept the fact that they won't be permitted to implement those, if they violate important ecological functions. Managers that are more concerned with the environment will persuade clients to take on a larger portion of the responsibility for their participation in global clean-up initiatives. In an effort to teach the environmental engineers the methodology involved in environmental responsibility and the statistical methods required to monitor compliance with environmental rules, the internal accountants will be required to work in tandem with them. In order to propose a model for green accounting, this research summed up a theoretical framework to support environmental management (serious environmental risks; corporate responsibility; a new link between business and environment; measure industry's influence; disclose and report impact). The approach was created based on a personal conviction that businesses ought to try to ensure that environmental concerns are addressed. The main conclusions drawn as a result of this research:

1) green accounting is important in promoting environmental consciousness and sustainable businesses development;

2) green accounting practices are effective in enhancing a company's financial performance and environmental transparency;

3) conceptual model for green accounting aids businesses in decision-making and improves environmental sustainability ;

4) corporate perspectives on green accounting differ from academic viewpoints, therefore gaps need to be bridged between theoretical robustness and practical applicability.

The academic publications on green accounting, that were analysed for this study, don't entirely agree with corporate viewpoints, but they also don't propose extreme ideas that can't be put into practice in any real-world situation. This research aims to highlight the importance of being extremely sensitive to how green accounting procedures are implemented and how their requirements are to be valid and implementable theoretical policy prescriptions. Future research should be presented in a way that makes academicians sensitive to strategies for promoting green accounting and mobilizing risks, in order to recognize the issues with current green accounting practices and develop a workable instrument while keeping all sensitivity issues in mind.

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Proceedings of the 2024 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" No 58
Jelgava, LBTU ESAF, 16-17 May 2024, pp. 41-48
DOI: 10.22616/ESRD.2024.58.004

SUPPLY CHAIN PERFORMANCE MANAGEMENT: A COMPREHENSIVE RESEARCH ANALYSIS

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Abstract. Organisations need supply chain performance management (further in the text - SCPM) to boost competitiveness and accomplish strategic objectives. This research integrates various viewpoints and scholarly contributions to provide a thorough definition of SCPM, crucial metrics, technological integration, difficulties, and solutions. The objectives of the research are: to clarify the concept of SCPM; to explore challenges and approaches in SCPM; to assess technological impacts on SCPM; to suggest practical suggestions for SCPM and improvement directions for further research of SCPM. The study emphasises the necessity of a cohesive strategy by highlighting the strategic alignment of supply chain plans with organisational objectives. The revolutionary influence of digitalization and technological integration, especially Artificial Intelligence (AI) and Internet of Things (IoT), is presented together with key performance measures including order fulfilment rate, inventory turnover, and on-time delivery. The study highlights how crucial it is to collaborate, be resilient, and adapt continuously in order to successfully traverse changing corporate contexts. Through the integration of theory and practice, the study provides practitioners with practical suggestions to enhance SCPM practices. Future research directions are also identified, such as innovative approaches to performance measurement and the usefulness of developing technology. In the end, this research fosters a deeper understanding of effective SCPM techniques in achieving organisational resilience and competitiveness in the dynamic supply chain landscape of today, serving as a guide for practitioners and scholars.

Key words: supply chain performance management, metrics, technology integration, SCPM challenges, SCPM solutions.

JEL code: D29, L29, L60, L69, O14

Introduction

Modern businesses attempting to successfully navigate difficult operating situations must have a firm grasp of such extensive subject as supply chain management. This study explores deeply into the topic of supply chain performance management, examining several aspects to reveal the challenges, methodologies and advancements impacting this crucial field. To better understand the purpose of supply chain performance management—which is to systematically assess, evaluate and improve the effectiveness and efficiency of supply chain operations to align with corporate goals—the study examines definitions provided by various prominent academics such as Simatupang et al., Ivanov and Dolgui, Chopra and Meindl, Christopher and Peck, and Sridharan et al. By using a mix of theoretical frameworks, this study aims to shed light on the intricate interplay between technology integration, performance metrics and the ever-changing challenges faced by supply chain practitioners.

People working in the field of supply chain management as well as those studying the topic will find this work useful, since this study provides actionable recommendations for enhancing supply chain efficiency by elucidating critical characteristics such as order fulfilment rate, inventory turnover and on-time delivery, amongst others. Researching the interplay of technologies, such as blockchain, the internet of things (IoT) and artificial intelligence (AI), paves the way for making use of digital developments to boost efficiency, transparency and response time. This study critically examines problems and proposed solutions in the fast-paced business environment; it stresses the need of organisational agility, resilience and cooperation in achieving success. By shedding light on possible avenues for future study and encouraging dialogue between academics and business leaders, this study not only answers important questions, but also paves the way for additional adaptation and innovations in the area of supply chain performance management.

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Materials and methods

For the purpose of this research, various qualitative methods have been used, such as systematic literature review, followed by meta-analysis and content analysis, as well as thematic analysis, synthesis method and logically constructive method to draw conclusions of the research and suggestions for future research.

Research results and discussion

1. Definitions of supply chain performance management

By systematically measuring, evaluating and improving many aspects of supply chain activities, supply chain performance management aims to accomplish strategic goals and deliver value to stakeholders. The complexity of this field is exemplified by the diverse classifications offered by researchers and academics.

- Simatupang et al., 2017: to evaluate and improve the efficiency and effectiveness of connected supply chain operations, Simatupang et al. (2017) suggest that supply chain performance management provides a thorough framework; the emphasis of their study is on coordinating operational metrics with broad business goals.
- Dolgui and Ivanov, 2020: one can learn more about supply chain performance management thanks to Ivanov and Dolgui's (2020) presentation of it as a dynamic method that uses digital technology to make supply chain performance management more transparent, responsive and resilient. They emphasise the significance of performance metrics in addressing the challenges of Industry 4.0.
- According to Chopra and Meindl (2007), the term "supply chain performance management" refers to the process of systematically coordinating and optimising various activities that make up the supply chain. These activities include logistics, production and procurement. Continuous process monitoring and improvement leads to improved overall performance - that's what it entails.
- The systematic pursuit of supply chain agility and resilience in the face of uncertainty and interruptions is what supply chain performance management is about, according to Christopher and Peck (2004). To succeed in the long run, they stress, that a strong supply chain is required.
- Supply chain performance management is defined in the research of Sridharan et al. (2005) as a proactive use of analytics and metrics to drive strategic decision-making. This definition adds to the existing literature and it entails optimising, and evaluating supply chain procedures on an ongoing basis.

Covering such topics as digital technology integration, resistance to disruptions, continuous improvement, and strategy alignment - all of the above definitions highlight what an extensive topic supply chain performance management is. The table below summarises various scholarly perspectives and views on SCPM, review of which emphasizes the need for a comprehensive plan to manage and to improve supply chain performance in a dynamic business environment.

Table 1

Summary of SCPM definitions

Authors	Definitions
Simatupang et al., 2017	**Supply Chain Performance Management (SCPM)** according to this definition all parts of supply chain operations are examined, evaluated and improved in a systematic and intentional manner to increase overall efficiency, adaptability providing competitive advantage.
Ivanov and Dolgui, 2020	**Performance metrics** Cost, time, quality and customer satisfaction – all are the key quantifiable metrics, which are used to measure and analyse various aspects of supply chain operations; the reason behind this is to make sure that the goals of the organization are aligned.
Christopher and Peck, 2004	**Technology-Enabled Supply Chain Performance Management** describes the process of boosting supply chain efficiency, visibility and decision-making through the use of such state-of-the-art technologies as blockchain, Internet of Things (IoT), and Artificial Intelligence (AI).
Choi et al., 2019	**Strategic Alignment in SCPM** shows, that by ensuring that metrics and actions directly assist in achieving of organizational objectives is an important part of connecting supply chain performance management methodologies with the larger strategic goals of the organization.
Simatupang et al., 2017	**Collaborative SCPM** is such supply chain management approach, where the process of enhancing efficiency and achieving shared advantages is achieved through cooperation and coordination among various supply chain participants - including, but not limited to producers, distributors, suppliers.
Ivanov and Dolgui, 2020	**Real-Time SCPM** The goal here is to make the supply chain more flexible, agile and adaptable, which can be achieved through continuous monitoring, analysis and tweaking in real-time – all made possible by advanced technology and data monitoring.
Chopra and Meindl, 2007	**Customer-Centric SCPM** Supply chains are purposefully designed to go above and beyond consumer expectations, to meet and exceed them, which can be achieved when performance indicators are aligned with customer satisfaction and desires.
Christopher and Peck, 2004	**Adaptive SCPM** This term describes the capacity of such supply chain performance management approach, goal of which is to maintain efficiency in the face of ever-changing market conditions, technological developments and company strategies.

Source: author's conclusions based on the above mentioned authors' articles

2. Key metrics

A key component of performance management in the supply chain is the identification of critical performance indicators that allows for effective evaluation and a well-informed and strategic decision-making for the business. These metrics need to be thoroughly investigated to understand the intricate dynamics of various and many supply chain activities. The significance of aligning these metrics with business goals of a particular company has been emphasised by many scholars, one such example is Simatupang et al. (2017) research, in which the author argues that achieving the alignment of the key metrics will ensure a cohesive approach to accomplish broader strategic business objectives. In addition to the mentioned and as pointed out by Ivanov and Dolgui (2020) - the study of performance measurement variations across different industries acknowledges the intricate nature of supply chain dynamics in different sectors; this research reveals the complexity of relationships between performance indicators, as well as particular difficulties and specific needs of various business sectors. By recognising, that a "one-size-fits-all" strategy may not reflect all of the intricacies of different business sectors - the research seeks to contribute a comprehensive understanding of the heterogeneous landscape of supply chain performance management by having a closer look at these industry-specific variances (Simatupang et al., 2017); the purpose of this research is to shed the light on the significance of key performance metrics - how they relate to organisational goals and the specific industry factors that impact supply chain performance management, the author uses a combination of various theoretical insights to support their claims.

Table 2

Summary of SCPM key metrics

Metrics	Definition
On-Time Delivery	Describes the number of orders which are fulfilled by a specified date (Ivanov, D., and Dolgui, A. 2020).
Inventory Turnover	Is a typical approach to determine the quantity of products sold/used within a particular period of time is to divide the cost of items sold by the average inventory value (Ivanov, D., and Dolgui, A. 2020).
Order Fulfilment Rate	Describes the share of completed orders that are dispatched to clients (Ivanov, D., and Dolgui, A. 2020).
Lead Time	Shows the time it takes to complete the whole order processing - from the moment an order is placed until it is delivered in full (Simatupang et al., 2017).
Perfect Order Rate	Is a way to describe the proportion of orders that arrive in perfect condition (Simatupang et al., 2017).
Supply Chain Cycle Time	Shows the total amount of time needed for a product to go from manufacturer to consumer (Chopra, S., and Meindl, P. 2007).
Fill Rate	Describes the proportion of consumer demand that is met only using stock on hand, without the need for extra stock (Chopra, S., and Meindl, P. 2007).
Return on Assets (ROA)	The rate at which assets are used to generate profits, as shown by the proportion of net income to total assets (Ivanov, D., and Dolgui, A. 2020).

Source: author's conclusions based on the above mentioned authors' articles

3. Technology integration

In today's world of supply chain performance management, new technological advancements play a pivotal role in shifting traditional ways of doing business. A comprehensive examination of various modern cutting-edge technologies such as blockchain, IoT and AI, highlights the ways in which all of these advancements are reshaping the efficiency of supply chains. Christopher and Peck (2004) in their research state, that AI facilitates better decision-making and predictive analytics, along with enhanced route optimisation and generalised optimisation of resources. According to another research - the research by Ivanov and Dolgui (2020), the Internet of Things (IoT) allows for real-time tracking and monitoring all the way through the supply chain, which provides unparalleled insight into inventory and logistics management. In addition, supply chain participants are more confident that fraud is reduced when blockchain technology is used, since it ensures that transactions are transparent and traceable – according to Christopher & Peck (2004). Digitalization using these fairly recent technologies enhance transparency, efficiency and responsiveness by providing the observer data insights in real-time, which allows for in time decision making – something that is crucial in many if not all businesses. Systems powered by artificial intelligence can predict potential issues, enable real-time adjustments to inventory levels, distribution routes and many more; although embracing technology can improve collaboration and decision-making, it can also cause problems such as integration, data security and a lack of competent employees, states Christopher and Peck (2004), to merge this all into "the big picture''. Tackling many challenges is necessary to fully utilise technology's ability to enhance supply chain performance; to better understand these revolutionary technologies' role in modern supply chain management, this research aims to illuminate some of the possible advantages and disadvantages of integrating them.

Companies that want to be more productive, agile and more competitive, nowadays are focusing a lot of attention on how to integrate technology into their supply chain performance management. Several scholarly articles shed light on this ever-changing junction; within the framework of supply chain integration- Gligor and Holcomb (2012) highlight the importance of information technology by emphasising

its impact on overall performance and coordination. The potential benefits of radio-frequency identification (RFID) technology for supply chain visibility and traceability are examined by Qu and Williams (2013) in their research. In similar way by analysing IoT integration in supply chains, Kannan et al. (2017) research shows how decisions can be made much better or faster, by using real-time data from connected devices.

Also, to shed light on the challenges and intricacies of technological integration, Pagell and Wu (2009) investigates the link between technology adoption and supply chain performance; all of these articles work together to show how the Internet of Things (IoT) and radio frequency identification (RFID) may improve SCM and how they also offer a sophisticated view of the challenges and opportunities presented by this dynamic and evolving industry.

4. Challenges and solutions

There are several challenges to effectively implement supply chain performance management practices in today's complex and changing organisational environments. Data accuracy, the need for integrating different systems as well as the need for cross-functional collaboration - are just some of the common challenges, according to research by Simatupang et al. (2017). Many scholars have proposed technological interventions and cooperative strategies as a way to answer to these complex issues - modern technologies, which include the Internet of Things (IoT) for real-time data and artificial intelligence (AI) for predictive analytics- both of these technologies can enhance accuracy of the data and streamline the flow of information, according to Christopher and Peck (2004). In addition to the aforementioned - alignment of organisational goals is crucial for boosting teamwork and overcoming compartmentalized practices, according to Simatupang et al., (2017); not to forget that new challenges arise constantly due to the ever-changing nature of the corporate environment. Organisational resilience and agility strategies will be up for discussion and since various studies have shown that staying ahead of challenges requires continual change - aligning performance metrics with company goals is another challenge to tackle, according to Simatupang et al. (2017). Not to mention, that getting everyone who is involved in the supply chain, to work together seamlessly - is difficult, since it involves various employees from different departments; this stresses the need of open lines of communication and collaboration across companies departments, according to Sridharan et al. (2005). Ivanov and Dolgui (2020) in their research note, that supply networks are inherently unpredictable due to their dynamic and agile nature, this calls for the development of strong strategies to mitigate the risks.

The necessity for solutions that combine socio-environmental and economic aspects is emphasised by Pagell and Wu (2009) research, whose work also stresses the significance and need for sustainable practices in supply chain management; Qu and Williams's (2013) case study exemplify the advantages and disadvantages of RFID adoption and other technological integrations within the company. Despite the importance of interpersonal contacts in supply chain management, the meta-analysis by Gligor and Holcomb (2012) shows, that these relationships are difficult to maintain and much more difficult to capitalise on; tackling these difficulties highlights the need for a comprehensive and adaptable strategy in supply chain performance management – a strategy that should incorporate sustainable practices, technological advancements and strategic relationship management.

The present discussion on supply chain performance management benefits from this study's examination of these problems and offer of practical solutions, which are based on both theoretical and empirical considerations.

5. Implications for practice

If practitioners are concerned with optimising their own operational procedures, they should pay close attention to the implications of the research findings on supply chain performance management – such as results from Simatupang et al. (2017) who's study shows how important it is to align supply chain strategies with overarching organisational objectives and demonstrating the need for a strategic approach that stands firmly in the real world. One option to improve current supply chain performance management techniques is to integrate sophisticated technologies, such as recent developments in artificial intelligence (AI) and the Internet of Things (IoT) for improved visibility and responsiveness, as is suggested by Ivanov and Dolgui (2020) study. Another important consideration for practitioners in this era of dynamic business challenges, is the data presented by Christopher and Peck (2004) which shows that enhancing the supply chain's resilience is crucial for dealing with disruptions and also according to Ivanov and Dolgui (2020) - organisations can respond to future trends and disruptions by increasing their agility, and also by staying ahead of ever-changing industry landscapes through digitization - with the help of the above mentioned technologies. By providing practitioners with actionable guidance on how to enhance their current procedures and prepare for new ones - these beneficial implications and recommendations contribute to the ongoing conversation of more effective supply chain management.

6. Value of the research

Both academics and businesses can benefit greatly from the research which provides a comprehensive analysis and evaluation of present approaches in the crucial topic of supply chain performance management, and based on the work of Simatupang et al. (2017) - this research delves into the topic of how well company objectives and supply chain strategy align, so that practitioners in the supply chain may benefit from the insights which this research offers. Innovations in supply chain transparency, efficiency and responsiveness may be on the horizon, according to an analysis of digitalization's effects that draws on work by Christopher and Peck (2004) and Ivanov and Dolgui (2020); for anyone who is looking to improve their supply chain performance management methods, they can take advantage of the research's practical insights and put them into practice; by pointing out where there is a lack of study, we may improve our understanding of the opportunities and threats in supply chain performance management and where to direct future academic efforts.

7. Future research directions

This study establishes a foundation for future research on the topic of supply chain performance management by identifying critical areas that require further investigation; building on the findings of Simatupang et al. (2017) that additional research into innovative methods of performance evaluation which meet the dynamic demands of contemporary supply chains is necessary. The importance of understanding the impact of Industry 4.0, IoT, AI and blockchain on supply chain performance was emphasised by Ivanov and Dolgui (2020), who examined future trends and technologies - to better inform practitioners, future studies should investigate real-world consequences of application of these technologies. The co-creation of knowledge and the application of research findings in real-world scenarios are greatly enhanced by the continual collaboration between academics and the industry, as advocated for by Christopher and Peck (2004) research. This work seeks to encourage a never-ending conversation between scholars and industry professionals by outlining potential avenues for further dialogue and further study in the area of supply chain performance management.

8. Key takeaways

All things considered, the areas of study and practice have been significantly broadened by this research on supply chain performance management; Simatupang et al. (2017) extensively analyse current approaches highlighting the importance of aligning supply chain strategy with organisational goals and objectives. Discovering key indicators and approaches, delving into technology integration, evaluating industry-specific variants - all contribute to a more nuanced comprehension of supply chain dynamics; integration of new technologies such as AI and IoT, and alignment of performance measurements with organisational goals are just the two examples of how supply chain practitioners might profit from the practical consequences of this research, according to Ivanov and Dolgui (2020) and Christopher and Peck (2004). To add to the above, in the view of the always evolving challenges in the ever-changing corporate environment, Ivanov and Dolgui (2020) and Christopher and Peck (2004) – both researches have emphasised the significance of constant adaptability, resilience and agility as the cornerstones of efficient SCPM. If organisations aspire to be more resilient and competitive in the face of unpredictability and unexpected events, the results show that a good supply chain performance management is crucial for the business, it can make or break it. Based on these findings - academics and industry professionals in the constantly changing field of supply chain management need to collaborate to find solutions to emerging problems, adopt cutting-edge technologies and develop flexible strategies to keep up with the ever-shifting nature of supply chain practices.

CONCLUSIONS

In conclusion, the intricate dynamics of such crucial subject as supply chain management is explained by the comprehensive analysis of various studies on supply chain performance management. This particular study builds on the work of such scholars as Simatupang et al. (2017) to highlight the importance of a well-coordinated strategy for achieving company-wide goals and the strategic alignment of supply chain objectives with those goals. Ivanov and Dolgui (2020) research and Christopher and Peck (2004) study offer a comprehensive overview of modern performance management approaches through their examination of key methodologies, metrics and the revolutionary impact of digitalization ear and technological integration. Practical advice is provided by these insights, which have effects for practitioners; one such suggestion is to enhance responsiveness and efficiency by incorporating new technologies such as AI and the IoT. Recognising the evolving issues in the ever-changing business climate highlights the need for continuous adaptation, resilience and collaboration, as pointed out by Christopher and Peck (2004) and Ivanov and Dolgui (2020) detailed works. Research provides various important findings, which are listed below.

1) The study emphasizes the necessity of integrating supply chain strategy with corporate goals to improve performance and competitiveness. Successful SCPM should easily integrate with business goals to guarantee unity and efficiency.
2) The paper examines how cutting edge technologies such as AI, IoT, and blockchain are changing supply chain management, since they enable real-time tracking and decision-making in fast-paced markets by improving supply chain transparency, efficiency, and responsiveness.
3) The research shows that supply chains must be agile and resilient to changes and disturbances to stay effective.

4) Suppliers, distributors, and consumers must work together for SCPM to succeed. Collaboration is critical for improving efficiency and obtaining mutual advantages in the complex supply chain environment.

5) The research identifies key supply chain efficiency metrics, supply chain performance must be measured and improved by aligning these indicators with strategic company goals.

6) The article discusses supply chain difficulties and recommends technology solutions and open communication inside and across companies to address these concerns

7) The study emphasizes the need for industry experts to adopt cutting-edge technology and novel management methods to improve supply chain operations. Practical lessons from the study can help practitioners in navigating modern supply chains more effectively.

8) The paper recommends studying new performance measuring methodologies and how developing technologies affect supply chain management. Investigating these topics will give deeper insights and stronger tactics for meeting global supply chain dynamics.

In the ever-changing world of supply chain management, this research can be used as a roadmap for both academics and professionals; it will aid in better understanding how to manage supply chain performance so that organisations can stay agile, resilient and ahead of their competition.

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Proceedings of the 2024 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" No 58
Jelgava, LBTU ESAF, 16-17 May 2024, pp. 49-59
DOI: 10.22616/ESRD.2024.58.005

CHANGES IN THE IMPORTANCE OF AGRIBUSINESS IN THE POLISH ECONOMY AFTER 2000

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Abstract. Agribusiness is losing its significance in the economies with economic development. In agriculture, lower labour productivity is usually observed compared to the entire economy. Agribusiness also undergoes internal changes. With the lengthening of supply chains and the increasing demand for highly processed food, the economic importance of agriculture within agribusiness decreases while food processing grows. This study aims to determine how the significance of agribusiness changed in the Polish economy, what direction these changes are taking, and what their dynamics are. The analysis covers 2000-2022, and data from national statistics were used. The significance of agribusiness in the economy was assessed by considering its share in gross output, gross value added, net fixed assets, employment, and foreign trade turnover. Exponential function was used to evaluate the dynamics of changes. The importance of the agribusiness sector in the Polish economy decreased. The employment share declined from 20 to 17%, and considering the primary source of livelihood, it was 11%. The share in gross output was 9%, and in GVA, only 5%. Oppositely, agribusiness had a much higher share in foreign trade, generating 14% of exports and 9% of imports to Poland. Over the analyzed period, the gross output share of agribusiness in the whole economy decreased by 38% and GVA creation by 47%. The export share increased by 30% and imports by 17%. The structure of the agribusiness sector has modernized. From 2000 to 2005, agriculture accounted for about 60% of the sector's GVA, while from 2018 to 2022, it was only 45%. Most of the agribusiness's GVA is currently generated in industrial food processing. It can be concluded that agribusiness in the Polish economy is becoming less and less significant. It only maintains a high share in foreign trade. Further reduction in employment and increased labour productivity, primarily in agriculture, is expected.

Key words: agribusiness, bioeconomy, gross value added, GVA, agriculture, labour productivity.
JEL code: J43, Q13, Q17

Introduction

Agribusiness is the sum of all operations involved in farming, fishing, forestry, manufacturing, and distribution of inputs and outputs of agriculture, fishery, forestry, and fibres. (Davis & Goldberg, 1957) These are activities related to agricultural production. The role of non-food production, i.e., biofuels, fibres etc., is emphasized, but the most important agribusiness element is still the production and supply of food. The concept of agroindustry also often appears, which is defined more narrowly and includes food acquisition, processing and distribution. The agroindustry can be identified as part of the food supply chain (Chobanian, 1999). Currently, the food industry is becoming more and more independent from domestic agriculture due to the possibility of global sourcing of raw materials.

Agribusiness undergoes continuous changes stemming from the increased availability of agricultural production resources, continual emergence of process and product innovations, changes in production scale, the emergence of international and even global supply chains, and efforts to limit environmental impact and reduce GHG emissions. It is essential not to forget that the primary goal remains providing sufficient food for the growing population. In a situation where production and consumption occur in other parts of the world, a significant task for agribusiness is to organize efficient logistics for raw materials and processed products.

The development of agribusiness in a given country results from local production and consumption conditions. However, several main trends relating to agribusiness can be observed on a global scale. Globalization and liberalization of food trade, as well as the increasing role of transnational corporations, lead to a situation where regulations regarding agribusiness increasingly strongly consider the interests of states and corporations expressed in specific interventions and directions of support for development.

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The increasing dominance of food processing and distribution in food supply is also an important trend (Ziggers, 1999). This results from the increased distance in time and space between producers and consumers. There is a greater distance domestically, as urbanization levels rise, and internationally, as some countries are net food exporters while others are importers. This leads to increased demand for processing agricultural raw materials into semi-finished or finished products. Consequently, the significance of the food processing industry in aggregating raw materials into larger streams, processing them, and further distributing them, also within global chains, increases. This requires innovative and environmentally friendly investments in processing and conservation methods, packaging, quality certification, and food traceability (Abashidze, 2023). Global players may find it easier to afford such actions (Ritambharaand Shukla Shiv Kantand Shukla, 2021). In countries with a high concentration of agribusiness and agricultural potential exceeding domestic demand, the growing importance of agribusiness with a focus on exporting surpluses is evident (Orlykovskyi & Wicki, 2019; Shainidze et al., 2023), as is the case in countries exporting soybean or palm oil, for example (Milazzo et al., 2013). Overall, most researchers predict the development of agribusiness, or more broadly, the bioeconomy, including the emergence of innovations in production inputs, new processing technologies, as well as new products utilizing agricultural products, whether for food production or other biobased products (Frisvold et al., 2021; Muska et al., 2022; Raimjanova & Popluga, 2023). This requires both tangible investments and investments in workforce education for agribusiness (Muska et al., 2022).

Intense concentration and commercialization of agriculture also lead to land concentration and the disappearance of small-scale farmers and traditional land users. The specialization of plant production, including the creation of monocultures and industrialization of animal production, i.e., animal production separated from feed production (Burkard, 2018), is a sample of consequences connected to agribusiness development. Small-scale farmers are often excluded from participation in the supply chain in the modern agrifood industry (Reardon et al., 2009). Another effect is agriculture-related land and commons grabbing (Dell'Angelo et al., 2021; Zawojska, 2014).

There are also increasingly more vital pressures to limit the impact of agribusiness, primarily agricultural production, but also transportation, on the environment. This mainly concerns emissions reduction and preserving environmentally valuable areas beyond agricultural use (de Azevedo Denise Barrosand Pedrozo, 2010; Lokko et al., 2018). Short supply chains, for example, are promoted, but these are ineffective beyond small local markets and may encompass a negligible percentage of production and only selected products (Dragicevic, 2021). Such short chains are often not low-emission either (Bogone Toth & Zs. Lakner, 2014; Malak-Rawlikowska et al., 2019). Allegations are made against large-scale and monoculture-based agriculture for not respecting environmental protection requirements and the rights of local communities (Milazzo et al., 2013), but other studies have found that emissions per unit of food production are decreasing in countries with intensive such output (Bajan & Mrówczyńska-Kamińska, 2020; Wicka & Wicki, 2023). Furthermore, large farms or agribusinesses are already becoming the subject of investments in financial markets, so agribusiness, and even agriculture in some regions, ceases to be an element belonging to local communities (Langford et al., 2020). For various reasons, stronger legal regulation of agribusiness is necessary, for example, regarding the use of multiple chemicals, GMOs, and food safety measures (Burkard, 2018).

In some countries, opening up to international competition can significantly weaken agribusiness. Agriculture is shifting towards extensive plant production; as a possible solution to move away from such a limited role, intensification in agriculture is advocated, including the development of animal production, biofuel production, and short supply chains. There is also a negative perception of agricultural work in the

surrounding environment and among successors on (Bilewicz & Bukraba-Rylska, 2021), which can lead to farm closing. Conversely, in least-developed countries, efforts are still being made to develop agribusiness to ensure at least food security. The introduction of modern solutions promoting efficiency growth and increased food sustainability while reducing environmental impact is advocated (Lokko et al., 2018). Both modernization and increased integration require support for sustainable development (Lema et al., 2021).

In Poland, as in other European Union countries, the role of agriculture and agribusiness in the economy is diminishing. Since the political transformation until 2000, the significance of agribusiness in the Polish economy has markedly declined, a consequence of both the development of non-agricultural sectors and the worsening economic conditions and the relation of input-product in agriculture production (Grontkowska & Wicki, 2015). A beneficial phenomenon for agriculture was the maintenance of the real price level of agricultural raw materials (D. Kusz et al., 2022). It was also observed that the dominance of agriculture in the entire agribusiness decreased and the importance of the food industry increased.

Aim and method

The study aims to assess how the significance of agribusiness in the Polish economy is changing, as well as the direction and dynamics of these changes. The analysis covers the period from 2000 to 2022. Data from national statistical resources, which are presented annually, were utilized. Three research tasks were adopted: 1) determining changes in the significance of agribusiness in the Polish economy; 2) identifying changes in the internal structure of agribusiness in terms of generating value-added; 3) evaluating differences in labour productivity levels in agribusiness relative to the entire economy.

Agribusiness was considered as the sum of agricultural activity and the food processing industry (food, beverages, and tobacco), as separate data on the shares of sectors supplying agriculture and the processing industry with means of production, as well as data on the share of agribusiness in trade and distribution, are not available. Estimating these quantities goes beyond the assumed scope of this study due to the specified research period. These two sectors constitute 64% of the bioeconomy in Poland.

The data used in the study originated from the database and publications of Statistics Poland (the authority responsible for public statistics in Poland). Data concerning the agricultural sector, food processing industry, beverage production, and tobacco processing were collected each year. The data included gross output, gross value added, net fixed asset values, and employment. Additionally, data on foreign trade turnover in agri-food products were collected. The data were collected in nominal values. To ensure comparability over time, nominal values were converted to real values using deflators calculated separately for the studied sectors for global production values, gross value added, and foreign trade prices.

The significance of agribusiness in the economy was assessed by its share in gross output, gross value added, fixed asset utilization, employment, and foreign trade turnover. In evaluating changes in the internal structure of agribusiness, the share of agriculture and food processing in generating gross value added within agribusiness was utilized. Labour productivity was determined using gross value added in the respective sector per one person employed.

Basic statistical methods, including those for assessing the pace of changes and average annual growth rates, were used in the calculations. The average annual growth rate was calculated based on the course of the exponential function for the time series. The function given below (formula 1) was used. Beta (β) is the average annual growth rate.

$$y = \alpha \cdot e^{\beta x_i} \quad (1)$$

where: x_i – means annual data for individual criterion.

The share of agribusiness in the Polish economy

The Polish economy grew at an average rate of approximately 3.7% per year in 2000-2022, as measured by GVA dynamics. As a result, in 2022, the value of real GVA generated was more than twice as high as in 2000 (Table 1). Much lower dynamics were observed for the agribusiness sector. The average annual real growth in the gross output value in this sector was approximately 2.2%, and the real yearly dynamics of GVA reached 1.2%. It was three times less than for the entire economy. This means that the structure of the economy was modernized.

Table 1

The size and dynamics of selected economic values of agribusiness in Poland against the background of the country's economy in the years 2000-2022 (constant prices for 2022)

Year	Size of agribusiness in Poland					GVA - Poland
	gross output	gross value added	import	export	employed persons[#]	billion 2022 zloty
	billion 2022 zloty[*]					
2000	365.9	95.6	29.0	25.5	2.57	1216.4
2001	370.0	100.3	28.8	27.1	2.54	1234.0
2002	380.0	107.9	28.6	27.8	2.57	1259.0
2003	393.6	112.1	28.7	34.5	2.54	1301.0
2004	420.6	111.2	29.8	37.1	2.55	1370.0
2005	419.5	113.2	40.3	53.7	2.54	1416.2
2006	447.8	118.7	45.0	61.0	2.54	1502.5
2007	470.3	117.0	53.8	67.8	2.54	1609.6
2008	469.8	117.9	62.7	72.8	2.53	1674.5
2009	492.9	129.2	64.8	79.8	2.51	1726.9
2010	471.7	129.3	69.1	86.3	2.78	1786.2
2011	484.6	122.5	75.4	93.4	2.76	1876.6
2012	472.0	112.7	79.1	108.4	2.77	1902.2
2013	483.8	119.5	83.9	123.2	2.76	1917.8
2014	500.2	118.6	90.5	132.0	2.78	1989.1
2015	502.8	116.2	97.5	142.2	2.78	2078.8
2016	528.4	122.4	109.3	150.5	2.79	2136.6
2017	556.8	126.7	118.1	166.1	2.79	2243.5
2018	537.3	135.0	115.1	173.8	2.79	2376.5
2019	580.6	139.1	125.2	182.0	2.79	2480.0
2020	561.1	130.9	137.6	196.8	2.79	2429.7
2021	604.4	120.9	140.2	204.3	2.79	2589.6
2022	653.5	146.0	150.8	223.9	2.79	2732.9
Real average annual dynamics [percent]	**2.23**	**1.17**	**8.34**	**10.17**	**0.57**	**3.71**

[#]—In 2010, the data was corrected based on the General Agricultural Census. Data for 2000-2001 and 2020-2022 were recalculated for comparability.
[*]-Exchange rates in 2022: 1 zloty = 0,223 USD; 1 zloty = 0,213 EUR.
Source: author's calculations based on Statistics Poland data

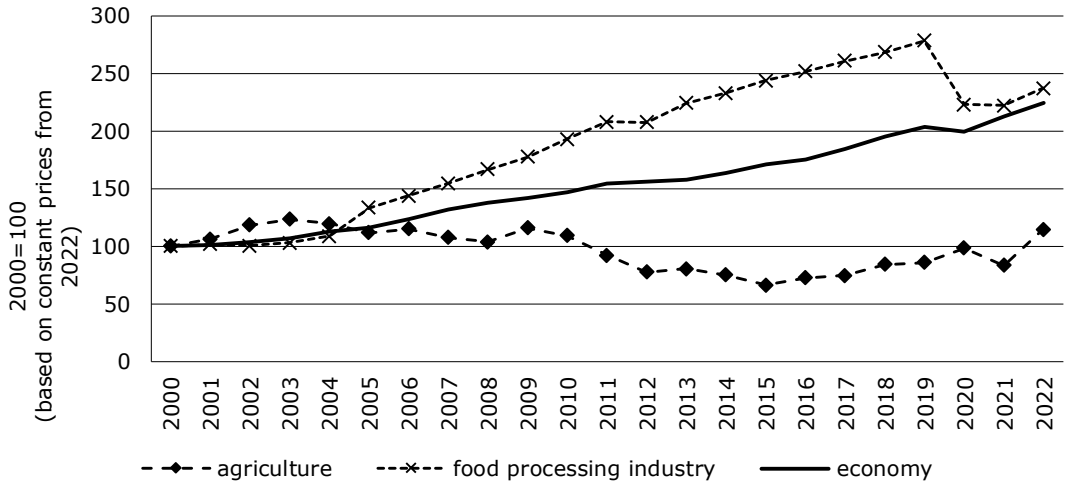
The value of gross agribusiness output (in real terms) in Poland increased from around 380 billion Polish złoty to 600 billion złoty between 2000 and 2022, representing approximately a 1.6-fold increase. The gross value added (GVA) of agribusiness also increased in real terms by about 30% during the same

period. This means that the ratio of value added to production decreased by approximately five percentage points from 27% to 22%. Profitability in agribusiness declined.

Employment in the agribusiness sector in Poland did not undergo significant changes. This is due to the high fragmentation of farms and the large number of people working in agriculture on a full—or part-time basis. After adjusting for the 2010 correction, after the National Agricultural Census, there was a slight increase in the number of people employed in agriculture, followed by a stabilization of employment.

In foreign trade, the share of turnover in agricultural and food products increased dynamically, both in imports and exports. Imports increased fivefold in real terms, while exports almost octupled. The average annual dynamics of real turnover value were 8.3% and 10.2%, respectively. Such high dynamics indicate that the sector's participation in international supply chains is increasingly significant and that the Polish agribusiness offering was competitive in foreign markets. Notably, exports increased from around 10% of the gross production value before 2005 to over 30% after 2015. Agribusiness in Poland currently has a strong export orientation.

Figure 1 shows the differences in the GVA dynamics of agriculture, the food industry and the entire economy. The lowest dynamics characterized GVA of agriculture; in 2011-2021, it was even lower than that observed at the beginning of the analyzed period. For the food processing sector, the GVA dynamics were higher than the average for the entire economy. During the SARS-CoV-2 pandemic, there was a significant slowdown in the growth dynamics in this sector. It is worth noting that food processing is responsible for all the growth in agribusiness, while agriculture only maintains a constant level of added value. Higher added value is created by expanding the offer of processed food and process and product innovations.



Source: author's calculations based on Statistics Poland data

Fig. 1. **Real dynamics of GVA in agriculture and food industry against the background of the entire economy in Poland in 2000-2022 (2000 =100)**

The share of agribusiness in the Polish economy and its changes

In the years 2000-2022, agribusiness in Poland was characterized by lower growth dynamics than the entire economy. As a result, its share in the Polish economy has changed. Table 2 shows the importance of agribusiness in the economy, which is measured using several main criteria.

Table 2

Changes in the importance of agribusiness in Poland in the years 2000-2022 according to selected criteria (the shares were determined at nominal values)

Year	Share of agribusiness in the economy in Poland in 2000-2022 in [in percent]					
	gross output	**gross value added**	**net fixed assets**	**employed persons**	**import**	**export**
2000	11.9	8.3	8.0	19.9	6.5	8.4
2001	11.7	8.2	7.4	20.3	6.8	8.4
2002	11.4	7.5	7.2	20.1	6.5	8.0
2003	11.4	7.3	7.0	20.1	5.9	9.4
2004	11.6	8.0	7.0	20.1	5.2	7.5
2005	10.8	7.5	6.8	19.7	6.8	10.0
2006	10.6	7.4	6.5	19.2	6.4	9.8
2007	11.1	7.3	6.1	18.5	6.7	9.9
2008	10.0	6.3	5.8	18.0	7.2	10.1
2009	10.2	6.3	5.5	18.2	8.7	11.8
2010	9.6	6.5	5.3	19.7	8.1	11.2
2011	10.0	6.8	4.9	19.4	8.3	11.2
2012	9.8	6.0	4.8	19.5	8.8	12.5
2013	9.9	6.2	4.7	19.4	9.1	13.2
2014	9.6	5.9	4.7	19.1	9.0	13.2
2015	9.1	5.5	4.6	18.8	9.1	13.3
2016	9.2	5.8	5.0	18.2	9.6	13.2
2017	9.5	6.1	4.7	17.8	9.4	13.5
2018	8.4	5.4	4.7	17.5	8.5	13.3
2019	8.8	5.3	4.6	17.3	9.0	13.3
2020	8.7	5.1	4.6	17.3	9.9	14.3
2021	8.7	5.0	4.5	17.0	8.6	13.1
2022	9.7	5.3	4.6	16.8	8.8	13.8
Total change, %	**76.4**	**66.7**	**62.7**	**85.5**	**145.2**	**162.5**
CAGR in 2000-2022 in percent	**–1.42**	**–2.22**	**–2.68**	**–0.67**	**2.21**	**2.72**

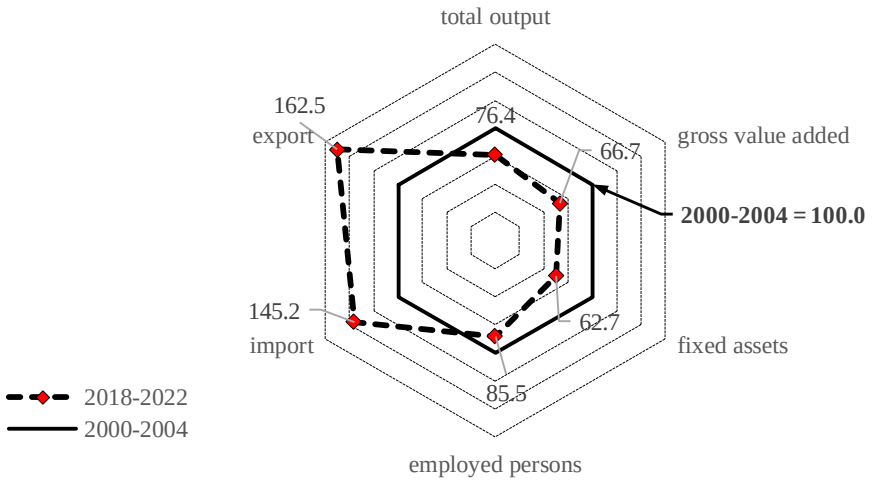
Source: author's calculations based on Statistics Poland data

The share of agribusiness in the Polish economy decreased. The primary indicator of the sector's significance in the economy, the share in gross value added, decreased by 2.6 percentage points between the beginning of the period (2000-2004) and the end of the period (2018-2022), from 7.8% to 5.2%. In relative terms, the decrease was as much as 33.3%. The share in gross output decreased by 2.7 percentage points to 8.9% in 2018-2022. The decrease was approximately 24%. To a lesser extent, by only 14.5%, the share of those employed in agribusiness decreased, and for the share of utilized fixed assets, the decline was 37%. It should be emphasized that the importance of agribusiness has reduced in terms of resource utilization, gross production, and value-added generation.

In contrast, an increase in importance was observed regarding the share of agribusiness in Poland's foreign trade. Trade in unprocessed agricultural products and processed food was considered. The share of agribusiness production in total exports increased from about 8 to 13.5%, with an overall increase of 5.2 percentage points during the entire period. In relative terms, this was a 62% increase. Concurrently, the import of agri-food products increased, but in this case, the dynamics were lower. In 2018-2022, the share of agri-food product imports in total imports was 9.0%. Since 2003, positive trade balances have

been observed in foreign trade in agribusiness products. In 2018-2022, this amounted to around 50 billion Polish złoty annually, representing approximately 12% of the value of total agribusiness production. The value of total agribusiness product exports in the last years accounted for about 35% of its total agribusiness output. It must be emphasized that the increase in output value in agribusiness was possible due to the export of surplus agricultural production and processed food.

Figure 2 shows the direction of changes in the significance of agribusiness in the Polish economy. In four out of six categories, the significance decreased. It is evident, among other things, that gross output and GVA decreased more than employment, leading to a relative decrease in labour efficiency in agribusiness.



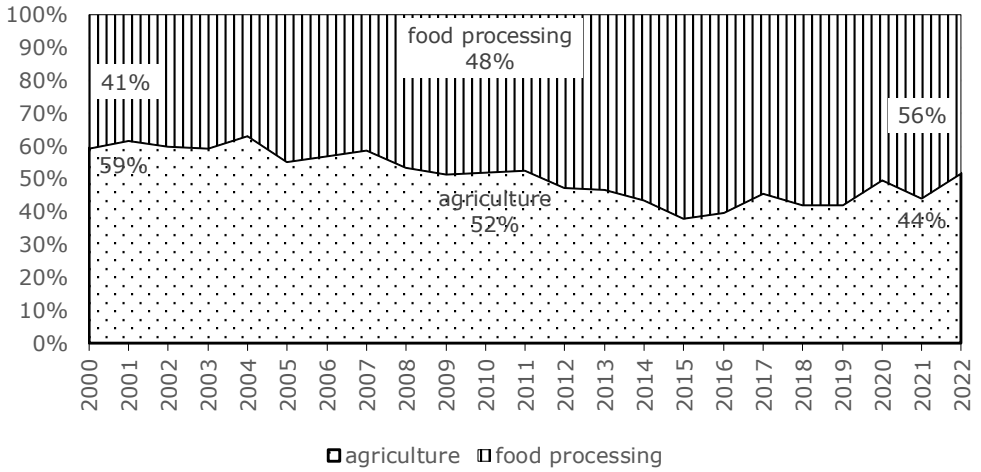
Source: author's calculations

Fig. 2. **Changes in the importance of agribusiness in the economy according to various criteria in the years 2000-2022 (2000-2004=100)**

Changes in the internal structure of agribusiness and differences in labor efficiency

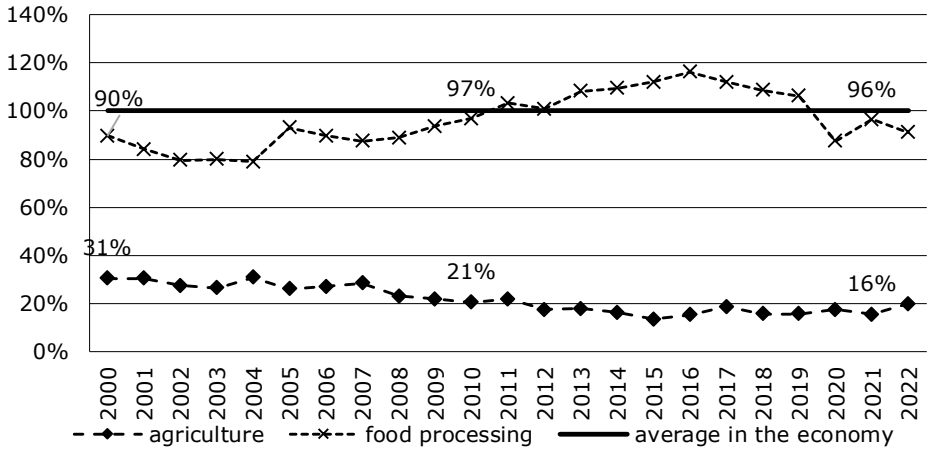
The results presented in the study concern agribusiness as a whole. Two main components included in this sector are agriculture and agri-food processing. There are persistent differences between these subsectors, primarily stemming from the level of production concentration and technological advancement. Another issue is that consumers expect food with an increasing degree of readiness for consumption, which means a lesser share of agricultural raw material costs in final products (Becvarova, 2002; D. Kusz et al., 2022). Similarly, processed food accounts for a growing share of exports, while agricultural raw materials account for a smaller share. Such a trend is observed alongside the economic development of countries. In more developed countries, the contribution of agriculture to value-added in agribusiness is smaller than the significance of food processing (Van Arendonk, 2015; World Bank Data, 2024). An exception is made for countries with high potential for plant production focused on the mass export of plant materials, such as grains (Zaburanna et al., 2017).

Figure 3 shows changes in agriculture and food processing share in creating gross added value within agribusiness. From 2000 to 2011, the share of agriculture decreased from 60 to 50%. After 2011, the majority of agribusiness GVA came from the processing subsector. The share of agriculture decreased to 40-45%. This means that a relatively modern structure currently characterizes agribusiness in Poland.



Source: author's calculations

Fig. 3. **Changes in the share of agriculture and food processing in creating gross value added within agribusiness in Poland in 2000-2022**



Source: author's calculations

Fig. 4. **Labour productivity in agriculture and food processing compared to labour productivity in the entire economy (based on GVA per employed person)**

An evident weakness of agribusiness is lower labour productivity compared to the average productivity in the economy. This is because agriculture in Poland is still fragmented. There are 1.3 million farms, and the average area of agricultural land per farm is only 11 ha. Figure 4 shows the level of labour productivity in agriculture and food processing relative to labour productivity in the economy.

The observed average labour productivity in agriculture, measured by the GVA per employed person, was low, reaching approximately 20% of the national average. A downward trend was observed, at around 3% annually compared to the average labour productivity in the economy. Agriculture fails to achieve the same pace of labour productivity growth as other sectors; it is a prolonged process because of its farm structure, which is dominated by small farms, which slows down modernisation processes(B. Kusz et al., 2022). Similar situations exist in other EU countries with fragmented agriculture (Ronzon et al., 2020). In contrast, the food processing sector experienced a different development path. Labour productivity in this subsector, initially lower than the country average, increased along with industry modernization and has been at a similar level to the average since 2010. The average annual growth rate was 1.18% relative to the average. On average, labour productivity in the agribusiness sector (agriculture and food processing) reached about 30% of the national average. Such disproportion will persist until there is a consolidation and, consequently, an increase in labour productivity in agriculture.

Conclusions

Agribusiness can be a significant sector of the national economy, particularly in countries with favourable natural and economic conditions for agricultural development and in less developed countries. With economic and social progress, the importance of the food processing and distribution sectors within agribusiness increases while the importance of agriculture itself decreases. Food processing and distribution may become increasingly independent of domestic agriculture and rely on importing raw materials.

In Poland, between 2000 and 2022, the gross output of agribusiness increased by over 60% in real terms, and the real gross value added in agribusiness increased by 30%. However, the significance of agribusiness in the Polish economy decreased as the real GVA value increased by over 100%. Based on the analysis conducted, the following conclusions can be drawn.

1) The dynamics of gross output and value-added in agribusiness were lower than those observed in the economy. The share of this sector in the economy decreased. Between 2000 and 2004, it accounted for approximately 8% of the gross value added in Poland, whereas between 2018 and 2022, it dropped to only 5.2%. Similarly, the sector's share in the gross output structure decreased from 11.6% to 8.9%.
2) In the GVA creation structure within agribusiness, agriculture's importance decreased while food processing increased. The share of food processing increased from about 40% to 56%. This also means that processed food with higher consumer readiness is becoming increasingly important.
3) The development of food processing was the basis for the dynamic growth of foreign trade in agri-food products. Their share in Polish exports increased from 8% to even 14% between 2000 and 2022. The trade balance surplus of agri-food products increased from zero to a permanent surplus of approximately $16 billion (approximately 75 billion zloty).
4) Labour productivity in agribusiness in Poland, measured by GVA per person employed, was low compared to the national average and decreased over time. At the beginning of the study period, it was around 40%; in the end, between 2018 and 2022, it was only 30% of the average. This was due to low labour productivity in agriculture, which was about 18% of the average. In the food industry, labour productivity was similar to the national average.
5) Poland's agribusiness developed slower than the entire economy. The driving force for growth in this sector was the link of food processing, while agriculture maintained a steady production level. The development of processing enabled the export expansion of agri-food products and ensured market opportunities for agricultural farms.
6) The most important barriers to agribusiness development in Poland stem from farm fragmentation, which leads to low resource productivity and low labour productivity. Concentrating production in agriculture will promote the growth of labour productivity and the competitiveness of Polish agribusiness. Still, innovative processes and food products are necessary for further agribusiness development.

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EFFICIENCY OF PRODUCTION PROCESS AND COMPETITIVE OF COMPANIES

Proceedings of the 2024 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" No 58
Jelgava, LBTU ESAF, 16-17 May 2024, pp. 61-68
DOI: 10.22616/ESRD.2024.58.006

IMPACT OF ISO 9001 QUALITY MANAGEMENT SYSTEM ON SMES: THE EXAMPLE OF GEORGIA

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Abstract. In the current era of globalization, many companies worldwide have adopted a quality management system that is recognized internationally. The International Organization for Standardization reports that over a million organizations across 170 countries have been granted the ISO 9001 certification as proof of their compliance with the quality management system standard (ISO, 2023). However, when we examine the certification data of Georgian businesses, only 134 companies in the country (ISO Survey, 2022) have been certified with the ISO 9001. The research conducted by various scholars indicates that ISO 9001 is a critical tool for enhancing competitiveness. Obtaining the ISO certification is an effective way to increase customer trust, and satisfaction, reduce production costs, and continuously improve companies.

The research aims to determine the effectiveness of the quality management system in small and medium-sized businesses in Georgia. It also highlights the benefits that service companies receive after obtaining an ISO certificate, such as increased process efficiency, improved service quality, better risk management, and a better company reputation. However, the study revealed that there is low awareness of the quality management system in Georgia, and the cost of certification is a hindrance for entrepreneurs when making a decision.

Key words: ISO 9001, quality certification, quality management system, business performance.

JEL code: M10, M16, O31

Introduction

Small and medium business is the most important component of the country's economic system. It is the main source of employment and income of the population. As of 1 January 2024, 255 961 active small and medium-sized businesses are registered in Georgia, which is 97.9% of the total number of active enterprises (National Statistics Office of Georgia, 2024). Small and medium-sized business has a great place in the economy of Georgia, and its sustainability, maintaining competitiveness and continuous improvement are very important for any country. Sustainable development of companies is the biggest challenge of the 21st century for business owners.

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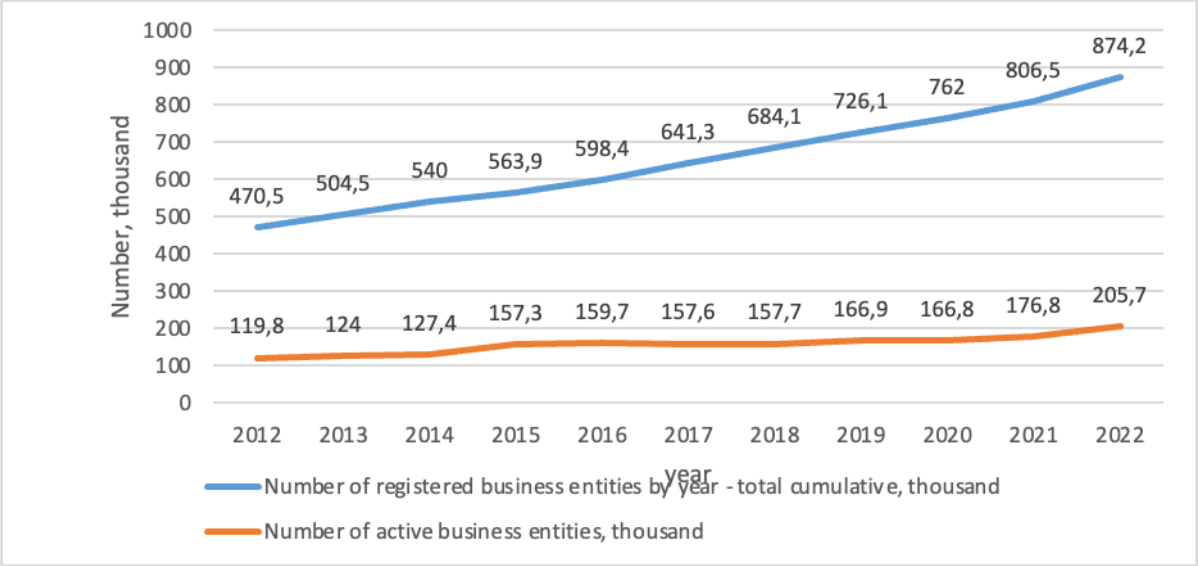


Source: National Statistics Office of Georgia

Fig. 1. **Number of registered and active business entities**

If we look at the statistical data of registered and active business entities in Georgia during the years 2012-2022 (Figure 1), we will see that the number of registered businesses increased by 403700 during the given 10-year period, and the number of active business entities by the end of 2022 is only 205700 entities, which is 51% of the total registered ones. This indicates that a significant part of the companies can no longer continue their development and stop being active. Under the strong competition of globalization, business needs a new, modern management approach, which will affect its quality and process efficiency and make it more competitive in the modern era. In order to maintain the sustainability of the companies, a number of companies in the world have already introduced a quality management system. According to the International Organization for Standardization, more than a million organizations in 170 countries around the world have received the ISO 9001 certificate as evidence of compliance with the requirements of the quality management system standard (ISO, 2023). If we look at the certification data of Georgian business entities, according to the data of the International Standardization Authority, only 134 companies in the country (ISO Survey, 2022) are ISO 9001 certified.

The purpose of the research paper is to determine the effectiveness of the quality management system in small and medium-sized businesses in Georgia. Many researchers worldwide have investigated the effectiveness of ISO 9001, although there are few studies in this field in Georgia, which shows the novelty and topicality of the research. The research reveals the positive effects that certification can have in Georgia.

In the research process, the research hypothesis was formed as follows: ISO 9001 has a positive impact on the efficiency of business processes in Georgia. The research methodology is based on qualitative and quantitative research methods: review of scientific literature, questionnaire survey. Also, quantitative data were obtained from the databases of national statistics of Georgia and International Organization for Standardization.

Data collection was carried out by remote survey method through google.doc questionnaire. The questionnaire was sent to representatives of 20 small and medium-sized businesses, which carry out crewing activities, namely the employment of seafarers in Georgia. All companies have been ISO 9001 certified for at least 1 year. Company managers were involved in the research. The surveyed companies employ a maximum of 50 employees. The questionnaire was answered by the heads of 8 companies, which represents 5% of ISO 9001 certified companies (134 companies in total) in Georgia. Diagrams were used

in the study to visualize the results. The study examined the impact of ISO 9001 on factors such as the efficiency of company processes, service quality, customer satisfaction, company cost reduction, profit growth, competitiveness, risk management and reputation.

During the research process, a review of the literature on the research topic was carried out. As can be seen from scientific works, many researchers confirm that ISO 9001 is an important tool for increasing competitiveness. In the conditions of strong competition in the era of globalization, companies should pay special attention to the quality of products and services. ISO certification is an effective way to gain customer trust, increase satisfaction, reduce production costs and continuously improve companies. As a result of the effective implementation of the quality management standard, companies are given the opportunity to significantly increase performance, stability and competitiveness (Almutairi, 2024).

According to a study by the International Organization for Standardization, which surveyed 10 small and medium-sized businesses about the impact of the ISO standard on their business, certification opened the way for them to tap into new customers and markets, which contributed to faster business growth and increased profits. The main advantages of the implementation were expressed in the following: improved products and services, cost reduction and increased profits, increasing competitiveness, opening export markets, adding new customers and strengthening business, the ability to compete with larger companies, gaining and increasing customer trust, increasing the efficiency of business processes, marketing Strengthening, promoting compliance with regulations (ISO, 2014).

In their research, Kim and Kumar revealed that the results of implementing a quality management system are reflected in an improved system, standardized processes and an improved communication environment (Kim et al., 2011). Some researchers have found that when the motivation for standard implementation is based mostly on the internal interest of the organization, the positive effect of implementation is also higher, which is caused by the pursuit of real quality improvement. On the other hand, if the motivation is limited to commercial motives, then the positive effect of the implementation is also limited by the external effect, and without the internal interest, the other benefits of the standard cannot be achieved. A significant correlation was found between the duration of system implementation and the resulting success. The longer the time since the certification, the higher the benefits, especially in those companies whose motive is not only determined by external factors (del Castillo-Peces, 2018).

Lepistö, K., Saunila, M. and Ukko, J., claim that quality management has a positive effect on customer satisfaction (Lepistö et al., 2022). In another study, researchers found that the quality management system affects the company's product excellence, which is directly related to competitiveness; on the increase of staff capacity; on increasing customer satisfaction; Implementation and continuous improvement of internal tools for meeting customer expectations (García et al., 2014). Several researchers such as Fazal Ali Shaikh and Samiullah Sohu confirm that the advantages of ISO in the construction industry are employee satisfaction, material cost reduction and new business contracts in global markets (Fazal & Samiullah, 2020).

Noteworthy is the work of researchers Zhiqing Yang, Peiyao Liu and Lianfa Luo, which deals with the impact of ISO 9001 certification implementation on China's agri-food business. The researchers concluded that ISO 9001 certification is positively related to the export of agricultural products, ISO 9001 certification promotes exports by increasing business innovation activities, and third, the export effect is greater for food than non-food manufacturing firms (Zhiqing et al., 2023).

Barkat Ullah, in his research, found that as a result of certification, companies innovate more in countries with weak institutions. These findings explain the rapidly growing popularity of quality certification in

developing countries (Barkat, 2022). As Simon Hillnhagen, Alexander Mützeb, Peter Nyhuisb؛and Matthias Schmidt point out in their research, by implementing ISO 9001, not only business owners get benefits as a result of continuous improvement, but also employees and Kopmann customers (Hillnhagen et al., 2023). As for the main motivators that push companies to implement a quality management system, they are increasing efficiency in the direction of market, productivity and competitiveness (Fonseca, 2022).

The significant benefits of ISO 9001 certification are demonstrated by the positive effects of increased customer satisfaction, customer retention, market share growth, employee productivity, and employee satisfaction resulting from the implementation of a quality management system through improved employee education, communication, teamwork, measurable quality goals, continuous improvement, and better work. from the conditions. ISO 9001 certificate helps to raise the image of the company and overcome trade barriers (Milovanović, 2023).

The implementation of the ISO standard on the one hand requires the organization to meet and bring the processes in line with the requirements of the standard, and on the other hand it promotes the development of the organization through continuous improvement (Olkiewicz, 2023). As a result of the implementation of the standard, there is a need to take into account user requirements, prevent defects and make continuous improvements in organizations, which affects the company's business results. This is the most important factor for gaining a competitive advantage (Nurcahyo et al., 2021).

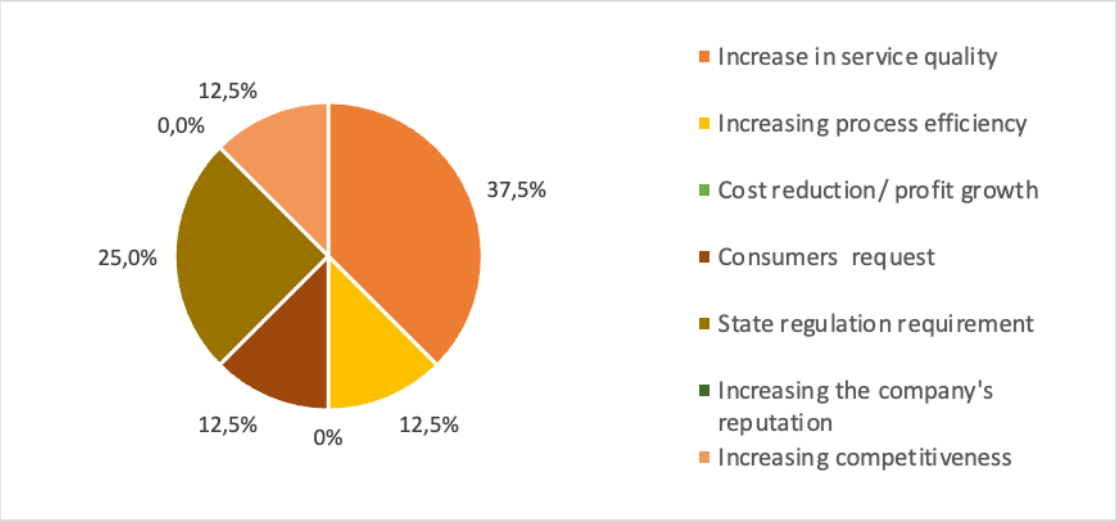
Research results and discussion

A survey consisting of 10 questions was used to test the hypothesis, and the answer options ranged from zero impact to significant impact. The questionnaire was sent to representatives of 20 small and medium-sized businesses that carry out recruitment activities in Georgia. These are also all crewing companies, which are also recognized by the maritime regulatory body of the country, the Maritime Transport Agency of Georgia. The questionnaire was answered by the heads of 8 companies. The analysis of the obtained results is given in subsections according to each factor.

1. Motivations for certification of companies

Figure 2 shows that according to the respondents' answers, the motivations for certification differ for different companies. In addition, the motivators are both internal, such as: service quality, process efficiency, and external motivators: competitiveness, state regulation requirement, consumer request. The biggest share (37.5%) is the motivation to improve service quality, which means that most companies implement quality management systems to improve quality.

DOI: 10.22616/ESRD.2024.58.006

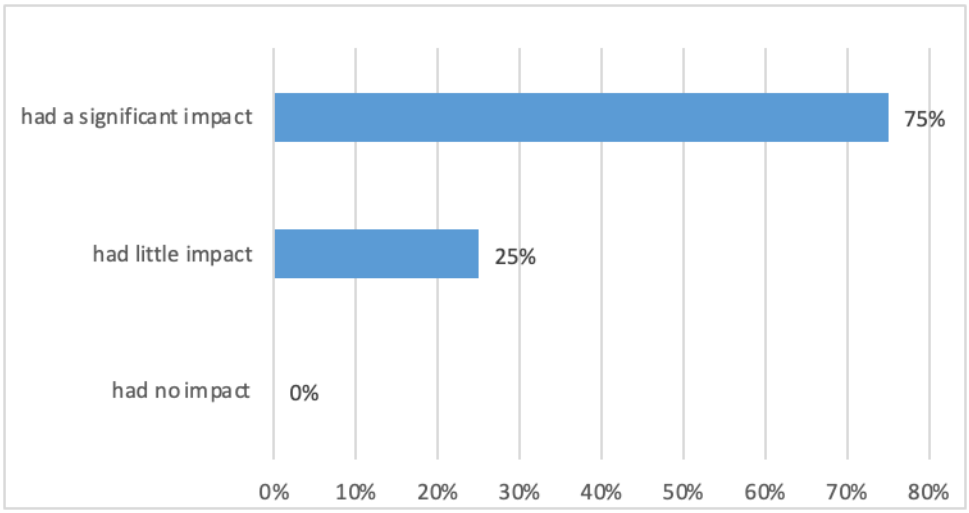


Source: authors' survey

Fig. 2. **ISO certification motivators**

2. Impact of quality management system on process efficiency

The results of the survey show (Figure 3) that 75% of respondents believe that ISO 9001 has a significant impact on increasing the efficiency of processes. In addition, according to 25%, the implementation of the quality management system had an insignificant impact. None of the respondents claim that ISO 9001 had no impact on processes. The obtained research results confirm the results of the previous research that ISO 9001 has a positive impact on the efficiency of the company's processes (Kim et al., 2011).



Source: authors' survey

Fig. 3. **ISO 9001 impact on process efficiency**

3. Impact of ISO 9001 on service quality growth and customer satisfaction

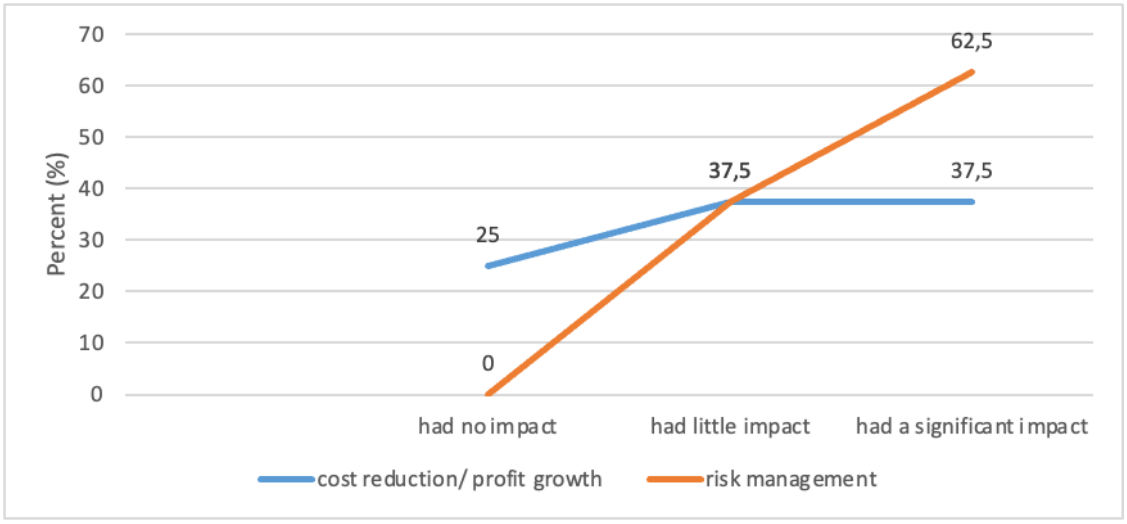
As Figure 4 shows, 87.5% of respondents believe that ISO 9001 has a positive impact on the company's customer service quality, and 62.5% believe that customer satisfaction has increased significantly. However, none of the respondents claimed that ISO 9001 had no impact on service. Therefore, within the framework of the results of the conducted research, it can be concluded that the quality management system has a significant impact on the quality of service of companies. The results are consistent with the results of a previous study regarding the positive impact of a quality management system on service quality (Milovanović, 2023).

Source: authors' survey

Fig. 4. **Impact of ISO 9001 on service quality growth and customer satisfaction**

4. ISO 9001 impact on cost reduction, profit growth and risk management

Based on the results of the conducted research (Figure 5), the opinion of the respondents is divided in terms of cost reduction and profit growth. In particular, 25% of respondents believe that ISO 9001 has no impact on financial performance, however, the remaining 75% of respondents believe that the quality management system has had an impact on cost reduction and profit growth. As for risk management, the largest part (62.5%) believes that certification had a significant impact on risk prevention and reduction, while 37.5% believe that it had little impact on risk management. The obtained research results confirm the results of the previous research that ISO 9001 has a positive impact on the reduction of company costs (Fazal et al., 2020).



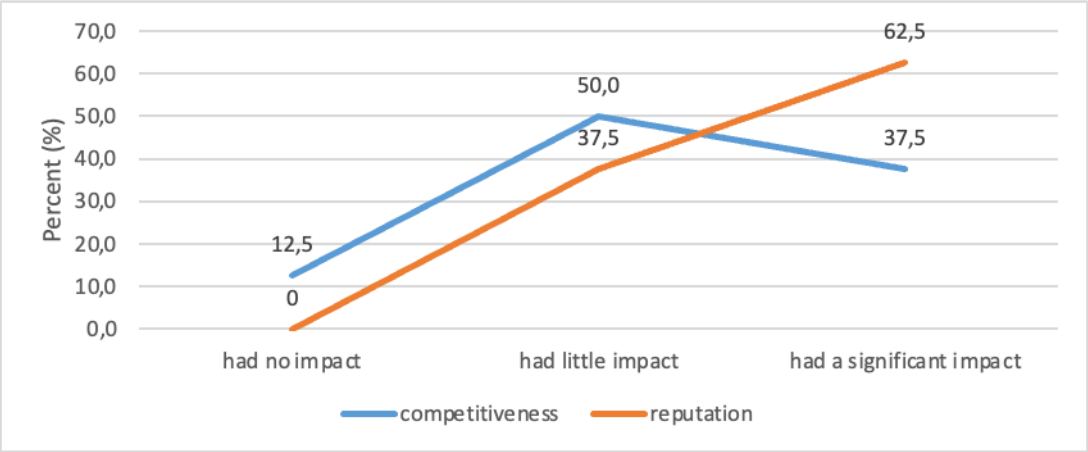
Source: authors' survey

Fig. 5. **ISO 9001 impact on cost reduction, profit growth and risk management**

5. Impact of ISO 9001 on the competitiveness and reputation of the company

Half of the surveyed respondents (50%) believe that the quality management system has little impact on the company's competitiveness (Figure 6), while 37.5% believe that ISO 9001 has a great impact on the company's competitiveness. In terms of reputation enhancement, a small number of company managers, 37.5%, believe that the certificate has a small impact on image enhancement, and the majority - 62.5% believe that the impact of the system on the company's reputation is significant. The positive

impact of ISO 9001 on company competitiveness has been found also in other studies (Fonseca et al., 2022; Nurcahyo et al., 2021; Almutairi et al., 2024).



Source: authors' survey

Fig. 6. **Impact of ISO 9001 on the competitiveness and reputation of the company**

6. ISO 9001 advantages and barriers

The respondents in the research emphasized the advantages that the certification brought to their company. These are: orderly and well-thought-out work processes that can always be improved, understanding and taking care to reduce risks, analysing the company's results through management analysis and understanding future plans, quality growth and continuous improvement. According to the respondents, the enterprises operating in the domestic market of Georgia will likely need to introduce an international standard to improve the efficiency of work processes and the quality of services. Some foreign companies may require ISO 9001 certification when approving suppliers or finding partners. Therefore, certification also increases the chance of attracting customers. One of the respondents emphasizes the benefits that the system has brought. Namely, high quality, transparency, lack of risks and analysis of processes.

As for the factors hindering business certification, companies mention the lack of awareness about ISO 9001 in Georgia, the absence of a national quality system, and the amount of service fees of certification organizations.

Conclusions, proposals, recommendations

Thus, as a result of the research we can draw the following conclusions.

1) The company's reputation, customer satisfaction, improved business processes are the most important levers for maintaining business sustainability in the face of global competition. One of the powerful tools to ensure the above is the implementation of the ISO 9001 quality management system.
2) The ISO certificate has a positive impact on the sustainable development of companies. It has especially positive impact on such factors as efficiency of processes, quality of service, risk management and growth of the company's reputation, which confirms the hypothesis – ISO 9001 has a positive impact on the efficiency of business processes in Georgia.
3) The quality management system ensures orderly and well-thought-out operation of work processes, prevention of company risks, continuous improvement of quality, thus gaining customer trust and increasing quantity, which ultimately, especially in the long term, results in increased profits.

4) The barrier to ISO 9001 certification in Georgia is low public awareness and difficult acceptance of its certification fee.

5) The limitation of this study is the small number of respondents and research focussing only on one specific direction of the investigated businesses - service industry. It is desirable to carry out studies on a larger scale in the future and also study the impact of the quality management system in the industrial and commercial spheres.

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Proceedings of the 2024 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" No 58
Jelgava, LBTU ESAF, 16-17 May 2024, pp. 69-76
DOI: 10.22616/ESRD.2024.58.007

LABOUR PRODUCTIVITY CONVERGENCE IN THE BUSINESS ECONOMY ACROSS EU MEMBER STATES

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Abstract. Labour productivity indicates output per employee, represents production efficiency and is the key factor in incomes and therefore the standard of living. Labour productivity in the business economy varied significantly, i.e. six-fold, across EU Member States, with the lowest labour productivity being reported mostly in East European Member States, which makes it necessary to achieve higher productivity there. The present research aims to examine convergence trends in labour productivity and labour cost in the business economy in the EU. The research found that the fastest increase in labour productivity was reported mostly in East European Member States, although different trends were observed and even a slight decrease was reported in some Member States. However, overall, the gaps in labour productivity and labour cost between the Member States decreased significantly over a decade. A correlation analysis revealed that the correlation was strong between the change in labour productivity and that in labour cost, even though a negative trend was observed in most of the Member States with the labour cost increasing at a higher rate than the productivity, which is not sustainable economic growth in the long term.

Key words: labour productivity, convergence, business economy, EU Member States.

JEL code: Q1

Introduction

Labour productivity, according to Eurostat, measures the amount of goods and services produced by each member of the labour force or the output per input of labour. Labour productivity is often defined as the value added per employed person. As a measure, the present research employed apparent labour productivity, which is defined as value added at factor costs divided by the number of persons employed and presented in thousands of euros per person employed. In the author's opinion, labour productivity is an accurate indicator for the tradable sector (business economy), but not for the entire economy because it is difficult to measure labour productivity in the nontradable sector making up most of the economy and representing public-sector and non-market activities, the value added of which could not be measured, e.g. many government-provided services.

D. Sondermann (2012) has found that "no convergence can be found at the aggregate level, selected service sectors and manufacturing sub-industries indicate evidence of convergence. Investments in research and development as well as a high skill level of employees are shown to be beneficial whereas regulations constitute a burden". This is consistent with the author's opinion that at the aggregate level or the entire economy level, measuring labour productivity or identifying the trend therein cannot lead to an accurate result, whereas at the level of some industries or sector (tradable), it yields accurate results.

Disparities in labour productivity vary significantly across countries in the world, including EU Member States, as do incomes and the standard of living. This problem needs to be addressed and is a research focus for a number of researchers. For example, A. Filippetti and A. Peyrache (2013) have found that "disparities in the levels of labour productivity are still substantial and, to a considerable extent, they can be attributed to technology gap differences. This raises concerns about the process of convergence in labour productivity in Europe and suggests further policies aimed at reducing the technology gap". A. Naveed and N. Ahmad (2016) have established that "the speed of convergence is different across different aggregation levels. The convergence speed at the regional levels is faster than at the country and industry levels".

Labour productivity convergence is an urgent problem to be researched in the EU, as a significant gap in labour productivity results in a significant gap in income levels between West and East European

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Member States. This contributes to excessive labour migration within the EU, a "brain drain" and other socio-economic problems, mostly in East European Member States.

The present research employed Eurostat data and aims to examine convergence trends in labour productivity and labour cost in the business economy in the EU. To achieve the aim, the following specific research tasks were set: 1) to examine disparities in labour productivity and labour cost and long-term changes therein in the EU Member States; 2) to identify correlations between changes in labour productivity, labour cost and investment.

The research employed statistical analysis and correlation analysis to identify correlations between the mentioned variables based on Eurostat data.

Research results and discussion

According to the Balassa-Samuelson theory, the income level, as well as the standard of living, are determined by the tradable sector or, more accurately, labour productivity in the tradable sector that represents export industries. The tradable sector is the "engine" of the entire economy. Unfortunately, Eurostat does not provide data on the tradable sector, yet there are data available only on the business economy. The business economy encompasses mostly export industries and, therefore, could be considered to roughly represent the tradable sector determining the income level in the entire economy. The business economy does not include agriculture, forestry and fishing (section A, NACE Rev. 2), which are an insignificant component of the economy, but a significant component of the tradable sector.

Even though this applies to the entire economy, a working document by the European Commission (2023) found "positive trends in labour productivity, reflecting upward convergence, though disparities were still high between Member States and even more between EU regions" and "less developed regions were generally catching up with the EU average in terms of labour productivity. However, the pace of convergence had considerably decelerated since 2008, notably after the economic turmoil which followed the economic and financial crisis which affected EU regions asymmetrically. In transition regions, labour productivity had drifted away from the EU average during the last decade". Therefore, one can conclude that according to the working document, overall, there are mostly positive trends in labour productivity convergence in the EU.

At the same time, it is important to note that labour productivity convergence needs to be balanced. Hoffer and Spiecker (2011) have found that "with the Euro, balanced trade requires that wages in all Member States grow in line with national productivity plus targeted inflation rate of the ECB. Otherwise, countries with relatively higher growth in unit labour costs will systematically lose market share and build up trade deficits". This means that in the long term, the pace of labour cost increases needs to be the same as the pace of labour productivity increases.

1. Disparities in labour productivity in the business economy across EU Member States

The research analysed labour productivity in the business economy in the EU. Table 1 shows the Member States arranged in descending order of labour productivity in the business economy. In 2020, the highest labour productivity was reported in Ireland, whereas the lowest, i.e. 10-fold lower, was in Bulgaria, which was a very significant disparity. In the period 2008-2020, the most significant increase in labour productivity in the business economy was reported mostly in East European Member States: Bulgaria (98.9%), Lithuania (83.8%), Estonia (72.5%), Poland (55.4%), Romania (54.1%) and Latvia (37.3%), as well as in two West European Member States: Ireland (132.2%) and Malta (56.2%). The extremely high labour productivity as well as the increase therein in Ireland could be explained by "the impact that the

highly globalized nature of the Irish economy has on productivity measures" (Central Statistics Office of Ireland, 2019).

A decrease in labour productivity in the business economy was reported in three Member States: Greece (34.2%), Cyprus (9.4) and Spain (3.6). Greece underwent a serious economic crisis in the period of analysis, which can explain this decrease. The economy of Cyprus is associated with the economy of Greece, which impacted the situation in this small economy. Spain experienced an insignificant decrease in labour productivity, yet given the period of more than a decade, this indicates long-term economic stagnation. In the same period, France also had no significant progress in this respect.

Table 1

Apparent labour productivity in the business economy and changes therein in EU Member States in 2008-2020, EUR thou./employee

Country/Year	2008	2012	2016	2020	2020/ 2008,.%
Ireland	77	90.8	135.6	178.8	132.2
Luxembourg	75.5	79.4	87.5	95.5	26.5
Denmark	79.5	74.9	82.9	95.2	19.7
Belgium	65.1	69.6	75.6	79.5	22.1
Sweden	59.2	69.7	71.3	75.3	27.2
Austria	59.5	61.8	66.9	69.3	16.5
Finland	61.4	59.7	65.5	68.1	10.9
Netherlands	53.3	57.8	62.0	67.1	25.9
Germany	54.7	52.5	57.0	61.8	13.0
France	58	57.5	60.3	59.7	2.2
Italy	42.1	43.9	48.2	46.4	10.2
Malta	26.0	29.8	38.7	40.6	56.2
Spain	41.2	39.7	40.5	39.7	-3.6
Slovenia	30.0	29.8	34.1	38.1	27.0
Cyprus	38.2	34.4	34.9	34.6	-9.4
Estonia	18.9	23.7	27.4	32.6	72.5
Czechia	24.3	23.9	25.7	30.4	25.1
Poland	18	20.6	21.5	27.5	55.4
Slovakia	22.4	23.2	23.1	25.7	14.7
Portugal	23.3	22.6	24.9	25.0	7.3
Hungary	19.3	19.1	21.2	24.3	25.9
Lithuania	13.0	14.8	17.9	23.9	83.8
Croatia	20.9	19.1	22.1	23.3	11.5
Latvia	15.8	16.2	17.4	21.7	37.3
Romania	13.3	12.6	15.2	20.5	54.1
Greece	28.4	24.9	19.4	18.7	-34.2
Bulgaria	8.7	9.7	12.6	17.3	98.9

Source: author's calculations based on Eurostat

Overall, the situation regarding labour productivity in the EU could be viewed positively, with mostly East European Member States indicating significant increases in labour productivity, which is a natural and logical trend in the convergence. In 2008 in the EU, the productivity gap was more than 9.1-fold

(79.5 EUR thou./employee in Denmark and 8.7 EUR thou./employee in Bulgaria), while in 2020 it was 5.5-fold between Luxembourg and Bulgaria, i.e. significantly lower (Ireland was not taken into consideration for some reasons specified below).

Table 2 shows the Member States arranged in descending order of labour cost in the business economy in the period 2008-2020. In 2008, the highest labour cost was reported in Denmark with almost 5 thou. EUR, whereas the lowest was in Bulgaria with less than 400 EUR per month, i.e. the difference was 13-fold. In 2020, the highest labour cost was reported in Denmark with more than EUR 6 thou., whereas the lowest was in Bulgaria with less than EUR 1 thou. a month, i.e. almost a 7-fold disparity. Over the period of analysis, the labour cost gap decreased almost 2-fold. Table 2 also shows labour productivity changes (Table 1) and allows a comparison of the labour productivity changes with labour cost changes, with a positive sign (+) indicating a positive trend (an increase in labour cost does not exceed an increase in labour productivity) and a negative sign (-) showing a negative trend (an increase in labour cost exceeds an increase in labour productivity). In most of the Member States, the trend was negative, indicating economic unsustainability. The most negative trend was observed in Latvia (labour cost increase was 73.8%, while labour productivity increase was only 37.3%), Romania (79.6% and 54.1%) and Bulgaria (141.9% and 98.9%). In contrast, the most positive trend was observed in Ireland (12.0% and 132.2%), Malta (9.9% and 56.2%), Lithuania (64.5% and 83.8%), Estonia (53.8% and 72.5%) and Poland (39.5% and 55.4%), thereby indicating economic sustainability. Among the Baltic States, only Latvia demonstrated a negative trend (a labour cost increase exceeding a productivity increase is possible at the expense of the factors of production other than labour as well as of gross fixed capital formation). As regards Ireland, the data might need some adjustment to indicate the true situation, as mentioned above.

Table 2

Labour cost in the business economy and changes therein in EU Member States in 2008-2020, EUR a month

Country/Year	2008	2012	2016	2020	2020/ 2008, %	Productivity change, %	Trend
Denmark	4 905	5 584	5 897	6 289	28.2	19.7	-
Luxembourg	4 638	5 023	5 539	6 033	30.1	26.5	-
Sweden	4 775	5 691	5 809	5 597	17.2	27.2	+
Netherlands	4 289	4 759	4 976	5 195	21.1	25.9	+
Austria	4 029	4 484	4 872	5 145	27.7	16.5	-
Germany	4 036	4 367	4 771	5 092	26.2	13.0	-
France	4 282	4 612	4 689	4 993	16.6	2.2	-
Belgium	4 590	5 061	5 053	4 905	6.9	22.1	+
Finland	3 848	4 368	4 778	4 773	24.0	10.9	-
Ireland	4 031	4 074	4 235	4 514	12.0	132.2	+
Italy	3 492	3 689	3 869	3 750	7.4	10.2	+
Spain	2 798	3 071	3 062	3 018	7.9	-3.6	-
Slovenia	1 929	2 187	2 310	2 604	35.0	27.0	-
Cyprus	2 269	2 516	2 180	2 258	-0.5	-9.4	-
Estonia	:	1 340	1 650	2 061	53.8	72.5	+
Portugal	1 682	1 840	1 878	2 018	20.0	7.3	-
Malta	1 812	1 993	2 182	1 991	9.9	56.2	+
Czechia	1 349	1 483	1 528	1 985	47.1	25.1	-
Greece	2 465	2 445	2 344	1 927	-21.8	-34.2	-
Slovakia	:	1 325	1 475	1 799	35.8	14.7	-
Croatia	1 363	1 375	1 405	1 667	22.3	11.5	-
Latvia	896	945	1 180	1 557	73.8	37.3	-
Poland	1 103	1 114	1 246	1 539	39.5	55.4	+
Hungary	1 182	1 184	1 301	1 519	28.5	25.9	-
Lithuania	876	874	1 117	1 441	64.5	83.8	+
Romania	636	659	830	1 142	79.6	54.1	-
Bulgaria	375	498	649	907	141.9	98.9	-

Notes: data unavailable (:); positive trend (+); negative trend (-)
Source: author's calculations based on Eurostat

The next measure analysed is investment per person employed in the business economy. Table 3 shows the Member States arranged in descending order of the variable in the period 2008-2020. In 2008, the highest figure was reported in Denmark with EUR 24.0 thou. EUR/person, whereas the lowest one was in Poland (3.9), which was almost a 6-fold gap. In 2020, the highest figure was reported in Belgium with EUR 19.1 thou. EUR/person, whereas the lowest one was in Greece (2.9), which was almost a 7-fold disparity. In contrast to the positive trend (convergence) in labour productivity and labour cost, no significant improvement was reported in terms of investment during the period of analysis. Greece reported the largest decrease in this measure over the period (60.8%). Cyprus and Denmark also reported very significant decreases. In Latvia, investment decreased by 34.8%, while labour productivity increased by 37.3%, indicating that labour cost (wages) could increase at the expense of deteriorating fixed assets, which was one of the factors.

Table 3

Investment per person employed in the business economy and changes therein in EU Member States in 2008-2020, thou. EUR

Country/Year	2008	2012	2016	2020	2020/ 2008, %	Productivity change, %	Trend
Ireland	16	26.9	10.0	25.8	60.2	132.2	+
Belgium	21.9	15.2	18.7	19.1	-12.8	22.1	+
Sweden	13.6	13.7	14.2	15.4	13.2	27.2	+
Luxembourg	9.4	11.5	12.8	13.9	47.9	26.5	-
Denmark	24.0	14.9	14.6	13.5	-43.8	19.7	+
France	13	13	12.2	12.8	1.6	2.2	+
Austria	14.2	12.1	11.9	12.7	-10.6	16.5	+
Finland	11.1	9.3	11.6	11.9	7.2	10.9	+
Netherlands	10.5	8.9	8.7	10.5	0.0	25.9	+
Germany	8.5	6.7	7.9	9.2	8.2	13.0	+
Hungary	4.9	4.5	5.7	7.9	61.2	25.9	-
Estonia	7.0	7.7	7.4	7.7	10.0	72.5	+
Czechia	6.6	5.9	5.7	7.1	7.6	25.1	+
Romania	8.7	7.0	6.6	7.1	-18.4	54.1	+
Slovenia	10.7	6.4	6.5	6.6	-38.3	27.0	+
Slovakia	9.5	6.2	6.5	6.6	-30.5	14.7	+
Italy	7.9	5.9	6.0	5.9	-25.3	10.2	+
Latvia	8.9	5.9	4.9	5.8	-34.8	37.3	+
Portugal	7.4	4.0	5.5	5.8	-21.6	7.3	+
Spain	9.0	5.6	5.6	5.7	-36.7	-3.6	-
Poland	3.9	4.3	4.7	5.6	43.6	55.4	+
Lithuania	5.4	4.3	4.8	5.5	1.9	83.8	+
Bulgaria	6.1	4.1	3.6	4.9	-19.7	98.9	+
Malta	5.4	5.3	11	4.5	-16.7	56.2	+
Croatia	7.5	4.0	4.4	4.4	-41.3	11.5	+
Cyprus	8.5	4.6	3.8	4.1	-51.8	-9.4	-
Greece	7.4	5.0	3.5	2.9	-60.8	-34.2	-

Source: author's calculations based on Eurostat

Overall, the situation regarding investment was quite negative, as most of the Member States decreased investment in their business economies. In several Member States, the amounts of investment decreased, whereas labour productivity increased, with the most notable positive trend being observed in Latvia, Romania, Slovenia, Slovakia, Croatia, Italy and Bulgaria. The same trend was observed in Malta, yet the variable was quite volatile in this Member State, which could be explained by its offshore country status. A very positive trend was observed in Estonia, as an increase of 10% in investment led to a 72.5 % increase in labour productivity.

2. Correlation between labour productivity and selected variables

The research calculated coefficients of correlation between changes in labour productivity and those in other two variables: labour cost and investment per person employed. The correlation analysis revealed that the coefficient of correlation between changes in labour productivity and those in labour cost was 0.6,

indicating a moderate correlation. However, if Ireland is excluded, the correlation coefficient was 0.81, which is a strong correlation. In 2020, Ireland reported very high labour productivity (178.8 EUR thou./employee) at a relatively low labour cost (EUR 4514 a month). For comparison, Germany reported almost 3-fold lower labour productivity (61.8 EUR thou./employee) at even a higher labour cost of EUR 5092 a month, which is illogical (Fig. 1).

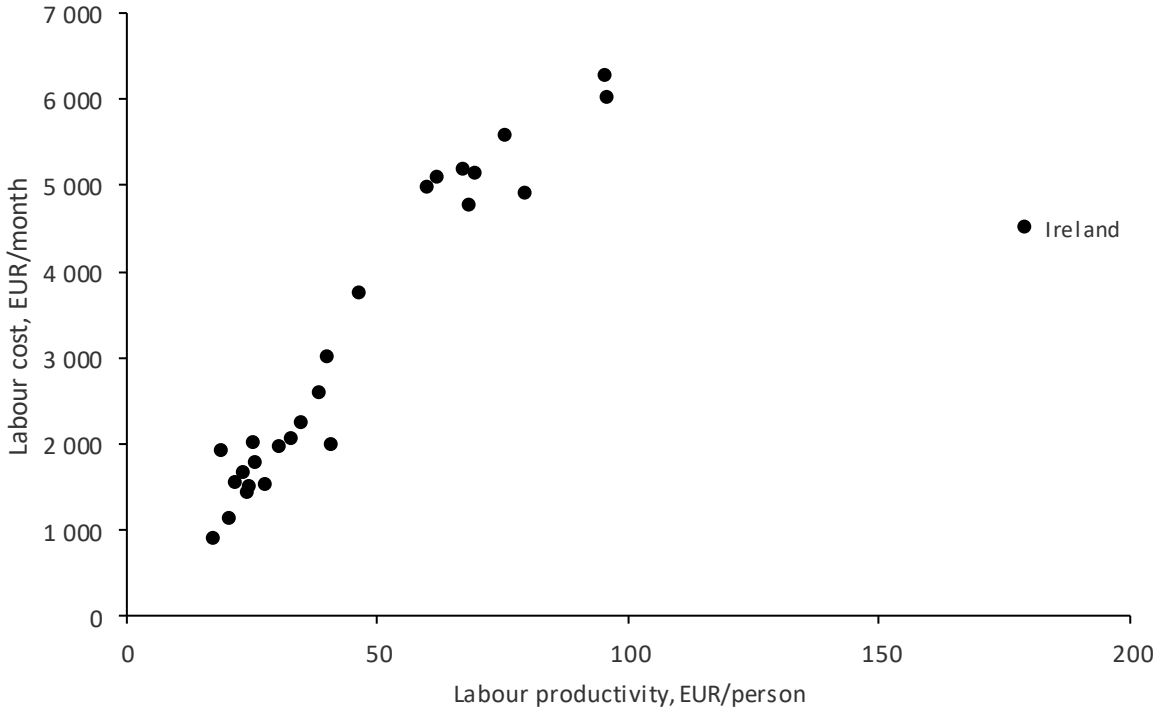

Fig. 1. **Empirical relationship between apparent labour productivity and labour cost in the business economy across EU Members States in 2020**

As shown in Figure 1, the position of Ireland on the chart is far away from the positions of other Member States, indicating that the labour productivity in Ireland needs to be adjusted for some factor(s) therein.

As regards correlation with the second variable or investment per person employed, the research identified a correlation coefficient of 0.42, which is a moderate correlation. However, if excluding Bulgaria, the coefficient reached 0.5. An exclusion of none of the other Member States could increase the coefficient so significantly. This could be explained by the fact that in the period of analysis, Bulgaria succeeded in increasing labour productivity by 98.9%, whereas investment per person employed decreased in this Member State by 19.7%, and such a strong positive trend was not observed in any other Member State.

Overall, it could be concluded that labour productivity and labour cost converged between the EU Member States during the period of analysis, which in turn reduced the gap in income and, therefore, the living standards between the developed Western European and less developed Eastern European EU Member States, thus also reducing various socio-economic problems in the Eastern European EU Member States.

Conclusions

1) In the period 2008-2020, the most significant increase in labour productivity in the business economy was reported mostly in East European Member States, as well as a couple of West European Member States, thereby indicating the convergence of labour productivity between the Member States.

2) In the EU, the labour productivity gap decreased significantly from 9.1-fold in 2008 to 5.5-fold in 2020 (between Denmark/Luxembourg and Bulgaria), thereby indicating a positive trend.

3) In the EU, the labour cost gap decreased significantly from approximately 13-fold in 2008 to 7-fold in 2020 (between Denmark and Bulgaria), thus indicating a positive trend.

4) In 2020, there was a 10-fold labour productivity gap across EU Member States, with the highest productivity being reported in Ireland, leading to a significant gap in income levels within the EU. The high productivity in Ireland probably should be adjusted for some factors, as the figure might not indicate the real situation in this respect.

5) In the period 2008-2020 in the EU, the change in labour productivity and that in labour cost indicated both a positive trend (productivity increased more than labour cost) in some Member States and a negative trend (productivity increased less than labour cost did) in the other ones, which was possible at the expense of the factors of production other than labour as well as of gross fixed capital formation.

6) The correlation between changes in labour productivity and those in labour cost was strong, while the correlation between changes in labour productivity and those in investment per person employed was moderate, which means that an increase in investment did not lead to a corresponding increase in labour productivity and was affected by some other factors.

7) The convergence of labour productivity and labour cost in the EU reduced the gap in income and, therefore, the living standards between the developed Western European and less developed Eastern European EU Member States, thus also reducing various socio-economic problems in the Eastern European EU Member States.

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Proceedings of the 2024 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" No 58
Jelgava, LBTU ESAF, 16-17 May 2024, pp. 77-88
DOI: 10.22616/ESRD.2024.58.008

THE PORTRAIT OF THE MODERN ONLINE CUSTOMER IN LATVIA

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Abstract. The study is aimed at examining the characteristics of the Latvian e-shopper segment in comparison with the average indicators across the European Union, with the goal of identifying the typical profile of an e-buyer, as well as the problems and trends in the further development of e-commerce in Latvia. As enterprises in Latvia become increasingly dependent on digital technologies and the effective use of e-commerce opportunities, understanding the key characteristics of e-shoppers and trends in this consumer segment plays a crucial role in further researching the target audience profile and selecting marketing strategies for effective communication with them. The article employs a combination of monographic analysis to study the peculiarities of e-consumers and statistical methods to evaluate trends in this segment. Characteristics such as age, education level, preferences in the use of electronic devices, and economic characteristics from 2015 to 2021 were used to study the Latvian e-shoppers. The research showed a noticeable trend towards the alignment of Internet usage and e-commerce indicators in Latvia with the EU averages, both on desktop and mobile devices. The novelty of the research lies in the further development and refinement of the understanding of the characteristics of the Latvian e-shopper segment, as well as its dynamics compared to other EU countries, of enterprises operating in the e-commerce.

Key words: e-commerce, e-shopper portrait, online shopping, online consumer, profiling.
JEL code: M31, L19, D91

Introduction

The widespread use of Internet technology stimulates the rapid development of e-commerce, which is due to a significant increase in the number of online transactions and, consequently, an increase in their share of the Gross Domestic Product (GDP). According to the report published by Research and Markets the market value of global e-commerce reached 18.98 trillion United States dollars (USD) in 2022 and is expected to reach USD 47.73 trillion by 2030 (Research and Markets, 2024). E-commerce is the most promising method of stimulating business growth. Therefore, it is becoming increasingly important to determine the most effective ways, methods, approaches, and tools for e-commerce.

One crucial aspect that has emerged is the understanding and refinement of effective online customer experiences. Bleier, Harmeling and Palmatier (2018) illustrate how diverse web page design elements, from linguistic nuances and visual cues to interactive features, synergistically mold the complex dimensions of online customer experiences. These dimensions include informativeness, entertainment, social presence, and sensory appeal, all of which are essential in transforming potential online interactions into substantial business growth.

The task of describing the online customer profile has gained importance with the development of online payment technologies. According to Stafford and Gonier (2004), it has been widely recognized that understanding the possibilities of Internet usage by e-shoppers allows to create products and services that are more relevant to existing needs. Ho and Wu (1999) emphasize that in the realm of e-commerce, every Internet user is a potential customer. They highlight that the pivotal challenge for e-businesses lies in transforming these potential customers into actual ones. This transformation process is contingent on a thorough understanding and consideration of the users' specific requests, habits, and needs.

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At the same time, the development of customer profiling has increased concerns about the security of personal information. The development of the technological basis of e-commerce in recent decades, has simplified personalization processes, involving dynamically displaying offers based on previous user activity across digital platforms like portals, websites, etc. (Mohamed et al., 2022). As a result, businesses have begun to employ personalization technologies, ranging from creating offers to analysing user paths and experiences (Khoali et al., 2022).

This has created the need to balance the interests of organizations and Internet users, especially in relation to the storage of user profiles and the use of this data in business. This requirement is particularly emphasized by the European Consumer Organization (BEUC, *Data collection, targeting and profiling of consumers online*, 2010) as a necessary condition for maintaining the balance of interests among the parties in the digital economy. Additionally, the European Commission underscores the importance of establishing mutually agreed-upon communication strategies with e-shoppers (European Commission, *Digital Markets Act*, 2022).

The joint research envisages the study and analysis of the behaviours, shopping habits and other indicators of online customers in various European Union (EU) countries over several years. Since the researchers of the study are Latvian scientists, the situation in Latvia was identified at the initial stage in order to plan the methodology and choose the most appropriate research methods and to compare the results with average across the European Union.

This **article aims** to profile Latvian e-shoppers by analysing data on their characteristics from 2015 to 2021 and comparing these characteristics to the average metrics across the European Union. The **novelty of the study** lies in advancing our understanding of the characteristics and dynamics of the Latvian e-shopper segment, compared to those EU average.

Research results and discussion

The development and application of effective e-marketing strategies necessitate a scientific and practical understanding of modern e-shoppers' profiles. Leading marketing research specialists, such as Kotler, Bowen, and Makens (2010), Lambin (1993), Engel, Blackwell, and Kollat (1978), have established the theoretical foundations for consumer behaviour research, which includes profiling these consumers.

Consumer behaviour is complex and influenced by numerous factors. However, understanding this behaviour is a crucial task for marketing managers, as noted by Kotler et al. (2010). The variety of influencing factors necessitates their categorization, a topic widely discussed in scientific literature. He delineates consumer segmentation into several categories: geographical, demographic, psychographic, and behavioural (Kotler et al, 2010). While some researchers, including Lambin (1993), argue for the inclusion of economic characteristics as a distinct category — encompassing not just income but also attitudes towards benefits and costs — Kotler et al (2010) integrates economic characteristics within the behavioural category.

The research conducted by Hamad and Schmitz (2020) examines the impact of demographic variables and consumer shopping orientations on the purchasing preferences for different product categories within the context of online grocery shopping in the UK. It aims to identify possible correlations between demographic variables, consumer shopping orientations, and the preference for purchasing certain products online, in order to provide a more comprehensive understanding of consumer behaviour in the online grocery shopping context.

Sadraddin (2019) investigates various factors impacting consumer purchasing behaviour, including the web environment, product features, Internet security and trust, promotional offers, and product price. He

focuses on external factors, distinct from the e-shopper's personal traits and indicates that the web environment, product characteristics, and promotional offers significantly influence online purchasing behaviour.

The assertion regarding the minimal influence of product price characteristics on e-shoppers' decisions appears controversial and may not be generalizable across all e-shopper categories. In contrast, "European e-shoppers in 2021" report by DpdGroup, which profiled European e-shoppers' online shopping behaviours, offer a more nuanced perspective. Utilizing a random sampling method, the study conducted 40,000 interviews globally, including 23,394 with European respondents. DpdGroup identified several distinct e-shopper types, including the regular, aficionado, senior, epicurean, eco-selective, and the emergence of the price-conscious e-shopper (DpdGroup, 2021).

Regular e-shoppers, individuals aged between 18 and 70 who make online purchases in at least one product category monthly, constituted 48% of all European e-shoppers in 2021. They were responsible for 86% of the online market share volume in Europe, receiving on average almost six parcels monthly. This group significantly contributed to increased sales in various categories, notably home equipment and food. Technologically adept and frequently online, 65% of regular e-shoppers prefer using their smartphones for shopping activities.

Senior e-shoppers, individuals aged 55 and above, increasingly turn to e-commerce, often driven by health-related necessities and availability of certain products. Like typical beginners, they place a high value on the trustworthiness of online platforms and are particularly conscientious about delivery details. Preferring to use computers or notebooks, they engage with social media more frequently than other e-shopper demographics. Characterized by their cautious and meticulous approach to online purchases and payments, senior e-shoppers account for one out of every ten online purchases, as reported by DpdGroup (2021).

The rise of the price-conscious e-shopper is notable, with these cost-focused individuals constituting 10% of the European e-shopper demographic. Based on a study of European online shoppers, Carmen Curé (DpdGroup, 2021) states that today's e-shoppers are confident in the online shopping experience and now expect a high level of service with every purchase. They are perfectly at ease buying food online and intend to keep doing so. They care about the environment, and, as ever, convenience is a key motivator.

Litavniece and Znotiņa (2017) investigate online shopping behaviour in Latvia in more detail. In the end, the authors conclude that the frequency of online shopping of Latvia's customers is dependent on their income level - a higher income level contributes to a higher frequency of online shopping, as well as increases the amount of money spent per shopping session. The authors can agree with the second part of the statement, because the amount of money spent on purchases directly depends on the income level of customers. In authors' opinionless relevant is the statement that the frequency of online purchases of Latvia's customers depends on their income level, given a significant increase in availability for customers with different income levels of both the Internet connection itself, and mobile devices that allow active use of the network opportunities.

The researchers Volvenkins, Sloka, and Cipane (2019) are more focused on identifying the problems faced by e-shoppers in the online shopping process and the influence of the delivery factor on the choice of an online shop. Thus, the authors, based on their findings, concluded that the most attractive for Latvian e-shoppers in the context of online shopping is the price of the product, the trustful name of an online store, and fast and preferably free delivery.

Customer profiling is a method of defining the portrait of each user, which includes personal and transactional details (Upadhyay, Vidhani, & Dadhich, 2016). Online profiling refers to the collection of

information about the behaviour of online users (Internet surfers) across various resources and websites to develop a profile of their habits and interests. This perspective is supported by Wiedmann (2001). According to Nykamp (2001), online profiling allows to provide the user strategic insight into how to manage customer relationships with each e-buyer. The authors argue that a group of profiles enables the creation of a universal customer portrait to facilitate relationship management with e-shoppers. Franzak, Pitta, and Fritsche (2001) also emphasize that the more comprehensive the data is used, the more detailed the customer portrait will be.

The first group includes factors related to the personal characteristics of the online buyer himself: socio-demographic, psychographic, behavioural aspects; the level of education and skills of the Internet user, their involvement in the Internet environment and social networks; indicators of financial security. **The second group includes factors** related to the functioning of e-commerce technology: availability and quality characteristics of the Internet for a region or a specific buyer; accessibility, functionality, convenience, user-friendliness, loyalty, attractiveness of the online trading platform, popularity of its brand; informativeness of the presentation of the product, its visualization, fair pricing, quality of the product, brand awareness; convenience and cost of purchase delivery.

This article analyses statistical information about customers' online shopping in Latvia for the period from 2015 to 2021 in the context of key gender, age, education, and economic characteristics. The article posits that existing researches have insufficiently explored the in-depth characteristics of e-customers/e-shoppers in Latvia. Recognizing the growing importance of the target audience analysis in e-commerce, the research aims to fill in this gap. This endeavour is crucial for enhancing customer engagement, sustaining e-commerce profitability, and increasing the prevalence of e-commerce tools in Latvia, which, as Babics and Zvirgzdina (2022) note, currently is below the EU average. Moreover, this study addresses the impact on Latvia's Electronic Gross Domestic Product (E-GDP). The European Digital Commerce Association's report (European Commission, 2022) indicates that Latvia's E-GDP growth, contributing merely 1.03% to the national GDP, trails behind Western European standards and the European average.

This research aims to highlight the differences in the profiles of the average e-shopper in Latvia compared to the EU average, which could potentially explain their position in the digital economy. It is important to emphasize that research is being conducted in the field of developing optimal strategies for interacting with e-shoppers. Specifically, the "European E-Commerce Report 2021" contains an in-depth analysis of the behavioural aspects of e-shoppers in Latvia (EuroCommerce, 2021). The quantitative research methods used in it include surveys and analysis of social media data, which revealed a significant dependence of Latvian consumers' preferences on the opinions of influencers and on the possibility of accessing online stores through social networks, which e-shoppers prefer. The conclusions of the European report emphasize the importance of integrating social networks into e-commerce strategies, which can serve as a basis for further research in this direction.

In the context of this research, the authors study legal ways of collecting the e-shopper's portrait formation and also aim to study **the personality of e-customers in Latvia**, their key characteristics — income level, economic activity, education, etc., in relation to the age category as far as their behaviour online is considered. However, the focus of this study is shifted precisely in the direction of users who make online purchases at least once every three months and are defined by the authors as active e-customers.

According to data from the "Internet Purchases by Individuals" section of the Eurostat report (2022), the percentage of Latvian online customers who have shopped online in the past three months increased from 27 % in 2015 to 51 % in 2021, indicating an 88.9% increase of the proportion. Note that the average share of e-buyers per country in the EU in 2021 was 75%. At the same time, the dynamics of indicators of

the frequency of online purchases allows to identify two periods of drastic change — 2016 and the period 2020-2021. Where in the first case there was an increase in the use of Internet banking capabilities and, consequently, the development of e-business, and in the second — the quarantine restrictions acted as the catalyst for changing customer behaviour. At the same time, the proportion of individuals who make purchases online more than 10 times in three months, is 9% according to Eurostat data (*Internet purchases by individuals*, 2022), which, based on the number of Internet users in the country, is at least 153,000 individuals.

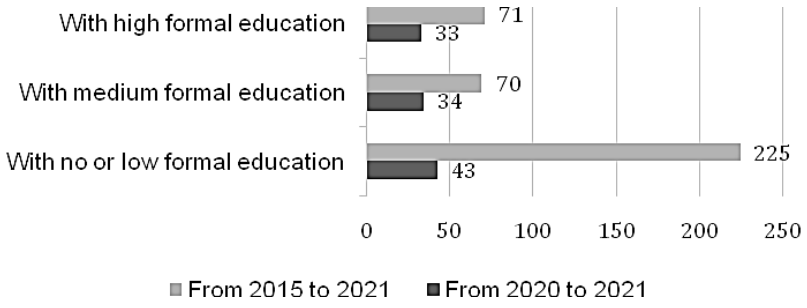
Statistical analysis of active buyers, those who make at least one purchase per quarter, indicates that in older age groups, the largest share of consumers partakes in 1-2 e-purchases per quarter. Specifically, in the age group of 65 years and older, 56.1% of consumers undertake 1-2 purchases per quarter, with 6.3% of them engaging in more than 10 transactions. In the demographic of 55 to 64 years, the proportion making 1-2 purchases drops to 44.8%. The age brackets of 25 to 34 years and 35 to 44 years represent the most confident online shoppers, with 31.3% and 30.9%, respectively, making 1-2 purchases per quarter. Additionally, more than 22% of e-shoppers in these groups make over 10 purchases quarterly.

The results of this study indicate that frequent online purchases are common among the working-age population in Latvia. The share of individuals aged 55-64 years who engage in online shopping at least once every three months stands at 29%, and 16% for those aged 65 and older. These figures are significantly different from those of the working-age demographic, where among individuals aged 25-34 years, the proportion reaches 80%.

Characterizing the e-shoppers in Latvia based on the level of education according to Eurostat data (*Individuals – internet use*, 2021), it is worth noting that there is a clear dependence on the level of activity of online shopping individuals in 2021:

- 82% of individuals with a low level of formal education used the Internet at least once every three months, and 39% of them made at least one online purchase at the same time;
- 88% of individuals with a medium level of formal education in Latvia have used the internet at least once every three months in 2021 and 39% of them have completed at least one online purchase in the same period of time;
- 99% of individuals in Latvia with higher education in 2021 used the Internet at least once in three months, and 72% of them have completed at least one online purchase.

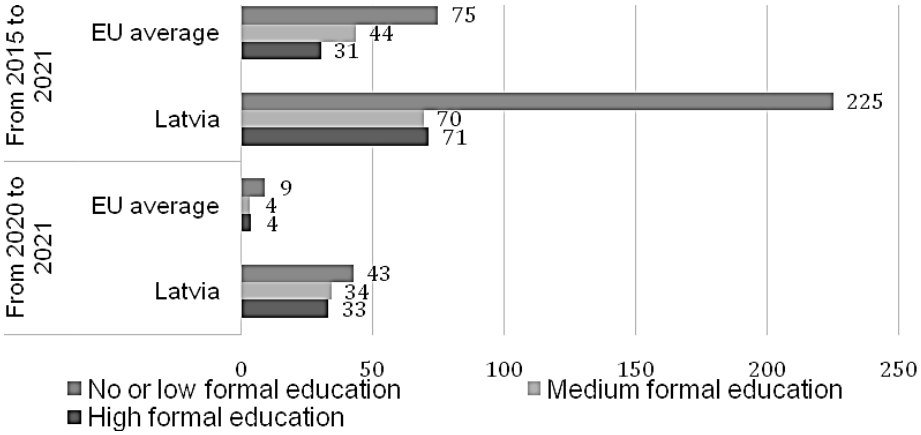
In this regard, the growth in the share of e-shoppers in the structure of each of the considered groups, identified by the criterion of level of education, as can be seen in the diagram presented in Figure 1, are very different. Thus, individuals with higher education in Latvia are much more likely to use e-business services. However, there is also a noticeable trend of a significant increase in the number of active e-buyers among those with low level of education: from 12% in 2015 to 39% in 2021, indicating almost 225% increase of the proportion.



Source: created by the authors based on the data from the European Commission (European Commission. Digital Economy and Society Index 2021)

Fig. 1. **The increase in the proportion of e-shoppers who buy online at least once in three months among all individuals, according to the education criteria, %**

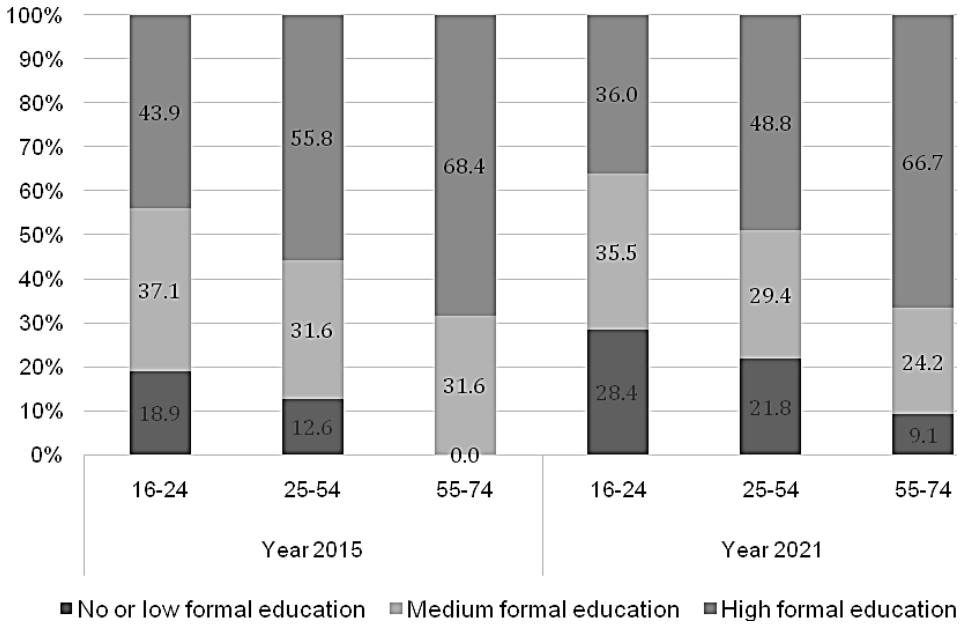
A comparison of the increase in the proportion of e-shoppers who buy online at least once in three months within each of the education criterion-based groups in Latvia and the EU average values is depicted in Figure 2.



Source: created by the authors based on the data from the European Commission (European Commission. Digital Economy and Society Index 2021)

Fig. 2. **Increase in the proportion of e-shoppers who buy online at least once in three months within each of the education criterion-based groups in Latvia and the EU average values**

In Latvia, compared to the EU average, a more significant increase in the proportion of e-shoppers making online purchases at least once every three months has been observed within each education criterion-based group. This study does not examine the potential impact of the COVID-19 pandemic on this aspect. However, it's worth noting that the pandemic affected all EU countries, implying that online shoppers in all nations faced similar conditions in this respect. Upon integrating the age as a supplementary factor alongside educational criteria in Latvia, the result is illustrated in Figure 3.



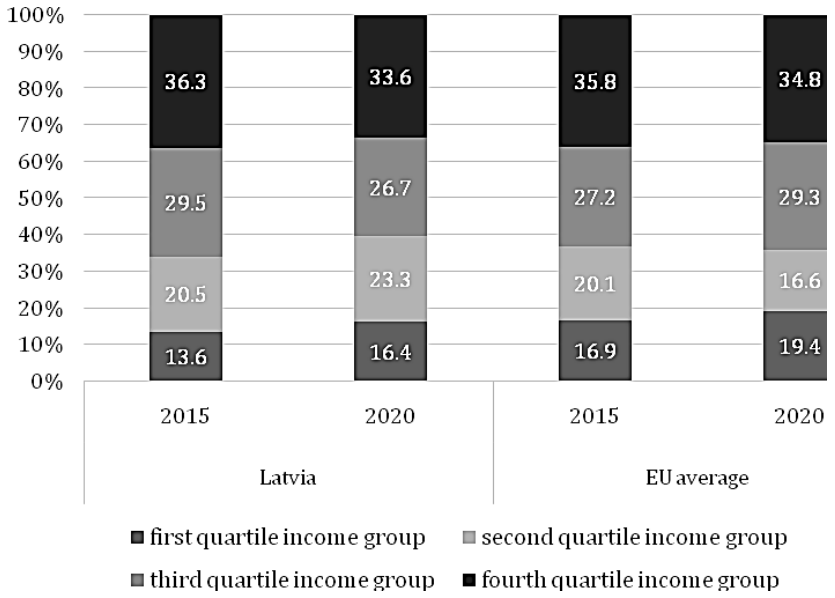
Source: created by the authors based on the data from the European Commission (European Commission. Digital Economy and Society Index 2021)

Fig. 3. **Structure of e-shoppers in Latvia by age and education criteria in 2015 and 2021, %**

The data indicate that in 2015, in Latvia, online shopping at least once every three months was predominantly typical among web users with higher education. In 2021, the proportion of active shoppers with higher education constituted a smaller share, due to a more intensive increase in the number of active e-shoppers with medium and lower levels of education.

Another important component of the portrait of online customers in Latvia, which is emphasized by Litavniece and Znotiņa (2017), as already mentioned, is the **level of income**. Therefore, this study involved conducting an analysis of the structure of individuals living in a household who made at least one online purchase during a three-month period, as shown in the dynamic presented in Figure 4.

The values obtained demonstrate that the largest share of active e-shoppers in Latvia and the EU average are people with the highest income, but it is worth noting that there is no total dominance in the dynamics of this group of buyers over those with lower incomes. The structure of the active e-shoppers in Latvia has shifted towards an increase in the share of buyers from the lower half of income distribution in the overall volume of e-purchases, while conversely, an opposite trend is observed on average across the European Union, indicating a reduction in the proportion of e-shoppers with incomes below the median and an increase in the shares of such e-shoppers in the income groups of the third and fourth quartiles.



Source: created by the authors based on the data from the European Commission (European Commission. Digital Economy and Society Index 2021)

Fig. 4. **Structure of e-shoppers living in a household making at least one purchase within three months, 2015-2020, %**

It is essential to gain insight into **the devices employed for Internet browsing by diverse age groups** in Latvia and to contrast these findings with the average statistics prevailing across the European Union. For instance, statistical data of the dynamics in the percentage of users utilizing specific types of devices to access the internet. The data are presented in Table 1.

Table 1

Devices used by individuals to access the internet depending on age, %

Country	Latvia				EU average			
Category, %	Desktop computers		Mobile devices		Desktop computers		Mobile devices	
	2016	2021	2016	2021	2016	2021	2016	2021
16–24-year-old	48	39	96	98	53	37	94	97
25–54-year-old	49	38	79	95	50	36	83	94
55–74-year-old	32	34	34	69	33	29	47	71
All individuals	43	36	67	86	45	34	73	87

Source: the authors' calculations based on the data from Eurostat (Eurostat. Individuals – internet use, 2021)

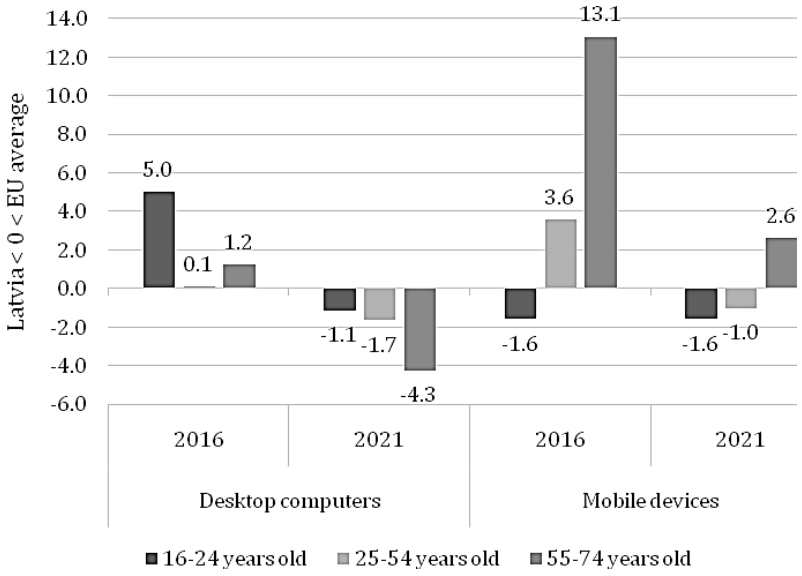
The data shows the decline in desktop computer usage in favour of mobile devices all age groups. In Latvia, the 16-24 age group shows a drop in desktop usage from 48% to 39%, while mobile device usage increases from 96% to 98%. The EU average for the same age group shows a similar trend, with desktop usage decreasing from 53% to 37%, and mobile usage increasing from 94% to 97%.

For the 25-54 years old individuals in Latvia there is a decline in desktop usage from 49% to 38%, and an increase in mobile device usage from 79% to 95%. The average across the European Union reflects a similar pattern with desktop usage decreasing from 50% to 36%, and mobile usage increasing from 83% to 94%. The 55-74 age group in Latvia shows a specific trend of increased mobile device usage from 34% to 69%, with a slight increase in desktop usage from 32% to 34%. The average across the European Union for this age group also shows an increase in mobile device usage from 47% to 71% and a decrease in desktop usage from 33% to 29%. Unlike desktop devices, the use of mobile devices to access the internet

is gaining popularity among individuals. While it is expected that a high percentage of young individuals are active internet users via mobile devices, it has also become a trend among older age groups.

This study presents a comparative analysis, as illustrated in Figure 5, focusing on the percentage of internet device usage among Latvian users relative to the EU average, categorized by age groups. During the specified period, there was a notable reduction in the proportion of internet users utilizing desktop devices in both Latvia and the European Union average. Notably, in Latvia, the decline in desktop device users was more gradual, and there was even an increase among users aged 55 to 74 years. For instance, in 2016, the average number of desktop internet users in Latvia was lower than average across the European Union; however, by 2021, the number of such users in Latvia had surpassed the EU average.

Among mobile device users in Latvia, there was a lag behind the European Union's average in 2016, especially in the age group of 55 to 74 years. Over the subsequent five-year period leading up to 2021, this situation evolved towards an alignment of internet usage rates via mobile devices. In 2021, 86% of mobile device owners in Latvia used their devices for internet access, compared to an average of 87% across the European Union.



Source: created by the authors based on the data from Eurostat (Eurostat. Individuals – internet use 2021)

Fig. 5. **Comparison of the size of Latvia's users and the EU average in terms of internet device usage by age groups, 2016-2021, %**

Overall, the data indicates a strong shift towards mobile-first internet access, driven by the convenience and evolving capabilities of mobile devices. This shift is uniformly seen across all age groups, suggesting a widespread digital integration.

These findings have significant implications for a variety of sectors, particularly those focused on digital marketing, e-commerce, and online content delivery. Adapting to a mobile-first approach is essential to meet the changing preferences of users. Moreover, the data highlights the importance of inclusive digital access for all age groups, emphasizing the need to consider older groups of internet users in the digital landscape.

Conclusions, proposals, recommendations

1) The authors conclude that the segment of Internet users in Latvia is increasingly and actively using shopping opportunities on the Internet. Both the number of e-shoppers is increasing and the frequency of their online purchases is also increasing. Several main features of the Latvia's e-shopper profile:

- there is a significant level of conservatism among e-shoppers, especially among the elderly with no or low education, but the number of e-shoppers with the lowest incomes is relatively rapidly increasing;
- users with higher education are predominant across all age categories of e-shoppers;
- there is a clear dependence of the frequency of online purchases on age, and the highest proportion of e-shoppers who shop online six times a month is observed in the age group from 24 to 44 years;
- young people up to 24 years old: about 70% of these users shop online at least once every three months, with a slight predominance of highly educated users;
- people aged 25 to 44: e-shoppers who frequently shop online and have a higher education have a significant advantage.

2) In Latvia, compared to the EU averages, the study reveals the following characteristics:

- in each group based on educational criteria, a significant increase in the proportion of e-shoppers who shop on the Internet at least once every three months has been observed. This study did not investigate the potential impact of the COVID-19 pandemic on this aspect.
- There is a noticeable decrease in the use of desktop devices for Internet access. In Latvia, this trend is characterized by a more gradual decline, ahead of the EU average.
- There are significant changes in the structure of e-buyers, with an increase in the proportion of buyers from the lower income side in total e-purchases. In contrast, in the EU as a whole, the number of e-shoppers with lower incomes has decreased and the number of buyers from the highest income quartiles has increased. Although young people mostly represent active Internet users on mobile devices, this behaviour is now becoming more common among older age groups as well. Overall, the findings show a significant trend toward prioritizing mobile devices for Internet access.

3) Businesses should tailor their marketing strategies to cater to the increasing diversity of e-shoppers. Recognizing that younger age groups and individuals with higher education are more inclined toward frequent online purchases, marketing campaigns should be customized to appeal to these demographics. At the same time, the rising number of older e-consumers and those with lower educational levels becoming active e-shoppers indicates a need for inclusive marketing that addresses these segments' unique preferences and barriers to entry.

4) Businesses need to prioritize optimization of their online platforms due to the rising number of older age groups. Ensuring that websites and apps are user-friendly for them, fast, and accessible on mobile devices can significantly enhance the shopping experience, catering to the consumers' evolving preferences. Essential features for older adults include simplified navigation, larger text, clear instructions, and enhanced customer service support, such as chatbots offering real-time assistance. Additionally, providing tutorials or guides on navigating the online shopping process can further enhance the user experience for this demographic. This approach not only makes the platform more accessible to older adults but also reduces their hesitation to engage in online transactions.

5) The rapid penetration of mobile devices into daily life has unequivocally resulted in the frequency and volume of internet use on these devices surpassing those on desktop systems. Mobile devices are

utilized by individuals across a wide array of professions, including construction workers at job sites, warehouse personnel, and even preschool children. However, the indicators of internet usage frequency and even the frequency of purchases made through mobile devices do not always uniformly fit all business sectors. Each business must consider the specifics of its sector and take into account not only the e-shopper's portrait but also their human portrait. Businesses must now consider not only the activities of their e-shopper but also the importance of shoppers' life situations, particularly in terms of the timing for delivering marketing messages. This approach emphasizes the importance of considering the context in which the client will receive and potentially react to the communication, ensuring that the timing and delivery are precisely aligned with the e-shopper's daily activities and actual needs.

Funding

This work was supported by the project of Latvia University of Life Sciences and Technologies Nr. Z70 "Integrated approach to determining socio-economic indicators of sustainable development".

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Proceedings of the 2024 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" No 58
Jelgava, LBTU ESAF, 16-17 May 2024, pp. 89-97
DOI: 10.22616/ESRD.2024.58.009

DIGITIZATION AND GENERATION Z: RETHINKING LABOUR REALITIES IN LATVIA

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Abstract. In the context of active digital transition, the issue of digitalization's impact on the youth labour market becomes especially relevant. This article examines how changes brought about by the introduction of information technologies affect the professional activities and labour values of the younger generation in Latvia. The study is based on data obtained from surveys conducted among young people and working professionals, with a focus on analysing the risks associated with digitalization. The main goal of the article is to assess the risks arising on the path of digital transformation and to develop strategies for their reduction. The research tasks include: assessing internal and external risks related to the functioning of the youth labour market; exploring the career paths of young people and their work attitudes; analysing objective and subjective factors contributing to the entrepreneurial activity of the youth; examining the influence of the information environment on the self-determination of the youth and their professional development; determining preventive measures to minimize the negative consequences of digitalization on the labour market for young professionals. The subject of this study is the impact of digital transformations on the youth labour market in Latvia. The main research methods include a literature review, sociological survey, risk analysis, empirical analysis, and comparative analysis. Survey results conducted by the authors show that Generation Z values the flexibility and career growth opportunities that digitalization provides but also expresses concerns about the risks and uncertainties accompanying these processes. The findings indicate that to support young people and improve their adaptation to a changing market, modernization of the Latvian educational system is necessary. Special attention needs to be paid to the development of digital competencies and the integration of modern information technologies into educational programs. Furthermore, the study emphasizes the importance of creating favourable conditions for the development of entrepreneurial initiatives among the youth.

Key words: generation Z, digital transformation, labour market, educational strategies.

JEL code: J24, O33, L26

Introduction

The modern era of digital innovations, marked by unprecedented progress in information technologies, transforms digital technologies into a key tool for achieving social and economic progress. These technologies have a significant impact on all areas of society's life, making innovative activity, the latest automation systems, and the dynamics of communication processes determining factors of social development (Schwab, 2017; Brynjolfsson & McAfee, 2014). Digitization and informatization pave the way to new scientific and technical horizons.

Among researchers, it is customary to highlight both positive and negative aspects of labour digitization. Positive aspects include economic growth, increased productivity, and global competitiveness in the field of digital technologies, e-commerce, and online business; improvement of well-being and quality of life, and growth of IT competencies thanks to online education (Manyika et al., 2017; Ford, 2015). Among the negative consequences are the increase in structural unemployment due to automation, the decrease in the level of social protection, the intensification of inequality in access to digital resources, and uncertainty in career planning (Autor, 2015).

In K.Leshinsky's study, the effect of digital technology-based education on the entrepreneurial intentions of Generation Z students from different countries in Europe and Central Asia is analysed. Generation Z, born after 1995, actively uses information technologies and makes choices for their future career in the context of digitization (Leshinsky, 2023).

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Some authors in the theory of generations argue that the socio-historical environment of youth has a significant influence on the generation (Mannheim, 1952). Generation Z is characterized as "digital natives" (Marc, 2001), grew up in the era of digital technologies, distinguished by the ability to quickly process information and use social networks for communication.

Generation Z values flexibility in working hours and aspires to continuous professional growth (Pinzaru et al., 2022). Leshinsky's conclusions emphasize the need for integrating digital tools into the educational process to stimulate entrepreneurial intentions among Generation Z, confirming their readiness for active use of technology in learning and in the labour market.

The COVID-19 pandemic has accelerated digitalization processes, yet its impact on economic and social processes has been twofold (OECD, 2020). Many organizations, including universities, have shifted to remote work and learning methods, which has facilitated more active acquisition of new information technologies by the youth. At the same time, this led to an intensification of problems related to the assessment and control of the work process, as well as a tendency for youth to use IT more for entertainment than for educational purposes (Witczak-Roszkowska, 2022).

Recent studies in Latvia reveal the complexity of the relationship between economic and human development, indicating that certain economic factors like added value and personnel costs are significantly correlated with the Human Development Index (Zarina, 2022). These findings suggest that Latvia's focus on enhancing industry-level economic outputs could positively impact human development, stressing the importance of strategic economic planning and investment in human capital development tailored to the demands of Industry 5.0 and the Sixth Technological Order. This integration aims to modernize Latvia's educational system and labour market to foster a workforce capable of thriving in a digital economy.

We argue that a crucial direction for Latvia should be the comprehensive modernization of the education system, taking into account global trends and a strategic approach to forming professional personnel capable of effectively functioning in a digital economy.

Hence, the research's objective is to evaluate the impact of digital transformations on the youth labour market through the lens of risk-oriented analysis. The tasks of the research include: assessing the internal and external risks associated with the functioning of the youth labour market; studying the career paths of young people and their work attitudes; analysing the objective and subjective factors contributing to the entrepreneurial activity of the youth; considering the impact of the information environment on the self-determination of the youth and their professional development; identifying preventive measures to minimize the negative consequences of digitization on the labour market for young specialists.

The main research methods include a literature review, sociological survey, risk analysis, empirical analysis, and comparative analysis based on data from two studies conducted by the authors. These methods combined offer a comprehensive approach to exploring the complex dynamics of digital transformation and its implications for young people in Latvia, with a focus on identifying risks and developing strategies to mitigate them.

Research results and discussion

1. The theoretical foundation and empirical base of the research

The empirical base of our analysis of the digital impact on youth consists of data from two studies. The first, conducted by Ltd. "Baltic Center" in February 2023, focused on youth aged 15 to 29 years with a sample of 98 respondents, making it representative in terms of gender, age, and place of residence. A

survey method with a multi-stage stratified sample was applied, with a margin of error of ± 4%. These data will serve as a basis for analysing the direct risks in the youth labour market.

The study is based on the concept proposed by Ulrich Beck (Beck, 1992), which elucidates the inevitability of various risks, both natural and anthropogenic, for modern society. According to this approach, progress in modern society entails both positive and negative consequences. Risks associated with digitization and modernization are mainly the result of human activity (Giddens, 1999), requiring a thorough analytical approach before taking steps to minimize them. The positive and negative aspects of digitization in the labour sphere require careful analysis to assess opportunities and threats for participants in the youth labour market and finding ways to mitigate them (Nickols, 2006).

The second study, conducted among the working population of Riga in November 2023, included 113 individuals engaged in work with information technologies, with a sample error of ± 5%. It is important to note that a significant portion of the study participants belonged to the age group of 18-29 years, allowing the data obtained to be used for further analysis within our study of the youth labour market.

2. Evaluation of digital risks

The study conducted in November 2023 revealed that actively working youth positively perceive digitalization. Ninety percent of respondents confirmed the favourable impact of digital technologies on career growth and educational processes (93.7%), creativity, self-realization, and self-expression (86%), increasing the level of social cohesion and trust in society (51.7%), and expanding opportunities for quality leisure (66%).

However, youth awareness of the potential negative aspects of digitalization remains low. For instance, 24 respondents noted that the transition to remote work formats increased the time needed to complete tasks due to constant distractions, such as messengers and email. Forty-one percent of the study participants indicated an increase in work intensity due to adapting to new technologies. At the same time, about 18% expressed concerns about the lack of necessary skills to work with new software and mobile applications, while less than 10% acknowledged feelings of insecurity and fear of the need to learn new technologies.

Youth entering the labour market face certain difficulties, particularly discrimination in hiring due to lack of experience, which is perceived as an indicator of insufficient qualification. Nearly all job vacancies require at least two years of experience in the field, making the acquisition of initial professional experience during university studies highly relevant (Smith et al., 2018). The trend of combining study and work is gaining momentum in Europe as a means of financial support and as an opportunity to gain professional experience before graduating from university. However, this can lead to undesirable consequences, such as a decrease in academic achievements and a deterioration of students' health, as well as a decrease in discipline levels, which negatively affects the educational process (Perna, 2023).

It should be noted that the positive aspects of labour digitalization are perceived by youth as obvious, whereas the risks associated with the implementation of information technologies are only recognized when directly encountered.

3. Labour values and IT competencies of youth

In the process of defining their own professional path, students often face uncertainty regarding what knowledge, skills, and abilities they will acquire during their university studies. Their career choice is often based on theoretical assumptions about the future profession and may not reflect their true needs, interests, and abilities, making the choice insufficiently considered (Kratus, 2007; Blustein, 2013). When

young people start their careers, they often lack a clear understanding of the qualifications required for the job and the prospects of their professional activity. This first encounter with the real labour world can lead to the need for re-evaluation or degradation of labour values, negatively affecting the socio-psychological state of youth and diminishing the value of professionalism in the younger generation.

The findings of a study conducted in February 2023 revealed that material aspects of work hold a higher priority for youth than its social significance and labour values. Among the key factors determining the choice of workplace by young people were: the level of salary; favourable working conditions, and the possibility of balancing professional activity and family commitments. Meanwhile, access to social guarantees and employment in prestigious companies are seen as less important criteria, according to only every fifth respondent.

Table 1

Professional value orientations of youth, %

The type of professional-value orientation of youth	%, respondents
Earning a high salary	77.4%
Favourable working conditions and schedule	56.3%
The possibility of combining work and family responsibilities	39.2%
Relative independence at the workplace	35.7%
Applying one's knowledge, experience, qualifications	34.5%
Positive relationships within the team	31.4%
Opportunities for advancement and career growth	29.8%
Contribution to society	27.9%
Work without excessive stress and overtime	23.3%
Development of interesting and innovative projects	22.6%
Collaboration with qualified colleagues	20.4%
Maintaining connections with representatives of various social strata	19.5%
Employment in a prestigious company	16.4%
Access to social benefits and guarantees	14.9%

Source: archive of authors

These results convince us that young people strive for material benefits and additional social goods. Many young people do not consider the labour sphere an important means of self-realization: it is viewed by young people primarily as a source of income, their work has lost its independent value and has turned into a pragmatic activity (Sennett, 2007; Standing, 2011; David, 2018). The trend towards the growing importance of wages has been shaped by many factors, including low salaries for young specialists and the impossibility of self-realization in a specific form of labour. Nevertheless, many young people have retained values such as career, independence, and professional development, although they are less pronounced.

4. Youth strategies in the labour market

In our research conducted in February 2023, a significant proportion of secondary employment among the younger generation was discovered: about 32% of respondents were engaged in additional professional activity, providing themselves with supplementary income. Despite the fact that part of these earnings was irregular, many young people indicated having stable side jobs, either in addition to their main employment or within their primary place of work. Secondary employment appears to be the main method of social adaptation in the face of economic crises, which leads to a decrease in the real income levels of the population and a reduction in the standard and quality of life (Standing, 2011).

Information from the Central Statistical Bureau shows that in 2023, the number of unemployed citizens of Latvia aged 15-74 was 61.5 thousand people. This is 3.7 thousand or 5.7% less than in the previous year. For youth aged 15 to 24, the number of unemployed decreased from 9.8 thousand in 2022 to 5.8 thousand in the second quarter of 2023 and rose again to 8.7 thousand by the fourth quarter (Central Statistical Office, 2023).

One of the main problems leading to youth unemployment in Latvia is the lack of alignment between the skills possessed by graduates and those demanded by employers. Educational institutions face the challenge of transforming their teaching approaches to match the dynamically evolving digital environment. Developing digital competencies among young professionals is extremely important in current conditions. Students and young professionals must be proficient in a wide range of information tools and technologies and be able to effectively find, process, store, and transmit information. Additionally, flexibility in professionals, their ability to adapt to new conditions, continuous striving for self-improvement, and education are important aspects of professional training.

Since 2013, the unemployment rate among youth in Latvia has been lower than the EU average, but in 2022 it was 0.8 percentage points higher. In 2023, Latvia had the lowest youth unemployment rate in the Baltic countries – 18.3% in Lithuania and 17.3% in Estonia.

In 2023, 34.9% of all young people were economically active, that is, were employed or actively looking for work (unemployed), while 65.1% of the youth were economically inactive — mainly they continued their education and were not looking for work (Central Statistical Office, 2023).

A higher education diploma does not guarantee successful employment and a good career. Individual researchers highlight the phenomenon of higher education inflation: despite its subjective attractiveness and prestige in public opinion, it begins to depreciate in terms of economic indicators (Penprase, 2018; Tan, 2020). The study of the issue revealed that the main reasons include not only a lack of IT knowledge gained over the years of study.

The structure of Latvia's economy indicates a need for specialized technical and professional skills that are not always adequately provided by traditional higher education programs. Insights from the conference 'Kā vadīt Latvijas cilvēkresursu attīstību?' highlighted this issue. A survey conducted among over 200 conference participants revealed a consensus on the necessity for students to develop more adaptable skills. This finding suggests that current university curricula might not fully meet the specific skill requirements demanded by employers, indicating a potential misalignment with labour market needs (Riga Technical University, 2023).

In Latvia, young professionals, facing limitations in the labour market after university, often reconsider their career paths. Digital data from a study conducted in February 2023 confirms that about 42% of respondents were engaged in work unrelated to their initial specialization. Moreover, a significant number of young professionals found professional opportunities in the public sector (76.2%), and management (63.4%), while the share of those who chose the path of entrepreneurs or agricultural workers was 16.3%. These data prove that the educational achievements of youth do not fully meet market requirements, which can be interpreted as successful employment only in cases where the graduate obtains a job according to their qualifications. Work that meets preferences regarding working conditions and schedule, salary level, employment guarantees, and career and creative development, remains a priority. However, work unrelated to the obtained specialty highlights economic and social issues, indicating the wasteful use of public resources. At the same time, according to the respondents' answers, a significant part of the youth in Latvia does not aspire to positions in accordance with their academic specialization, which is evident already during their education.

Annually, the labour market is oversaturated with graduates, while the number of high-tech jobs created by the state does not meet the employment needs of youth, as prescribed by legislation. Delays in updating educational regulations, and failing to keep up with socio-economic trends, lead to a mismatch in the market for educational services and labour (Cellini & Chaudhary, 2023).

The modernization of the educational system depends on many factors. Among the most important is the development and implementation of high-quality software, ensuring universal access to educational materials for all students. The integration of information technologies and distance learning into the educational process plays a key role, not only facilitating a better understanding of the study material but also stimulating the development of creativity and independent thinking among students (Tyrkba et al., 2022).

For many young people, remote employment has become not only the main source of income but also a supplementary one, helping to overcome difficulties in the labour market. According to the results of our study conducted in February 2023, autonomy in work is a priority for 39% of youth, and the possibility of combining work and family responsibilities (especially relevant for young women) was noted by 42% of respondents.

The development and implementation of new employment models become an important adaptive strategy for entering the modern labour market. Among these models, joint work, temporary project management, temporary assignments, work outside the office using information and communication technologies, crowdworking, crowdsourcing, and freelancing stand out. These forms allow workers to flexibly approach the organization of their labour activity and adapt to changing market conditions (Fleming et al., 2019).

In this context, it is noteworthy that freelancing as a form of employment is popular as a preferred form of employment where standard labour agreements are absent. For freelancers, key advantages include the ability to flexibly manage their working hours, independence from superiors, and the possibility of working remotely, not visiting an office. However, freelancers face the need to independently search for clients, manage their own accounting and taxes, and also with high demands for personal discipline and self-organization (Dunn et al., 2021).

The increase in the number of self-employed individuals in Latvia is also associated with freelancing as a primary source of income (State Revenue Service, 2023). The results of our analysis confirm that approximately every eighth young person in the country considers the possibility of working as a freelancer, despite the associated labour market risks, such as the lack of social guarantees in case of injury, disability, violations of working conditions, and the consideration of such activity in pension assignments. Among the youth, entrepreneurship stands out as the most attractive form of self-employment. In a survey conducted in February 2023, about 35% of young people expressed a desire to engage in business. Nevertheless, many evaluate the current conditions for starting and developing entrepreneurial activity in the country as difficult: every fourth of young respondents described them as unfavourable. Improving the institutional conditions for conducting business will contribute to increasing the entrepreneurial activity of the youth.

5. Communicative environment

The sphere of youth communication has undergone significant changes against the backdrop of digital transformation, moving into virtual space. Traditional social connections are increasingly giving way to online relationships. According to a study conducted in February 2023, practically all youth (97.3%) use the internet daily. The majority of respondents (83.4%) actively interact on social networks, every second regularly browse news and entertainment resources, while 65.4% of young people make purchases in

online stores. Only one-third of the young respondents have access to educational resources and platforms with scientific and reference information important. The most popular internet messengers are WhatsApp (68.4% daily users, 24.1% weekly users) and Instagram Direct (44.6% daily users, 28.3% weekly users).

Latvia is among the countries with an average level of digital competence among young people aged 16-24 years (Witczak-Roszkowska, 2022). This places Latvia in a group characterized by relatively stronger digital skills compared to countries with low or the lowest digital competence, but still lagging behind such leaders as Finland, Malta, the Netherlands, Spain, and Iceland.

Specifically, the young population of Latvia was identified by the synthetic Helwig index, equal to 0.500, which ranks it 9th among European countries in terms of digital competence (Witczak-Roszkowska, 2022). This assessment is based on 23 diagnostic characteristics reflecting skills in digital content creation, online communication, and collaboration, as well as internet privacy and data protection. The average level of digital competence suggests that young Latvians possess a moderate ability to effectively use digital technologies, which is crucial for adapting to the demands of the digital economy.

The study also shows a significant difference in digital competencies across different European countries, with some countries demonstrating much higher levels of digital skills. For Latvia, being in the middle category means there are significant opportunities for improvement to reach the level of digital competence observed in leading countries. This improvement is crucial for enhancing Latvia's competitiveness in the digital global economy and preparing its young workforce for the future labour market, which increasingly requires advanced digital skills.

Polish researchers point to a significant deficit in digital competencies among young people in many European countries, underscoring the need to adapt the educational system to the requirements of the digital economy. A systematic approach to developing digital skills, demonstrated by leaders in this field such as Finland and Malta, can serve as a model for Latvia in forming an effective digital education strategy (Witczak-Roszkowska, 2022). In particular, the importance of in-depth study of ICT, digital content creation, ensuring cybersecurity, and using the internet for educational and professional purposes should become a priority in updating curricula. Such an approach will not only increase the competitiveness of Latvian youth in the labour market but also promote the wider implementation of digital technologies in the country's economy, opening new opportunities for entrepreneurial activity and innovation.

Virtual networks of young people become not just a space for entertainment or political activity, as vividly demonstrated last year. It is also a field for realizing creative abilities and business ideas, a tool for distance learning, and professional self-realization. When young people have the opportunity to utilize the results of digitalization, they can successfully self-actualize (Rukavina, 2009). In the absence of digital skills and competencies, young people may experience a sense of social isolation. This, in turn, can provoke feelings of loneliness and depression not only in the professional and educational environment but also in everyday life (Arnd-Caddigan, 2015).

Research shows that modern young people consider active participation in online communications a key condition for success in life, a way to realize their own potential and improve their chances in the competitive labour market. Representatives of the younger generation use their presence in virtual social networks as a means for personal development, creative expression, and professional advancement.

Conclusions, proposals, recommendations

1) Digitalization is perceived as a critically important stage in the development of the global economy, ensuring the transition to a new technological level and contributing to the improvement of the

population's living standards. This process is a key trend of modern times, necessary for advancing the economy to more sophisticated technological stages and enhancing people's welfare.

2) Digital transformation plays a decisive role in the changes in the global economic situation and people's lifestyles, becoming the dominant factor of evolution. In the era of digital transformation of economic and labour processes, there is a growing need for the population to master digital technologies, affect both leisure and daily life.

3) The impact of digitalization on the labour sphere has become noticeable. Both quantitative and qualitative characteristics of employment are changing, including the balance of demand and supply in the labour market, the emergence of new professions, and the disappearance of outdated ones. At the same time, new forms and formats of labour relations are appearing.

4) The prioritization and modernization of the educational system in line with the digital era is an urgent task. Key directions include the development of digital competencies among students, the use of modern software, and the integration of remote information technologies into the educational process.

5) To stimulate entrepreneurial activity among youth, it is necessary to improve the institutional environment for business and introduce comprehensive legislative initiatives regulating labour relations in the context of new employment. After such transformations, entrepreneurship will become a significant factor, contributing to a more effective adaptation of youth in the labour market.

6) Latvia's commitment to enhancing digital skills by 2027 demonstrates a proactive approach to aligning its workforce with the demands of a digital economy. The country has set specific targets to ensure that 70% of its citizens will have at least basic digital skills, and 45% will possess above-basic skills (Jakobsone, 2021). This initiative is crucial for supporting not only individual career prospects but also for bolstering Latvia's overall economic development and its competitive stance in the global digital arena. The strategic focus on digital competencies aims to prepare young Latvians to thrive in an increasingly digital world, highlighting the importance of these skills in maintaining economic stability and growth.

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Proceedings of the 2024 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" No 58
Jelgava, LBTU ESAF, 16-17 May 2024, pp. 98-105
DOI: 10.22616/ESRD.2024.58.010

VIABILITY OF ESTONIAN DAIRY FARMS

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Abstract. In achieving the goals of the common agricultural policy and the EU rural development programme, the viability of agricultural enterprises is, among other things, a topical issue. The purpose of this paper is to assess the economic viability levels of agricultural holdings of dairy type, as classified by the Farm Accountancy Data Network. The viability of agricultural holdings was analysed by means of the model of farm viability, a tool which includes farm income, threshold wage, and return on the capital invested in non-land assets. The outcomes enable the classification of Estonian dairy farms as viable or vulnerable. The findings show that income as a basic economic objective of the agricultural holdings' activity is an important determinant of the economic viability of the holdings. The results of the study enable us to explore dairy-type agricultural holdings with the objective of considering ways in which they might improve viability. It is anticipated that the results will be of interest to practitioners and decision-makers in order to identify possibilities in which policies might be adjusted to increase the viability of agricultural holdings.

Key words: dairy farming, economic sustainability, EU agriculture, farm profitability, FADN.

JEL code: Q12, Q18

Introduction

For the period 2023-27, the common agricultural policy (CAP) is built around ten key objectives, focused on social, environmental and economic goals. One of them is the objective to support viable farm income and the resilience of the agricultural sector in order to enhance long-term food security and agricultural diversity, as well as to ensure the economic sustainability of agricultural production. Fair income refers to the entrepreneurial income of the farm on a per family work unit basis (European Commission 2018). A viable farm is a prerequisite for the agricultural sector to provide a wide range of goods and services, including food as well as ecosystem services. (Finger & El Benni, 2021). Regardless of their location in the EU or outside the EU in Europe, the small-scale farms have been found to be rather economically weak but environmentally friendly (Guth, et al., 2022). Many farms face viability problems as farmers' incomes are structurally lagging behind salaries in other sectors, justifying transfers of payments to the farm community from the general population and also in a rural development perspective (Rocchi et al., 2021). Farm viability can be defined in general as the ability of a farmer to run a farm efficiently in a specific area, and maintain an economically viable farm business. Economically viable farm business has a direct impact on land use and indirect impact on issues such as the socio-economic status of rural areas. Farm viability is determined by the level of incomes but also by the fluctuations of incomes and the level of leverage (Vrolijk et al., 2010). Agricultural holdings must consider the combined effects of financial structure and profitability as preconditions of financial viability. A farm is economically viable if it can remunerate family labour at the average agricultural wage, and provide an additional 5 per cent return on non-land assets (Frawley & Commins, 1996; Hennessy et al., 2008).

The purpose of the paper is to provide an assessment of the economic viability of Estonian dairy farms, as classified by Farm Accountancy Data Network (FADN), focusing on family farms. The motivation for examining the economic viability of Estonian agricultural holdings of dairy type relates to the structural changes that have occurred in dairy sector recently. Due to the increase in fuel and energy prices, feed costs have increased. The higher price of grain had a significant impact on the cost of animal feed. The production cost of milk has been increased by 19% in 2022 compared to 2021 (FADN Estonia, 2023). According to FADN Estonia, the average selling price of milk was 463 EUR/t in 2022. The value of livestock production per animal unit also increased by an average of 41%, but at the same time, special costs of

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livestock farming increased by 17%. In 2022, the ratio of total production value to total costs in dairy production was 1.06. Labour costs were, on average, 24,271 euros per annual unit of paid labour. This means that the average labour cost was 11.03 euros per hour. Compared to 2021, labour costs have increased by 14%, but compared to 2018, the increase is 35%. In dairy production, the net added value was 58.000 euros per annual labour unit (FADN Estonia, 2023).

The purpose of the research is to examine changes in the economic viability of family dairy farms in Estonia. The work defines the concepts and indicators of farm viability, which are applied at the farm level, as well as elucidates past and current developments in the viability of smaller dairy farms using Estonian FADN data.

1. Farm viability indicators and measures

In the EU, the financial viability of farms has previously been analysed as the risk of farm deficits following changes in agricultural support policies (Vrolijk et al., 2010). Most of the studies analysing the viability of farms focus on the amount of farm subsidies (Vrolijk et al., 2010, Jurkėnaitė & Volkov 2017). Small-scale, mostly family-run farms are labour intensive, and diversified with weaker ability to maintain economically sound and ongoing business. Large corporate farms which are relatively specialised and rely on capital invested in machinery, benefitting from economies of scale, are able to provide the labour with an adequate standard of living, service borrowings, allow investment on farm to maintain the farm's productive assets and provide funds for investment which increases long term productivity (Gómez-Limón et al., 2023; Guth et al., 2022). In time, EU-level land use and agricultural production have become more concentrated.

Results of EU-level analyses have shown significant differences in viability rates between the EU countries (Vrolijk et al., 2010; O'Donoghue et al., 2016). However, these results of viability rates are not equally applicable at the level of countries, farm types or even individual farms, as there are significant differences in farm viability rates between countries. Cross-country differences in farm viability exist because the specific standard of living varies from country to country. Therefore, it is difficult to come up with one universal method of farm viability, with the main priority being viable farm income.

Several methodological approaches have been proposed to assess the viability of agricultural enterprises. Farm viability has been measured in terms of the achievement of a specific income objective (Argilés, 2001; Aggelopoulos et al., 2007; Hennessy, 2008; Vrolijk et al., 2010, O' Donoghue et al., 2016; Loughrey et al., 2022). These indicators are also not equally applicable at the level of the country and individual farms. Loughrey et al. (2022) have recently taken a challenge to develop a farm income measure, which would provide a stronger foundation for the analysis of farm business viability, as despite the significant volume of empirical studies, the conceptual framework used by many researchers to study farm viability has been largely insufficient. They have found that existing empirical literature has still provided weak theoretical foundations for the methodological choices to analyse farm economic viability.

There are number of different definitional choices that can be used when viability is measured. Farm viability measurement as a welfare measure has not always been consistent. These include the wage, which determines the threshold at which viability is determined, and the return on capital, which also affects the viability rate of a farm. Farm economic viability has been measured in terms of opportunity cost of farm resources or as income measure, comparing farm incomes with an income from another source of employment (O'Donoghue et al., 2016). Among indicators used to determine financial viability was farm family income per fully employed member of the farming family (FFI); family labour used in the household, measured in human labour units (HLU) (Aggelopoulos et al., 2007). A farm is considered economically

viable if it can remunerate family labour at the average agricultural wage, and provide an additional 5 per cent return on non-land assets, (Frawley & Commins, 1996; Hennessy et al., 2008). Non-land assets include the capital value of machinery, livestock and production quotas (Hennessy et al., 2008; Hlavsa et al., 2020). Viability is measured as the point at which the farm retains some of sales revenue as operating profits over a year. Similarly, a farm is classified as economically sustainable if the farm net value added (FNVA) per annual work unit (AWU) exceeds some portion of average labour cost per year and provides a certain amount of return on the capital invested in non-land assets, i.e. buildings, machinery and breeding livestock.

2. The data and methodology

The data from the European Farm Accountancy Data Network (FADN) are used for the analysis. FADN is a data source for the evaluation of the income of farms and the impacts of the CAP, enabling the classification of farms into groups according to the type. FADN covers all agricultural holdings with utilised agricultural area (UAA) of at least one hectare (ha) and those holdings with a UAA of less than one ha if their market production exceeds certain physical thresholds. Under Regulation (EC) No. 1166/2008, the minimum area threshold for agricultural holdings is five hectares. The basic FADN sampling unit is the commercial holding, i.e. a farm which is large enough to provide a main activity for the farmer and a level of income sufficient to support his or her family so that many small family farms are excluded (The Farm Accountancy Data Network (FADN)). The analysis includes the years 2006-2021, the last year available to the authors of this paper.

The model of farm viability captures entrepreneurial income, cost of own capital, annual work units and threshold wage (O'Donoghue et al., 2016). The study will utilise the opportunity-cost-based approach to ascertain the proportion of viable farms within different size categories. According to Vrolijk et al. (2010), a viable farm is defined as one that can withstand income fluctuations, which is measured by the difference between family farm income and the cost of capital required for the hours worked on the farm. This difference should exceed the threshold wage. The issue of determining the viability threshold is a crucial aspect of further discussion, as the choice of threshold significantly impacts the viability of farms. The analysis is based on the average income of paid labour on the farms included in the sample. The viability of a farm is calculated as a difference between family farm income and the cost of capital per hour worked on the farm. The result is compared with the threshold wage.

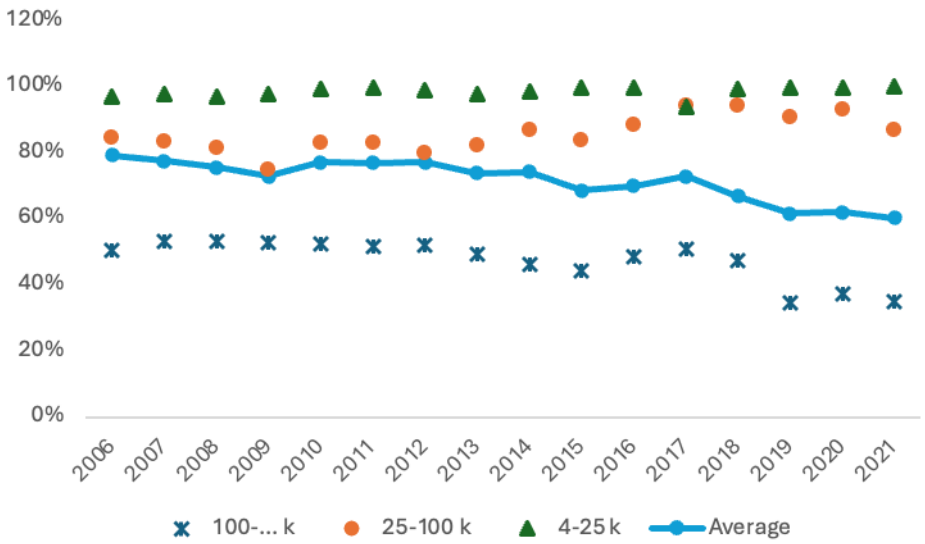
According to the Farm Accountancy Data Network, family farm income is defined as the total output minus intermediate consumption, depreciation, payments to external factors, plus the balance of subsidies, and minus taxes. Data on family farm income and hours of on-farm work are collected through the FADN survey. The cost of own capital is estimated as an opportunity cost of assets, representing the potential return on investing the same amount of capital elsewhere in the economy. Calculations are based on long-term interest rates in the eurozone, as Estonia does not have comparable long-term interest rate instruments (OECD Data, 2024). The hours of on-farm work are based on the annual work unit (AWU), which is fixed at 2200 working hours per year.

The threshold wage, as an income target, is a subjective element that depends on the current standard of living in the country. It can be measured by the average wage in the economy, typically at least 80% of the average labour cost per year or the paid wages observed in the FADN. In this study, the threshold wage is calculated based on paid wages from Estonian FADN data.

The raw data was obtained from the FADN databases. The sample consists of economic indicators from Estonian farms over the period of 2006-2021, with a total of 1420 observations over 16 years. Family farms

are characterised by a significant proportion of unpaid labour input. To exclude commercial farms, all farms with less than 10% unpaid labour input are excluded from the sample. The current data does not provide sufficient information on the total income of agricultural households earned both on and off the farm. Therefore, the opportunity-cost-based approach is adapted to estimate the cost of capital and viability threshold.

Farms were categorised into three distinct groups based on standard output calculations derived from FADN data. Within a sample of Estonian dairy farms, there has been a consistent decrease in the proportion of unpaid labour input. As depicted in Figure 1, there is a clear trend of higher unpaid labour input on small farms, with a subsequent decline as farm size increases.



Source: authors' calculations, a sample of FADN farms 2006-2021

Fig. 1. **Share of unpaid labour by farm size, 2006-2021**

Specifically, the average share of unpaid labour input among the farms in the sample declined from 79% in 2006 to 60% in 2021. Among the group of smallest farms, with a standard output ranging from EUR 4000 to 25.000, the share of unpaid labour input was nearly 100% throughout the sample period. In the second size group of farms, which had a standard output ranging from EUR 5.000 to 100.000, the share of unpaid labour input was 94% in the final year of the estimation period. On average, the share of unpaid labour input during the investigation period was 86%. The third size group, with a standard output exceeding EUR 100.000, exhibited a relatively lower and declining share of unpaid labour input.

3. Results

The findings displayed in Table 1 provide a concise overview of the contextual details pertaining to the farms included in the sample. Over the observed period, there has been a decline in family farm income or entrepreneurial income, as well as a decrease in the proportion of unpaid work. Conversely, there has been an increase in both the annual hourly wage and the amount of one's own capital.

Table 1

The average values of the parameters of viability, sample of FADN farms in 2006-2015

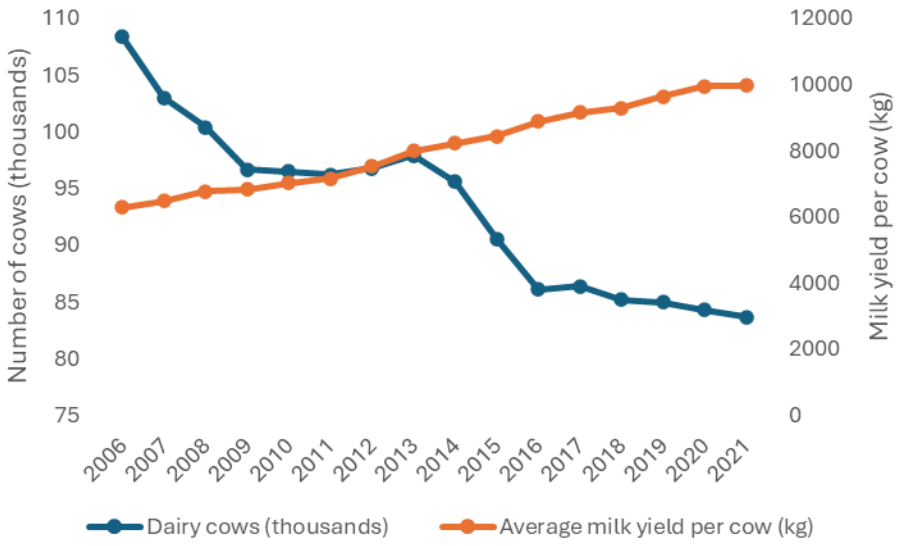
	2006	2013	2021	Change
Number of farms	155	98	44	-72%
Utilized agricultural area (ha)	123	119	164	34%
Total labour input (AWU)	2.63	2.15	2.93	12%
Family farm income (euro)	21731	27642	20529	-6%
Yearly average wage (euro per hour)	2.12	5.64	9.91	368%
Average farm capital (excluding value of land)	119806	225202	572067	377%
Share of unpaid labour	0.79	0.74	0.60	-24%

Source: authors' calculations based on FADN

In the period 2006-2021, there has been a steady decrease in the number of dairy cows, as can be seen from Figure 2. At the same time, milk yield per cow has increased. The reduction of subsidies in 2009 and 2014, as well as the Russian import bans in 2014, have had a significant impact on the overall viability of dairy farms. In comparison to farms that focus on field crops, Estonian dairy farms have demonstrated lower levels of viability. While milk production is primarily dominated by large commercial farms, smaller and medium-scale farms have experienced a decline in competitiveness, leading many of them to cease farming operations altogether.

The dairy cattle livestock farming sector experienced even a slight increase in livestock units until 2013, after which it began to decline primarily due to a reduction in dairy herds. Over the past decade, there has been a notable decrease in the number of farms engaged in dairy cattle farming, with the number of farms holding animals decreasing by half. Small farms with a limited number of animals have chosen to discontinue their livestock farming activities.

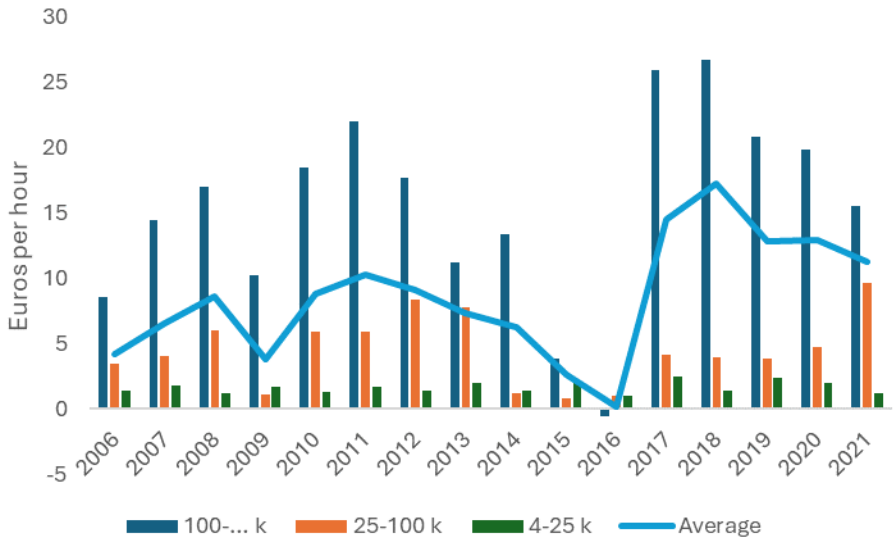
Between 2014 and 2016, approximately one-third of dairy farms made the decision to cease keeping dairy herds, further exacerbating the impact of the subsidy reduction and import bans on the existing dairy farms.



Source: Statistics of Estonia, Data tables PM09, PM12

Fig. 2. **Average viability by farm size (standard output in thousands of euros), 2006-2021**

The viability of Estonian dairy farms has experienced a slight increase, as indicated by Figure 3. On average, larger farms demonstrate higher levels of viability compared to smaller farms. However, it is important to note that even the largest farms do not consistently maintain a high level of viability. Although viability is generally considered a long-term concept, it can also be measured in the short-term using the defined economic viability criteria. The decrease in average viability in 2009 can be attributed to two factors. Firstly, the global economic crisis, which had already begun a year earlier, had a significant impact on Estonian agriculture in 2009. Secondly, as a result of the crisis, the government substantially reduced top-up payments, leading to a decrease in the average subsidy level. Another downturn occurred in 2014, primarily due to a decline in agricultural prices and a reduction in subsidies. Additionally, the Russian import ban on agriculture, announced in August 2014, further contributed to the decline in average viability. It is evident that the viability of Estonian dairy farms is closely linked to output and input prices for agricultural production, as well as changes in international trade.



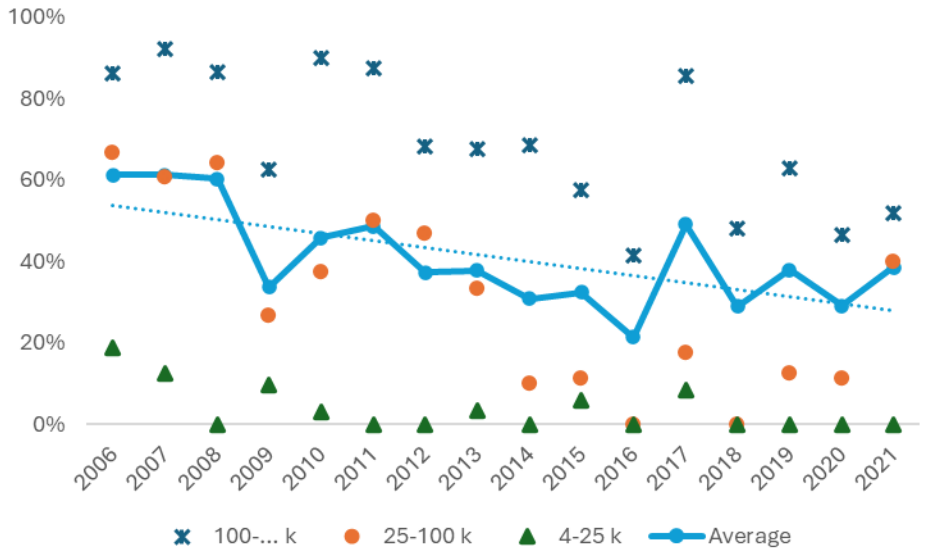
Source: authors' calculations, a sample of FADN farms 2006-2021

Fig. 3. **Average viability by farm size (standard output in thousands of euros), 2006-2021**

In achieving economic viability, farm size matters. Results show that as the size of the farm in terms of standard output grows the probability of being viable increases. This is clear in the case of farms with a standard output of more than EUR 100.000. The results obtained allow for the assessment of the proportion of viable farms in Estonia. Overall, there has been a decline in the proportion of viable farms, as indicated in Figure 4. Notably, larger farms exhibit a higher proportion of economic viability. Conversely, smaller farms face greater economic vulnerability due to their limited capacity to develop and utilise available resources.

The analyses of the economic viability of Estonian dairy farms show that problems with viability are focused in particular on the group of smallest farms, with a standard output ranging from EUR 4000 to 25.000. Holdings with a high intensity of labour have higher levels of viability since the intensification of labour is related to achieving high productivity results. In addition, the age of the beneficiaries is related to increased productivity in agricultural holdings. Young producers have more knowledge and more opportunities for business growth than the previous generations and can, therefore, respond to the new competitive market conditions (Aggelopoulos et al., 2007) Socio-demographic variables affect the viability to some extent: age is associated with a higher probability of being an unviable farm for the two categories

which consider the long-term viability (Coppola et al., 2020). The results show that the average economic viability of Estonian dairy farms has slightly increased, but the share of viable farms has decreased. Larger dairy farms' likelihood of being viable is higher. Smaller farms are economically more vulnerable as their capability to survive, live and develop by using the available resources is lower, compared to larger farms. The ability to generate sufficient profit with reasonable labour input grows with farm size and capital intensity.



Source: authors' calculations, a sample of FADN farms 2006-2021

Fig. 4. **A share of viable farms by size (standard output in thousands of euros), 2006-2021**

Despite an increase in the average economic viability of dairy farms in Estonia, there has been a decrease in the proportion of farms that are considered viable. Specifically, the share of viable farms has declined from 61% to 39% between 2006 and 2021. It is important to note that their size influences the viability of farms, and there exists a negative relationship between farm size and viability. Notably, among the larger farms, there is a significantly higher percentage of viable farms compared to smaller farms. Although the percentage of larger viable dairy farms has decreased from 86% to 52%, it is evident that the majority of small farms are not viable. Furthermore, the group of farms with an average size, as observed in the current sample, also exhibits a low share of viability. Despite the decline in the share of viable farms across all size groups, there is an increase in the proportion of viable farms as farm size increases.

Conclusions, proposals, recommendations

1) The study focus was to assess the economic viability levels of Estonian agricultural holdings of dairy type, as classified by Farm Accountancy Data Network, and to provide an understanding of viability changes across farm size.

2) The results indicate the following:

- the average viability of dairy farms has slightly increased, but the share of viable farms has decreased;
- smaller farms are economically more vulnerable as their capability to survive, live and develop by using the available resources is lower, compared to larger farms;
- the ability to generate sufficient profit with reasonable labour input grows with farm size and capital intensity;

- small-sized farms are not only viable based on income from their on-farm operations, they can achieve viability through off-farm work.

3) Small farms have proven to be quite weak economically, and many of them face viability problems, as farmers' incomes structurally lag behind those of other sectors. However, the issues of ensuring the viability of farms must continue to be addressed because viable farms are decisive in the long term for the agricultural sector's ability to produce food, as well as the ability to ensure ecosystem services and environmental protection.

4) The assessment of economic viability levels of farms is quite a complicated topic in scientific debates, and there are still many limitations and issues that need to be addressed. The applicability of indicator systems is still under discussion in the scientific community.

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Proceedings of the 2024 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" No 58
Jelgava, LBTU ESAF, 16-17 May 2024, pp. 106-113
DOI: 10.22616/ESRD.2024.58.011

CORPORATE SOCIAL RESPONSIBILITY - A FACTOR OF INCREASING THE COMPETITIVENESS OF THE COMPANY

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Abstract. Corporate social responsibility (CSR) is a link between society and the organization. It is a new phenomenon that involves improving the economic, social and cultural environment and solving problems that are directly or indirectly caused by business activities. CSR has already become a rapidly growing contemporary trend and a common form of doing business. Nowadays, the number of organizations that are active in the field of social responsibility is increasing. They express goodwill and their main goal is not only to make a profit, but also to have a positive impact on the working, natural and social environment. Apart from social goals, in case of increased competition, CSR is applied as a marketing tool to gain competitive advantage in the marketplace. Due to the actuality of the topic, the demand for corporate social responsibility from customers, employees and investors is increasing in Georgia, which leads to the need to study mentioned issue in depth. This article discusses and analyses the corporate social responsibility of the business as an important factor in increasing the company's competitiveness. Based on the conducted research, the article examines the current situation in Georgia in terms of CSR. Also, this article analyses the attitude of Georgian consumers towards the companies that are socially active and based on the information received, the relationship between social responsibility and increasing the company's competitiveness is identified. Attention is focused on contemporary challenges and in the form of a conclusion, the necessary recommendations for solving the mentioned challenges are formulated.

Key words: corporate social responsibility, company competitiveness, sustainable development, marketing tool.
JEL code: M14

Introduction

Corporate social responsibility (CSR) is one of the most actual topics of the 21st century. Nowadays, contemporary society demands corporate social responsibility from companies of all sizes around the world - both in developed and developing countries. The topicality of the issue is determined by the fact, that the process of globalization actively affects the growth of interest related to CSR. The demand for it from customers, investors, suppliers and employees is increasing. This leads to the need to study social responsibility and analyse it (Khoferia & Chkheidze, 2018).

Corporate social responsibility is one of the fastest growing concepts in modern world business. From the 1930s to the present, many scientists, economists and businessmen have speculated about the role and importance of CSR. Its essence and forms have changed many times. Nowadays, we can say that corporate social responsibility is a tool for gaining a competitive advantage in the market, because products acquire additional social value (Vashakmadze, 2016).

The main aim of the research is to study the current situation in the direction of CSR in Georgia and to determine to what extent the use of corporate social responsibility is a factor of increasing competitiveness for the company.

The research objectives are as follows:

- studying the Georgian consumer's attitude towards corporate social responsibility;
- determination of the role of social responsibility in the process of selection of products or services by the consumer;
- identifying customer expectations regarding the direction in which social projects should be implemented in order to increase the company's competitiveness.

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The hypothesis of the present study is following: according to public opinion, corporate social responsibility increases the company's competitiveness, therefore companies aspire to be socially active and they implement social projects that are in demand by customers.

Methodology

While working on the article, both bibliographic and quantitative research was carried out. In the research, the works, articles, internet publications of both Georgian and foreign authors were mainly used. At the initial stage, as part of the quantitative research, respondents living in one of the regions of Georgia – Adjara were interviewed in January-February (205 respondents). Based on the obtained results, relevant recommendations were developed and a conclusion was prepared.

Research results and discussion

Nowadays, in the modern world, it is unbelievable to operate a company that is not active in terms of corporate social responsibility. CSR has become a common form of doing business. The main goal of any business is to make a profit, but at the same time it has to operate in a certain social, political, economic and cultural environment and obviously, it cannot ignore the interests of society. Moreover, a necessary condition for the effective functioning of the company and business is the stability of the society. Therefore, they try to develop and implement such events, that ensure the stability of society. Implementation of CSR projects concerns large, small and medium-sized businesses. However, large companies are more in the centre of attention, because they have more power, and as is known, power is accompanied by adequate responsibility (Takalandze, 2021).

In terms of market dynamics and corporate social responsibility, companies that implement CSR projects are perceived positively and have a better reputation. They have more loyal customers and take advantage than companies, that ignore CSR projects (Konjaria, 2018). CSR is often perceived as a modern philosophy, the main determinants of which are competitiveness, mutual benefit and sustainable development (Anil, 2021).

Social responsibility has a positive effect upon the company's business activities, because it helps to increase the competitiveness, improve its image, helps the firm to better manage the risks related to its activities, attract investors, maintain good relations with employees, suppliers, customers, etc. (Mamuladze, 2016). In addition, a firm that implements CSR not only improves its image, but also increases the motivation and commitment of its staff, which leads to greater creativity and productivity of the company. A positive image of the firm also improves cooperation with business partners, which can increase sales and financial results (Marakova, Wolak-Tuzimek, & Tuckova, 2021).

When analysing what issues of competitiveness are linked to corporate social responsibility, it has been found that CSR influences company's reputation, branding, increase financial capacity, loyalty and customer satisfaction, attracting highly skilled workers, market share growth, work efficiency, cost and risk reduction. All these aspects of activity provide a competitive advantage for a socially responsible company (Lu et al., 2020).

One of the most famous examples of CSR is the company "Toms", which has been implementing CSR projects since 2006. The company's founder, Blake Mycoskie, created a new business model called "One for One," which meant that for every pair of shoes sold, a second pair would be sent to barefoot children in Africa or another continent. At first, by 2006, the firm's awareness was low, but because of the new business concept, "Toms" quickly gained popularity, and by 2013, it had already sold ten million pairs of shoes and given the same number to children in need. The company later expanded to include glasses

and coffee businesses, although the concept remained the same. "Toms" has become competitive firm and the founder - world famous (Carrillo-Duran & Castillo-Diaz, 2021). For the 42 year-old entrepreneur, business has never been just about making a profit, on the contrary, giving is the main factor of his business model. This is how it becomes possible to achieve sustainable development for a better future.

It is interesting to review and analyse the current situation in Georgia regarding CSR. For the first time, this topic became relevant here about 20 years ago. In 2005, the first meeting between Georgian non-governmental organizations and the business sector was held, which was accompanied by the first memorandum on cooperation in the social sphere. In 2007, the Georgian representation of the UN program "Global Agreement" - "Global Agreement - Georgia" was created, the purpose of which is to popularize the issue of CSR in Georgia and implement the practice of producing international social reports (Lekvinadze, 2014).

Nowadays, the Georgian government does not implement a unified consolidated strategy to support corporate social responsibility, there is still no state policy for CSR promotion or a government agency that would perform the coordinating function of these issues. However, there are separate governmental initiatives and programs that directly or indirectly contribute to the establishment and development of corporate social responsibility in Georgia (Corporate Social Responsibility Information Hub, 2024).

Despite the fact that it still takes a long time to form a civilized business in Georgia, the problem of CSR is becoming more and more relevant. In the last period, great importance is given to the issue of increasing social investments financed by businesses. As in many developing countries, CSR in Georgia is mostly seen as charity and it has a local character (Kartsivadze, 2023). In the present sense, CSR in the developed countries of the West is a much broader concept than charity, sponsorship or even philanthropy. Philanthropy and sponsorship are outdated forms of corporate social responsibility. What distinguishes the current understanding of CSR from past initiatives is its understanding not as a one-time act, but as a sustainable process that is based on and equally takes into account the aspects of sustainable development (Mkheidze, 2022).

In order to determine to what extent the CSR is a factor in increasing the competitiveness of the company, a survey to study the attitude of Georgian consumers towards CSR was conducted. 205 respondents took part in the survey, the majority of whom are female (66.3%). 37.6% of respondents are between 35-55 years of age, 24.4% - between 26-34 years of age, 20% - between 19-35 years of age, 11.2% - over 56 years of age, and in the minority are respondents under 18 years of age, which make up 6.8% of respondents.

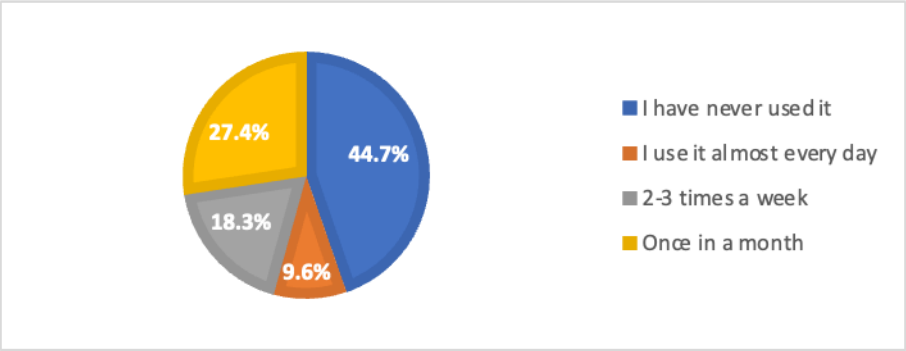
According to the results of the research, 51.2% of the respondents have information about the CSR, 33.2% have heard about it, but have no information about its importance, and 15.6% have no information about CSR. 63.7% of respondents cannot name the companies that are active in the direction of social responsibility in Georgia. While 36.3% can, and such large Georgian companies as Bank of Georgia, TBC Bank, Bank Kartu, Gulf, Wissol, PSP, Tegeta and etc.

As for the projects implemented by socially active companies in Georgia environmental, cultural and social events are noteworthy. However, respondents also declare that projects of this type are one-time.

Since 2018, the responsible business competition Meliora has been held annually in Georgia, the main goal of which is the development of CSR in Georgia and its promotion in society (Georgian Responsible Business Competition Meliora, 2024). One of the sub-categories of the competition is local community education and development, providing educational opportunities and supporting educational activities. During the last period, many companies are implementing projects for the development of education, although it should be noted that only 2% of respondents consider that Georgian companies should

implement CSR projects in this direction. Regarding the mentioned result of the research, it is interesting to review the latest data of the international student assessment program, PISA 2022, according to which the knowledge and skills of 15 year-old Georgian students in Georgia in 2022 in mathematics, reading comprehension and natural sciences did not improve compared to 2018. Among 81 countries, Georgia ranks 67th in reading comprehension, 60th in mathematics and 66th in natural sciences (The Organization for Economic Co-operation and Development (OECD), 2023).

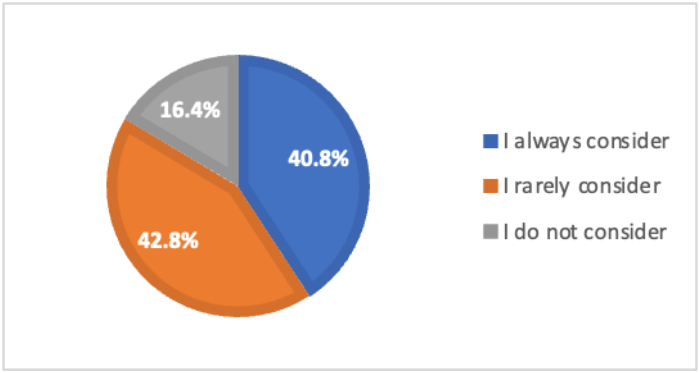
When asked how often you have used the products or services of companies that are active in the direction of corporate social responsibility, 44.7% of the respondents declare that they have not used them, 27.4% use them once in a month, 18.3% 2-3 times a week, and the smallest number of respondents 9.6% declare that they are used by them almost every day (Figure 1).



Source: authors' research results

Fig. 1. **Frequency of consumption of products or services produced by socially active companies by respondents**

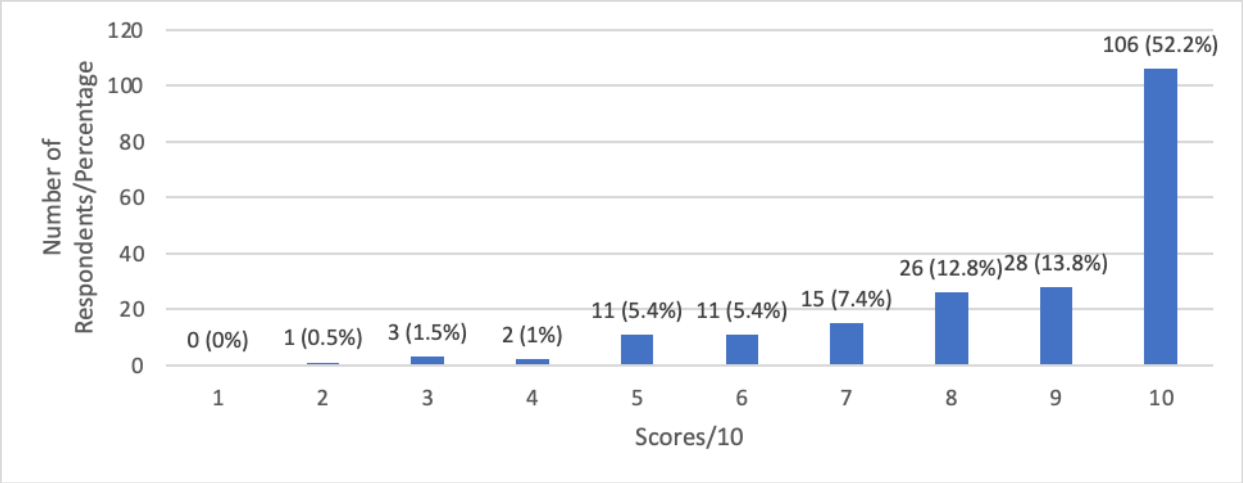
When asked in the buying process, when making a decision, to what extent do you consider the activity of the company in the direction of corporate social responsibility, 42.8% of respondents state that they rarely consider, 40.8% always consider, and 16.4% do not consider (Figure 2).



Source: authors' research results

Fig. 2. **Considering the social activity of the companies during the decision-making process of the respondents in the buying process**

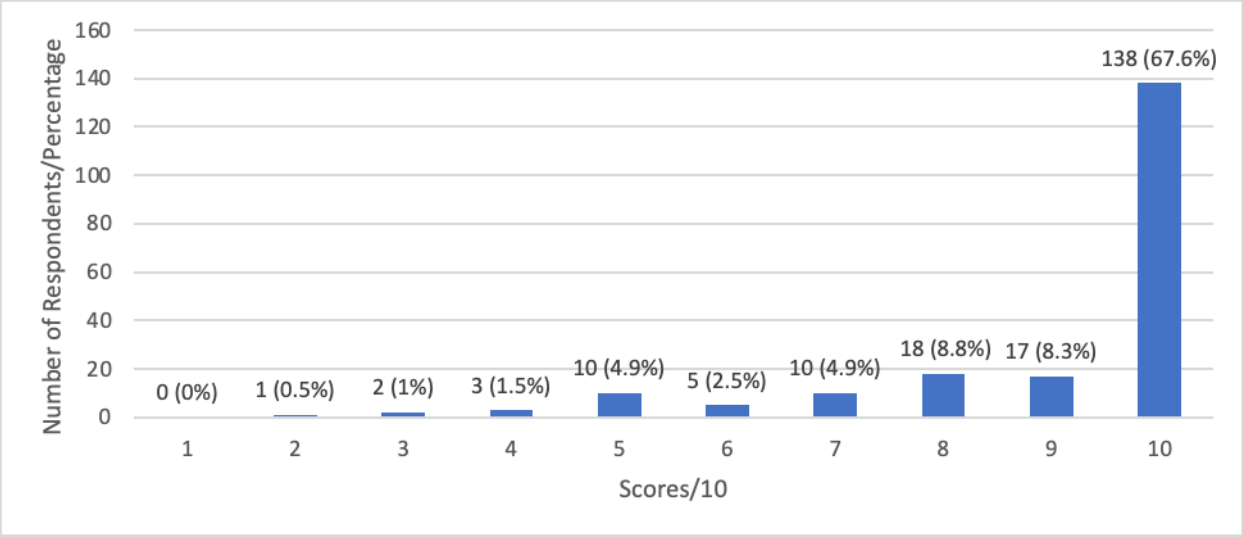
When asked how important it is to implement corporate social responsibility in companies in order to increase competitiveness, most of the respondents (52.2%) rated it as the highest on a 10-point scale (Figure 3).



Source: authors' research results

Fig. 3. **Respondents' attitude towards the establishment of CSR in companies in order to increase competitiveness**

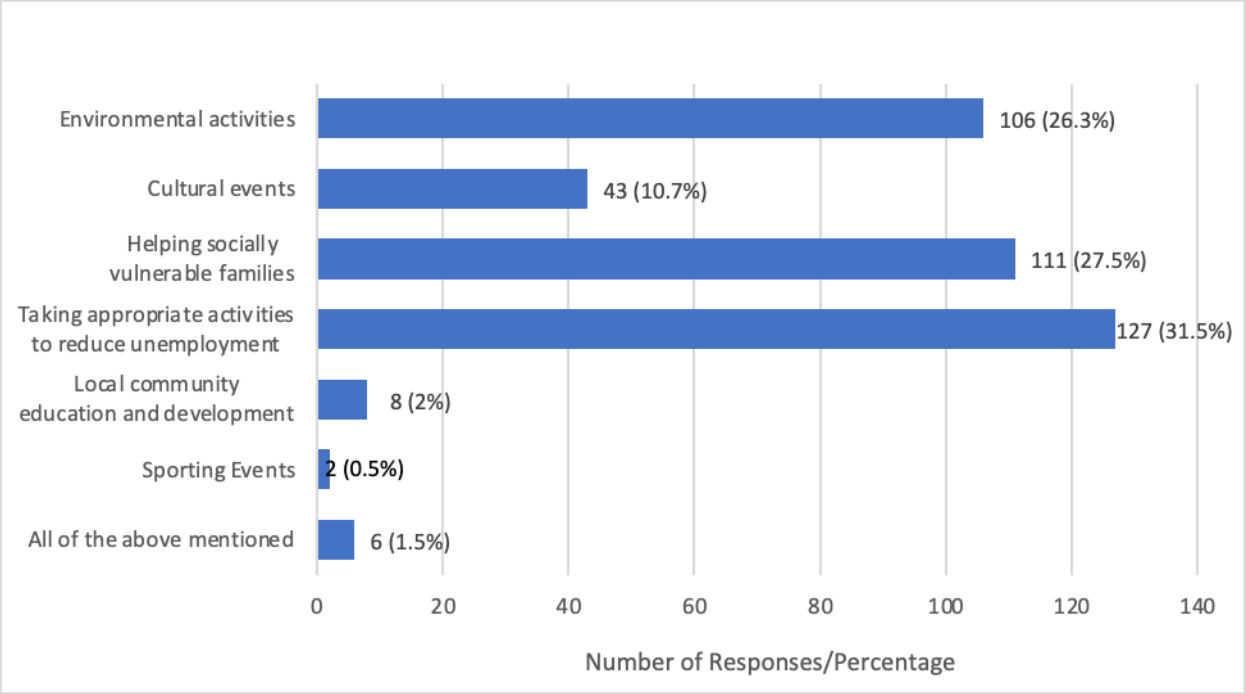
Most of the respondents (67.6%) rated their attitude with the highest score on the question of how important it is to increase awareness in the direction of corporate social responsibility in Georgia (Figure 4).



Source: authors' research results

Fig. 4. **Respondents' attitude towards increasing awareness in the direction of CSR in Georgia**

As for customer expectations regarding in which direction the companies should implement social projects in order to increase competitiveness, the majority of respondents (31.5%) believe that relevant activities should be taken in order to reduce unemployment, 27.5% of respondents believe that appropriate projects should be implemented in order to help socially vulnerable families and 26.3% of respondents believe that projects in the direction of environmental activities should be implemented (Figure 5).



Source: authors' research results

Fig. 5. **Customer expectations regarding in which direction the companies should implement social projects in order to increase competitiveness**

Thus, we can conclude that corporate social responsibility is a factor in increasing the company's competitiveness, because although the awareness of CSR among consumers is not very high, those consumers who have information about it in the purchasing process make a choice in favour of socially active companies. Also, most of the interviewed respondents believe that it is appropriate to raise awareness about this issue and establish CSR in companies in order to increase competitiveness.

Conclusions and recommendations

Globalization is accompanied by intensified competition, therefore companies should pay special attention to the implementation of corporate social responsibility in companies, as it is directly related to the improvement of the company's image and reputation. As a result of the implementation of CSR projects, the trust and loyalty of customers increases, which is one of the prerequisites for the formation of a successful and sustainable future.

Our research brought to the fore several issues that companies should pay attention to.

1) Despite the increased activity of companies and the government in the direction of CSR, awareness among consumers is still low. Raising awareness is important, because it will increase the company's competitiveness and the number of loyal customers. One of the best ways to raise awareness is to involve stakeholders in this process, including employees, customers, suppliers, investors, and anyone else who has an interest or influence over the business. A combination of online and offline platforms may be used to increase awareness, including creating a website or blog, press release, video, webinar and other marketing activities. Distribution of information by companies about their CSR projects depends on their goals, audience and budget.

2) Companies should develop an effective social responsibility policy and implement projects that have a major consumer demand. As it is clear from the results of the research, the most demanded social projects in Georgia are those that serve to help socially vulnerable families, take appropriate measures to reduce unemployment, increase support for families with many children and etc. If companies focus

on these directions, they will attract more customers and their competitiveness will be increased accordingly.

3) Another problem revealed by the research is that respondents do not consider it necessary for companies to implement social projects for the promotion of education. Only 2% of respondents believe that Georgian companies should implement CSR projects in these directions. However, the results of the PISA 2022 research regarding the knowledge and skills of Georgian students are not very favourable. Therefore, regardless of the results of our research, projects in the direction of education are a necessity. It is crucial to improve the quality of education and make it accessible to everyone.

4) There are many companies in Georgia that spend quite a lot of money on the implementation of social projects. However, such initiatives are often of a one-time nature, which is confirmed by the results of the survey. Therefore, companies must realize that in order to achieve success and increase competitiveness, they must be guided by high standards of social responsibility and focus on continuity and sustainability of projects.

5) Based on the research, the validity of the presented hypothesis was confirmed and it was also determined that most of the customers (83.6%) always or rarely consider the company's activity in the direction of social responsibility when making a decision. When there is intense competition in the market and this is not so rare in Georgia, consumers in most cases choose companies that implement social projects. Also, 80% of respondents with the highest rate on the 10-point scale of consumer attitudes (10, 9 and 8 points) assess the need to establish CSR in companies in order to increase competitiveness, which is also a high indicator.

Therefore, companies should develop a CSR strategy that will be more systematic, sustainable and long-term, because the establishment of corporate social responsibility in the firm in the right direction is an important factor in gaining a competitive advantage for the company.

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INTEGRATED AND SUSTAINABLE REGIONAL DEVELOPMENT

Proceedings of the 2024 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" No 58
Jelgava, LBTU ESAF, 16-17 May 2024, pp. 115-124
DOI: 10.22616/ESRD.2024.58.012

CONCEPTUAL ISSUES OF SUSTAINABLE LOCAL ECONOMIC DEVELOPMENT: INTERNATIONAL EXPERIENCE

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Abstract. Good examples of the world's experience show that strategic planning of local economic development is more likely to achieve sustainable development and inclusive growth on the ground, which implies that development processes should be guided by a local economic development strategy based on participation and cooperation. It creates a framework policy for local development and relies on assessments and forecasts developed in accordance with the research and analysis of the situation of the place, which further reduces the risks of failure. The purpose of the research is to determine effective ways of local economic development. Achieving the set goal requires solving the following tasks: study and analysis of existing concepts of sustainable economic development. Based on this, the research has studied the experience of different countries on the support of local sustainable economic development. The subject of the research is local economic development as a priority strategy for sustainable development. The research is based on methodologies, papers and reports developed by international organizations and international scientists and experts in the field of development. Based on the conducted research, effective ways of forming and implementing economic policies promoting local sustainable economic development in developed countries have been identified, and basic recommendations have been developed.

Key words: sustainable economic development, development policy, local development, cooperation of local actors, globalization.

JEL code: Q01, Q56, R11, R58

Introduction

The approach to local economic development, which was initially developed for vulnerable social groups and poor populations at the local and regional level and has found a significantly increasing acceptance in global, neo-liberal economies, is mainly based on the idea of self-help.

One of the first experts on local economic development, Sam Aaronovitch of the London Local Economic Policy Unit (Aaronovitch, 1986), once pointed out that we cannot escape the path of self-preservation. It is this way that represents local economic development, which James Robertson (Robertson, 1985) characterizes as: "local activities for local people using local resources." The current international trend in the field of governance shows that "top-down" management approaches have been replaced by "bottom-up" approaches, local and regional development, and devolution of power from the central government to subnational levels (Glinskiy et al., 2016; Akgün et al., 2012). Endogenous (development from within) approaches have been developed, and especially in the last two decades, indigenous, indigenous, indigenous population and their specificities have become widespread (Pike et al., 2010; Müller et al., 2011). The balanced growth of the country and its territories depends on the process of regional development, which makes it possible to effectively utilize the region's financial, economic, and social ability to improve social well-being (Abuselidze, 2019; Abuselidze and Meladze, 2023). Since they, in our opinion, are what maintain the harmony of the region's social, political, cultural, and public relations features, the financial and economic components of regional growth deserve special attention (Abuselidze and Meladze, 2024).

This trend was significantly determined by the characteristics of the local economic development approach, which implies: solving local problems by residents and actors who have the most information about the specifics and needs of the place; ensuring participation and engagement with a shared vision; pooling efforts and resources to increase cost-effectiveness; inclusiveness and sustainability (Zoidze et al.,

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2023; Steurer, 2008). Local economic development is often based on practical experience, which can be improved by taking into account the successes and failures of others.

There is no single model of local economic development support, local economic development strategy design, or local economic development programs that can be directly transferred to any area at any time. Every place has its own individual characteristics, without taking into account the processes of local economic development will be unsuccessful and ineffective for improving the living standards of local residents.

Accordingly, the developed strategic programs and initiatives of local economic development take into account the conditions and environment of the specific place for which they were developed.

Therefore, local economic development programmes and projects of different areas are different and peculiar. However, it should be noted here that the methodologies and international practical experience in the direction of local economic development are so broad that it allows local actors interested in this regard to freely study the successful and unsuccessful experiences of others and with the help of analysis and methodologies to determine the correct vectors of actions towards the desired results, gather others and with their maximum involvement to ensure local development.

Due to the fact that increased competition leads to the movement of capital and human resources in search of better conditions, which are defining elements for development, the need to increase competitiveness in local areas arose, for which it was important to develop new policies, which implies that local units should assess the potential of the area, threats and barriers to properly plan site development activities, attract investment and maintain and develop human resources and assets (Pike et al*.,* 2016; Lin et al*.,* 2023).

It is significant that in the conditions of globalization, the traditional methods of development policy planning are already losing their effectiveness, because in the conditions of centrally planned policies, economic growth can be caused only by the increase in the well-being of small groups, although such growth cannot be considered economic development (Badulescu et al*.,* 2024; Veshapidze and Karchava, 2022).

International practice shows that local initiatives, including innovative ones, succeed when calculations are made correctly in accordance with specific environmental conditions. It should be noted here that different actors of local economic development processes have different strategic visions and resources, based on which innovative ideas appear, and real changes and development are achieved by the involvement of actors in the processes, combining resources and ideas.

Methodology

A complex and systematic approach to the concept of sustainable development is the methodological basis of all areas, including our research. Sustainable development refers to a form of economic growth that ensures the well-being of society in the short, medium and, most importantly, long term. It is based on the principle that the needs of the present must be met without jeopardizing future generations. Sustainable development means creating conditions for long-term economic development with maximum consideration of environmental protection issues.

To achieve sustainable development, it will be of great importance to increase production efficiency and introduce reuse of raw materials. The existence of eco-efficient enterprises and companies will make it possible, on the one hand, to improve the quality of life of the population at the expense of competitive prices for manufactured products and services, and on the other hand, to reduce the negative impact on

the environment and, at the same time, to use raw materials economically, so that the natural balance of ecosystems is not disturbed.

As a result of the development trend of the current socio-economic and related problems, our research relies on methodologies, documents, papers, reports and official sources of statistical data developed by international organizations, scientists and experts.

Therefore, the following methods are used in the research: qualitative data analysis, statistical analysis, deduction, induction, schematic, systematic, synthetic, comparative analysis and case-study methods.

Within the scope of work on this paper, the research aimed:

- to analyse methodologies, scientific literature, reports and strategic documents on local economic development;
- to study various legal acts, programmes and documents prepared by experts on the country's experience on the issue of local economic development.

At the end of the research, after analysing the obtained information and materials, conclusions and recommendations were prepared.

Research results and discussion

1. Theoretical and methodological foundations of local economic development

In the face of increased competition as a result of globalization, traditional methods of development policy planning are already losing their effectiveness, as they do not adequately respond to such important challenges as sustainable development and inclusive growth. Centrally planned policies based solely on the principle of "top-down" management cannot adequately achieve economic flexibility in response to increased inter-territorial and interpersonal disparities as a result of competition (Yi and Xiao-li, 2018). Accordingly, the importance of integrated, holistic and participatory development approaches focused on increasing the competitiveness of local areas has gradually increased.

Real development starts at the local level. That is why in many countries of the world the local economic development approach is very popular and successfully used in the processes of development policy planning and implementation, which is an alternative approach to development policy planning to achieve sustainable development faster and more effectively (Sotarauta et al., 2012). It implies an integrated, self-help-oriented, holistic and participation-based process of transformation of the economic, social and ecological environment within the territory by combining efforts, synergy and cooperation of local public, private and civil sector actors, central government and international development partner organizations (Zoidze and Abuselidze, 2023).

Local economic development is effective only when the main actors of local economic development are involved in the development processes (Table 1), including local residents, local authorities, representatives of various political parties, the private sector, non-governmental organizations, various local unions, universities, research organizations, and various representatives of the civil sector.

Table 1

Stakeholders in local economic development processes

I	II	III	IV
Local public sector	**Local private sector**	**Local civil society**	**Other participants**
• Mayor; other local, elected political leaders; state trustees in the regions; relevant civil servants and the local economic development team; • Local, regional and national level governing bodies/institutions/structures; state-owned enterprises; • Research and educational public institutions; • Other.	• Micro, small, medium and large entrepreneurs; informal sector; • Business development and support organizations; • Banks, credit, microfinance and other financial institutions/unions; • Developers; • Business supporting organizations; • Chamber of Commerce; • Trade associations; • Business associations; • Unions of farmers and producers of products (e.g. farmers etc.) • Private educational institutions; • Analytical centres (think-tanks) • Media; • Other.	• Local community organizations; informal community leaders; neighbourhoods; • Citizens with local economic development initiatives; • Unions and institutions (non-governmental) created with special interest (youth organizations; organizations for women, disabled people, marginal citizens and people with other needs); • Other non-governmental organizations; environmental protection non-governmental organizations; • Professional associations; labour unions; • Educational sector (schools, universities, colleges, centres and others); • Research organizations; • Political organizations; religious associations; religious leaders; • Other.	• Government, ministries and representatives of the government and relevant agencies at the national level; • International organizations and international experts working on issues of local economic development.

Source: compiled by the authors

It should be noted that the local economic development approach is significantly different from the traditional development approaches and it requires new and strategic thinking, which implies the following approaches:

- instead of making decisions at the central level, moving to negotiation, collaboration and partnership, combining forces and capabilities to achieve common goals;
- transition from sectoral development planning to integrated planning;
- taking into account the idea that not only the government has responsibility and obligations for the achievement of development, but the whole society is responsible for it;
- to concentrate on effective and efficient use of local resources, capabilities and finances within the territory instead of depending on support received from outside the territory;
- conducting processes in a way that combines elements of development, training and monitoring;
- focusing on the end result (for example, poverty reduction) instead of focusing on intermediate results (for example: new projects and laws) (OECD, 2001).

Good examples of the world's experience show that strategic planning of local economic development is more likely to achieve sustainable development and inclusive growth on the ground, which implies that development processes should be guided by a local economic development strategy based on participation

and cooperation (Zoidze, 2023). It creates a framework policy for local development and relies on assessments and forecasts developed in accordance with the research and analysis of the situation of the place, which further reduces the risks of failure.

It is significant that local economic development cannot be effectively achieved if the responsibility is assigned to only one actor, because in such conditions the development process will be deprived of the benefits that local actors' cooperation and partnership bring.

It should also be noted that relations in the format of cooperation of development-oriented forces and involvement of actors in local dialogue can significantly encourage the emergence of innovative initiatives, promotion of effective use of local resources, development of value chains and raising of living standards (Bedianashvili, 2021). The social capital at the local level plays an important role in this, which implies the ability of people to act together to achieve a common goal, the existence of such a mode of social structure that facilitates the activity of an individual in a structured context (Coleman, 1994; Gvelesiani and Veshapidze, 2016), for which it is important to have an appropriate level of mutual cooperation and trust.

It is significant that in such societies where people find it difficult to form public unions and organizations independently, to organize and cooperate for a single purpose, such societies are more dependent on the state (CIPDD, 2006; Raszkowski, and Bartniczak, 2018) and will not be able to initiate changes based on mutual cooperation. The local economic development strategy is unique and distinctive in that it offers countries, especially in the post-crisis period, a holistic approach to concentrate resources and efforts to ensure the economic and social development of vulnerable areas.

The concentration of resources and efforts means the achievement of economic, social and environmental goals on the ground by ensuring the joint involvement of material resources, knowledge, institutions, national and international development organizations, non-governmental organizations, research and development organizations, local government agencies and organizations in the business sector.

All this contributes to improving the living standards of the local population, creating jobs and providing opportunities for families to generate adequate income. For this, it is important that the strategic planning process is well understood, the situational analysis is carried out qualitatively, and the needs are correctly identified, which will be answered by the activities defined by the strategy.

2. International experience of local economic development support and programme implementation

For a better understanding of the essence of local economic development and international trends on local economic development issues, it will be interesting to discuss examples of strategic programs and initiatives of local economic development from the experience of different countries. Based on the specifics of the issue, it would be more appropriate and interesting at first if we consider examples not by country, but by who are the authors of local economic development initiatives: local indigenous population, local private sector, civil sector or public sector actors.

At the initial stage, let's consider examples of local economic development that were initiated by the local indigenous population within the territory. It is worth noting that local economic development initiatives are sometimes created naturally and spontaneously by the population or one local actor at the initial stage and then develop in cooperation with other local actors, which often happens only in places where the level of social capital of the population is high.

In many cases, local economic development programs are developed and developed as a result of targeted development planning. The author of the local economic development initiative can be one or

several local residents who, by sharing the idea with others, increase the scale of their activities, which has a better impact on the local economy. Sometimes solving a local problem effectively and on time requires the unanimity of the population, and for this the local population unites and starts activities for local economic development independently of the local government and other actors.

In this regard, several examples of local economic development led by the initiative and leadership of local residents are interesting. Due to political changes in East Germany, a local agricultural cooperative and a large power plant near Frankfurt-Oder were closed. The residents of the mentioned village (150 inhabitants) lost their jobs, although they did not want to leave their homes. The residents unanimously decided to use the available village resources and purchased an abandoned four-story grain warehouse and turned it into a community development centre. They also opened a market where locally produced organic products were sold. They started using new technologies for the production of environmentally friendly products and developed renewable energy systems. Moreover, they created a local power station and an irrigation system. Later, the villagers began to sell their knowledge and experience to international educational centres working in the field of rural development.

The island of Papa Westray in northern Scotland was also developed by the initiative of the local population. A local store and a passenger ship owner went bankrupt on the said island. Since these two were the link to the rest of the world, the local people decided to form an island cooperative and operate a store and a passenger ship on their own. This was only possible by investing in collective unremunerated (unpaid) labour, which meant that the islanders shared the work of this shop and ship by arrangement until the shop and ship owner had the resources to hire others. Then the members of the cooperative came up with an idea to implement a new successful project. At the initial stage, they turned abandoned unused farmhouses into small hotels (hostels), and later into family hotels, established a new nature reserve, developed archaeological sites and organized tourist tours on the island. From the above, it can be seen that through mutual cooperation based on the building of social capital and shared benefits, the islanders have achieved common prosperity and increased incomes.

By the joint efforts of the population, the settlement of Ballyhoura in Western Ireland was also developed, in which previously only agriculture and milk production were developed, however, when the reform of the European Union in the agricultural sector (created a uniform standard of milk production) limited the income from local milk production, it became necessary to diversify the local economy. In response to this challenge, the "Ballyhoura Development CLG" was established on the initiative of the local population. It took them a long time to gain knowledge about the mechanisms of economic development, but today they are highly aware of these issues. They implemented local development projects based on mutual cooperation, positive relations with local authorities and with the help of the EU programme (LEADER).

An important role was played by the strategic plan jointly developed by local actors, which determined the implementation of many initiatives. The initiatives were related to: the diversification of the local economy; development of local rural tourism; turning Ballyhoura into a place of rest; development of rural products; establishment and development of small firms and handicraft enterprises; promotion of local services. As a result of local development processes, income from tourism has increased, jobs have been created and employment has increased, niche markets have been established, the popularity of the place has increased with the help of the media, and numerous local infrastructure improvement projects have been implemented.

To illustrate local economic development initiated by a single family, the example of a family enterprise in a national park in Portugal is interesting. A Portuguese doctor and his French wife started a small business in rural tourism in Penada-Geres National Park, Portugal (Coelho et al*.,* 2010). They offered recreation, sports, gastronomic and accommodation services to vacationers. The aforementioned entrepreneurship filled the lack of services caused by the inaction of the National Park administration. This entrepreneurship played an important role in local development. One successful local initiative has led to the emergence of new development initiatives. The local development agency has started work on encouraging the tourism sector and commercializing the local handicrafts sector (Romao and Neuts, 2017; Hrechyshkina, 2016). Development processes were later supported by the EU programmes.

Among the examples of local economic development by residents, the Urban Circular Collaborative Economy Initiatives of The Hague (Netherlands) are also interesting, which are based on sharing and creating platforms that provide residents with access to each other's goods/products, reducing poverty, improving social capital and sustainable development. The Netherlands is at the forefront of the circular and collaborative sharing economy, the importance of which is gradually increasing. This is evidenced by the fact that in the Netherlands, 23% of the population was involved in the sharing economy in 2016, compared to only 6% in 2013. Such a growing trend is influenced by the following factors: circular collaborative economy initiatives increase access to products; Cooperative thinking; Bringing people closer together, reducing the feeling of loneliness and integrating them into society; Strengthening circular and sustainable approaches. It should be noted that the low level of awareness of the population on the importance of the social value of the urban cooperative economy and related issues is an important challenge in the strengthening of similar initiatives.

Some examples of urban circular cooperative economic initiatives produced by the population are interesting:

1) "Made in Moerwijk" - (helping people excluded from society to integrate into society; recovery of second-hand items and creation of new items from waste; educational activities for children on environmental issues);
2) "KledingBank Den Haag" (clothing bank; collection and delivery of clothes (free of charge or one unit for one euro) to people who need it);
3) "Lekkernassuh" - (buying products from local farmers in one specific place, much cheaper only for members registered in the initiative);
4) "De Groene Regents" (installation of communally owned solar panels in the neighborhood; electric car sharing).

The combination, cooperation and organization of several local entrepreneurs can turn a local business into a world-class cluster, and a great example of this is the flower cluster in Aalsmeer, the Netherlands, whose history began in 1911, when local growers decided to join forces and jointly, cooperatively organize auctions and produce products. This initiative gradually grew, became more complex and large-scale, and involved more stakeholders (Hermans et al*.,* 2011; Lordkipanidze, 2021). As a result, in 100 years, the largest cluster of flowers and plants and a trade centre of global importance was formed in Aalsmeer. Currently, the cluster includes flower and plant production and logistics private companies, knowledge/research sector, educational and government organizations. They work together to fulfil one mission, which is to increase the international competitiveness of the local flower cluster. The cluster focuses on innovation and sustainability, which ultimately drives local economic growth. The example of Aalsmeer is also interesting in that it shows how a local economic development initiative within the

framework of a partnership of local entrepreneurs can identify a local market niche not only at the national but also at the world level.

It should be noted that there are no unique, exemplary models of local economic development programs. Therefore, all local communities should find their own solutions and set strategic vision and goals (Abuselidze, 2023). It is significant that international methodologies are so sophisticated and the experience of international countries is already so large that everyone can take ideas about local economic development initiatives and supporting policies/measures, take into account the successes and failures of other areas and adapt these ideas to their own area.

Economic and employment policy is a regional issue, but self-governing cities and municipalities can cover all issues that are the common needs and interests of their residents (Shayan et al., 2024; Haughton and Counsell, 2004; Berger, 2003). Municipalities can also exercise all powers that are not defined by law for other levels of government (Jovovic et al., 2017; Fang et al., 2019).

The role of international organizations in the development processes of different countries is very important. Many international organizations work on issues of local economic development, but the following stand out among them: World Bank, International Labor Organization (ILO), European Union (EU), United Nations Human Settlements Program (UN HABITAT), United Nations Development Program (UNDP) and Organisation for Economic Co-operation and Development (OECD). Their role in the development of local economic development methodologies, introduction and implementation of development approaches/models/programmes based on local areas is special.

International organizations implement programs and projects supporting local economic development even in relatively problematic local units of developed countries. However, it should be noted that the role of international organizations in introducing the local economic development approach is particularly important in developing and underdeveloped countries. In such countries, the civil society is weak and neither the central government nor the representatives of the local government have the appropriate knowledge and experience to implement appropriate policies and activities supporting local economic development (Abuselidze, 2020). For the implementation of the local economic development approach, international organizations offer both methodological and financial support to the governments of the countries.

Conclusions, proposals, recommendations

International experience shows that there is no one unique definition of local economic development, nor one methodology and design of support processes (promotion) and strategy. They differ in emphases, but all methodologies share important aspects that relate to:

1) the participation and cooperation of local actors (from the public, private, civil sectors);
2) dialogue and consensus building between actors;
3) creation of appropriate platforms for partnership and synergy and integration of existing efforts at local, national and international levels for effective achievement of local development goals;
4) development of one strategy with a common vision;
5) holistic perception of development processes;
6) focus on self-help;
7) balanced presentation of responsibilities (including financial) and interests of the main actors;

8) planning economic development in such a way that it simultaneously takes into account and effectively responds to social and ecological needs, which ultimately ensures local sustainable development and inclusive growth.

International experience shows that with a "bottom-up" management approach, local economic development initiatives are initiated to solve one or more local problems and mainly concern the diversification of the local economy; development of the local workforce; development of connections between local actors; supporting small and medium-sized businesses; promoting the production of local products; promotion of tourism; development of outdated and dysfunctional industrial areas; social support etc.

Also, international experience shows that there is already a growing tendency to introduce place-based economic development approaches everywhere in the world, which is especially effectively and efficiently implemented in countries where the level of social capital is higher. This approach has been successfully implemented in developed countries and they have already accumulated a lot of experience. They share this experience with relatively less developed/developing countries, in which the role of international organizations is special and, significantly, all this creates important opportunities for less developed countries in the world.

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Proceedings of the 2024 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" No 58
Jelgava, LBTU ESAF, 16-17 May 2024, pp. 125-133
DOI: 10.22616/ESRD.2024.58.013

CHALLENGES OF ORGANIZATION'S CULTURE CHANGES IN BALTIC ENTERPRISES

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Abstract. This article examines how organisations in the Baltics perceive organizational culture topic, what is managers' understanding and actual activities used for organizational culture change. The results of this study indicate that the topic of organizational culture is one of the priorities in organizations in the Baltics. In most cases, organizational culture change is initiated either by a change in ownership, organizational strategy, entry into new markets or development of new products/services. It seems that there is lack of practice how to approach this topic and notice sense of urgency for necessity to improve organization's culture in other cases, especially because used measures for organisational culture does not measure all organizational culture aspects or is not measured at all. The results show that the organizational leader and the management team are the ones who should determine the organizational culture; however, most of actual or perceived activities for organizational culture change are in scope of Human Resource or Communication professional. The empirical part is based on quantitative research conducted in 2022 surveying 80 managers and 6 qualitative in-depth interviews with managers who have actually succeeded in organizational change activities.

The analysis of the information gathered in the research led to the conclusion that managers in the Baltics lack of understanding of how to research and measure existing culture, especially its intangible aspects and proposal to develop a practical methodology for measuring, researching and transforming organizational culture improving success rate or organizational change activities to achieve improve aspects of organization's performance what is affected by organizational culture.

Key words: organizational culture, manager's influence, business development.

JEL code: M14

Introduction

Nowadays, in the business environment, the influence of organizational culture on the company's results, employee well-being and the company's long-term development opportunities is brought up. Building the culture of the organization is directly identified as one of the priorities by business owners and senior managers. The issue of organizational culture has become relevant, firstly, during the Covid pandemic, and secondly, due to circumstances such as mergers, restructuring or change of management. The purpose of the study is to investigate the relevance of organizational culture understanding and improvement for companies in the Baltics, to determine the main reasons for changes in organizational culture and the methods used for organizational culture improvement. The tasks of the research are as follows: (1) to assess the importance of organizational culture topic in Baltic organizations; (2) to find out the key reasons why organizations have initiated organizational culture change; (3) to find out the used methods for organizational culture change; (4) to find out the perception of factors that influence organizational culture.

To reach the conclusions, quantitative and qualitative methods were used for the study conducted in 2022: (1) electronic survey of leaders of organizations operating in Baltic countries (Latvia, Lithuania, Estonia), obtaining the opinions of 80 (eighty) respondents (45% international companies working in Baltic countries, 32% Latvia's based private equity firms, 11% Latvia's public institutions, 7% Lithuania's based private equity firms, 5% Lithuania's based private equity firms); (2) semi-structured in-depth interviews with company executives (6 in total) whose organizations operate in the Baltics or the wider region and who have carried out targeted activities to change the organization's culture; (3) data collection and the obtained data analyses, integration of expert opinions in order to carry out the conclusion. The novelty

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and topicality of the research lie in the search for understanding different aspects of organizational culture. Research covers not only employees' experience, but rather looks from a business perspective and perceives organizational culture as important aspect of organization system as a whole that impacts every aspect of business, including how products and services are designed, how customers are engaged and served, if and how results are achieved.

Research object: organizational culture.

Research subject: relevance of organizational culture understanding and improvement for companies in the Baltics.

Research results and discussion

1. Literature review

Several researchers have indicated the importance of organizational culture and how it affects various business aspects. Author Flamholtz asserts that organizational culture is one of the six key tasks or dimensions that organizations must perform to be successful at each stage of their growth and that determines organizational success or failure (Flamholtz et al., 2000). Researchers have found that corporate culture elements significantly and positively impact quantitative and qualitative organization performance (Arikan et al., 2016) and that there is statistically significant relationship (at 0.05 level) between culture and financial performance (measured by 'EBIT,' or earnings before interest and taxes) (Flamholtz et al., 2001). Organizational culture is also one of the components that lead to job satisfaction, what is making a great difference on economic indicators like productivity, turnover of employees and absence of work (Apsite, 2019).

Organizational culture also impacts organization's future success and capacity to use modern technologies and adapt to more effective working methods. For example, organization culture is considered as an undoubtedly crucial element in knowledge management process as it governs how people behave with respect to creating, sharing and managing knowledge (Apsite et al., 2017) what is prerequisite to create innovations and building competitive advantages in a company. In this respect researchers also refer to the term "learning culture" what can be considered as one way how organizational culture manifests and embeds learning into how things are done in an organization (CIPD, 2020). To enable knowledge sharing within the company, a special role is paid by the existing organizational culture, since certain organizational cultures promote more open information movement among members.

Also, in learning culture topic area, "researchers increasingly emphasize the positive role of knowledge sharing and the advantages to be gained from it by private individuals and organizations. To make organizations successful, specific attention is required for provision of information interaction" (Cekuls, 2015) and develop "communication and knowledge sharing habits as organizational culture values in the organization" (Cekuls, 2016). Among other researches, the focus on special skills development, like digital skills (Buligina et al., 2022) or intellectual capital efficiency (Titova et al., 2022) and its impact on growth rate and profitability of a company or overcome competitive labor-force challenges, are studied.

Also, the implementation of strategic performance management tools is positively related to the organizational culture (Oliveira et al., 2023). Researchers also indicate that some shortcomings in organizational culture are one of the main barriers to company's success in the digital age. The results show that organizational culture has impact on digital transformation (Butt, 2024), is essential for maximizing digital transformation opportunities (Kocak, 2023) and is one of the barriers of using big data

or instead with existing favourable culture of the company can overcome technological limitations (Batraga et al., 2023).

Consequently, there is an incentive for founders and top managers to create organizational culture that supports the organization's strategy or change existing organizational culture towards more favourable one. As Michela and Burke (2000) claim, to change culture, we must first understand it. In order to change or to manage corporate culture, one has to be able to define and therefore pinpoint exactly what it is one is trying to change. Andriukaitiene et al. (2018) argue that all organizational culture enhancement actions must be reasonably planned and coordinated; the effectiveness of the measures taken is evaluated. The authors also refer to a Model for the Excellence of Culture Management (Flamholtz, 2015), which includes six steps necessary for the processes of business enterprise cultural management. While the 1st step is "Define the Culture needed to support long-term success" (desired culture), the second step is "Identify Current culture". Only after gaps between the desired and current culture have been identified and analysed, a culture management plan is developed and later executed.

However, there is no consensus of what 'organizational culture' entails (CIPD, 2022) and organizational culture has been defined by several authors in various ways. One of the most detailed definitions, recognizing culture as a multidimensional concept, is presented by Schein (2010). According to him, "organizational culture is the pattern of basic assumptions that a group has invented, or discovered in learning to cope with its problems of external adaptation and internal integration, and that have worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems". Schein (2010) considers that organizational leaders are a key source of influence on organizational culture. How change occurs within organizations will be influenced by the fact that cultures are underpinned by deep assumptions that are shared (Schein, 2010).

2. Empirical study

The study of the Baltic organizations among other things aims also to find out what is the perception of organizational culture concept and factors that determine or influence organizational culture development or change. To get the overall picture, the studies included a survey of 80 organizations that were various by size, business geography (local and international), different industries with different origins of capital, including public sector organizations. Research data does not show significant differences in the results between organizations in different industries, size or origins of capital.

Taking into account organizational culture's impact on business results, one of the tasks of the study in the Baltics was to assess whether managers recognise the importance of organizational culture topic. Thus, survey participants were asked a question: "How important is the topic of organizational culture in your organization?". According to the survey data, organization culture topic is highly important in the Baltic companies as average result is 8,7 (in scale 1 to 10, where 1 is not important and 10-very important). Moreover, survey participants were asked whether they have tried to improve the culture of the organization in the last 2 years, where most participants confirmed that they have tried to change organization's culture (68%) or have recognized the need to improve organizational culture and thus are planning activities to change organizational culture in the near future (11%).

The second task of the study was to find out the key reasons why organizations have initiated organizational culture change. According to the research results, new products/services & markets (24%) and Mergers &Acquisitions or ownership change (21%) are the key reasons for organizational change. In most of Mergers & Acquisitions and Ownership change cases, also change of CEO and partial management team change was reported. Also, in CEO change cases, it is common practice to fully or partially change

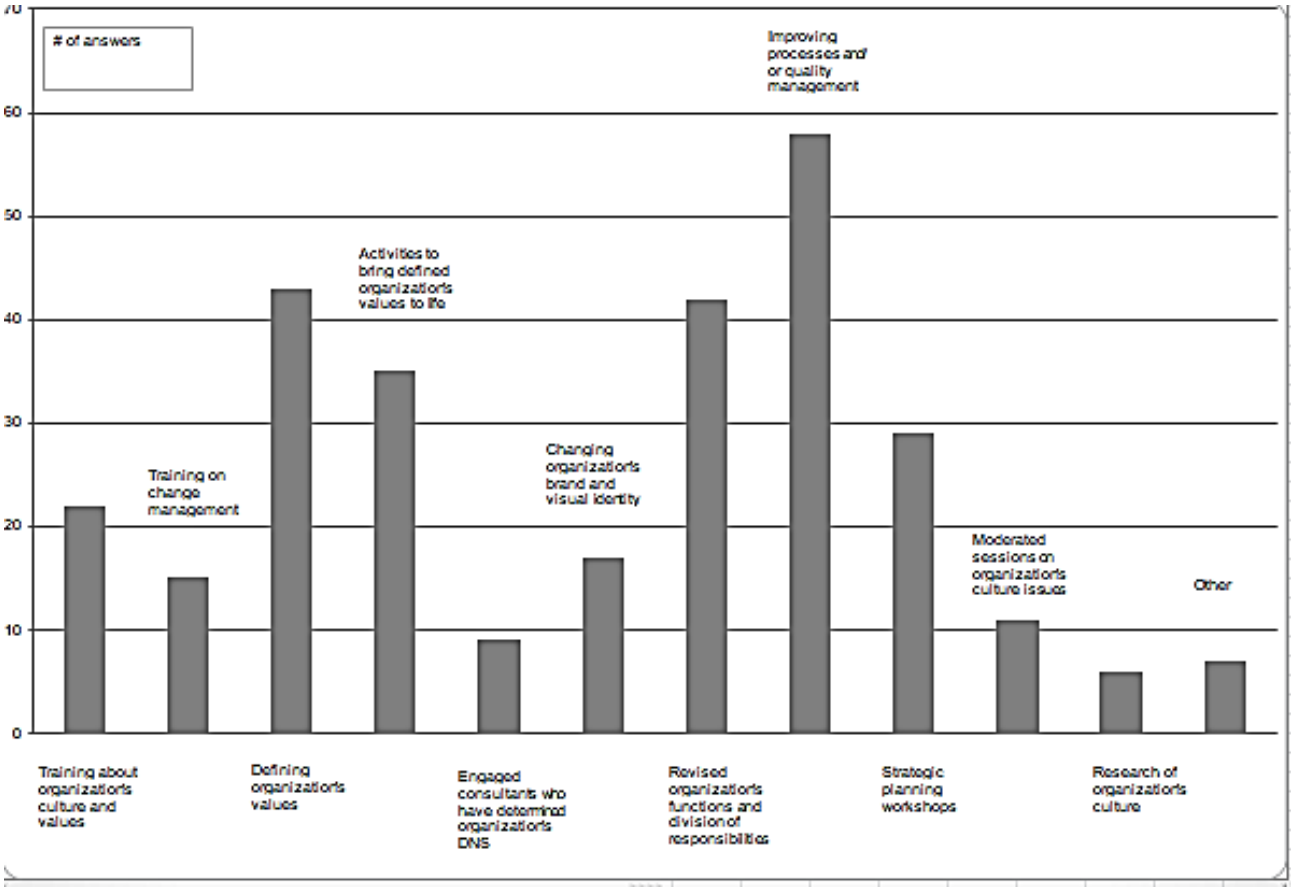
the management team to initiate further organization's culture change. Among other culture change initiators, such factors as implementation of new culture statements and new ways of working were mentioned.

Despite the common belief that Covid-19 pandemic has a large impact on organisation's cultures, the research results show that while 60% of respondents admit that Covid pandemic partly might have an impact on the initiated changes, only 22% of the respondents see that their organization's culture has changed as a result of the Covid pandemic. According to the interview data, managers see that a crisis (also such as a pandemic) sheds light on existing organizational cultural patterns and rather stimulates to prioritise actions to change and improve what in other situations might be postponed.

The survey included also the question, whether culture change activities were successful. Surprisingly, only 32% of respondents claimed that they had achieved desired results, while 60% admitted that only partly, while 8% have not achieved the desired changes at all. The interviewed managers mentioned that organizational change typically originates from two primary sources including change resulting from external or internal environmental factors that are outside the leader's control and change resulting from a planned implementation. It can be summarised that managers who had succeeded in organizational change activities define organizational culture as a living organism who changes over time and that impacts how an organization perceives, evaluates, and reacts to the internal and external factors shaping the environment and that influence all aspects of organization everyday activities. The interviewed managers have admitted that changing a culture has taken more time than they initially expected and that is a large-scale undertaking and eventually all of the organizational tools for changing minds will need to be put in play.

The third task of the study was to find out the used methods for organizational culture change (Figure 1). Most of the respondents have used more than one activity to improve existing culture (on average 3,5 methods).

Among the top activities, most often mentioned are business improvement practices like revising the division of functions and responsibilities, improving processes or quality management and strategy planning workshops. In most cases, these activities are combined with definition of organization's values and respective activities to bring the defined values to life. Overall, the most common methods of changing the culture of an organization are related to internal communication and explaining defined values of the organization, or related to learning. Very few organizations have conducted dedicated research on existing culture and organised moderated sessions on cultural change issues. Thus, it has not been possible to follow six steps necessary for the processes of business enterprise cultural management not in 1st step to define desired culture, not in 2nd step to identify current culture. It is interesting to note that from all the respondents only one organization has developed a road map for culture change after analysing the existing culture research results, which is logical 3rd step for culture management. This might be also one of the reasons why organizational culture change activities are reported not to be highly resultative.

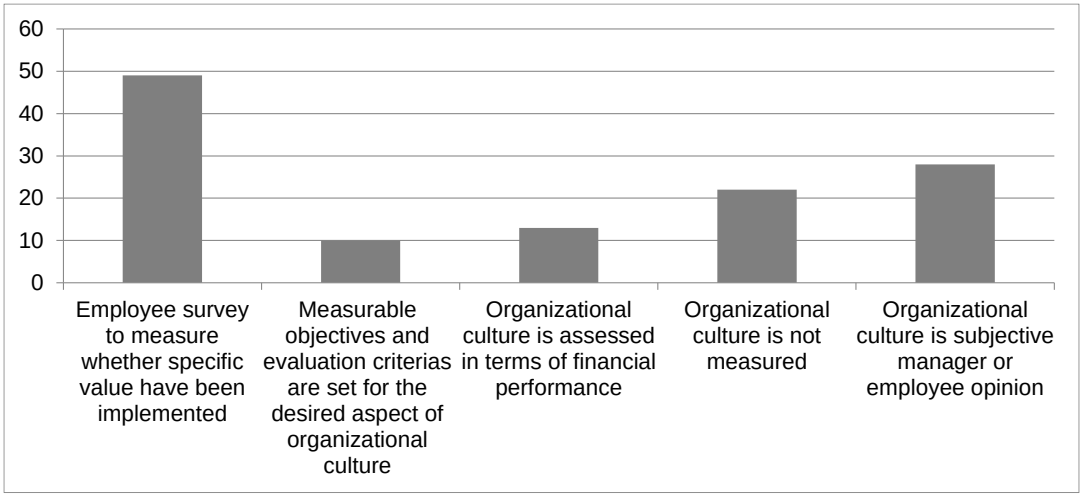


Source: authors' calculation based on received survey data

Fig. 1. **Methods used to improve organization's culture**

Moreover, according to the research results, 21% of organizations do not measure organizational culture and even larger proportion of respondents believe that organizational culture is subjective assessment of the managers or employees (Figure 2). Thus, in organizational culture context, the usual business practice to set KPIs and follow their progress as well as to notice the red flags is not widely practiced. For organizations that measure organizational culture, the most popular method to measure organizational culture is employee survey. However, in practice, it covers only visible part of organizational culture and is not sufficient for all culture's aspects. Organization's financial performance is a valid measure, if culture change activities give the desired effect. However, if it remains only as a measure, it provides only a short-term view, while organization culture develops throughout the whole organization existence.

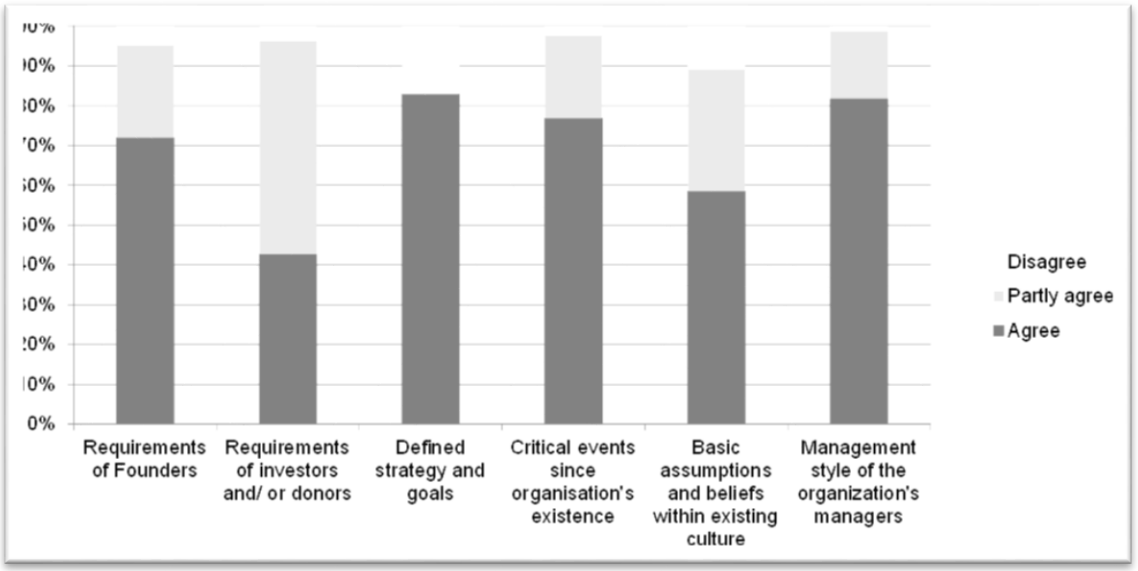
Another task of the study was to find out the perception of factors that influence organizational culture. The survey participants were invited to answer to the open question: "What is organization's culture?". The answers included wide scope of perceptions about organizational culture with the several dominant views: 1) organizational culture consists from-individual values and behaviours of the employees; 2) organizational culture is just about the employee experience; 3) organization's culture consists of the patterns that determine how the organization operates and it impacts every aspect of the business. It can be also concluded that used methods for organization's culture change depend on the understanding of the concept of organization's culture.



Source: authors' calculation based on received survey data

Fig. 2. **Measuring of organizational culture (number of answers)**

In order to understand the perception of what aspects impact organization's culture, respondents were given several statements on factors that should be taken into account when initiating organization's culture change activities (Figure 3). A large proportion of respondents agree that the culture of the organization is influenced by a diverse set of factors, such as the settings, strategy and goals of the founders, the views of the head of the company and the management approach; critical events since the organization's founding and formed basic assumptions and beliefs.

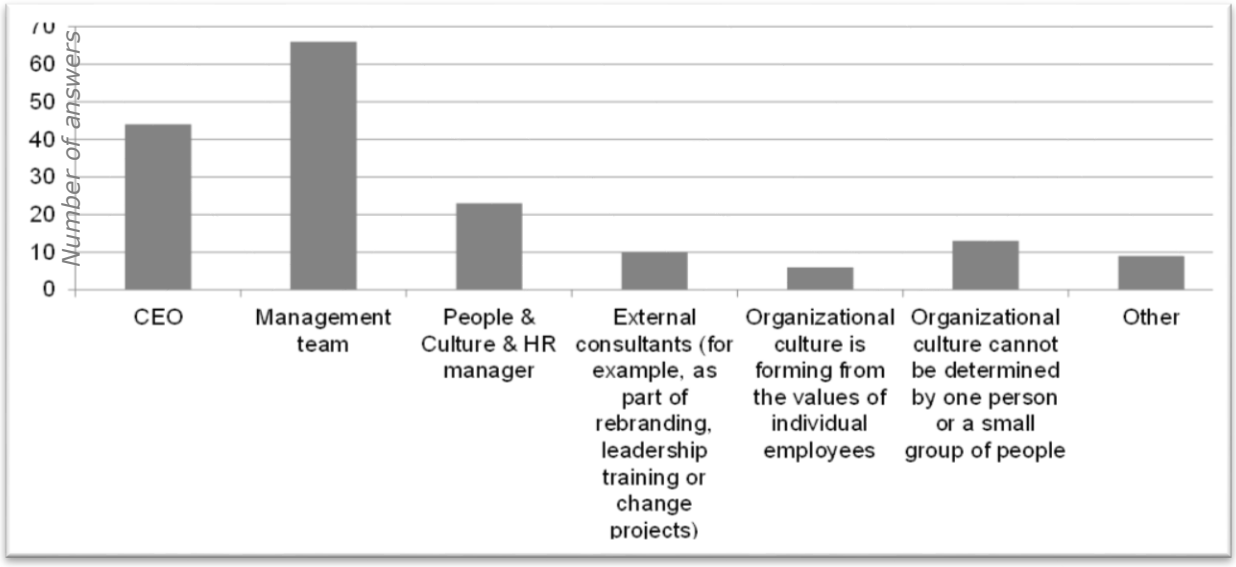


Source: authors' calculation based on received survey data

Fig. 3. **Factors that influence organizational culture**

Despite the fact that M&A or ownership change is one of the most important factors that has initiated organization's culture change in the last 2 years in the respondent organizations, it is surprising that only 35% of the survey participants think that investors and donors' requirements should be taken into account in culture change activities.

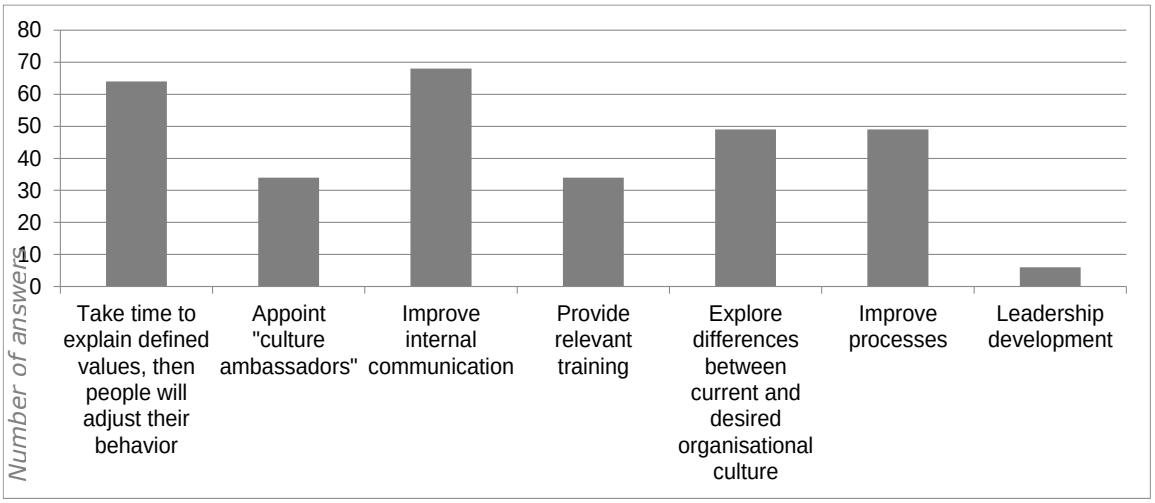
Most of the researched participants acknowledge the influence of the CEO and management team in determining organization's culture. However, 23% of respondents believe that it is the responsibility of HR function or People & Culture Lead (Figure 4). This situation suggests that there are many myths about organization culture observable in organizations in the Baltic region.



Source: authors' calculation based on received survey data

Fig. 4. **Who should determine organizational culture?**

When questioning about the needed activities to change the current organization's culture towards more desirable one, the respondents on average named at least 3 activities (Figure 5). Even though exploring differences between the current and desired organization's culture is not among the most used methods in practice, almost 50% of respondents have marked it as important to implement desired organization's culture.



Source: authors' calculation based on received survey data

Fig. 5. **Activities to change organizational culture**

Still, it can be noted that most of the activities and methods admitted as appropriate for organization's culture change by survey respondents are within the scope of HR function alone with limited involvement of management team and organization as a whole.

Conclusions, proposals, recommendations

1) Literature review provides a wide range of business result elements that are affected by organizational culture like financial performance, knowledge management, digitalization as well as employee satisfaction and attitude towards learning.

2) There is no consensus what organizational culture entails among academics and business leaders. It is clear that organizational culture is a multidimensional concept, and such factors as intangible aspects and shared deep assumptions are the most influential.

3) The empirical study confirms that the topic of organization's culture is among priorities on the organization's management table in the Baltics, and most of respondents have tried purposefully to improve their organizational culture.

4) In most cases, organization's culture change has been initiated either by the change of ownership or by organizations strategy entering new markets or developing new products/services. It seems that there is lack of practice to discuss necessity of organization's culture change in cases where there is no new management or new strategy that forces organization to transform. Thus, it is recommended to either include organizational culture aspects in strategic KPIs and follow up in strategic goal review meetings or initiate regular research of organizational culture to identify whether it is aligned to and supports organizational strategy.

5) Results show that those factors, that survey participants believe have impact on organizational culture, not always are taken into account when culture is purposefully changed. For example, requirements of founders and investors.

6) Even though it is a common practice in organizations before changing any other business elements, examine AS-IS state, then define TO-BE state to develop a thoughtful change plan, the pre-research on existing culture and system exposed to changes are rarely done. This might explain why organization change activities do not fully reach the desired results.

7) More than 20% of organizations do not measure organization culture aspects. Among others, the most popular measurement method is employees' surveys that cover only part of organizational culture levels.

8) Although participants believe that CEO and the management team are the ones who should determine the culture of the organization, the methods used and the activities carried out to improve the culture of the organization mostly include the duties of personnel or marketing and communication specialists. Therefore, the roles of the CEO and management team members in organizational change activities should be clarified.

9) It can be concluded that managers in the Baltics lack understanding of how to research and measure existing culture, especially its intangible aspects and there is a need for practical methodology for measuring, researching and transforming organizational culture improving success rate or organizational change activities. Understanding of culture can be useful in two ways. First, cultural insight provides an awareness of the extent to which organization members are willing to accept change and a cultural assessment is likely to determine the root cause of the problems that need stronger performance.

10) Authors propose to the continue research to identify the pre-requisites for successful organizational culture change and detect the most appropriate methods to research and measure existing culture and manage the process of changes in organizational culture improvement.

11) Authors' recommendation is to continue the research on the methods that could give the most desired results for organizational culture change to achieve improved aspects of organization's performance, which is affected by organizational culture identified by the academic research.

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Proceedings of the 2024 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" No 58
Jelgava, LBTU ESAF, 16-17 May 2024, pp. 134-141
DOI: 10.22616/ESRD.2024.58.014

DEVELOPMENT PROSPECTS AND SUSTAINABLE TOURISM IN MOUNTAINOUS ADJARA

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Abstract. Sustainable tourism as an economic sector is of crucial importance and affects the social, economic and ecological environment. The promotion of tourism in mountainous regions is based on special features that are attractive for visitors. Adjara has a great mountain tourism potential. Statistical data indicates a positive trend in a number of visits in the mountainous Adjara and significant potential for the development of new forms of tourism. For the development of sustainable tourism, it is necessary to analyse the prospects and opportunities of the region, to assess the tourism environment of the region and what hinders the success and development of this sector.

The main objective of the article is to explore mountainous Adjara as a tourist destination, analyse the findings of the conducted research on lodging establishments in the region and identify key problems. The study included quantitative research method and data was collected through a structured questionnaire. The discussion and classification of the research results are provided based on the revealed economic, social and environmental problems, and specific recommendations have been developed.

Key words: sustainable tourism development, mountain tourism, sustainability indicators.

JEL code: Z32, Q01, O18

Introduction

The natural environment is one of the most important resources for tourism development. Recently, a new type of tourism has emerged, especially based on nature. Mountain Tourism is a type of "tourism activity which takes place in a defined and limited geographical space such as hills or mountains with distinctive characteristics and attributes that are inherent to a specific landscape, topography, climate, biodiversity (flora and fauna) and local community. It encompasses a broad range of outdoor leisure and sports activities". Mountain tourism has a high potential to stimulate local economic growth and social change because of its complementarity with other economic activities, its contribution to GDP and job creation, and its capacity to promote the dispersal of demand in time (fight seasonality) and along a wider territory (World Tourism Organization, 2024).

Mountains, especially those covered with forest trees; make up a good proportion of the land area. It is considered one of the most important tourist attractions due to its distance from sources of pollution. Sustainable mountain tourism is part of the issues that have become a concern for international bodies and organizations, including the World Tourism Organization, which has adopted the rules of sustainability in tourism and the modalities of its development. Tourists can enjoy the snow in winter and enjoy the fresh air and shade in summer. Since sustainable tourism development is one that 'meets the needs of tourists and host sites as well as protects and provides opportunities for the future, it is the guiding rules in the field of resource management in a way that meets the requirements of environmental, economic, social and cultural issues, cultural integration, environmental factors, biodiversity and support for life systems (Kharboutli, 2004).

Tourism should be developed in accordance with the sustainability principles. Sustainability principles require changes in the way of thinking and values, where the changes must include global interdependence, life environment management, social responsibility and economic sustainability (Drumm et al., 2004).

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The promotion of tourism in mountainous region is based on special features like the fresh, cool air, and the spectacular landscapes. Moreover, tourism offers a great variety of opportunities. In mountain regions tourist activities include trekking, hiking, skiing, snowboarding, visiting national parks, bird-watching, and a number of new extreme trend sports. Long recognized as places of sanctuary and spiritual renewal, mountains will become even more attractive as places of escape from city life (University of Berne, 1999).

Adjara region, the popular tourist destination in the Black Sea region, was chosen study area of the paper. The region is known for its coastal and mountainous landscapes and stands out with its rich biodiversity, with four protected areas and national parks, three of which hold UNESCO World Heritage status. The region offers diverse tourism activities, including rural, wildlife, adventure, and eco-tourism such as hiking, horseback riding, rafting, and bird watching. With over 2 million international traveller visits annually, Adjara is not only popular among international tourists but also ranks as a top destination for domestic tourism. Statistical data shows a positive trend in a number of visits in the mountainous parts of region too. The post-pandemic data indicates the impressive recovery rates and increasing dynamics, reaching 23% increase compared to pre-pandemic data in 2023 (Table 1). These numbers demonstrate the growing popularity of mountain destinations among the visitors and highlight the significant potential for the development of new forms of tourism.

Table 1

Distribution of the number of visits made by international and domestic visitors by the municipalities in Adjara (2019-2023)

Mountain Municipalities in Adjara Region	2019	2020	2021	2022	2023	% 2023/2022	% 2023/2019
Keda	42025	4793	36501	56269	73093	29.90%	74%
Kobuleti	114177	385	56356	104826	109263	4.23%	-4%
Shuakhevi	13171	109	4400	6860	11364	65.66%	-14%
Khelvachauri	29929		30575	48992	49006	0.03%	64%
Khulo	28519	2124	3551	14671	38392	161.69%	35%
Total	227821	7411	131383	231618	281118	21.37%	23%

Source: author's calculations based on the data provided by Tourism Product Development Agency (TPDA) / Department of Tourism and Resorts of the Autonomous Republic of Adjara

The main goal of the article was to analyse the lodging establishments segment in the mountainous Adjara, to identify the key problems and develop the recommendations based on the results of the conducted research.

The quantitative data needed for research purposes was collected through a structured questionnaire. We have provided discussion and classification of the research results in three contexts of sustainability: economic, social and environmental.

Research results and discussion

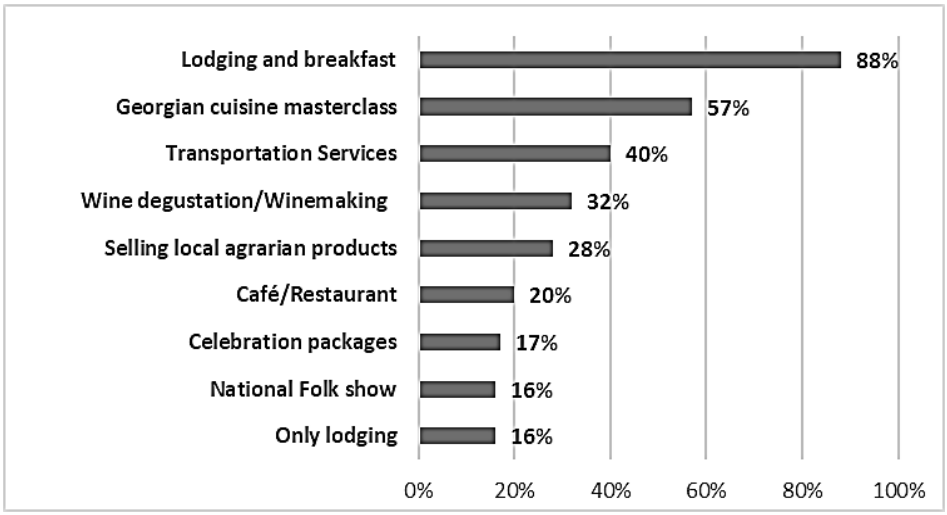
The geographical area of research was mountainous area of Adjara, including Keda, Khulo and Shuakhevi municipalities. Qualtrics online server was used for sending the questionnaire to the respondents. From the total population of 252 rural lodging establishments in the mountainous Adjara, random sample of 156 filled questionnaires were received. Sample covered about 62% of respondents, with 95% of confidence interval and 5% of the sampling error, the survey results are representative for the lodging establishments in the mountainous Adjara.

The profile of surveyed respondents. The majority of surveyed respondents are female (52%) and the age groups are almost equally distributed, with the least represented age groups of 16-24 (7%) and 60+ (11%). The mean for surveyed establishments functioning on the market is 4.9 years.

As the distribution of surveyed lodging establishments show the majority of accommodation sector consists of guesthouses (53%) and cottages (40%).

The owners state that average cost per room night is 58 GEL (Georgian Lari), while the average daily rate (ADR) is 152 GEL (*Stdev*=89). As it was expected the highest ADRs were noted in the subgroups of Hotels and Glampings with mean rate of 213 GEL (*Stdev*=75).

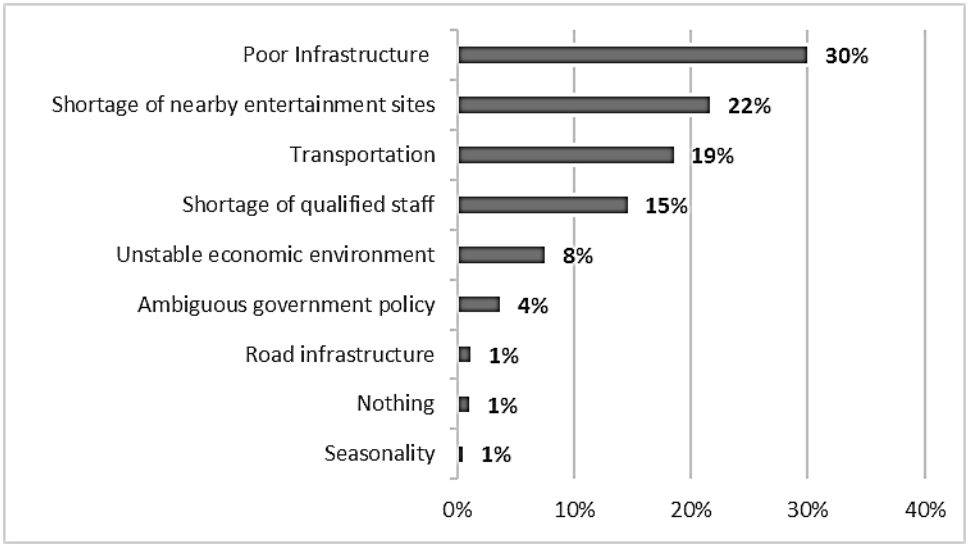
The research shows that only 19% of surveyed establishments are occupied throughout the year, the great majority (66%) notes that they are mostly functioning only during the summer season. Seasonality problem can be caused by natural, social or institutional factors, inertia or tradition. Judging by our research, the trend that can be observed in this regard is to develop such a strategy that will not be focused only on room rental and breakfast offer, and will include a variety of services in tourist packages. For example, fishing, tea picking and producing, engaging traditional activities, trekking in mountains and forests, etc. The majority of the owners try to expand their services beyond the renting a room only. Top supplements include: Breakfast, Georgian cuisine masterclasses, Transportation service, Wine degustation or winemaking, selling locally produced agrarian products, café-restaurant, wedding, birthday or other celebration packages and national folk show. However, we see that the percentage share of additional services is not so favorable. Adding and offering diverse services and activities could mitigate the seasonality problem for mountain tourism. which could be called one of the causes of the problem of seasonality (Fig. 1).



Source: author's calculations based on the research results

Fig. 1. **List of services offered to visitors on site**

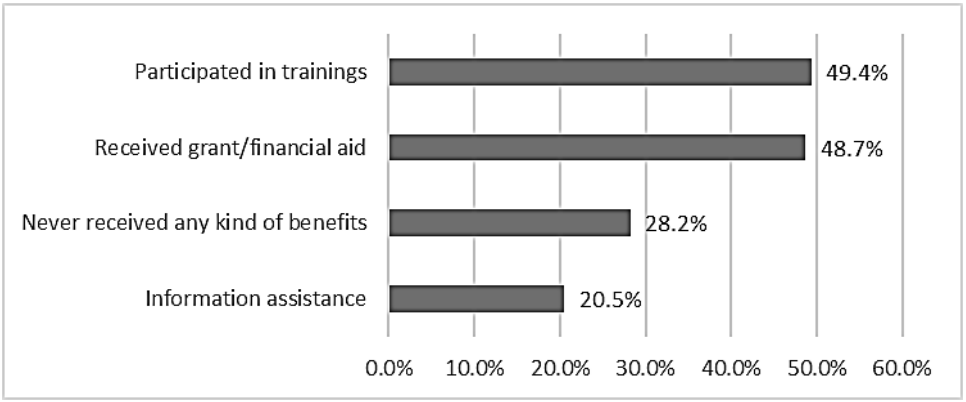
The positive trends are seen in one of the most important indicators of sustainable tourism development - rate of local community employment. 67% of the surveyed owners state that they have employed at least one person on the site, including 17% corresponding to 5-10 or more employed persons. Optimistic perceptions are evident in future plans too. According to the results, 87% of owners are planning to expand their existing business. It could be concluded that the local people do see future in the tourism development and they hope to get more benefits from the industry.



Source: author's calculations based on the research results

Fig. 2. **Owners perceptions on top barriers of the tourism development**

As the results show, almost the half of respondents have already benefited from several supporting services from the government and/or international organizations, including the financial benefits, trainings for staff, providing information assistance (Figure 3). After analysing the existing practices of the governmental and international programs in the country, we can conclude that Adjara region has seen a notable increase in interest and investment in mountain tourism development. Various financial aids and support mechanisms have been identified to facilitate sustainable development in this sector. One of the frequently mentioned, governmental program "Produce in Georgia" aims to develop and financially support the country's tourism and tourism-related services. The goal of the "Produce in Georgia - Business" direction is to develop entrepreneurship in Georgia, support entrepreneurs, promote the creation of new enterprises/hotels and the expansion or retooling of existing enterprises/hotels (Enterprise Georgia, 2022).



Source: author's calculations based on the research results

Fig. 3. **Type of benefits lodging establishments have received from Government/International organisations**

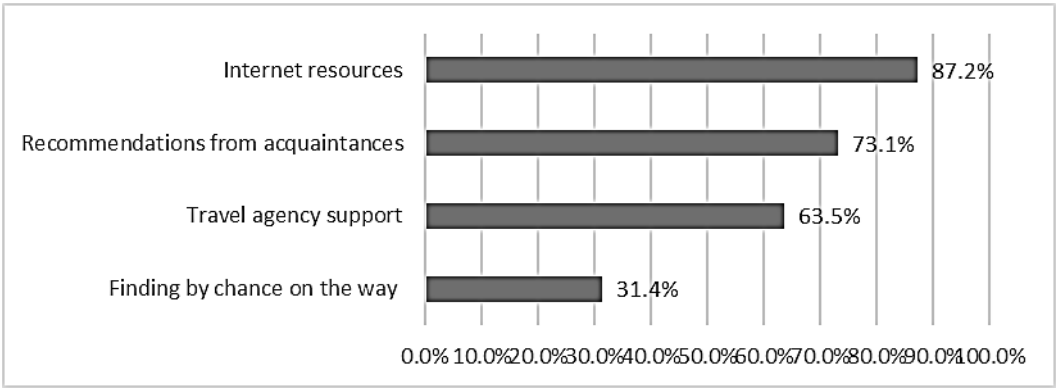
Specific non-governmental organizations (Keda Lagi; Khulo Lagi) improve the well-being of the population living in rural areas through the diversification of agriculture, the purpose of which is to involve the population of the mountainous region, to train them, to participate in various projects. Also, the generation and financing of new projects and ideas (such as family hotels, fast food establishments, greenhouses, animal husbandry etc.) which is made from the Rural Development Fund (Georgia today, 2021).

In Keda and Shuakhevi region, with the support of the European Union "ENPARD" program, the Keda leader project was implemented. Within the framework of the project, it became possible to grow Adjarian grapes and give tourists the opportunity to taste foreign and unique wine. A small bee farm was financed within the framework of the project of the local development group (LDG) of Keda, which serves to promote the diversification of economic activities and tourism, as well as to strengthen the role of women in the village of Wayo. The production of beekeeping products increased significantly after the purchase of a honey bottling machine and a honey vodka distilling machine (Delegation of the EU..., 2020).

Within the framework of the project "Tourism Development School" organized by the regional tourism board, Department of Tourism and Resorts of Adjara, in order to develop tourism and improve services in mountainous Adjara, the identification of the needs of accommodation, catering and other service providers in mountainous Adjara and the training of the existing personnel in various directions are actively carried out (Tourism Development School, 2017). According to the needs, the training modules were written according to the content, which were loaded according to the following topics:

- accommodation facility standards;
- specifics of the cleaning service;
- organization of food;
- online resources and social media;
- regulations related to tourism;
- specifics of working with foreign tourists.

Special interest was caused by the topic of online resources and social media, which was related to the study of modern technologies, implementation and operation through them in the Internet space. The results of our research show that a large share of accommodation facilities manage to position their business in the Internet space, make reservations and increase the awareness of their facility (Figure 4).



Source: author's calculations based on the research results

Fig. 4. **Information source for visitors while choosing the accommodation**

The respondents evaluated their perceptions towards the overall satisfaction level of tourism development in the surveyed area. The Table 2 shows the comparison within the different types of accommodation measured for 2 variables. Satisfaction level corresponded 5-point Likert scale statement, where 1= totally unsatisfied, 5= totally satisfied. As the results show mean number is stable between the glamping, cottage or hotel owners (*mean>4.00*), where the most neutral perceptions were demonstrated by the guesthouse owners (*mean=3.00*) who are operating on the market for more than 6 years. The indicated rates of the respondents' satisfaction levels may be due to the outstanding unique culture and traditions of mountainous Adjara, which in turn is highly popularized by the public festivals held by the local government and municipalities throughout the year, such as: rural tourism festival "Gandagana",

honey festival, Shuamtoba, Machkhloba, Selimoba and other. Holding each festival or event opens up new opportunities for the region: raising awareness and popularization, introducing a culture of recreation and entertainment, increasing economic income and more employment, the opportunity to see famous performers, developing infrastructure, attracting investors, creating a healthy competitive environment (Shanidze, 2012).

Table 2

Respondents' overall satisfaction level of tourism development in the surveyed geographical area

Lodging establishment type	Operating on market (years)		Satisfaction level	
	Mean	StdDev	Mean	StdDev
Glamping	3.22	1.79	4.14	0.81
Cottage	3.03	2.20	4.01	0.87
Guesthouse	6.26	2.54	3.01	1.04
Hotel	6.20	3.33	4.12	0.62

Source: author's calculations based on the research results

Another aspect of social sustainability to be considered is accessible tourism for people with special needs. People with disabilities still face numerous obstacles due to the lack of appropriate environmental and the technical conditions necessary for movement. The major barrier is the accessibility of services in mountainous Adjara, including accommodation, food, transportation, as well as participation in festivals and events in the region. The mentioned challenges are still only at the discussion and recommendation stage. Based on the principles of sustainable development, the mentioned issue requires a prompt response and concrete steps, both by the state to introduce relevant regulatory legislative acts and by the private sector in sharing social obligations and introducing accessible travel practices.

Another critical area of focus are environmental issues of sustainable tourism development. The Department of Environmental Protection and Natural Resources is constantly working in regard of the state of air and water, soil, waste management, geological monitoring, forest resource management, biodiversity, although there are still problematic issues:

- state of waste management, lack of monitoring of the state of fulfilment of the requirements of the environmental legislation in the centres of active pollution of water and atmospheric air;
- purification of agricultural waters in densely populated areas - study of the state of decontamination;
- ecological condition of the sanitary protection zones of the main building of the rural water supply system;
- monitoring of active environment polluting enterprises in connection with the arrival of the holiday season in the region;
- study of the situation of alternative energy use; absence of central water supply;
- unauthorized cutting of timber; Inactive work of the forest disease fighting service; faulty monitoring of landslide and eroded areas;
- damage to the soil through the destruction or movement of the upper fertile soil layer (construction of buildings, structures, car parks, roads, footpaths), degradation or complete destruction of vegetation as a result of compaction and soil tamping (the formation of new paths and roads);
- lack of knowledge popularization of environmental protection, the public's awareness of environmental protection;

- motorized transportation, including cars, buses releases pollutants such as carbon monoxide, nitrogen oxides, and particulate matter into the air.

Addressing these challenges requires a holistic approach, involving joint efforts from the government, local communities and private sector representatives. By prioritizing sustainable practices, investing in infrastructure, implementing effective monitoring mechanisms, and raising awareness, the region can move towards a more environmentally sustainable future.

Conclusions, proposals, recommendations

The findings from the various aspects of tourism development in the surveyed geographical area highlight several key areas that require attention and action from different stakeholders. The following priority actions need to be promoted to enhance the competitive advantages, social equitable and sustainable development.

1) Involving and providing travel service and tourism activities for people with disabilities, is a legal and ethical obligation of the tourism industry practitioners. Based on the principles of sustainable tourism, this is a problem that requires a quick response and specific measures, both by the government, the relevant regulatory legislative acts, and the involvement of private business players and the imposition of social obligations on them in the provision of services for the creation of appropriate environmental conditions for disabled people.

2) Based on the results of the overall satisfaction level of tourism development in the surveyed geographical area, owners require more support from the government, especially towards the developing or improving the roads, infrastructure and solving transportation problems to the villages of Mountainous Adjara. Government should contribute to the creation and promotion of new tourist products and entertainment sites.

3) Taking into consideration the unpredictable and seasonal nature of the tourism industry, tourism development should be integrated into broader economic strategies for mountain regions. Government should be focused on strengthening existing systems and diversifying local economies. On the other hand, property owners should diversify their services and offer more activities to visitors, that will contribute to the mitigation of seasonality problem.

4) Direct financial contributions and contributions to government revenues can contribute directly to the conservation of sensitive areas and habitat. Revenue from park-entrance fees and same types of sources can be allocated to pay for the protection of environmentally sensitive areas. Special fees for park operations can be collected from tourists or tour operators. Governments also can raise funds by user fees, income taxes, taxes on sales or rental of recreation equipment, and license fees for activities such as hunting and fishing to manage natural resources. Improved environmental management of tourism facilities, based on analysis of the environmental resources of the area, can increase the benefits to natural areas.

5) It is necessary to heighten awareness of the value of nature and lead to environmentally conscious behaviour and activities to preserve the environment. Therefore, it is important to induce people to participate in pro-environmental action by providing general information on environment to make people aware of a problem.

6) The Department of Environmental Protection and Natural Resources should manage monitoring system for state of waste, pollution of water and atmospheric air, landslide and eroded areas. Motorized transportation, including cars, buses should be replaced by ecofriendly transports.

7) Collaboration between non-governmental organizations, the private sector, and local stakeholders is essential to promote sustainable tourism development and enhance community participation in the tourism sector.

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Proceedings of the 2024 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" No 58
Jelgava, LBTU ESAF, 16-17 May 2024, pp. 142-158
DOI: 10.22616/ESRD.2024.58.015

ENVIRONMENTAL AND CLIMATE CHANGE GOVERNANCE INTEGRATION INTO MUNICIPAL DEVELOPMENT PROCESS: AGGREGATION APPROACH FOR GOVERNANCE PROCESS STAGES

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Abstract. The environmental governance sector is nowadays the mandatory, but integrative applicable subject of municipal development governance content and process, including planning documents and their practices, but, certainly, to be done in close interconnection with the other main dimensions of sustainable development – economic and social dimensions, as well as importantly, the governance dimension. Valmiera city as one of the leading pro-environmental municipalities in Latvia was selected as a pilot territory within the Environmental and Sustainable Development Governance project (SUSTINNO) of the National Research Grant Programme, in order to study the environmental governance strength and challenges into their both complementary general application formats: governance sector and integration approaches, and, eventually designing and implementing some innovative but pragmatically based mixed/hybrid applications.

Environmental governance sector (branch) as multi-disciplinary sector itself, including inner cross-disciplinarity's, has been continuously and substantially developing for studying and governing of socio-ecological system into their interactive diversity. Valmiera city municipality has made clear and recognizable progress in complex implementation of the environmental governance in its territory by adopting and step-wise implementing environmental planning elements and management practices. Studies were realized in cooperation with municipality applying research-and-development framework approach and using case study research integrative methodology, complementary including document studies, household questionnaires and all main stakeholders deep semi-structured interviews, altogether. There have been designed and partially tested set of action policy proposals/instruments for systemic environmental governance process and its stages development for Valmiera city, what also could be eventually recommended for municipal environmental governance stages in general in Latvia.

Key words: governance process, 5P process model, auditing and monitoring, governance instruments and communication.

JEL code: O18, O21, Q56

Introduction and municipal environmental governance overview

Environmental governance research is closely related to the practice of environmental governance (hereinafter referred to as EG), namely, the implementation of research into the planning and management practices and vice versa (Armitage, 2008; Ernsteins, 2016). In the current studies, the known research-and-development (R&D) framework approach was utilized, where alongside the research phase and acquisition of academic results and insights, subsequently, there are to be taking place development phase, where, essentially also in partnerships with main stakeholders, are generated directly applicable results in practice – research application reports with designing of action policy recommendations (Armitage, 2008; Loe, 2009).

The statutory municipal development governance process, as well as environmental or any other sectorial/thematical governance process could be described and analysed also through the prism of governance process cycle and its stages. Traditionally, Environmental Management Systems (EMS), being based on ISO 14000 standard and its Plan-Do-Check-Act business cycle model, being used also by any other ISO series systems, are recognizing and structuring their performances around the six-step process

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as key elements of this standard: step 1: Environmental Policy etc. – Planning – Implementation - Checking and Correction - Management Review - Continual Improvement step.

But for this paper and other related R&D studies, particularly done in cooperation projects with municipalities in Latvia, there are used slightly different in 5 stages structured model of the **governance process cycle,** formulated as **5P stages model** (Ernsteins, 2017), and described below, but, particularly, emphasizing different first and critical process step as **Problem or Situation Analysis** (P1 step). In the planning practice for any policies and territorial planning documents, there could be recognized an analogy of this 5P model realization, even done to various extent. Otherwise, 5P's stages governance process model includes all main consecutive cycle steps for any governance process - stages are to be seen as parts of mutually inter-connected circular process, taking into account processual basic functions as audit-planning-management-control, and aiming to engage target/interest groups, but especially into every governance process stage (Ernsteins, 2017) (Figure 1):

P1 stage - **Problem Analysis:** situational status quo and trend analysis stage, using different data sources, and analysis of internal development potential, when identifying and clarifying environmental and developmental situations in the municipality/area, e.g. governance process audit, including existent qualities of the environmental governance content, stakeholders/segments and governance instruments, and then also engaging target groups for their evaluations, also usually when finishing this pre-planning stage, the SWOT analysis are carried out analyzing strengths-weaknesses-opportunities-threads, designing problem situation solving scenarios, overall monitoring frame and development perspectives;

P2 stage - **Policy Design and Formulation**: as strategic planning stage, where policy decisions are to be taken and the solutions of problem situations strategically planned and so the policy goal/s and main action directions are formulated, to be supported by clarified values and intentions, setting necessary principles and priorities;

P3 stage - **Planning:** as tactical planning stage (actionable short and medium-term planning), defining action directions into the tasks and subtasks etc.; preconditions and diverse resource provisions, set of policy instruments and actual monitoring frame (indicators/pointers);

P4 stage - **Practice Management:** as implementation stage of the plan/programme done, including distribution of tasks and responsibilities, communication and practical execution and management actions;

P5 stage - **Process Monitoring and Results Reviewing**: traditionally in 1-2 years, the systemic monitoring of the activities planned and managed in statutory municipal planning documents takes place, having review and decision making (eventually together with stakeholders, publicly) for the identified necessary adjustments in P3-P4 stages, or even for the whole governance cycle established, also preparing information for the subsequent P1 stage (Ernsteins, 2017).

However, the issue always remains about this governance process main functions of the audit-planning-management-control realization quality in the practice, starting with decisions made and methodological etc. approaches chosen by the leadership and specialists in particular municipalities - how to design and plan preparation process for P1 situation audit stage, next P2 and P3 planning stages, and, finally, for P4 and P5 implementation process stages. From national level having only spinal type guidelines for the structure and general content of the statutory municipal planning documents, these decisions and approaches in the particular municipalities in Latvia have been quite diverse for last decades and depending also from personal qualifications and motivation (Ozolins, 2023; Ernsteins, 2016). Traditionally it depends also from previous experiences, municipal territories and inhabitation size, location (central vs. peripheral, with or without regional development centres etc.) and type, particularly, rural vs. urban municipalities still often having various financial etc. resources capacities, especially, staffing capacities in general and,

importantly, in the case of environmental and climate change governance being understaffed. Besides the specialized staff of traditional statutory (according to the Law on Municipalities) environmental sectors as water, waste and heating (communal sectors), there was quite limited number of municipalities (mostly main cities) having any other type/specialism of environmental specialists or environmental managers (Ozolins, 2023). After the last administrative territorial reform in 2021 reducing number of municipalities in Latvia from 119 to 43 in order to increase their inhabitation size (to have at least around 20 000 inhabitants) and all necessary developmental capacities, the situation with environmental staffing has improved (Brizga, 2023). Also in the National Environmental Policy Plan 2014-2020 these municipal environmental governance shortages are recognized, as well as, still limited best practice exchange at the local municipal level.

Besides the main issue of this paper, the **environmental governance (sector) integration into municipal statutory development planning process cycle**, in parallel, there would be worthwhile at least qualitatively to review the similar exercise with actually similar and also content-wise overlapping, but even least developed, **climate change governance (sector) integration** issue too.

Comparatively new for municipalities in Latvia there is step-wise developing this climate change governance sector, previously dealt and developed within environmental governance sector planning and particularly in some urban municipalities, being there often combined with energy management sector, e.g. climate change and energy management subsector of Environmental Action Program, designed by Liepaja city coastal municipality (around 80 000 inhabitants) already in 2009. Also there should be mentioned, that there were not only such environmental sub-sectors elaborated and planned, but also voluntary initiated new municipal planning sector – actually, using different approaches and document structures, there were separate sectorial planning documents on climate change governance designed and approved by comparatively smaller local municipalities in Salacgriva (2011), Valka (2019) and Salaspils (2022). Also, more as dozen of local municipalities have signed EU Pact of Mayors (PM) and according to the joint matrix they have recently designed and approved Sustainable Energy and Climate Change Action Plans, instead of having just Sustainable Energy sector planning documents by PM during last 10 years. This gives another support for further establishment of the Climate Change and Energy (CCE) sector.

Particular change for municipal climate related issues governance was in 2023, when the new Law on Local Governments entered in force. This renewed law was, firstly, re-stating previously since 1991 known municipal autonomous functions in the nature/environmental fields (communal sectors as water, heating, and municipal waste, also sanitary cleanliness, green areas and natural capital and few more specific ones), however, there were not included any of other environmental activities what municipalities carry out anyway on a voluntary basis, related and chosen according their actual needs, e.g. protecting and improving air quality, remediating polluted sites, working with noise and other subsectors, monitoring and ensuring water quality in bathing areas, etc., and this list is ever growing – these subsectors are to be taken into account especially carefully, when planning and implementing environmental governance integration approach.

Secondly, the new law introduced also one new function to be at the full responsibility of municipalities, however quite vague formulated – to contribute to climate change mitigation and adaptation. Also in the municipal planning handbooks and recommendations issued by Environmental Protection Ministry is especially advised to consider the development of **voluntary sectorial planning document on climate change governance.** Finally, besides is to be mentioned, that newly elected national parliament have accepted proposal by just established majority Cabinet of Ministers to create brand new ministry – the

Ministry of Climate and Energy, combining together related departments from Environmental Protection Ministry and Economics Ministry, starting to work from 2023.

Continuing with all other environmental governance sectors/subsectors, there is to be mentioned the comprehensive list of all main environmental governance sectors being developed and accounted into regular or statutory municipal practice in Europe, as well as, good municipal sectorial practices, are compiled by the European Commission in the report "Best Environmental Management Practice for the Public Administration Sector" (Canfora P., 2015). There are described not only those known traditional communal sectors as water supply and wastewaters, waste, energy, then also green/rural areas and nature protection, but also a number of other environmental sectors to be taken regular care of – air quality, noise pollution, land use, mobility, and, separately both, climate change mitigation and, especially, adaptation, then green public procurement, environmental information/education for companies and for citizens. Actually, there could be mentioned more sectors or fields of municipal interest and/or municipal responsibilities, prescribed by different national level laws and bylaws.

Both, environmental and climate change governance sectors, obviously are seen as cross-sectors, also requiring **horizontal sectorial-thematic integration** process and not only with traditional and new non-traditional environmental subsectors, but, particularly, also with a wide range of socio-economic sectors of the any particular municipality/territory. In this context, there is obviously also straight similarities with another cross-sectorial governance application - integrated coastal (zone) management (ICZM) approach and understanding, being known already since 1970-ties (Karpouzoglou, 2016; Ernsteins, 2017), before introduction of marine spatial planning applications, and having many positive non-formal and formal experiences to be learned from at all governance levels, from municipal, to regional and national ICZM sectorial planning documents in various regions and countries across continents. This is also reminder of another ICZM mandatory feature, being important in the cases of environmental and climate change governance sectors – **vertical integration across governance levels.** All this and more was required also by EU already in 2000 in order to have National ICZM Strategies elaborated for all EU coastal countries by 2006, unfortunately still being not fully realized.

Research and development framework: case study research

The research-and-development (R&D) framework approach was used to study and then also to propose to the municipality related action policies guidelines for environmental governance process development for all the process cycle stages. The studies described took place in two stages.

First stage was realized before Administrative Territorial Reform (ATR) taken place in Latvia in 2021, what has been crucially changing municipalities' landscape due to reducing number of municipalities from 119 to 43 in order to increase the size of municipality and a number of inhabitants (above 20 000) around the chosen regional development centres for enhancing of the municipal development potential and various possibilities. This research stage was implemented within the framework of the National Research Program "Innovation and Sustainable Development: Environmental diversity and sustainable governance (SUSTINNO, 2014-2018) as multi-step research program, covering various environmental governance related topics, sectors and involving several case studies research, including in municipalities.

Given the multisectoral and complex nature of environmental governance and its connection to all aspects of territorial development planning, the methodology of the study was **integrative case study research** (CSR), which involves using several complementary methods to obtain processed information. Studies described in the paper were organized in urban Valmiera city municipality (about 25 000 inhabitants) as one of the most pro-environmental municipalities in Latvia, having some partnering

activities with University of Latvia already previously. Then this research was oriented towards academic and municipal collaboration also with potential designing, adapting and legally implementing jointly elaborated policy and planning initiatives. Already after initial research done, Valmiera municipality have been approving jointly elaborated Environmental Declaration (2015) as complementary policy document to their just approved main statutory municipal middle-term development planning document – Valmiera city municipal Development Program (2014-2020), including also special chapter on Environmental Awareness Development, based on structured application of action-oriented environmental communication model (Ernsteins, 2017) with all four communication instruments planned – environmental information and education/training, participation and pro-environmental behaviour. In the Valmiera environmental governance process cycle study, the following methods were used: document studies, including analysis of municipal and higher-level planning documents, analysis of state and local regulatory acts; interviews with main governance stakeholder's representatives; observation studies; focus group interviews and round table discussions; also household survey with results complementary to results of the stakeholders' interviews, but not described in this paper due to size limitations.

Stakeholder interviews (altogether 42 in-depth, semi-structured) with especially chosen key representants of the main stakeholder groups (Ernsteins, 2016): national/regional level and municipal administration (including municipal utility companies), production companies, intermediary groups (mediators - media, educators, non-governmental organizations (NGOs), experts/science), and then separately also short selection of households. The questions were related to the assessment of the environmental situation and governance in Valmiera. A matrix of semi-structured interviews was developed consisting of five interview modules, starting with the introduction of the interview, where also the identity of the interviewee as belonging to a certain or several governance stakeholder group/s, and, also to the relations to and between all main stakeholder groups and their environmental activities, was discussed and recorded. The next module of questions was about environmental communication (action-oriented model) - the internal and external communication practice in municipality and related companies/organizations was recorded. The third module included all environmental sectors – where the respondent is asked to evaluate what has been done in the sectors known in municipality and his/her organization or company. The fourth module helped to identify specific pro-environmental actions both in the institution/company and in the territory of the municipality. The last module - about governance instruments and their use.

Few focus group interviews were realized, based on research results and including development proposals, as well as, two r**ound table discussions and seminars** with municipal leading politicians and department directors and senior executives.

Document studies - studies of the national and regional documents for top-down requirements, municipal legal/regulations and planning etc., management documentation of municipal administration divisions and communal companies etc., and, also documents of governance segments outside municipal administration as far it was possible. Various municipal document studies were complemented by the local areas **observation studies** – inner and outer pro-environmental behaviour practise activities and cases, while visiting mentioned governance segments/organizations, the all main stakeholder's organizations in situ, for interviews and besides them.

Second stage of the studies was realized also in Valmiera municipality, but after the Administrative Territorial Reform of 2021 - Valmiera city merged with five neighbouring rural municipalities and two smaller towns becoming then Valmiera county municipality. As a result, the area of the municipal territory increased from 19.35 km^2 to 2 946 km^2, including very sizeable nature, forested territories and arable lands etc., and, in terms of population change – from Valmiera city population around

25 000 inhabitants to Valmiera county with around 51 000 inhabitants after the reform. Accordingly, not only the capacities of the municipality increased, what was particularly important for environmental governance further developments and our studies, but also the range of problems to be solved, including those related to environmental governance.

During this studies stage, besides traditional and above described **document studies**, but particularly, of county documentation and data basis, and comparative **observation studies**, there were performed also **stakeholder interviews** (altogether 8 in-depth semi-structured and several express interviews) with relatedly to the first studies stage chosen key representants of stakeholder groups, but also not only on environmental governance process progress after ATR of 2021 as also on comparatively newly growing energy and climate change (EEC) sector developments, both integrative and sectoral.

Results of the Valmiera municipality case study research

1. Results of the all main stakeholder's interviews: summary

By the Law on Municipalities, there are delegated a wide range of environmental governance related autonomous functions to the local management level – this is municipal responsibility with full accountancy, but to fulfil these functions in all sectors prescribed, there are also important, actually essential, eventual collaboration development with all main other governance stakeholder groups (segments) and in both integration complementary directions (Ernsteins, 2017): upstream with regional and national governance levels up to international/EU level, and, downstream with local corporate segment, inhabitants/household segments, also particularly, with more and more emergent mediator stakeholders segment as NGO's, media, educators (formal/non-formal) and knowledge/science segments.

There is the municipal political will and administration interest to further develop the existent favourable environmental situation in the city (as valued by stakeholders outside municipal administration and companies), and its political etc. manifestations (e.g. the Green City Declaration, various Environmental Action Days etc.), even partly this could be perceived as campaign-like activities, still the scepticists are a minority. Even in general valuing environmental management positive, several of the respondents pay attention on particular unsystematic and not always systemic performance of environmental management activities in practice (besides basics of communal sectors management), also mentioning as these are eventual consequences of the lack of the responsible environmental specialist position and/or the proper environmental management organisational structure in the municipal administration to be responsible for the full scale integration of environmental issues into municipal everyday management. Each department acts in the frame of own duties, but there is not yet sufficient mutual coherence. However, there is also the opinion, especially by municipal administrators, that the current arrangements work well enough and do not need to be changed. The municipality has a number of internal and external, general public oriented, environmentally friendly actions, which are positively valued. Other positive municipal environmental performance aspects are related to environmental communication activities and instruments, also recognizing the role of existing municipal work position of the environmental communication specialist. But there are also deficiencies mentioned e.g. the transfer of the information to those target groups that are not so active. In general the municipality is evaluated as sustainable development focused. But necessity to create the municipal organizational structure-coordination for environmental management have been emphasized by various stakeholders, including from municipal administration.

Practically all respondents emphasize the good quality of Valmiera's environment; compared to other cities in the country, especially the big ones, it is even rated as excellent. This assessment is made up of

several components, noting serious improvements over the last 10-12 years: reconstruction of the wastewater treatment of the city and companies, as then also the water quality in Gauja river, splitting Valmiera city in two parts, normalized and is rated as good, however, there is some remaining pollution mainly brought from the upper stream connections; various activities of companies in environmental protection. The episodic air quality problem is in the vicinity of the dairy plant. Noise is practically limited problem as elevated levels are noted only around major transportation highways, but not significantly disruptive. The only concern is the activity of the households not connected to centralized sewerage, of few last and limited private housing areas. The cleanliness of the urban environment, as well as the state of parks and squares, are highly valued. The city has very good drinking water, used also as potable springs. Most of the respondents know what is happening not only in their immediate surroundings, but in the whole city, are informed about each other and have an opinion not only about the functioning of the municipal administration, but also about the functioning of most other target groups. National environmental institutions at the regional level in Valmiera city, are accused by some respondents as having too formal approach, but the attitude towards them is not strongly critical. All stakeholders note the lack of active environmental NGOs, at the same time stating that they actually have not much to do in the city.

2. Environmental governance process: summary for 5P process cycle stages

In the research phase complementary methods of case study research methodology had given very substantial information and data base and for this paper we will be using that research integrative summary results and also complementary research-and-development approach mode, as well as, following step-by-step structural analysis and action policies plannings based on environmental governance process cycle **5P stages model** (Ernsteins, 2016).

Problem analysis (P1)

In this stage, it is crucial to understand what data relevant to environmental management is available to the administration or potentially accessible but currently unused. Significant sources in this regard include the Environmental Overview of the Valmiera 2017 Spatial Plan, the review sections of the Development Strategy and Program, as well as document and statistical source studies.

The Environmental Overview was developed within the Strategic Environmental Assessment (SEA) procedure of the spatial plan, adhering to the requirements of regulatory acts (Cabinet Regulation No. 157, 2004). It provides fundamental information covering almost all environmental sectors regarding environmental quality and potential impacts of the specific planning document on the environment. However, environmental burdens and risks are not extensively characterized. Despite meeting regulatory requirements, the Environmental Overview lacks integration with geospatial information and does not reflect environmental management aspects.

The Sustainable Development Strategy and Development Program did not have a specific section on territorial analysis, but it was developed separately for both documents. It contained highly detailed and well-illustrated information about the city of Valmiera, but environmental burdens were insufficiently described, and there was a significant lack of information about environmental management organization within the municipality. Furthermore, community target groups were not addressed, which is not the task of territorial description. Most of the sources identified in document analysis were used, but data from Latvian environmental, geological, and meteorological databases were only partially utilized.

CCE sector - P1. Problem analysis in the CCE sector requires nowadays much wider and system-based approach and, especially, also more risk assessments and additional financial planning and management.

The main municipality's autonomous function is the obligation for the municipality to organize heating services for residents regardless of the location and type of residential properties. This is task traditionally for municipally owned or co-owned heating and other communal infrastructure companies. Additionally, within the municipality's administration, there are buildings and other energy-consuming infrastructure and facilities to implement other autonomous functions. Meanwhile, the new Municipalities Law defines the work towards climate change mitigation and adaptation as autonomous function of the municipalities. Thus, the challenges faced by Valmiera municipality, like any municipality in Latvia, are associated with improving energy efficiency in municipally owned buildings and in centrally heated residential buildings. Especially, since the energy crisis triggered by the various regional conflicts, ensuring energy security has also become a challenge, strengthening municipal and Latvian energy independence, as well as optimizing energy consumption. Achieving climate neutrality requires reducing greenhouse gas emissions and promoting CO2 sequestration in various sectors. To adapt to climate change, the municipality has to identify climate change risks and expected impacts. Increasing flood risk possibility and the expected rise in various extreme weather conditions are significant concerns and is to be accounted.

Since January 2017, the municipal council of the municipality of Valmiera has approved the municipality's energy policy, determining the municipality's commitment to support the energy management system and improve its efficiency. The three priorities of the certified energy management system: **thermal energy consumption of municipal institutions, electricity consumption and street lighting.** The total length of Valmiera lighting networks is 122.27 km. 81.82 km of them are currently regulated by the automatic street lighting control system Lucidus Smart. The system has 3,649 light points, including 1,463 or 43.65% LED lights.

Since September 2012, the residents of Valmiera apartment buildings have the opportunity to receive co-financing from the Valmiera city municipality for the management of their buildings, for example, for energy audits, simplified renovation of buildings, as well as yard improvement. There are 82 fully renovated apartment buildings out of 167 in Valmiera, which is 49% of the total number of apartment buildings. The largest operator of apartment buildings in Valmiera, SIA "Valmieras Namsaimnieks", which also has built the first municipal apartment buildings in Latvia in 2018, as well as educates residents of Valmiera about energy-efficient and building and health-friendly operation of buildings. In Valmiera, in a communal house of different social groups at Udens Street 2C, during its reconstruction, solar collectors were installed on the roof of the building for the preparation of hot water. Solar collectors for hot water preparation have also been installed on several other buildings in Valmiera, where consumers are using the building intensively even in the sunny summer season.

In 2019, Valmiera City Municipal Council approved the thematic planning "Valmiera City Transport Infrastructure Concept" and its environmental report. As the most appropriate transport hierarchy for the city, the document mainly proposes walking and cycling as the two basic modes of transportation in the city. In order to reduce the number of cars on the streets and encourage the use of public transport, a system of discounts of up to 100% has been established for different groups of the population for public transport.

Policy Design and Formulation (P2)

Within the framework of the current study and in collaboration with municipal specialists, the Valmiera City Environmental Declaration was developed and adopted by the municipal council on January 29, 2015. This document serves as a testament to the municipality's political will regarding actions that affect or may affect all environmental sectors within the city. Such a declaration represents a typical "umbrella"

instrument in the "P2 – Policy Definition" stage of the planning cycle, affirming the municipality's commitment to maintain a specific course not only in individual environmental areas but also across all stages of governance and in all areas. By the fall of 2017, the Declaration had been signed by 366 residents and representatives of significant enterprises. The introduction of the declaration outlines its intentions and mission statement. In the subsequent territorial development and/or environmental management planning process, all analysis of the situation and policy documents should directly or indirectly contain all elements of this structure. The Environmental Declaration also became the "visiting card" of the city council; for example, it was displayed in the foyer of the city council. The declaration was prepared as a policy proposal formulated as a result of research and was adopted by the municipality with minor changes compared to the proposed version.

CCE sector - P2. Valmiera, as the administrative centre of the county, is a sustainable city that, while promoting the industrial development of the area, cares for a clean and organized urban environment, the preservation of natural values, and the mitigation of impacts on the surrounding environment. To strive for climate neutrality by 2050 and thus contribute to the achievement of the UN Sustainable Development Goals, particularly Goal 7 "Affordable and Clean Energy" and Goal 13 "Climate Action", Valmiera county municipality decided to join the international EU Covenant of Mayors in 2022, with elaboration and approvement of the **sectorial CCE planning document** in 2023 – Valmiera Sustainable Energy and Climate Action Plan until 2030. Tasks have been set to achieve the objectives of Valmiera's sustainable energy and climate policy in all areas affected within the municipality's competence. At the same time, utilizing climate communication instruments, Valmiera municipality as an implementer of the European Green Deal at the local level, promotes the participation and collaboration of all stakeholders affected in the implementation of energy and climate policy. Valmiera municipality has also defined its energy policy, which is part of the energy management system. It establishes principles for practically maintaining and analysing the municipality's work with energy resources and Valmiera municipality decided on the ten principles.

Planning (P3)

In the Valmiera City Development Program for 2015-2020, there were noticeable consistencies regarding the environmental management elements incorporated therein relative to those mentioned in the Strategy. In the strategic objective "Personal Growth," the action direction (S-4) "Environmental Awareness" outlined tasks for promoting environmental awareness (Table 1).

The Valmiera City Development Program Monitoring Report included the following indicators related to the environment: organized environmental events (target: stable); percentage of households connected to centralized water supply and sewage (target: increasing); streets with pavement (target: increasing); multi-apartment residential buildings where energy efficiency measures have been implemented (target: increasing); natural (green) areas (target: stable).

Thus, the environmental component in the long-term priority "Educated, active, creative society oriented towards a healthy and environmentally friendly lifestyle" resulted in one of the medium-term priorities: "Development of sports and active recreation offerings, orientation towards a healthy and environmentally friendly lifestyle." Meanwhile, the long-term priority "Accessibility of work, housing, healthcare, and social services in a safe city" corresponded to the medium-term priority "Formation of functional, aesthetic urban environments with developed and environmentally friendly infrastructure and efficient resource management"; conditionally, this can also include the development of governance directed towards residents and collaboration. However, it should be noted that environmental issues were not addressed

anywhere in the priority of economic development, which was somewhat contradictory to the principle of green and simultaneously industrial areas envisioned in the environmental declaration – achieving such a result is not possible without directly linking environmental issues with the economy. The presence of environmental management in the tasks of medium-term priorities was significantly important. The establishment of a multifunctional environmental and science centre and infrastructure development envisaged the development of environmental education and information at a new level and beyond traditional educational institutions. Three out of nine points in the development of urban environments were dedicated to environmental and its management issues. The revitalization of territories and the section on engineering infrastructure and waste management were fully related to environmental management, and moreover, the development of degraded and undeveloped territories are environmental issues directly linked to economic development. The promotion of energy-efficient transportation use, as well as the development of cycling infrastructure, were two of the four main directions for the development of the city's transportation systems.

Table 1

Environmental awareness promotion thematic planning in the Valmiera development program

Action Planning: Environmental Awareness via Environmental Communication tools
S-4-1 Societal information, education, and awareness building on environmental issues and environmentally friendly lifestyles (total of 4 actions)
S-4-2 Societal participation in environmental governance and promotion of environmentally friendly behavior (total of 5 actions)
S-4-3 Establishment of a multifunctional environmental and science centre and infrastructure development (total of 4 actions)

The analysis of planning documents created the impression that environmental and its management issues constitute a significant component of city development. However, there was no apparent systemic approach to their inclusion. It appeared that the development program compiled suggestions from sectoral specialists. The specialists involved in the specific planning situation had a high environmental awareness, but there was a lack of balance, unity of concept, and integration. In fact, no attention was paid to environmental management as such and the development of environmental communication. In the municipal planning documents there is mentioned necessity and plan to develop an Environmental Policy Plan.

In Valmiera, a large number of binding regulations issued by the municipal council were in force, which, in accordance with the municipality's competence and functions, regulated various aspects of city life. Several of them directly or indirectly related to specific aspects of environmental management: No. 119 on waste management; No. 182 on tree felling outside forests; No. 133 on the procedure for taxing buildings that degrade the environment, are dilapidated, or endanger human safety; No. 277 on the provision and use of public water management services. Additionally, several other binding regulations included individual aspects related to environmental management.

CCE sector - P3. The implementation of climate and energy management by the municipality of Valmiera is carried out both via integration approach and recently also as sector approach as since 2022 there is established, even voluntary planning document - the Valmiera Sustainable Energy and Climate Action Plan until 2030, Plan until 2030, Climate change policy (the Green Deal) is integrally defined by the municipal statutory Development Program as one of the municipality's three horizontal development priorities. Municipal horizontal priorities serve as guidelines for planning and implementing all medium-

term measures and investment projects. Thus, all planned investments must be assessed in response to the question of what contribution the investment project will make to the Green Deal. The Valmiera Sustainable Energy and Climate Action Plan includes separate analyses of electricity and heat production, defines a climate and energy management model, and analyses the following sectors affected by energy and climate policy in Valmiera municipality: municipal buildings and facilities; public lighting; residential sector; water supply; domestic sewage; stormwater management; blue-green infrastructure in urban planning; waste management; transportation and mobility; business and tourism sector; agriculture and forestry; management of developed peat bogs; health; civil defence and emergency situations; climate communication. Energy poverty is separately analysed, and the impacts of climate change in the region are also analysed separately: extreme heat; extreme cold; extreme precipitation; floods; sea-level rise; drought; storms; landslides; forest fires.

Practice Management (P4)

In the framework of governance implementation, there was a general presence of environmentally friendly actions in the municipality's overall action plan. The implementation of policy measures was evidenced, for example, in January 2017 with the approval of the city's municipal energy policy. On March 29, 2017, the municipality received the LVS EN ISO 50001:2018 energy management certificate, confirming the effective energy management system covering 63 municipal buildings and public street lighting in Valmiera. The municipality engaged in environmental information, environmental education, public participation, and promotion of environmentally friendly practices.

The short-term action plan for development, in accordance with regulatory requirements, was designed as a dynamic component of medium-term spatial planning. Aligned with the 4 strategic objectives, the action plan was divided into 4 parts. The strategic objective "Safety of residents, both socially and physically," contained 3 environmentally friendly action directions under "Governance," with the most significant being the implementation of Environmental Policy (EP) by developing the EP strategy by 2020. Several actions were indirectly related to environmentally friendly practices as they involved resource conservation.

The strategic objective "An aesthetically pleasing, functional, and nature-inclusive urban environment" contained environmentally friendly elements in almost all of its points. The strategic objective "Business development" included at least 3 environmentally friendly actions directly related to the economic and environmental interrelationships. Similarly, several positions indirectly addressed environmentally friendly practices. The strategic objective "Personal growth" included various environmentally friendly elements indirectly.

Valmiera City Council did not have **institutional environmental management instruments**; considering the scale of the territory, the creation of such instruments may not have been purposeful. The position of Environmental Communication Specialist served as an administrative governance instrument in Valmiera, highly valued by the public. Other environmental management issues were divided among specialists in different areas, indicating that environmental management issues within these areas were generally addressed successfully (as evidenced by public reaction). However, some issues remained unresolved, and the existing scheme was evaluated as insufficient to further support the growth and development of environmental management. As a solution, the creation of a position responsible for environmental information circulation (including preparing information for the Environmental Communication Specialist) and coordinating environmental management activities in the city was consistently highlighted in interviews.

CCE sector - P4. The municipality implements CCE sector management applying both approaches – sector and integrative. Considering climate change policy as a horizontal priority for municipal development, the promotion of energy efficiency is particularly integrated and emphasized in the municipality's statutory Development Program, the long-term development priority "Attractive Living Environment and Space" and its medium-term development priority "Accessible Housing", as well as in each of its action directions: AD1 "Accessibility and Mobility"; AD2 "Engineering Infrastructure"; and AD3 "Residential Stock". Municipal Sustainable Energy and Climate Action Plan defines sectorial approach to the municipal energy and climate management. The municipality implements a certified energy management system ISO 50 000 covering energy efficiency of municipal buildings, electricity consumption of municipal buildings, and public lighting. The Municipal Real Estate Management Department, in collaboration with municipal administrations of local parishes, is responsible for the management and administration of municipal real estate owned or used by the municipality or leased to it. Within the Real Estate Management Department works the specially appointed specialist - municipal energy manager, who is also responsible coordinator for the work of the Municipal Energy Management Supervising Working Group and energy management system. Municipality owned and established joint-stock companies play a significant role in the implementation of municipal energy management, providing centralized heat production, energy transmission, and housing management.

Process Monitoring and Results Reviewing (P5)

Valmiera city Sustainable Development Strategy did not contain monitoring and evaluation system or their elements as regulatory requirements did not demand them from strategic planning, instead, such a system was attached to the mide-term planning (7 years) Development Program. The Valmiera city Development Program 2015-2020 defined the urban development priorities and directions of action, achievable results and the procedure and system for monitoring the implementation results of the development program. This monitoring and evaluation system consisted of 9 strategic development indicators describing the general social and economic development - population, territorial development index, etc. and 23 mid-term indicators related to development priorities and achievable results within the framework of action directions. There were still no particular/sectorial environmental governance indicators in the list of strategic indicators, however, there was one indirect environmental governance indicator - "Satisfaction of the population with life in Valmiera", the numerical value of which is determined by means of a population survey. In the same time, for the monitoring of the medium-term priorities, there were mentioned the following, even just 3 basic indicators - Number of households connected to centralized water supply and sewerage (%); Number of apartment buildings with implemented energy efficiency measures; Natural (green) areas (ha).

Since 2015, regular biannual reports on both monitoring indicators have been prepared, but they had a more descriptive nature, without detailed analysis, especially in the context of overall territorial sustainable development. The biannual developmental planning Monitoring Report 2019 of the Valmiera city Development Program 2015-2020 indicates that the 2019 Valmiera Residents' Survey showed also results with relation to above mentioned strategic indicator - that 94.6% of residents are satisfied with life in the city, which is 5.6% more than in 2013 and 0.4% less than in the 2018 survey. It should also be noted here that while the characteristics of all indicators increased between 2013 and 2020, one of the key indicators, namely population size in the city, continued to decrease.

Later on Valmiera city municipality was defined as a national city within the Administrative Territorial Reform (ATR) and merged with five neighboring rural municipalities and two smaller towns in 2021.

Importantly, that the positive practical experience and strategic development documents of the neighboring rural and small towns municipalities were taken into account when developing now already Valmiera county statutory development planning documents starting from 2022. The number of indicators related to environmental governance in the Valmiera county Development Program 2022-2028 has increased significantly compared to the Valmiera city programming document - from 3 indicators as mentioned to 40 now. This is one of the highest number of environmental governance indicators in any municipal development planning documents in Latvia. Now the monitoring indicators system is actually covering not only all traditional-communal sectors (water, waste, heating), but also new environmental sectors being outside those statutory communal sectors prescribed by the Law on Municipalities. In the new Valmiera County Sustainable Development Strategy 2022 - 2038 is formulated one unified and summarizing goal: "Valmiera county - a territory of excellence in economic development, knowledge and social life with a dynamic and intelligently governed environment", which significantly emphasizes the meaning and importance of good environmental governance in the municipality, but at the same time, environmental governance indicators are still not included into this long-term strategic development planning document, however in several other Latvian municipalities strategic indicators could be found. Of course, long-term development indicators in development strategies may overlap with and complement the medium-term indicators in development programs but there is clearly a need for such a link. Development strategies should include at least one long-term management indicator as a variable related to changes in the medium-term performance indicators of the activities, which should correlate with changes in other key long-term development indicators such as population changes, indicators of economic activity in the municipality (GDP, number of active enterprises etc.). In the mandatory monitoring system of the territorial planning, there should be more detailed procedure provided for the preparation of monitoring reports, including requirements for data sources etc.

CCE sector - P5. The implementation of the statutory municipal mid-term Development Program was and is to be evaluated every three years. It includes monitoring indicators for the following development sectors: demographics; youth; education; social services and child protection; security; healthcare and promotion; culture; sports; business, economy, and tourism; mobility and infrastructure; housing; water management; heat management; drainage, stormwater, climate change adaptation; environment, nature conservation, public space; digital transformation (information society); governance. Among them, the following indicators for the implementation of energy policy and climate policy in the sector of "mobility and infrastructure" are included: Total length of roads with sidewalks and pedestrian paths; Total length of cycling infrastructure in the district; Number of electric charging stations in the district; Number of passengers transported on regional bus routes in Valmiera district; Number of passengers transported on the Riga-Valga passenger train route per year; Number of mobility points; Share of low and zero-emission vehicles in the city's public transportation fleet; Positive residents' assessment of public transportation accessibility; Positive residents' assessment of pedestrian infrastructure and public space; Positive residents' assessment of cycling infrastructure development; Positive residents' assessment of mobility infrastructure development (cycling, car-sharing, food delivery to home, information etc. new services); Positive residents' assessment of public transportation accessibility.

Discussion: Proposals for Environmental Governance Process in Valmiera

Although general development planning principles envisage the inclusion of all three (actually, four) dimensions of sustainability in the development planning process, currently, legislative acts do not require the assessment of environmental situations in municipal territories and the incorporation of guidelines into

territorial development planning documents; essentially, this is of a voluntary, goodwill nature. Accordingly, there are neither methodological guidelines on how to do this nor corresponding instruments available.

In Valmiera, the Environmental Governance Process Cycle is organized through the following elements - tools for each stage of the governance cycle (Figure 2) (Ernsteins et al., 2020):

- Environmental Problemanalysis (P1 – Environmental Governance Report - EGR);
- Environmental Declaration (P2 - Policy Formulation - already implemented);
- Environmental Management and Communication Program (P3 - Policy Planning);
- Environmental Management and Communication Action Management (P4 – Policy; Implementation - practice management within the respective planned programs);
- Environmental Management Monitoring System (P5 - Monitoring).

The Environmental Governance Report (EGR) is a comprehensive document of environmental management situation analysis and is based on a wide range of information sources, including necessary research. In an integrative approach, Environmental Management is one of the cross-sectoral binding elements and a direct source and reflection of sustainability. EGR envisages assessing environmental impacts not as a specific planning document aspect, but as a sum of planning documents and non-planning factors - the actions of society's target groups. EGR views the environment in terms of environmental condition, management, and public involvement, and as one of the fundamental elements of sustainable development. EGR concludes with joint and sectoral Strengths, Weaknesses, Opportunities, and Threats (hereinafter - SWOT) analysis matrices, which serve as guidelines for planning document development.

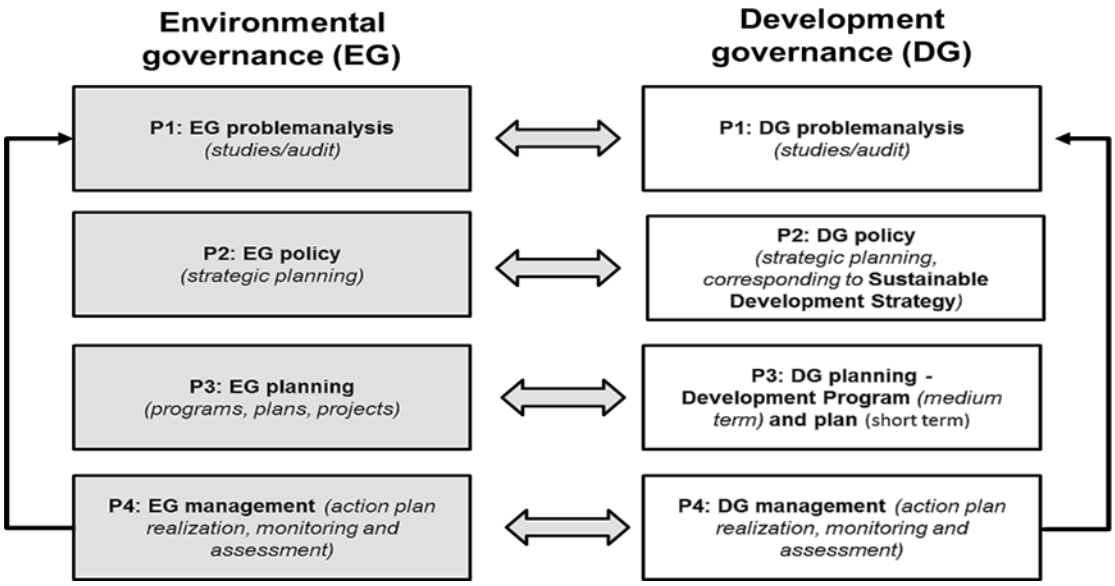

Figure 1. ***The necessity of procedural interaction (step-to-step integration) between the environmental governance process cycle and the municipality's overall development governance process cycle in the context of the reduced 4P process model (Ernsteins, 2016).***

Policy Formulation, Environmental Management and Communication programs derive from the information and guidelines provided by EGR. These programs respectively define the overall strategic vision, surface objectives, goals, priorities, and medium-term action directions for Environmental Management and Communication (as components of governance) and structurally do not differ from general development planning documents. A SWOT analysis of the environmental communication sector had been conducted in Valmiera, forming the basis for the forthcoming environmental communication program. Similarly, to the territorial development program, documents are concluded by action and investment plans, and these documents are discussed in a broad public participation process.

Sustainable Development and its Management monitoring in municipalities are comprehensive instruments for planning supervision and evaluation. Various monitoring and evaluation systems for different planning documents do not allow for a clear overview and comparisons, and are also very inconvenient and ineffective from a management perspective. The municipal monitoring system is being developed at the proposal level as a component of EGR; it is the focus of environmental and sustainability information circulation and a strategic public information and involvement tool. All included parameter systems are complementary, and each performs its function within the framework of sustainability monitoring: Sustainable Development Management indicators allow monitoring progress towards long-term goals, including forecasts and an early warning system for issues in achieving these goals; Performance indicators in the development program allow monitoring the development direction and progress towards medium-term goals; Execution indicators in the action plan allow monitoring the execution of this plan's points (Kauliņš, Ernsteins, Kudrenickis, 2018).

It is essential that the systems of indicators and performance metrics overlap significantly; specifically, performance metrics can form the basis of indicator systems, supplementing the list with missing parameters and ensuring methodological provision for all of them. A significant element here is the broader public engagement in civic monitoring, involving data collection, processing, and subsequent discussion (Aceves-Bueno, 2015: 493-506 pp.). This approach allows for the observation of a range of parameters in all three subsystems, some of which would be practically impossible to obtain information on otherwise. From the public's perspective, such a method increases trust in both the specific measurements and the overall governance and planning initiatives (Pruse, Datava, 2017). The municipal monitoring concept is thoroughly justified and elaborated upon.

Conclusions and recommendations

1) The Valmiera City Council had expressed a clear political will for the further development of environmental governance instruments by adopting the City's Environmental Declaration as a long-term guideline, a behavioral model for the city's further social, economic, and governance development, while balancing the importance of natural dimensions in sustainable development processes.
2) The use of environmental governance instruments in Valmiera's long-term and medium-term planning documents was justified by the general characterization of the territory and the adequately developed environmental awareness of responsible sectors. Planning documents contained a number of significant principles for the further use of environmental governance instruments; these principles were detailed in short-term planning documents down to the level of specialized action groups, clearly assessing potential benefits. However, several positions in the action plan did not specify specific objects (mostly related to infrastructure) to which these actions would apply; perhaps this was due to insufficient clarity on funding possibilities. Precise tasks for the further development of environmental governance and the respective instruments were defined in the planning and communication fields.
3) The further development of the use of planning instruments in environmental governance in Valmiera is closely related to institutional/administrative and communication instruments. Institutional development was a key factor in the development of other instruments, as it was necessary to establish a position for a coordinated stage in environmental governance planning and actions, as well as in environmental disciplinary information circulation.
4) To ensure the sustainable development of Valmiera City from an environmental governance perspective, it was necessary to include the Environmental Situation Description in the municipality's Sustainable Development Strategy and Development Programme, develop disciplinary sectoral policy

planning documents such as an environmental policy program or environmental communication program, but also integrate environmental governance directives into other sectoral planning documents.

5) Monitoring and evaluation of sustainable development in Valmiera City, while simultaneously creating a dataset for the needs of the next planning cycle, could take place through comprehensive municipal monitoring, developing it based on the results of the development program, where the system includes a block of sustainable development and its governance indicators, a block of planning document performance indicators, and a block of planning

6) document implementation indicators. The foundational document of the monitoring system is a manual containing detailed methodological guidelines for system usage.

7) The successful approval of the environmental governance cycle instruments in Valmiera could serve as a basis for improvements in regulatory acts regulating these issues at the national level.

Acknowledgements

Research & Development data were collected, elaborated and paper prepared within the framework of Latvian National research program project (SUSTINNO). The following contributors from University of Latvia shall be acknowledged that have taken part into the realization of sub-projects and contributed to the information for this manuscript: Krista Ošniece, Ugis Rusmanis, Jānis Brizga, as well as Valmiera municipal administration, stakeholders and secondary school students. The work presented has been supported by the University of Latvia.

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Proceedings of the 2024 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" No 58
Jelgava, LBTU ESAF, 16-17 May 2024, pp. 159-168
DOI: 10.22616/ESRD.2024.58.016

MARKETING RISKS AND THEIR MANAGEMENT FOR COMPANY'S SUSTAINABILITY

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Abstract. This article explores the types of marketing risks in the company's sustainable development, primarily influenced by marketing factors such as a decrease in consumer purchasing power, loss of market share, intensified competition, and the adoption of insufficiently justified marketing management decisions. One of the main challenges is related to defining the essence of marketing risks, systematizing them, and establishing a scientific approach, which is still not sufficiently researched. The causes of marketing risks encompass the current market situation, internal and external factors affecting the company, strengths and weaknesses in the company's operations, insufficient marketing information, and errors in marketing analysis and planning. Effective management of marketing risks should focus on optimizing the balance between expected market share, profit and risk, considering available qualitative and quantitative marketing research and experience. The marketing risk management system includes the definition and classification of potential marketing risks, the analysis and exploration of marketing risks, their qualitative and quantitative assessment, measures to reduce, prevent, or transfer marketing risks, and the evaluation of the results of implemented measures. The objective is to uncover the impact of marketing risks, and the processes of identifying analysing, assessing, and reducing these risks through effective management remains relevant and requires a review and the development of new approaches in the field of marketing risk management in today's difficult market conditions. As a result of the article's analysis and identification, risk management involves development of a set of management decisions to minimize or avoid the risks arising in the process of marketing activities.

Key words: marketing risks, risk management, sustainability.
JEL code: M31

Introduction

Today's busy market, competition, dynamics, and development of technologies create additional risks in marketing. The life cycle of a product is shortened, competition is growing rapidly, new brands are coming in the market but finding uniqueness becomes harder. Companies offer similar or identical products, assortment, thus the main instruments to compete are prices, location, service, and other added values. All this creates serious marketing risks and threatens sustainability and the existence of a long-term marketing strategy within the company. To ensure sustainability within the company, companies must be on a constant wave of innovation.

Also, in today's technology-driven landscape, risk management has evolved from being the responsibility of a single employee to becoming an indispensable tool for all business leaders. It provides a framework for systematical analysing of potential risks that could impact a business, either positively or negatively. By leveraging data and insights, organizations can develop comprehensive plans to mitigate and manage these risks, ensuring resilience and sustainability in the face of challenges.

The objective of this study is to uncover the impact of marketing risks, the processes of identifying, analysing, assessing, and reducing these risks through effective management. This objective remains relevant and requires a review and the development of new approaches in the field of marketing risk management in today's difficult market conditions. The article seeks to answer and puts forward two research questions.

1) What are the most common marketing risks faced by companies in today's business environment?

2) How do companies effectively manage marketing risks to enhance their sustainability?

The main tasks of the research are as follows:

1) to investigate the impact, processes of marketing risks, which involves risk identification, analysis, assessment and exclusion within the existing literature and the latest studies;
2) to develop a set of conclusions based on the performed analysis and identifications.

The increase of various economic risks, where marketing risks also play an important role, requires a significant improvement of the risk management methods, which also means preventing their occurrence. Sustainable marketing risk management aims to identify potential risks and develop potential solutions so that the company should reduce all the potential negative consequences in the cases where any of the risks occur. Ideally, risk management operates as a control function that prevents separate risks from reaching threatening levels while actively supporting the right risk-reward decisions.

Literature review

In the late 1960, Bauer introduced the concept of perceived risk to the marketing literature and proposed two definitions of risks as far as marketing management is concerned: 1) perceived consequences of an outcome in case of a wrong choice; and 2) subjective probability to make a mistake (Bauer, 1960). Risk in marketing science is generally based on two elements: adverse consequences and uncertainty (Dowling and Staelin, 1994). During this period, there is a lack of consensus across disciplines regarding the concept of perceived risks, and there is no widely accepted definition of uncertainty and its consequences. As for adverse consequences, there are several kinds of losses. Jacoby and Kaplan considered seven kinds of loss risks: financial, performance, physical, psychological, social, time or convenience risk and linked-decision risk (Jacoby, Kaplan, 1972).

Cox published a work on perceived risks among consumers which laid the foundations of subsequent research in consumer behaviour and brand management. While academic literature extensively explores risk, there remains a gap in mainstream marketing resources regarding operational risk management (Cox, 1967).

Kapferer and Laurent (1982), and in a more detailed way Kapferer (1998), talk and analyse risk as one of the variables potentially linked to involvement, interest and brand sensitivity. When Kapferer and Laurent (1982) suggest a framework regarding brand sensitivity, they briefly mention risk perception as the seriousness of negative consequences in case of failure. The possibility of a failure, made by the customer choosing the brand is, according to Kapferer, one of twelve variables explaining brand sensitivity. As such, risk perception is believed to increase brand sensitivity. However, risk conception is not considered as one of the ten variables estimating involvement by Zaichkowsky (1994).

Research on risk concept was an attempt to apply perceived risk to marketing management, by establishing that perceived risk is partially depending upon risk attitudes, among many other independent variables. The theory of customer decisions also appears in marketing research, where risk is regarded as one of the possible dimensions of customer decision making (Bettman, Luce, and Payne, 1998).

The author of the book "Marketing" understands risk in marketing as the threat of loss or lack of income as a result of the implementation of specific decisions or types of production and sales activities, based on marketing recommendations (Pavlenko, 2008). Macdonald (2007) offers a classification of risks in marketing, which is divided into three groups: market risks associated with the assessment of the potential size of the market, risks associated with the chosen marketing strategy and profit risks (Macdonald et al., 2007).

There are many issues in marketing, which in other fields of activity are solved by standard methods, and in marketing they require new theoretical and practical approaches (Morgan et al., 2009; Sharma et al., 2009; Corsaro, Snehota, 2010). Management of marketing risk and efficiency can also be processed as a multicriteria problem and the methodology of solving such problems in various related fields of economic research is properly presented by Ginevicius, Podvezko (2008) and Ginevicius, Zubrecovas (2009).

In the dynamic and ever-evolving realm of modern business, managing risks effectively have emerged as a critical determinant of long-term success and sustainability. With market landscapes continuously shifting and uncertainties proliferating, organizations must adopt a proactive stance to identify, evaluate, and mitigate potential risks in order to navigate the complexities and challenges they encounter. However, before delving into the intricacies of risk management, it is imperative for businesses to cultivate a comprehensive understanding of the prevailing market dynamics. This entails conducting a thorough assessment of the economic climate, industry trends, consumer behaviours, and competitive forces at play. Such an analysis not only unveils potential growth opportunities but also unveils lurking threats that could jeopardize operational stability and strategic objectives.

To delve deeper into the intricacies of the market landscape, organizations can leverage a plethora of research methodologies. This may include employing market surveys to gauge consumer preferences and sentiments, conducting thorough competitor analyses to discern strengths and weaknesses, and meticulously studying industry reports to identify emerging trends and potential disruptors. By harnessing these diverse sources of information, businesses can glean valuable insights into market nuances and fluctuations, enabling them to make informed decisions and adapt strategies accordingly. In essence, robust risk management begins with a comprehensive understanding of the market landscape. By staying attuned to evolving market dynamics and employing diligent research methodologies, organizations can not only anticipate potential risks but also capitalize on emerging opportunities, thereby fortifying their competitive position and fostering long-term sustainability (Faster Capital, 2024).

Risk management may not be the first thing that appears to mind when we think of marketing, but it is an inseparable part of an overall marketing strategy. The main reasons are as follows. Uncertainty is inevitable: in the world of marketing, uncertainty is a constant companion, with shifting markets, evolving consumer behaviours, technological advancements, and unforeseen competitive manoeuvres. Acknowledging these uncertainties allows companies to take proactive measures and brace themselves for impending changes. **Protect reputation:** safeguarding reputation is paramount in marketing, as even minor missteps can severely damage a brand's image. Risk management plays a crucial role in identifying potential public relations crises, allowing for swift action to prevent or mitigate any reputational harm. Efficient resource allocation is essential for success in marketing endeavours. By identifying and managing risks, companies can strategically allocate resources, ensuring that efforts are directed towards the most promising opportunities. **Regulatory compliance:** compliance with regulatory requirements is a non-negotiable aspect of marketing operations. Failure to adhere to relevant laws and guidelines can lead to significant penalties. Effective risk management ensures that companies remain compliant with all applicable regulations, safeguarding against potential legal repercussions (Pardo, 2024).

Since then, many things have changed: globalization itself, technology development, GenAI, economics, market trends, customer behaviour, Covid-19, war etc. All these reasons directly and indirectly affect the risks that marketing may face.

Already today and even more in the nearest future, GenAI can dramatically transform risk determination and management planning activities in multiple ways, enabling a new operating model and at the same time streamlining activities and costs. These include: 1) generating first drafts of documentation, scenario descriptions, and potential regulatory impact analyses; 2) streamlining decision making by using real-time comparisons and analysis of data against benchmarks and detecting anomalies at granular level in the business; 3) reducing manual errors by automating data clean-up for processes such as budgeting or advanced scenario simulations, with a potential for efficiency gains of up to 50%; 4) enabling a new reporting model that moves from individual what-if requests to a complete analysis leveraging the full set of company data; 5) shifting work from low value to high value activities. GenAI applications are already a reality, and many organizations are testing them with the goal of transforming the planning operating model. However, this new technology brings its own series of risk and concerns as well. Pressure to control the risks, while still reaping the considerable rewards is fuelling the integration of responsible AI, an approach to designing, developing, and deploying AI systems that is aligned with the company's purpose and values, while still delivering transformative business impact (Coppola et al., 2023).

For marketers, there are endless factors that can affect the success or failure of a marketing strategy beyond timing, economic variables, and the competitive landscape. Some of these factors include: talent, timing, technology, economy, competition, target audience, value proposition, marketing channels, analytics and measurements, budget and resource allocation, organizational alignment etc. Still, evaluating a technology or new medium for marketing can be a delicate balance between taking advantage of potential opportunities and mitigating risks associated with potential failure. Here are some steps that Karr Douglas (2023) suggests to be considered when evaluating adoption: 1) research and due diligence; 2) objective identification; 3) assessment of the competitive landscape; 4) pilot testing; 5) ROI calculation; 6) contingency plan development; 7) monitoring and adaption; 8) small start and scale up (Douglas, 2023).

It's important to have updated marketing strategies and techniques that put into perspective the risks that could occur nowadays. Here are some of these risks. 1. **Brand risk** – all businesses can lose the value of their brand. This may be a result of poor marketing strategy and activities or very active competition. 2. **Misidentification of target market** – it's easy to make mistake regarding target market by failing to perform sufficient market research, gathering information in the wrong way and from the wrong sources, and due to improper use of data. 3. **Changing trends** – nowadays marketing trends change on the daily basis. Marketing strategies, especially online, must be updated according to the latest trends and changes. 4. **Promotional risk** – the way products or services are promoted affects the success of marketing efforts. If techniques are miscalculated, the campaign may fail (Mc Ewen, 2020).

A risk management strategy is the proactive identification, evaluation, and timely response to potential risks projects may be affected. The aim of such a strategy is to help prevent any significant hindrance to its completion. Throughout all this process, regular reviews and updates about risk assessment are conducted to ensure that the strategy aligns with new information received (Sharma, 2023).

However, there are several tools and frameworks that can help to assess and mitigate marketing risks like SWOT and PESTEL analyses, 4P paradigm, scenario planning and risks matrix. By using these frameworks and tools, marketing professionals can better measure, manage, and avoid or minimize risks in their digital marketing strategies. Additionally, it's important to continually monitor and adjust strategies based on new insights, data, and changes in the market.

Within this particular research, the risk matrix and 4P paradigm will be reviewed in more detailed way.

A risk assessment matrix, also known as a **probability** and **severity** or **likelihood** and **impact** risk matrix, is a visual tool depicting potential risks affecting a business. The risk matrix is based on two intersecting factors: the likelihood that the risk event will occur and the potential impact the risk event will have. Essentially, it's a tool designed to help businesses visualize the probability versus the severity of potential risks. Depending on their likelihood and severity, risks are categorized as high, moderate, or low. Companies utilize these matrices as part of their risk management process to prioritize risks and develop appropriate mitigation strategies.

Risks come in many forms: strategic, operational, financial, and external. The risk assessment matrix works by presenting different risks as a chart, color-coded by severity: high risks in red, moderate risks in yellow, and low risks in green. Every risk matrix also has two axes: one measuring the likelihood of occurrence and one measuring the impact.

Despite the increasing magnitude and complexity of business risks, creating a marketing risk matrix should be an accessible process for all. Apart from specialized software or pre-made templates, a simple spreadsheet tool such as Google Sheets or Microsoft Excel suffices to construct the matrix. There are four fundamental steps involved in making a risk assessment matrix: **identify the risk landscape; determine the risk criteria; assess the risks; prioritize the risks.** It is suggested to use 3x3 or 5x5 size risk matrix or the size of matrix even can be adopted to the particular company needs.

Likelihood/Impact	Low impact	Moderate impact	High impact
Unlikely	**Low risk**		
Likely		**Moderate risk**	
Highly likely			**High risk**

Source: AuditBoard, Inc. (2023)

Fig. 1. **3x3 Risk Matrix**

If the business is using a 3×3 risk matrix, the following three categories of likelihood suffice.

1. Unlikely. Risks in this category have a relatively low chance of occurring. **2. Likely.** Risks in this category are predicted to occur and require a mitigation strategy. **3. Highly likely.** Risks in this category are almost guaranteed to occur and require a mitigation strategy.

Effective risk management has always been crucial for success in any business, but never more than within today's markets (Vicente, 2024).

Now, looking at one of the most known marketing tools: the 4P paradigm – product, price, promotions, and place, yet it does not distinguish between marketing tools that provide information, stimulate curiosity, persuade, and build image and those that are used to reduce perceived risk (Van Waterschoot & Van den Bulte, 1992).

Marketing risks are classified based on their underlying causes, originating from both external and internal factors within the marketing environment. External risks encompass market dynamics, supplier relations, competitive pressures, challenges with distribution channels, shifts in consumer behaviour, and uncertainties surrounding target audience engagement. While these risks are inherent to the external environment, marketing professionals possess the capability to influence and mitigate their impact. Internal risks, on the other hand, stem from deficiencies in organizing and controlling marketing activities, the potential for unreliable data obtained during marketing research, the risk of adopting and executing

incorrect marketing strategies, and the possibility of developing and implementing a marketing mix that fails to align with market conditions. These internal risks fall under the purview of organizational control and require proactive management to minimize adverse impacts on marketing initiatives (Fig. 2).

Fig. 2. **External and internal marketing risks (Vitlinsky, 2013)**

Depending on the cause of occurrence, marketing risks are classified according to the 4P marketing tools: price risks – risks related to price policy; product risks – risks related to product policy; distribution risks – risks related to marketing distribution policy; and promotion risks – risks related to communication policy (Fig. 3).

Price risks	**Product (commodity) risks**
Place (distribution) risks	**Promotion risks**

Source: Bortnik (2022)

Fig. 3. **Classification of marketing risks according to the main "4P" marketing tools**

In the case when brand building becomes an important means of fighting for a consumer, reputational risk becomes especially relevant, where, in turn, various marketing tools are the most effective means of reducing this risk (Bortnik, 2022).

Effective risk management empower marketing team members to anticipate and respond to potential barriers, thereby reducing the likelihood of disruptions to their operations and tasks. It provides a structured approach to highlight uncertainties, ultimately supporting strategic decision-making and resource allocation. Key elements of risk management that marketing teams should consider and use within the all risk management process: (1) **risk identification**: identifying and understanding potential risks specific to marketing campaigns, market dynamics, and industry trends; (2) **risk assessment**: evaluating the probability and potential impact of identified risks on marketing initiatives; (3) **risk mitigation**: developing strategies and action plans to minimize the likelihood and impact of potential risks (LET, 2024).

Following the planning phase, the subsequent step is risk identification. This entails utilizing tools such as checklists to uncover potential risks, categorizing them, and assessing their likelihood of occurrence.

One recommended approach, as advocated by Urbanski et al. (2019), involves employing a framework akin to the work breakdown structure (WBS), such as the risk breakdown structure (RBS). Once risks are identified, the project team progresses to the risk evaluation stage. Here, each risk is assessed based on its probability of occurrence and the potential losses it could entail. Subsequently, a risk mitigation plan is developed to minimize the impact of unforeseen events. This plan may encompass strategies such as risk avoidance, sharing, reduction, or transfer.

Regular monitoring and control of risks are paramount to assess the effectiveness of the risk management process and identify any emerging threats. Continuous evaluation ensures that mitigation plans remain relevant and effective, while also allowing for the capture of any overlooked information that could impact the program's success (Urbanski et al., 2019).

Effective risk management hinges on establishing a robust internal control framework. Therefore, there are several different tools, software, formats that can help monitor and control risk management processes. One of them is risk control matrix (RCM) format that underscores the importance of a proactive and risk-centric internal control environment, which may encompass automated or manual controls tailored to specific circumstances. This document outlines various control objectives and corresponding measures to safeguard against potential risks, facilitating systematic assessment and the formulation of action plans.

Conclusions

Today's world and businesses are on a high-speed train, where the word sustainability is threatened from all sides. Markets are crowded, financial situation in the world is fluctuating, competition is tough, products and services are cannibalizing each other and the only way for them to survive is to play with the price, quality, service, delivery, place etc. This all brings new risks for businesses and marketing function may change together with all these new changes.

The literature review led the authors to the following conclusions.

1) There are many factors that may affect marketing risks: timing, technology, economy, competition, target audience, value proposition, marketing channels, analytics and measurements, budget and resource allocation etc. Thus, it's essential for all strategically important projects, campaigns to have this risk management system that may help mitigate or even avoid all potential risks.
2) Marketing risks span into marketing complex elements, including products, transactions, operations, pricing, and regulatory compliance. Effective risk management involves deploying a range of strategies and tools tailored to the specific market dynamics and regulatory landscape.
3) Risk exposure within a marketing plan is dynamic, with some risks unfolding sequentially while others have interrelated effects. While certain risks are foreseeable and manageable, other may pose unforeseen challenges. However, informed decision-making and proactive planning are essential for navigating all types of risks and ensuring the success of marketing strategies.
4) By integrating risk management processes, marketing teams can make information and calculation-based decisions. Through the identification and assessment of potential risks, teams get a comprehensive understanding of the challenges they may conflict with, which enables them to devise robust strategies and contingency plans.
5) The distinctive specifics of marketing risks necessitate the implementation of appropriate risk management concepts and measurement systems.
6) The marketing risk management system encompasses defining potential marketing risks and categorizing them, conducting qualitative and quantitative risk analysis and research, implementing

measures to minimize, eliminate, or transfer marketing risks, and evaluating the outcomes of these measures. Thus, despite extensive research into marketing risks, the process of identifying, analysing, evaluating, and mitigating them through effective management remains pertinent and necessitates ongoing review and the exploration of new promising approaches in modern market conditions.

7) GenAI, which is our present and nearest future, can transform risk determination and management planning processes, automate many things and exclude human resource. But at the same time, it creates many new risks and concerns.

8) The risk management planning process is crucial for anticipating potential challenges that may hinder the effectiveness of a program. It involves analysing the likelihood of these challenges occurring and taking appropriate actions to prevent or minimize their impact. Identifying risks during the planning phase allows for swift decision-making and the implementation of risk mitigation strategies. Monitoring and evaluating the process helps gauge its effectiveness and provides insights for improvement.

9) Successful management of marketing risks involves different action complex including co-operation with other departments, processes reviews, data and market analysis etc. Each of these parts has a crucial role in identifying, evaluating, and mitigating potential risks associated with marketing efforts. Understanding the interdependencies among these elements can lead to a more effective approach to managing marketing risk.

10) The integration of risk management and sustainability initiatives is a synergistic approach. Enterprise risk management typically focuses on identifying and addressing risks impacting a company over the next one to five years. The same tools and methodologies can also be effectively leveraged to assess longer-term sustainability goals and bolster environmental, social, and governance (ESG) practices.

11) Integration of agile risk management practices into the organisational processes and procedures is one of possible ways that will help companies to survive in the current business environment. It is practically impossible for entities to be able to cope with such an environment if the ultimate responsibility of managing risks is assigned to the risk management office. Therefore, there is a significant need for entities to make sure that risk management is embedded within the operations, policies, and procedures of the organisation. It is mandatory that organisations build a mature risk management culture.

12) One of the most significant parts of the risk management process is being prepared for action in the case the risk does occur. It's important to co-operate with clients and partners.

13) Developing a comprehensive marketing risk assessment plan may be intricate but is indispensable for achieving consistent results. Over time, diligent efforts yield effective marketing strategies with tangible outcomes.

14) It's important also to communicate potential or already faced risks to the relevant stakeholders, team members and management. They should be informed of the nature, level, and status of risks and risk responses. Their feedback, input, and support for risk management decisions and actions is important as well.

15) It's important to monitor and follow the company's risk profile as it evolves and make certain that responses are still appropriate. The follow-up and update of the risk management plan is a part of the risk management process.

16) Different tools such as risk audits, reviews, or indicators can be used to monitor risks and ensure that they are within acceptable levels and tolerances.

17) In today's world we have such a big advantage to track and measure the results of marketing efforts. Instead of relying on intuition or qualitative information, it is more useful to utilize the data available and make informed decisions that will perform well.

18) It's easier to overview results and processes if the company have a flexible and scalable CRM, which is the key to tracking results effectively. It provides clear performance data and informs about the best practices for future efforts, allowing them to be optimized reactively.

19) Proactive risk management is essential for navigating the complexities of the market landscape, ensuring sustained success in marketing endeavours.

20) In the final process of risk management, it is important to extract valuable insights from the risks encountered by evaluating and documenting the outcomes and lessons learned from the risk management process. This entails analysing how the risks and the corresponding responses have influenced marketing objectives and metrics. It's essential to pinpoint the best practices, successes, and shortcomings of the risk management efforts, determining areas for improvement or replication in future endeavours. Utilizing tools like post-mortems, surveys, or feedback sessions facilitates the learning process, enhancing overall risk management skills and capabilities for future endeavours.

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Proceedings of the 2024 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" No 58
Jelgava, LBTU ESAF, 16-17 May 2024, pp. 169-179
DOI: 10.22616/ESRD.2024.58.017

CHALLENGES OF COMPLETING THE LAND REFORM: THE CASE OF KULDIGA MUNICIPALITY

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Abstract. After the restoration of Latvia's independence in 1990, the goal of the land reform was to rearrange the legal, social and economic relations of land ownership and land use. In 1997 and 1998, laws on the completion of land reform were adopted in Latvia, which determined the procedure and conditions for the completion of this process. An essential condition for the completion of land reform is land surveying, issuance of land ownership documents to owners and registration of land properties in the cadastre. Estonian land researchers also obtained similar results during the analysis of the land reform in Estonia register, because only ownership rights registered in the land register give the opportunity to fully handle real estate. The demand for land is growing in various sectors of the national economy, and the full use of land plays a vital role in the development of the country. A quarter of a century has passed since the adoption of the previously mentioned laws, but not all land in Latvia has been registered as a property yet. The audit of the State Audit Office found that in 2022, more than 1 million hectares of land were not recorded in the land register in Latvia. The aim of the research is to investigate the challenges that have hindered the completion of the land reform, and Kuldiga municipality has been selected as the research object, in the territory of which there are almost 9 thousand hectares of land not registered in the land register. In order to achieve the aim, the composition and ownership of land units not registered in the land register were evaluated, as well as the reasons for the completion of the land reform were analysed. The main reasons were found to be: insufficient funding for land cadastral surveying; legal obstacles caused by the long process of reform, due to the fact that many land claimants have died and their inheritors cannot be found; as well as the unfavourable conditions for renting and buying out lands set by the legislation.

Key words: land reform, land unit, ownership, land register, cadastral surveying.

JEL code: Q15

Introduction

In 1990, after the restoration of the independence of the Republic of Latvia, the aim of the land reform was to reorganize the legal, social and economic relations of land ownership and land use (LR Saeima, 1990, 1991). This aim was achieved by restoring the property rights of land owners whose land was nationalized during the Soviet era, or to their inheritors, as well as by giving every Latvian resident the opportunity to own land for a fee. The Law "On Completion of Land Reform in Rural Areas" (1997) and the Law "On Completion of Land Reform in Cities" (1998) determined the procedures and conditions for completing land reform. An essential condition on the way to the boundaries in nature and issuing the land ownership or land use document to the land owner or land user (LR Saeima, 1991, 1998). An important condition for strengthening land ownership rights is the registration of land ownership in the land register. Only the property rights registered in the land register give the opportunity to fully handle real estate and get all the possible benefits from it (Grutups, Krastins, 2002). The demand for land from various sectors of the national economy continues to grow, and the full use of land is essential for the development of Latvia as a whole. In July 2023 alone, 2928 transactions with real estate were registered for the total amount of 121.59 million EUR (Lursoft, 2023). This indicates that it is very important to complete the land reform as soon as possible by first carrying out the cadastral survey of the land and recording it in the land register. In 1993, when the Land Registry Law of 1937 was renewed, the legal registration of land properties was started in Latvia. However, more than 30 years have passed and it is still not finished. The audit of the State Audit Office has found that in 2022, more than 1 million hectares of land were not recorded in the land register in the entire territory of Latvia (Valsts kontrolle, 2022).

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The **aim** of the study is to investigate challenges that have hindered the completion of the land reform in Kuldiga municipality.

Kuldiga municipality, where the in the land register unregistered area is almost 9 thousand hectares, was chosen as the research object. The municipality consists of 20 territorial units: the cities of Kuldiga and Skrunda and 18 rural territories. Kuldiga municipality is located in the central part of Western Latvia, its area is 2505 km^2, the number of inhabitants according to the data of the Central Statistical Bureau at the beginning of 2023 was 27363, of which 43.5% live in cities and 56.5% in rural areas. The population density is relatively low – 11 people per 1 km^2. The largest territory of the region is occupied by forests (56% of the total area of the region) and agricultural land (32%). The most important sectors of the national economy are forestry, woodworking, agriculture, production and processing of agricultural products. There are many specially protected areas and natural monuments in the territory of Kuldiga municipality, which contribute to the development of the tourism industry in the municipality.

In accordance with the law "On the completion of land reform in rural areas" and the law "On the completion of land reform in cities", the Cabinet of Ministers issued orders on the completion of land reform in each municipality rural territory and municipality town. At the time of the issuance of the order, until the administrative reform that took place in 2020, the current territory of Kuldiga municipality consisted of three separate municipal territories - Kuldiga, Skrunda and Alsunga municipalities, therefore, in the period from September 2015 to September 2016, five orders of the Cabinet of Ministers were issued on the completion of land reform both in cities and in the countryside in the territory of the current Kuldiga municipality. The annex to each order also contained information on the proportion of land units not recorded in the land register and its distribution by status. By evaluating these documents, conclusions can be drawn about the obstacles that could have hindered the successful completion of land reform.

In order to achieve the aim of the study, the following tasks have been set:

1) to review the role of completing the land reform in the national economy and its conditions;
2) to evaluate the composition and dynamics of land units not registered in the land register of Kuldiga municipality;
3) to evaluate the progress of the land cadastral survey and the conditions hindering it;
4) to analyze the use of lands not registered in the land register organised by the municipality of Kuldiga.

The research also uses the data of the State Land Service and the government of Kuldiga municipality on the progress of land cadastral surveying and real estate registration in the land register. The research uses statistical data analysis method, mapping/cartographic method related to the used data, data visualization with ESRI geospatial tools.

Research results and discussion

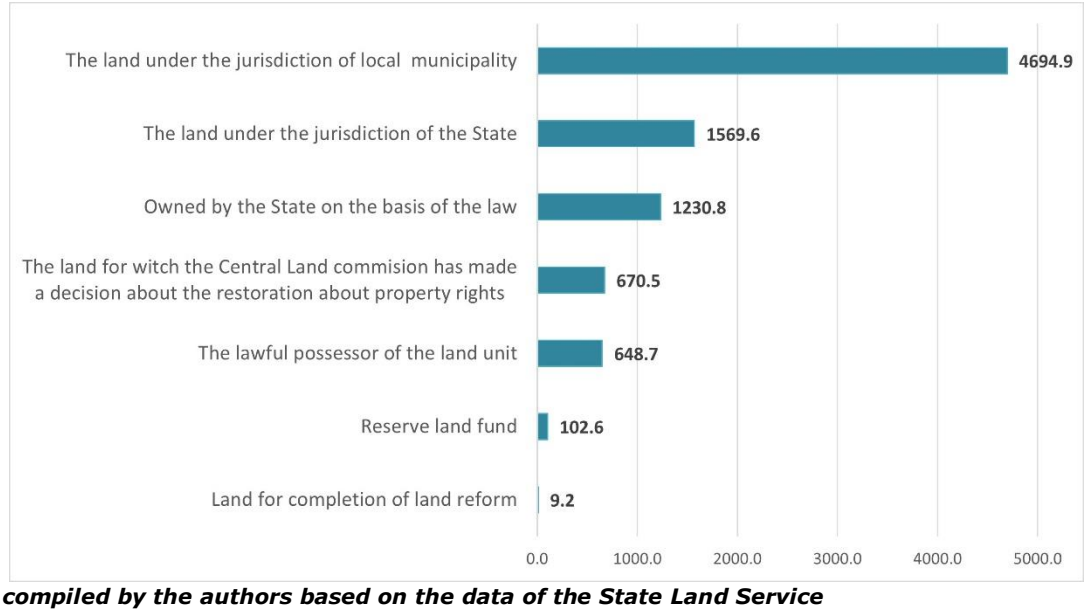
Land is an essential resource not only for the development of various sectors of the national economy, but also one of the cornerstones for the existence of the country. The land reform started in 1990 has left a significant impact on today's land policy in Latvia. As a result of the reform, when the land from the possession of a public person comes into private ownership, the development of various sectors of the national economy is significantly promoted (Putterman, 2009; Khasaev, et al., 2018). The reform has promoted the rational use of land as a resource, creating legal, social and economic relations of property. By creating a clearly understandable form of real estate and the institutions that maintain it, the former Soviet republics attracted the interest of investors who, after the initiation of land reform, again saw the

development potential for large investments in real estate (Swinnen et al., 2016). Continuous evaluation and comparison of these processes takes place between the Baltic States, analyzing its course and results (Parsova et al., 2020). The arrangement of the real estate institute for investment attraction is common not only in the former Soviet republics, but also in other parts of the world (Coulibaly et al., 2018). According to the Civil Law, obtaining all the benefits and at the same time the power over the property can be obtained only through ownership. Ownership is the most complete property right, which gives a person full rights of action and at the same time also responsibility for property (Grutups, Kalnins, 2002).

The land reform has been ongoing for several years, and in the course of its implementation, considerable and extensive work has been done on changes in land ownership relations. This has been recognized by several researchers who have analysed the course of land reform and its results in former Soviet republics (Csaki, Lerman, 1997; Khasaev et al., 2021). Comparing the progress of land reform in Latvia with the nearest neighbouring countries - Lithuania and Estonia, it can be concluded that in all these countries it has been delayed and has not been implemented according to the originally set deadlines (Parsova et al., 2020). The similar course of land reform in all three Baltic states can be explained by the identical political and socio-economic situation after the restoration of independence (Gaudesius, 2021). In Latvia, as well as in Lithuania and Estonia, the implementers of the land reform initially did not realize the complexity of the reform and the amount of resources needed for its implementation. According to Estonian researchers Jurgenson and Maasikamae, (2009), the completion of the land reform faces challenges and the remaining part of the land reform seems difficult. Therefore, research is needed to better understand the current situation and analyse obstacles that influence reform completion.

1. Land units not registered in the land register and their dynamics in Kuldiga municipality

In order to fully complete the land reform, it is necessary to register all land units in the land register. Data about land units of Kuldiga municipality and Cadastre Information System indicates that 4115 land units with an area of 8926.3 ha were not registered in the land register in the entire territory of Kuldiga municipality (26 367 land units in total). Although it is only 3.6% of the entire territory of the municipality, it is still a significant land resource, the potential of which is not fully used.



Source: compiled by the authors based on the data of the State Land Service

Fig. 1. **Distribution of areas of land units not registered in the land register by status in Kuldiga municipality, 2023**

As it can be seen in Figure 1, the largest part of the area of unregistered land units in the land register of Kuldiga municipality is the land owned by the municipality - 4694.9 ha or 52.6% and the land used by state administration institutions - 2800.4 ha (31.4%). After the evaluation and updating of the status, the land of the reserve land fund of 102.6 ha and the land for the completion of the land reform in the area of 9.2 ha will be used by the municipal and state administrative institutions. It can be concluded from this that municipalities and state institutions are responsible for the majority of land units not registered in the land register.

In order to evaluate what has hindered the completion of the land reform, it is necessary to examine the historical trajectory of reform, how the completion of the land reform proceeded in the separate territorial units of Kuldiga municipality. In addition, the fact that an administrative reform took place in Latvia in 2020 should also be considered, as a result of which Kuldiga municipality increased on the basis of the territories of neighbouring municipalities.

Table 1

Information about land areas not registered in the land register in Kuldiga municipality at the time of adoption of the Cabinet of Ministers order on the completion of land reform

Indicators	Kuldiga town	Skrunda town	Rural areas until 2021*		
			Kuldiga municipality	Skrunda municipality	Alsunga municipality
Date of adoption of the order of the Cabinet of Ministers	15.03.2016	09.09.2015	27.09.2016	28.01.2016	28.01.2016
Total area of the territory, ha	1324.12	597.31	174 151.92	54 747.57	19 119.83
Total area of land not registered in the land register, %	29.32	24.41	5.32	24.39	34.25
including, %:					
land for which the opinions of the land commissions on the restoration of property rights have been accepted	0.29	0.55	0.45	0.55	0.62
land in the legal possession of natural and legal persons	0.32	0.93	0.93	0.93	1.63
land belonging to the state	0.12	20.85	1.35	20.84	27.43
public waters	5.15	0.54	0.52	0.53	0.34
reserve land fund land	0.82	0.12	0.25	0.13	0.62
the land belonging to the municipality government	22.62	1.41	1.82	1.41	3.61
the land included in the equivalent land compensation fund	-	0.01	-	-	-

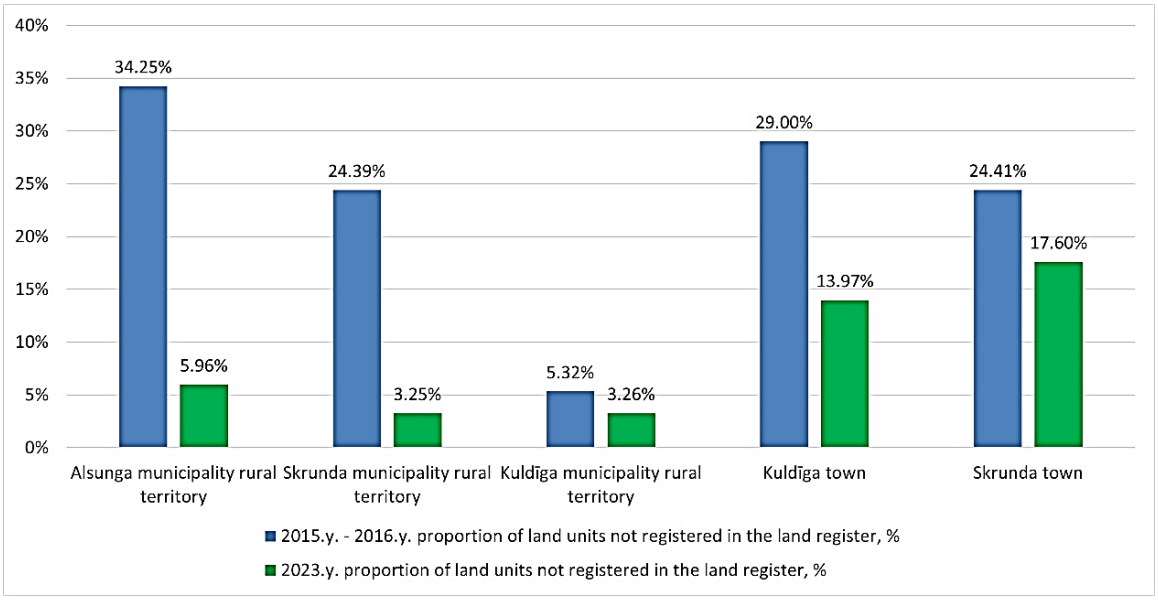
* ***Note: on June 10, 2020, the Law on Administrative Territories and Settlements was adopted, according to which administrative territories will move into new borders on July 1, 2021***
Source: compiled by the authors based on the data of the State Land Service and the government of Kuldiga municipality

The share of the area of land not registered in the land register differs significantly between the territorial units of the municipality (Table 1). The smallest area of land not registered in the land register was in the former rural territory of Kuldiga municipality (5.32% of the total area of the municipality), but the highest proportion was in the rural territory of the former Alsunga municipality (43.25%) and in the town of Kuldiga (29.32 %). Evaluating the data, it can be concluded that in the rural territory of Alsunga municipality, in the town of Skrunda and in the rural territory of Skrunda municipality, the largest share of land units not

registered in the land register is state-owned land, respectively 27.43%, 20.85% and 20.84% (Table 1). On the other hand, in the town of Kuldiga, the largest share of the area (22.62%) of the land units not registered in the land register is the land belonging to the municipality. But in the former rural territory of Kuldiga municipality, the proportion of land not recorded in the land register in the distribution by status is relatively balanced, however, the biggest advantage is the land belonging to the municipality and the state (respectively 1.82% and 1.35%).

In order to assess the dynamics of the implementation of land reform in the period from the moment of the issuance of the Cabinet of Ministers' orders on the completion of land reform in 2015 and 2016 with the current data of the Cadastre Information System (2023), changes in the areas of land units not registered in the land register were compared in the former administrative territories, which now forms Kuldiga municipality (Fig. 2).

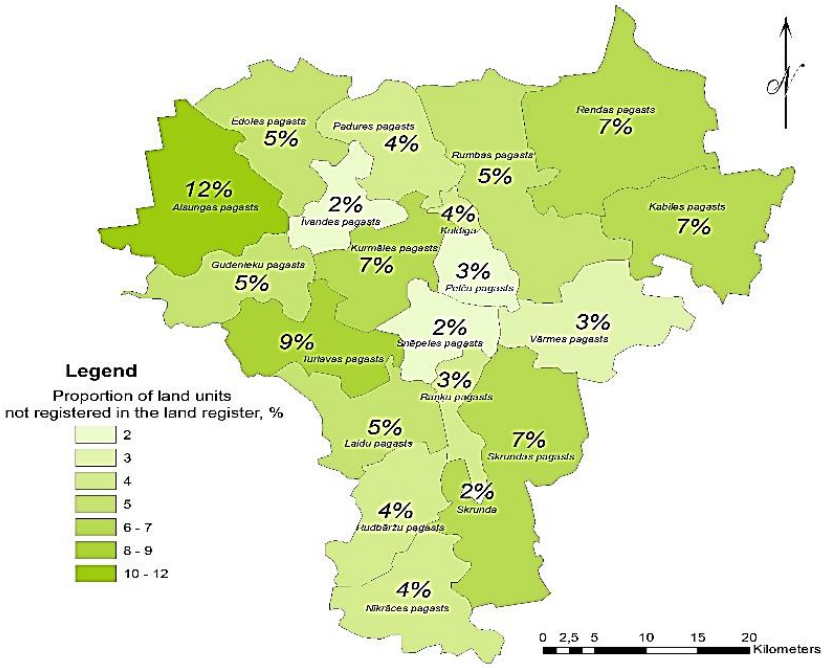
As can be seen in the figure 2, the proportion of unregistered land units in the land register has decreased in all administrative territories during this period. The most significant changes can be seen in the former territory of Alsunga municipality, where in 2016, 1/3 of the municipality territory was not registered in the land register, but in 2023, only 5.96% of land units were no longer registered in the land register. Significant changes have also occurred in the rural territory of the former Skrunda municipality, where the proportion of land units not registered in the land register has decreased from 24.39% in 2016 to 3.25% in 2023. Also, a significant reduction of the unregistered area in the land register can be seen in the town of Kuldiga and the town of Skrunda. On the other hand, in the former rural territory of Kuldiga municipality, there is the smallest decrease (by only 2.06%) of the area of land units not registered in the land register over these 8 years, which can be explained by the fact that already in 2016, this indicator was small - 5.32%. However, it was not possible to discover special relationships in the dynamics of this process. It must be concluded that there is a certain part of the land units whose registration of property rights in the land register has objective or subjective obstacles that should be eliminated.



Source: compiled by the authors based on the data of the State Land Service

Fig. 2. **Changes in the proportion of the area of land units not registered in the land register**

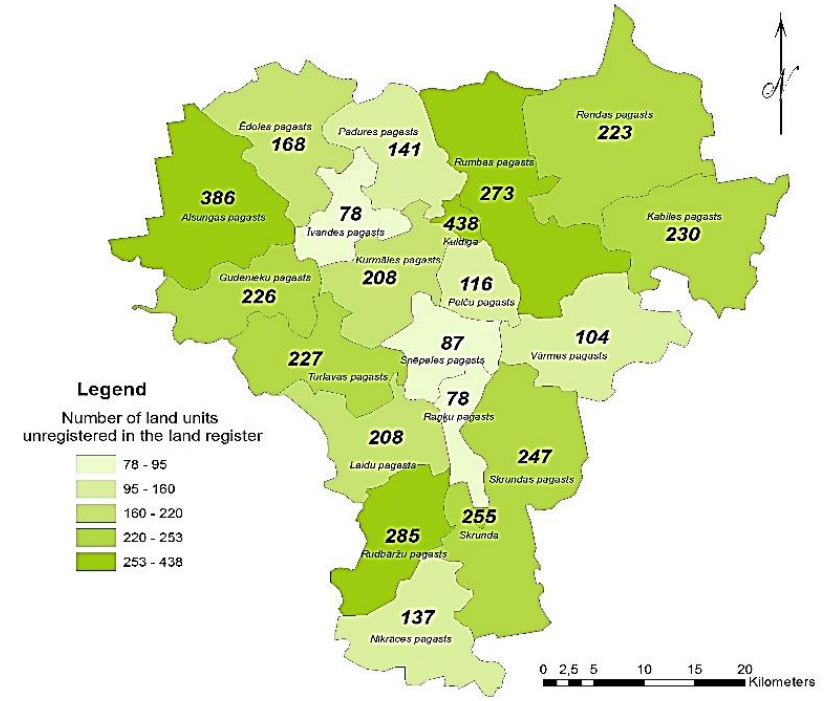
Figure 3 shows that in 2023 the largest proportion of unregistered lands in the land register is in Alsunga rural territory (12%) and Turlava rural territory (9%), while the smallest proportion of these areas is in Ivande and Snepele rural territories and in Skrunda town (in each 2 %).



Source: compiled by the authors based on the data of the State Land Service

Fig. 3. **The share of unregistered land areas in the land register in Kuldiga municipality, 2023, %**

Figure 4, on the other hand, shows the distribution of the number of land units not registered in the land register by territorial units in Kuldiga municipality. Although the proportion of unregistered land units in the land register was only 4%, the number of such land units is the highest in the town of Kuldiga (438). This can be explained by the way these land units are used - they are mostly building plots, the sizes of which are relatively small. A large number of unregistered land units are in Alsunga rural territory (386), Rudbarzi rural territory (285) and Rumbas rural territory (273).



Source: compiled by the authors based on the data of the State Land Service

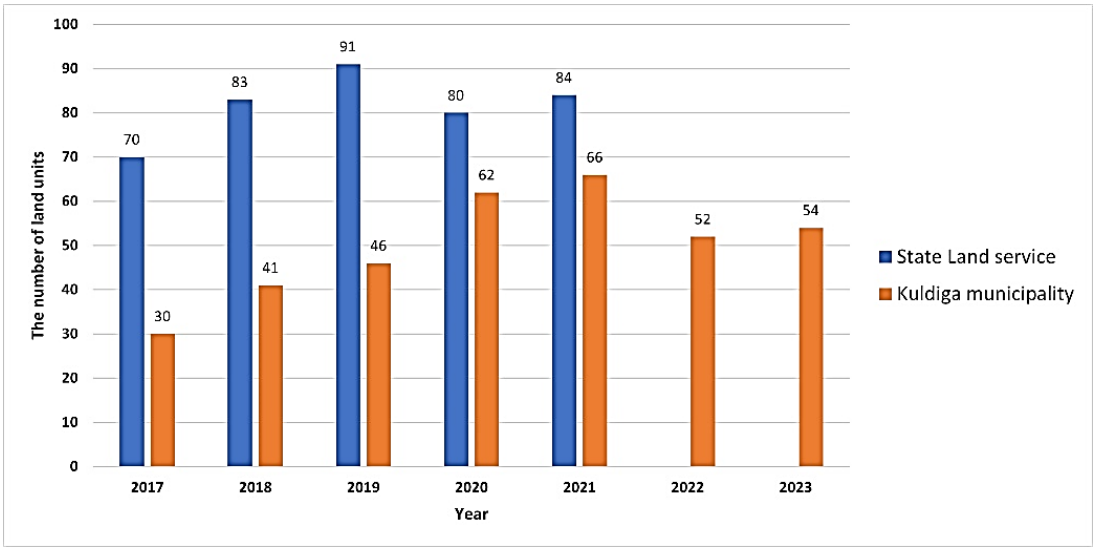
Fig. 4. **The number of land units not registered in the land register in Kuldiga municipality, 2023**

Both the number of unregistered land units in the land register and the proportion of their area to the area of the respective rural territorial unit are of significant importance - the larger the area of the rural territory, the more unregistered lands there are in the land register. However, it must be recognized that these differences between territorial units are difficult to explain due to the number of unregistered land units in the land register. Estonian researchers also obtained similar results when analyzing the results of the land reform in Estonia (Jurgenson, Maasikamae, 2009). The land users themselves, their interest and capabilities also play a big role in the quick completion of the land reform.

2. Land cadastral surveying and related obstacles

Land units must be cadastral measured before registration in the land register. Figure 5 compares the number of land units surveyed by the State Land Service and government of Kuldiga municipality until 2023. The data of the State Land Service on the cadastral survey of land in 2022 and 2023 were not yet available at the time of the research, but it can be concluded that the government of Kuldiga municipality was not far behind the State Land Service in terms of the number of land units surveyed in 2020 and 2021. When starting the land reform, the state undertook to correct the injustice of land nationalization and to carry out the first land cadastral survey at the expense of the state budget for a certain group of persons: former land owners and their inheritors, politically repressed and people with group 1 disabilities (Ministru kabinets, 2012). According to the data of the State Land Service, there are 3884 land units in the entire territory of Latvia, for which the state has undertaken to carry out the first land cadastral survey with budget funds. The state has entrusted this task to the State Land Service. Funding for land cadastral surveying is provided in the institution's budget every year, with the help of which the State Land Service has surveyed 408 land units in the period from 2017 to 2021 (Fig. 5).

Considering the amount of land units in use by Kuldiga municipality, as well as the financial and administrative capacity of the municipality, surveying all the land units owned by the municipality will take several decades.



Source: compiled by the authors based on the data of the State Land Service and the government of Kuldiga municipality

Fig. 5. **The number of surveyed land units in the period from 2017 to 2023**

Cadastral surveying is often hindered by various legal obstacles. In addition, most often it is the death of a person, the absence or unreachability of inheritors. When implementing the land cadastral survey, it

is very important that the person is reachable and able to promptly participate in the land cadastral survey process, thus facilitating the restoration of ownership rights.

According to the data of the State Land Service (2023), 26 land units are included in the list in Kuldiga municipality, which are waiting for land cadastral surveying at the expense of the state budget. There are the most of them in the rural territories of Alsunga and Renda, where six land units are waiting for land cadastral survey in each rural territory for the state budget funds. There are 4 in Kuldiga town, 3 in Skrunda rural territory, two each in Nikrace and Turlava rural territories, and one land unit each in Gudenieku, Kabile and Rumba rural territories. Practically all of these land units have legal obstacles, and they cannot apply for land cadastral surveying at the expense of the state budget.

There are 137 land units with a total area of 670.5 ha in Kuldiga municipality, which in the Cadastre information system have the status "Land for which opinions of the land commission on restoration of ownership rights have been accepted" (State Land Service, 2023). For all these land units, the land commission has adopted a decision on the restoration of property rights, which entitles a person to carry out a cadastral survey of the land at his own expense or at the expense of the state budget and register the property rights in the land register. There are no such territorial units in Kuldiga municipality where there are no land units with this status not registered in the land register, but in terms of area, the majority of such land units are in Skrunda (123.9 ha), Ranki (84.6 ha) and Renda (76.2 ha) rural territories. However, registration in the land register does not go so smoothly, it is often due to the absence of potential owners or other personal motives. For example, in the town of Kuldiga, as of 2023, there are 7 such land units with a total area of 2 ha on the list. The purpose of real estate use for these land units is mainly the construction of individual residential houses, one-story and two-story apartment buildings, but for five of them the survey cannot be carried out because the potential owner is dead.

3. Use of land units not registered in the land register

The possibilities of the municipality to deal with its property are relatively wide, and it has the right to register real estates in the name of the municipality in the land register, conclude transactions, acquire and expropriate or lease movable property and real estate. The Municipal Law (2022) stipulates that the municipality acts within the boundaries of its administrative territory and its task is to manage the assets in its use and ownership as efficiently as possible.

Normative acts on the lease of personal land regulate the procedure for leasing land units belonging to the municipality, but not registered in the land register. When leasing undeveloped land to the government of Kuldiga municipality, the rent or the starting price of the auction is determined according to the price list established by a certified appraiser (Cabinet of Ministers, 2018) and the rent must be reviewed at least once every six years. Exceptions are land lease agreements concluded in accordance with Cabinet of Ministers regulations of August 30, 2005 no. 644 "Rules on the procedure for concluding a lease agreement for unpurchased rural land and calculating the rent", where the land rent is set at 0.5% of the land plot's cadastral value and the contracts are not terminated. On the other hand, the annual rent of a built-up plot of land is 1.5% of the land plot's cadastral value, but not less than EUR 28.

From the point of view of efficient and economically justified use of resources, it seems that it is not correct to lease land to former users, building owners and for the needs of personal auxiliary farms, because the rent is significantly lower and the terms of the lease agreement are not always favourable for the municipality. Leasing these lands consumes administrative resources, however, an important factor is that these territories provide the basic goals of land reform - they provide an opportunity to farm, maintain your own building property or set up a vegetable garden to meet basic needs.

Within the framework of the research, one case of land expropriation (purchase from the municipality) of a former land user is examined, which examines the lease relationship until the initiation of expropriation, the process of expropriation and its termination. With a person in accordance with the Cabinet of Ministers regulations of August 30, 2005 no. 644 "Rules on the procedure for concluding a lease agreement for unpurchased land in rural areas and the procedure for calculating the rent" a standard land lease agreement concluded until March 23, 2026 for the lease of a land unit with an area of 1.94 ha. The cadastral value of the land unit is 1652.- EUR, the rent is set at 0.5% of the cadastral value and is 8.26 EUR/year. In 2022, a person initiated the expropriation of a unit of land in accordance with the procedure established by the Law on the Expropriation of Property of a Public Person. Considering that the lessee has been in good faith and has fulfilled his obligations to the municipality, the government of Kuldiga Municipality has decided to prepare the land unit for expropriation. The municipality has carried out an assessment of the land unit and the expropriation notice has been sent to the former land user regarding the conditional price of the real estate to be expropriated – EUR 7200.-. The deadline for payment was set - within one month after receiving the aforementioned notification, therefore payment has not been made within the deadline. Considering that the concluded standard land lease agreement is valid until 2026 and the Law on Expropriation of Property of a Public Person does not allow to expropriate or lease land to other persons during the term of the lease agreement, then the valid lease agreement with the former land user continues. Comparing the rent and the conditional price set in the buyout offer, it can be concluded that continuing to lease the land to the former user is more profitable.

This example clearly describes the disorder in the lease relationship, which is not beneficial for both parties - the municipality and the land user who would like to buy the leased land. Therefore, the conditions of lease and land redemption terms should be changed.

Conclusions, proposals, recommendations

1) Full use of land is essential for the development of the whole Latvia. This land resource cannot be fully used in the development of the national economy until the land has been surveyed for the first time and the property rights to the land have not been confirmed in the land register. Although more than 30 years have passed, land reform is still not completed. In 2022, more than 1 million hectares of land were not recorded in the land register in the entire territory of Latvia, suggesting that that there are obstacles hindering its completion.
2) In Kuldiga municipality, most of the unregistered land in the land register consists of land owned by the municipality and land used by state administrative institutions. Considering the amount of unregistered land in the land register, as well as the financial and administrative capabilities of the municipality, the registration of all land units in the land register will take several more decades.
3) In the last 7-8 years, a sharper reduction of unregistered lands in the land register can be observed precisely in those municipal territories where the proportion of these lands was higher. However, it was not possible to discover a significant reason for the differences in the lands not recorded in the land register in different areas of Kuldiga municipality - both in urban and rural area. It can be explained by the fact that the most problematic cases remained at the end of the reform. Likewise, land users themselves, their interest and opportunities to consolidate land ownership rights in the land register play an important role in the faster completion of land reform.
4) The most important reasons for the delay in the completion of the land reform are: insufficient financial resources (both for municipalities and potential land owners); various legal obstacles - the situation of potential land owners has changed due to the length of the reform, most often it is the

absence or unreachability of the person or his inheritor and the death of the person. As a significant obstacle in the strengthening of property rights is the unfavourable and inconsistent legislation in land lease and purchase relations, which does not create interest for land users to solve this situation.

5) The laws and regulations governing the leasing of land to former land users should be revised and a reasonable period should be established during which the lessee must buy the land or terminate the lease agreement.

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Proceedings of the 2024 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" No 58
Jelgava, LBTU ESAF, 16-17 May 2024, pp. 180-190
DOI: 10.22616/ESRD.2024.58.018

THE IMPACT OF EDUCATION ON EMPLOYMENT AND WAGES IN THE REGIONS OF LATVIA

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Abstract. Education is one of the key aspects of getting a better job and having higher wages. Most studies conclude that education raises wages and leads to better employment opportunities. The literature review shows that various factors affect employment and salary. Still, the scope of this study is investigating only relationships between the Educational Attainment Index (EAI) and employment indicators and wages in the statistical regions of Latvia using only available official statistical data. To evaluate the education level of individuals, the highest educational level attained is considered. The Educational Attainment Index (EAI) was developed and calculated to evaluate educational attainment. The study results show that the highest education level is in Riga and Pieriga statistical regions. In those regions, it is above the average. The correlation analysis shows a strong positive correlation between education attainment, number of employed persons, and wages. Although education plays a vital role in employment and salary, a more detailed analysis is required to evaluate aspects of labour supply and entrepreneurs' requirements that affect labour demand.

Key words: Education Attainment Index, employment, correlation, wages.
JEL code: E24, I25, R10, C12

Introduction

There is a generally accepted view in a society that higher education level will lead to higher incomes in the future. Education has widely come to be seen as an aid to the achievement of individuals' economic ambitions (Hinchliffe, 1987). Great emphasis has been placed on education's role in ensuring the economic success not only of individuals but also of nations (Lauder & Mayhew, 2020). Higher-educated people make more money, have higher employment rates, and pay more taxes thus increasing the prosperity of the country (Ma & Pender, 2023; OECD, 2023). Overwhelmingly, high-wage states are states with a well-educated workforce. There is a clear and strong correlation between the educational attainment of a state's workforce and median wages in the state (Berger, Fisher, 2013).

The researches done by various scientists show that better education can increase the incomes of individuals (Militarua, 2016; Masarova, 2011; Tuor & Backes-Gellner, 2010), as well as the vast majority of people with higher education are employed and the activity rate for this group is significantly higher than for less educated persons (Bebel, 2019). The human capital improved through the study of professional courses and comprehensive quality courses during the period of higher education has a positive and significant relationship with the starting salary of graduates, which makes them easier to find a job successfully (Wang et al., 2022). People with higher education are more in demand in the labour market. During their training, they take not only professional courses but also comprehensive ones, which also improves their qualifications. This has a positive effect on their salary, both initially and for the long term.

In Latvia, there is a lack of studies about the impact of education on the employment and earnings of individuals, especially at the regional level. Assessment of the impact of education level on employment and wages in the regions of Latvia is the **novelty** of the study.

The **hypotheses** of the research:

H1 - there is a high positive correlation between the education level of employees and the employment indicators in the regions of Latvia;

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H2 - there is a high positive correlation between the education level of employees and wages in the regions of Latvia.

The thesis **aims** to study the impact of education level on employment and wages in the statistical regions of Latvia.

To prove the hypothesis and reach the aim of the thesis the following **tasks** are defined:

- to do the literature review on the relationships between education level, employment, and earnings of employees;
- to analyse statistical data on employment, education level, and wages of working age population in statistical regions of Latvia;
- to develop and calculate the Educational Attainment Index (EAI) in the regions of Latvia;
- to calculate correlations between EAI and employment indicators, and EAI and wages.

Research methods applied: analysis and synthesis to do literature review; desk research or secondary data analysis to analyse statistical data; mathematical and statistical methods to calculate the index and do correlation analysis.

Limitations of the research: because of the lack of official statistical data at the regional level, the period for data analysis is 2019 - 2023. The longer time series would improve the credibility of correlations.

Research results and discussion

Literature review and defining the scope of the research

Even if most of the studies conclude that education raises wages, the findings frequently diverge significantly. It is necessary to take into consideration that statements about the positive effect of education on earnings are general and the real situation could be different. The evaluation of the impact of education level on the earnings of individuals could be more complicated. The most common limitations and problems in the investigation of the correlation between education level, employment, and earnings are as follows.

- ***Ceteris paribus* assumption**, which means that all other variables that are not included in the model, are not changing – they are constant. If the task of the study is to examine the relationship between education level and wage, then other variables will not be considered. For example, the earnings advantage from educational attainment can vary also according to age, gender, program orientation, and field of study. Other factors are the demand for skills in the labour market, the supply of workers and their skills, the minimum wage and other labour-market legislation, countries' structures, and practices, such as the strength of labour unions, the coverage of collective-bargaining agreements and the quality of working environments (OECD, 2023). Boshara, Emmons, and Noeth (2015) argue that the positive correlation we observe between a person's education and his or her wealth does not imply that education itself is solely responsible for wealth accumulated. Besides education, many different factors can affect future incomes: natural ability, family background, assortative mating, incentive to become financially knowledgeable, inheritances, benefits of better health and longer lifespans, and others (Boshara, Emmons & Noeth, 2015). It is almost impossible to define which factor is responsible for the increase in wealth of the person.
- **Time and finances to develop more complicated models**. In the very simple model, we will see only a connection between wage and education level (or employment level and education level), but it is possible to add more detailed information. For example, the returns to education may differ across the wage distribution: the returns are higher for those in the top decile of the income distribution compared to those in the bottom decile (Harmon, Osterbeek & Walker, 2000). The other factor that can

affect the estimation of earnings is the period after graduation. One of the investigations about higher education graduates with or without work experience shows that having vocational education and training (VET) work experience increases wages and diminishes search time one year after graduation. Although this beneficial effect persists for five years after graduation, it is no longer significant for wages, unemployment spells, or employment positions five years after graduation (Oswald-Egg, Renold, 2021). To develop more detailed models at the regional level, there is a lack of statistical data and then it is necessary to have more time and money to collect data from surveys.

- **Availability of statistical data**. There is a lack of official statistical data at the NUTS 3 level in Latvia. For example, there are no official statistical data on the educational level of the employed population in the statistical regions of Latvia. Such data would be useful for analysing labour supply and demand. And the period of data publication is not enough. In some cases, there is data only for the last 3 years, and it is not possible to create reasonable correlation models on the data of such a period.
- **A field of study is too broad**. It is easy to go outside the research question because usually there are so many related problems to solve. In this study, one problem was to decide whether to study or not the question about over-qualified workers. The problem that was identified in the context of the research was the labour market and many employees with higher education who hold positions that do not require a college education and are below their qualifications (Bebel, 2019). The question is - whether someone needs their highest qualification to obtain their job and whether they need the capabilities and skills associated with possession of that qualification to do the job (Lauder, Mayhew, 2020). The other problem was to decide whether to take into account that a person can have two or more different educations. The studies proved that among all educational paths ending with a tertiary degree, the mixed educational paths are associated with the highest level of earnings: earnings of individuals with mixed educational paths are significantly higher than those of individuals with straight educational paths (Tuor, Backes-Gellner, 2010).

The academic literature has extensively studied the effect of education on earnings. The theoretical and methodological underpinnings of such studies were laid in the 1970s. Most studies are based on the model developed by Mincer in 1974, in which salary is a function of an individual's years of education and work experience. Mincer's model assumes that two important investments in human capital are made during life – investments in formal education and the accumulation of skills in the workplace (Vilerts, 2015). Mincer tried to answer the question - how much of the existing inequality in the distribution of labour incomes can be attributed to individual differences in investments in human capital? He concluded that the standard procedure for estimating a rate of return to education involves the discounting of differences in earnings between two groups differing in education. However, the estimated rate is a rate of a weighted average of returns to schooling and to other investments in human capital in which the two groups differ (Mincer, 1974). The Mincer coefficient was used in Vilert's research on Returns to Education in Latvia in 2015. The main conclusion was that education has a positive and statistically significant effect on earnings in Latvia. According to the Mincer coefficient, incomes rise by 7.6% on average for every year of schooling (Vilerts, 2015).

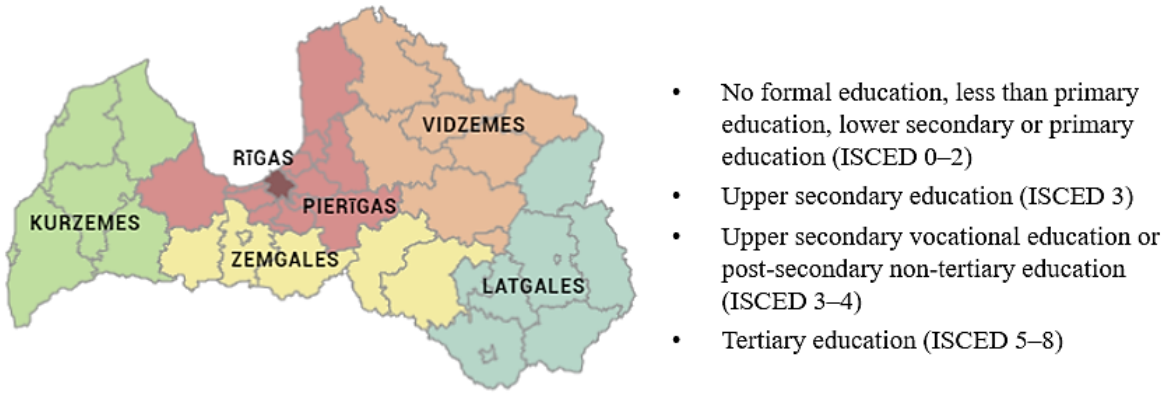
The other aspect of research, which shows the importance of education level in the possible higher earnings and wealth in the future, is about students' perceptions when entering the university or other higher education institutions. For students very often a major motivation for attending university is their perception that it will help them get better and more secure employment. (Al-Harthi, 2011). But, at the same time, to deliver "employable" graduates, students need to be thoroughly trained in 21st-century skills,

and their development should be retained and expanded (Habets et al., 2020). Of course, employability is not only about education and skills. Demands that young people face in employment and work are also related to experience, behavior, and bodily performance (Nikunen, 2021).

To conclude, it is visible from the literature analysis, that education is important, because a higher level of education is associated with better employment and higher salary. The previous studies show that there could be a positive relationship between education level and employment level, as well as between education level and wage of employees in the regions of Latvia. The scope of the study is investigating only relationships between the Educational Attainment Index (EAI) and employment and wage in the statistical regions of Latvia using only available official statistical data. To evaluate the education level of individuals, the highest educational level attained is considered.

Methodology of the Educational Attainment Index (EAI) development

The indicators for EAI calculation were chosen from the Official Statistics Portal of Latvia, considering the availability of statistics for statistical regions of Latvia before 01.01.2024. Selected indicators and a map of six statistical regions are shown in Figure 1.



Source: Central Statistical Bureau of the Republic of Latvia, 2021

Fig. 1. **Statistical regions (NUTS 3) of Latvia before 0.01.2024 and education level indicators for EAI**

To calculate the EAI first the method developed by Slovak researchers Masarova, Koisova, and Habanik (2022) was applied. In this method, the EAI was calculated to assess the educational attainment of employed people, as well as economically active population, and unemployed people. The following formula was used to calculate the EAI of employed people (Masarova, Koisova, Habanik, 2022):

$$EAI_E = \frac{1 \cdot EDU_1 + 2 \cdot EDU_2 + 3 \cdot EDU_3 + 4 \cdot EDU_4}{Employed\ population} = \quad (1)$$

Where:

EAI_E - Educational Attainment Index of employed (working) population;

EDU_1 – population with basic education and uneducated;

EDU_2 – population with lower secondary education;

EDU_3 – population with upper secondary education;

EDU_4 – population with tertiary (academic) education.

The index values range from 1 to 4. A value of 1 would indicate that all persons in the group have only primary or no education. Conversely, a value of 4 would indicate that all persons in the group have a university education. Unfortunately, when this method was applied to calculate the EAI for statistical

regions in Latvia, the index values for all regions in all research periods were the same ($EAI_E = 3$) and such a result was not useful for further statistical analysis.

Therefore, to calculate the EAI for statistical regions of Latvia the authors of the article first used data normalization and changed all initial statistical data (in thousands of people) to the percentages compared to the average value of all regions by Formula 2:

$$X = \frac{x}{x_{avr}} \cdot 100\% \quad (2)$$

Where:

X – normalized indicator;

x – actual value of the indicator;

x_{avr} - average value of the indicator in the regions.

According to this method, the average value from all regions always will be 100% and the normalized value of the indicator will show whether the situation in the region is above or below the average.

Then the EAI index was calculated as the weighted average of all normalized indicators by Formula 3:

$$EAI = \sum_{i=1}^{n} (w_i \cdot X_i) \quad (3)$$

Where:

EAI – Educational Attainment Index;

w_i – relative weight of the indicator;

X_i– normalized value of the indicator;

n – number of indicators.

The relative weight of each indicator was assigned by experts. Eight experts took part in the survey and the arithmetical mean from their answers was calculated and the result was rounded to a whole number. The relative weights of all indicators are shown in Table 1.

Table 1

Relative weights of the EAI indicators

Indicator	Abbreviation	Relative weight
Share of people with:		
No formal education, less than primary education, lower secondary or primary education (ISCED 0–2)	EDU_{0-2}	10%
Upper secondary education (ISCED 3)	EDU_3	20%
Upper secondary vocational education or post-secondary non-tertiary education (ISCED 3–4)	EDU_{3-4}	30%
Tertiary education (ISCED 5–8)	EDU_{5-8}	40%
in total amount of people aged 15 - 64		

Source: authors' calculations based on expert interviews

From Table 1 it is possible to see that the results are logical: the most important in the Education Attainment Index is the share of the population with tertiary education.

Results of calculations and their interpretation

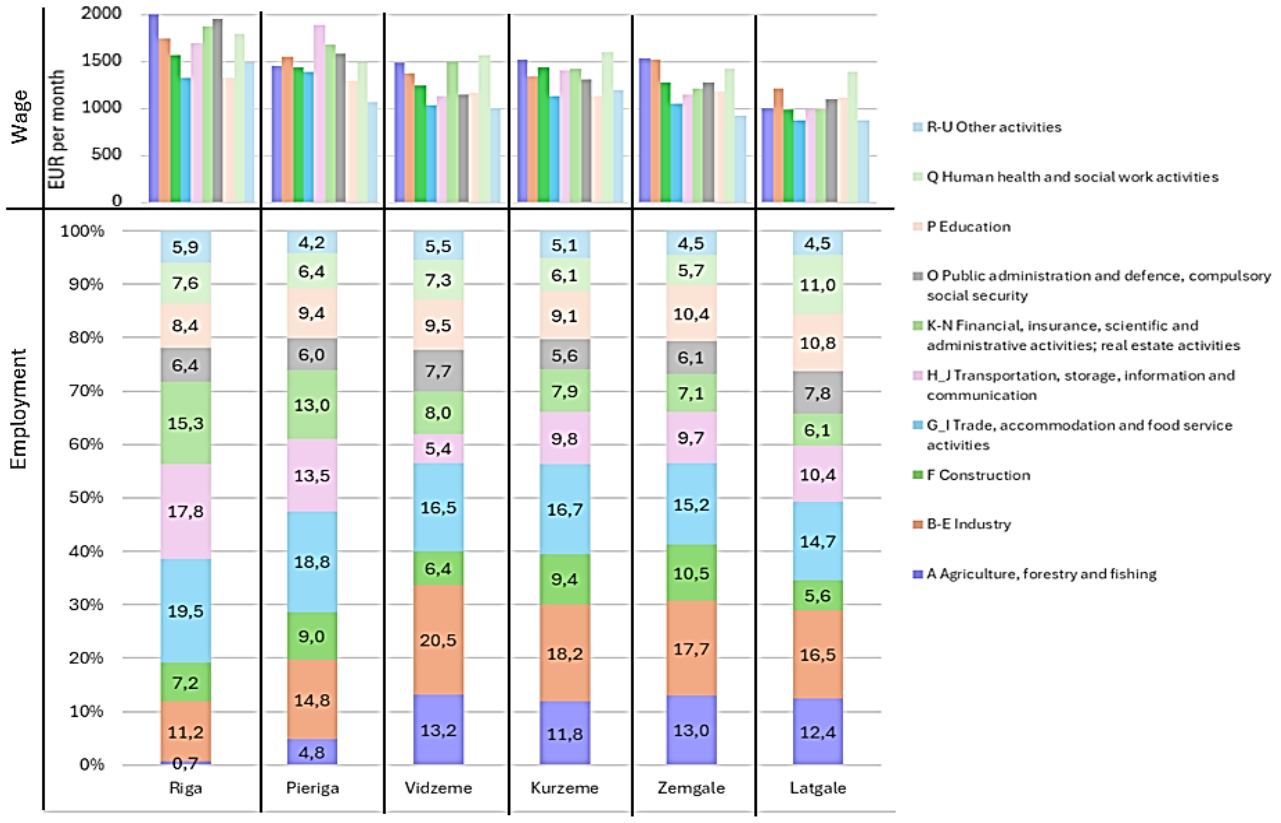
1. Short analysis of employment and wage indicators in the statistical regions of Latvia

Literature analyses show - students believe that getting a better education will help them get better and more secure employment after graduation. To give a short overview of the employment situation in the statistical regions of Latvia the authors of the article analysed employment and wages by industries in the regions (Figure 2) in 2023.

On average, the wages are higher in Riga statistical region, but industries are developed differently in the regions.

It is possible to see that in Riga statistical region many people are employed in trade, accommodation, and food service activities (19,5% of all employed persons), but the wage in this industry in Riga region is low – only 1330 EUR per month. One of the highest wages is in the public administration and defence, compulsory social security industry (1964 EUR per month), but only 6,4% of employed are working in this industry.

For example, the opposite situation is in Zemgale region, where 17,7% of employed persons are working in industry and the wage of those workers is also relatively high (1518 EUR per month). This is the second most well-paid industry in Zemgale region after agriculture, forestry, and fishing. An interesting situation is also in Latgale region. The 4th industry with many employees is human health and social work activities with the highest wage among other industries in this region (1397 EUR per month), while in Riga or Pieriga regions wage in this industry is not among the highest.



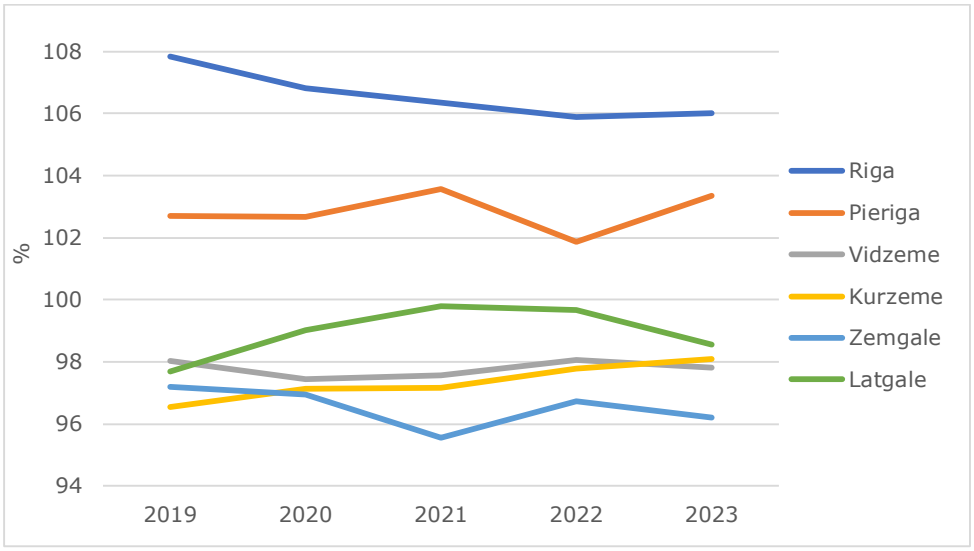
Source: Official Statistics Portal

Fig. 2. **Wage and employment in the statistical regions of Latvia, 2023**

From the analysis of data in Figure 2 it is possible to conclude that different industries are developed in regions and also other factors, such as the study direction and choice of industry, are important to get better-paid jobs.

2. The EAI in the statistical regions of Latvia

To see the overall picture of the education level in the statistical regions of Latvia, the Educational Attainment Index was calculated. The results are summarized in Figure 3.



Source: authors' calculations based on the data from Official Statistics Portal

Fig. 3. **Educational Attainment Index in the statistical regions of Latvia**

From Figure 3 it is possible to conclude that the highest education level is in Riga statistical region. It was 106% in 2023, and that means that the education level in Riga region was 6 percent points higher than the average. However, the education level is slightly decreasing in comparison with the year 2019, when the EAI was 108%. The reason for this is the bigger share of people with EDU_{0-2} and the smaller share of people with education levels EDU_3 and EDU_{3-4}.

Pieriga region is also above the average ($EAI = 103\%$) in 2023.

Vidzeme, Kurzeme, Latgale, and Zemgale regions are below the average. In the last place is Zemgale region ($EAI = 96\%$). It is because the share of the population with education level EDU_{0-2} is the highest and the share of people with education level EDU_{5-8} is the second lowest in this region.

3. Correlations between education level and employment indicators and wages

To prove hypotheses H1 and H2, the correlations between EAI and employment and wage indicators in statistical regions in 2023 were calculated. The Pearson correlation coefficient was used for calculations. It measures the linear relationship between pairs of variables, which requires numerical codes for categories of each variable (Chen, Carolyn, Anderson, 2023). The results are summarised in Table 2.

Table 2

Statistical data in regions and correlation coefficients (r) in 2023

Statistical data				
Region	**Employment level in age group 15 – 64** *%*	**Employed persons aged 15 – 64** *thousands*	**Wage, gross** *EUR/month*	**EAI** *%*
Riga	74.1	282.8	1706	106.02
Pieriga	73.2	180.7	1505	103.35
Vidzeme	69.5	75.8	1242	97.82
Kurzeme	70.4	99.5	1306	98.08
Zemgale	70.8	98.0	1293	96.20
Latgale	64.9	96.6	1083	98.55

The correlation coefficient r between EAI and:		
Employment level	**Employed persons**	**Wage**
0.649	0.952	0.862
moderate	strong	strong

Critical values of $r_{\alpha;N}$; of different probabilities (α) and $N = 6$			
$\alpha = 0.1$	$\alpha = 0.05$	$\alpha = 0.02$	$\alpha = 0.01$
0.726	**0.811**	**0.882**	**0.917**

Source: authors' calculations based on the data from Official Statistics Portal and Palmer, Rycroft, Cermack, 2006

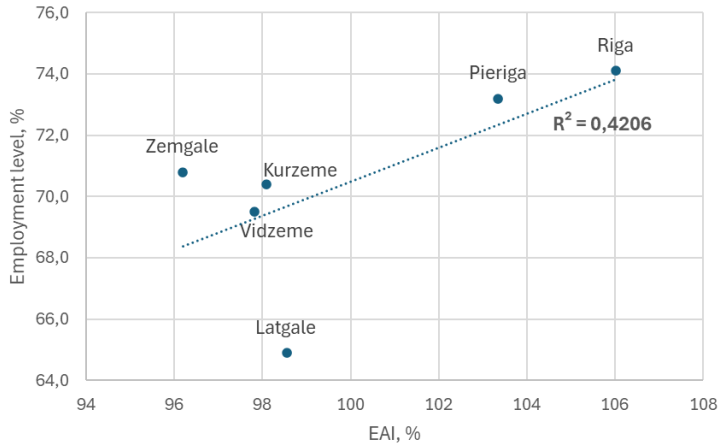
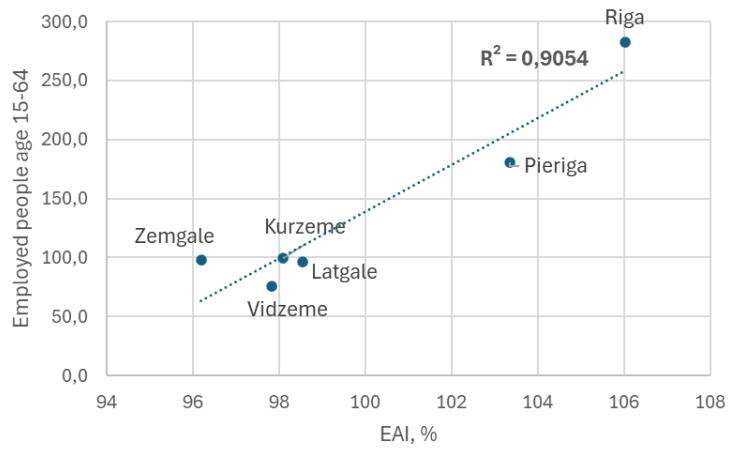
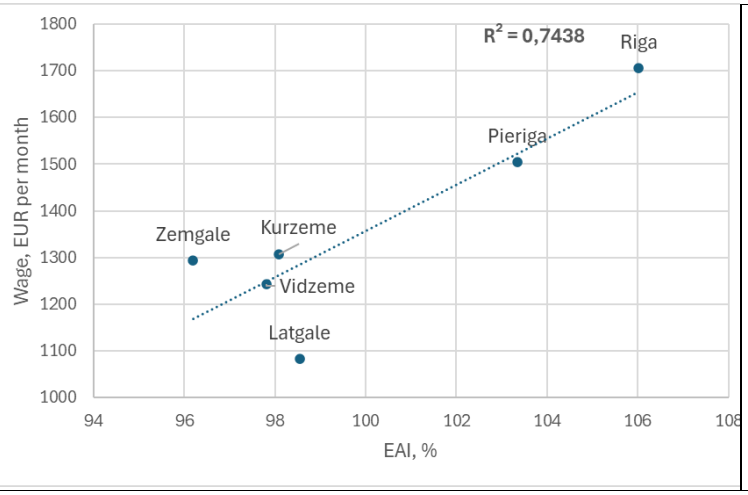
From Table 2 it is possible to conclude that there is a positive strong relationship between education attainment and employed persons, as well as between education attainment and wage. And the correlation between education attainment and employment level is moderate. Correlation is reliable if $r_{\alpha;N} < r$ and therefore it is necessary to compare correlation coefficient values r with the critical values $r_{\alpha;N}$. It is obvious, that:

- in the case of correlation between EAI and employment level $r = 0.649$ and the probability that there is a strong relationship between those two indicators is less than 90%;
- in the case of correlation between EAI and employed persons $r = 0.952$. There is a 99% probability that there is a strong relationship between those two indicators;
- in the case of correlation between EAI and wage $r = 0.862$. There is a 95% probability that there is a strong relationship between those two indicators.

Possible relationships between the above-mentioned indicators are also explained in Table 3.

Table 3

The impact of education on employment and wages in the regions of Latvia, 2023

Chart	Conclusions
Education and employment level	
	The relationship between education attainment and employment level is moderate. Only 42% of changes in employment level could be explained by changes in education level.
Education and employed persons	
	The relationship between education attainment and employed persons is strong. The more people with higher education attainment, the more they are employed. 91% of changes in the number of employed persons could be explained by changes in education level.
Education and wages	
	The relationship between education attainment and employed persons is strong. The more people with higher education attainment, the higher their wages. 74% of changes in wages could be explained by changes in education level.

Source: authors' calculations based on the data from Official Statistics Portal

In Table 3 it is possible to see that the highest educational attainment (above the average level) is in Riga and Pieriga regions. In those regions employment level, number of employed persons, and wages are also higher than in other statistical regions of Latvia.

The opposite situation is in Kurzeme, Vidzeme, Zemgale, and Latgale statistical regions, where educational attainment is below the average and the employment level, number of employees, and wages are lower than in Riga or Pieriga regions.

It is possible to conclude that education is important to get a job and a higher wage. If there are fewer educated people in the region, the employment level and average wage of employees will be lower.

Conclusions, proposals, recommendations

1) Hypothesis H1 is partially confirmed because there is a high positive correlation between the education level and the number of employed persons in the regions of Latvia. However, the relationships between education attainment and employment level are not so strong.

2) Hypothesis H2 is confirmed because there is a high positive correlation between the education level and wages in the regions of Latvia.

3) Students' perceptions that enrolling in university for better education will help them obtain better and more secure employment are correct. However, it is necessary to consider other factors that affect employment and wages, especially in regions. There are different industries developed in regions and the average salary in those industries is also different. For example, in Riga region, a big part of the population is employed in trade, accommodation, and food services, where the average wage is lower than in other industries, but still higher than the wage in the same industry in other regions (except Pieriga region). The highest wage in Riga region is in the public administration, defence, and compulsory social security industry, but the number of employed persons is relatively small. Accordingly, not only higher education is important to get better-paid jobs, but equally important is the study direction and choice of industry in which the students are going to work.

4) Although education and the amount of salary plays a vital role in employment, a more detailed analysis is required to evaluate not only aspects of labour supply but also the requirements of entrepreneurs that affect the demand for labour.

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Proceedings of the 2024 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" No 58
Jelgava, LBTU ESAF, 16-17 May 2024, pp. 191-198
DOI: 10.22616/ESRD.2024.58.019

SCIENTIFIC APPROACHES TO THE FORMATION OF GEO-INFORMATION SUPPORT FOR THE MANAGEMENT OF REGIONAL DEVELOPMENT AND POST-WAR RESTORATION OF TERRITORIAL COMMUNITIES IN UKRAINE

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Abstract. This article explores scientific approaches to developing geoinformation support for managing regional development and facilitating post-war restoration of territorial communities in Ukraine. The research focuses on leveraging geoinformation systems (GIS) to enhance decision-making processes in the aftermath of conflicts. The study delves into the conceptual foundations of GIS application, emphasizing their role in optimizing resource utilization, environmental rehabilitation, and strategic planning for regional growth. Additionally, the article examines international experiences in employing GIS for post-war reconstruction to draw valuable insights applicable to the Ukrainian context. The innovative aspect of the research lies in proposing practical recommendations for the widespread implementation of GIS technologies, contributing to the effective coordination of regional development initiatives and post-conflict recovery efforts. The findings aim to inform policymakers, planners, and researchers on the potential of geoinformation systems as instrumental tools for sustainable development and reconstruction, offering a comprehensive framework for future applications in Ukraine and beyond.

Through a review of current scientific methodologies and case studies, this article highlights the significance of integrating geoinformation approaches into regional management frameworks to enhance spatial understanding, resource allocation, and infrastructure development. Furthermore, it emphasizes the importance of collaboration between government agencies, academic institutions, and local communities in harnessing the full potential of geoinformation support for fostering resilience and prosperity in post-conflict and developing regions of Ukraine.

Key words: GIS; regional development; monitoring; evaluation; land management.

JEL code: R5, R58, C21

Introduction

The issue of Ukraine's regional development in the context of the large-scale armed aggression of the Russian Federation requires the development of completely new scientific approaches that should be based entirely on dynamic geographic information models, taking into account the constantly changing situation in both the economic and social spheres. In Ukraine, the main planning document in the field of regional development is the State Strategy for Regional Development, which was recently adopted for 2021-2027. However, given the dramatic change in the situation in Ukraine due to the full-scale invasion and the country's accession to the EU, the strategy needs to be significantly changed and updated. At the same time, a geographic information system for monitoring and evaluating the development of regions and communities should become the main driving mechanism for implementing the State Regional Policy.

The purpose of this article is to present scientific approaches to the formation of geoinformation support for the management of regional development and post-war reconstruction of territorial communities in Ukraine.

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To achieve this goal, the following tasks are planned to be solved:

1) to conduct a retrospective analysis of the regional development process in Ukraine;
2) to conduct a comprehensive analysis of the legislative, regulatory and methodological regulation of the principles of regional policy in Ukraine;
3) to develop the main priorities on which the geographic information system of regional development and post-war restoration of territorial communities in Ukraine should be based.

The main working hypothesis underlying the article is the assumption that the theoretical substantiation of scientific approaches to the formation of geoinformation support for regional development will create a conceptual basis for the transition to a qualitatively new modern world form of strategic management of socio-economic development and post-war recovery through decision-making based on geospatial data. At the same time, the advantage of our approach will be a significant reduction in the cost of work on the formation of regional development strategies at all levels with a gradual transition to a fully automated geographic information system.

The scientific basis of the study is the provisions and principles of the modern concept of sustainable development of rural areas, the results of research by domestic and foreign scientists, which reveal the institutional nature of modern geographic information support for the purposes of regional development, strategic planning and monitoring of these processes. In the course of the study, general scientific and special research methods were used, namely: dialectical - to identify the conditions in which the activities of participants in the process of regional development and territorial rehabilitation are carried out, their direction, effectiveness and efficiency; analysis - to highlight the role and place of strategic planning in the system of socio-economic relations; synthesis - to combine different doctrines on the formation of the institution of regional development and post-war rehabilitation; induction and deduction - to identify gaps in the normative framework.

One of the first European fundamental studies on improving the management process in the field of regional development was related to the widespread use of geographic information systems as a spatial tool for decision-making based on strategic planning data (Juliao, 1998). In turn, over the next decade, geodata processing tools and GIS models were developed to support regional environmental planning and management, which had a significant impact on the development of regional development processes and decision support systems (Schaller, Mattos, 2009). Also, a significant research contribution was made in the development of a geospatial database for rural areas, which significantly influenced their further development (Cano, Garzón, Sánchez-Soto, 2013).

The novelty of the proposed approach lies, unlike the existing ones, in the formulation of methodological approaches to the system of strategic planning and regional development adapted to modern Ukrainian conditions, the construction of the concept of a geographic information system for organising and managing the process of reconstruction and post-war recovery (organisation, administration, analysis, information identification, determination of the value of objects, management of the information base) at the level of territorial communities of Ukraine.

Research results and discussion

For more than thirty years, Ukraine has been in constant search of an effective model of regional development, as the country was formed within the territories that have long been part of different states and has 25 regions that differ in natural conditions, urbanisation, regional economic structure, language, history, religious preferences, and ethnic composition.

An important component of the state regional policy is the socio-economic development of the regions. The need to accelerate Ukraine's entry into the path of sustainable development, economic growth, and to create conditions for dynamic and balanced socio-economic development of Ukraine and its regions were defined and approved in the State Regional Policy Strategy. However, the implementation of reforms in Ukraine during 2007-2014 did not yield results, as the process of formulating and implementing strategies, which was dependent on changes in the socio-political situation in Ukraine, demonstrated low efficiency and the mostly declarative nature of most of the adopted legal acts (concepts, programmes etc.) related to regional development.

In 2014-2021, Ukraine's state regional policy reached a new level of development: The Law "On the Principles of State Regional Policy" was adopted and a fundamental reform of local self-government and territorial organisation of power was launched.

As part of the decentralisation reform, amalgamated territorial communities were formed in Ukraine, on the basis of which a new administrative and territorial structure was formed in 2020 and 1470 territorial communities were formed, which contributed to the balanced development of Ukrainian communities and regions, and thousands of horizontal links between communities and regions were created. intensification of decentralisation processes. At the same time, the implementation of the State Strategy for Regional Development and regional development strategies had very limited financial resources. The implementation of the State Strategy for Regional Development for 2021-2027 was based on an integrated territorial approach, which envisages "the use of special mechanisms and instruments of state support" depending on the type of functional territory characterised by a specific set of social, spatial, environmental and economic features (Zelenskyi, 2022; Law of Ukraine On the principles of state regional policy, 2013; On approval of the State Strategy for Regional Development for 2021-2027, 2020; Law of Ukraine On the regulation of urban development activities, 2011). Achieving the strategic goal of the state regional policy by 2027 involved the implementation of three strategic objectives.

- Formation of a cohesive state in the social, humanitarian, economic, environmental, security and spatial dimensions.
- Increasing the competitiveness of the regions.
- Building effective multi-level governance.

As of the beginning of 2022, out of the 1438 territorial communities in Ukraine that have joined the strategic planning process at the territorial community level: 617 (43%) had approved development strategies, 625 (44%) had a document under development, and 196 (13%) had not started work on their strategy.

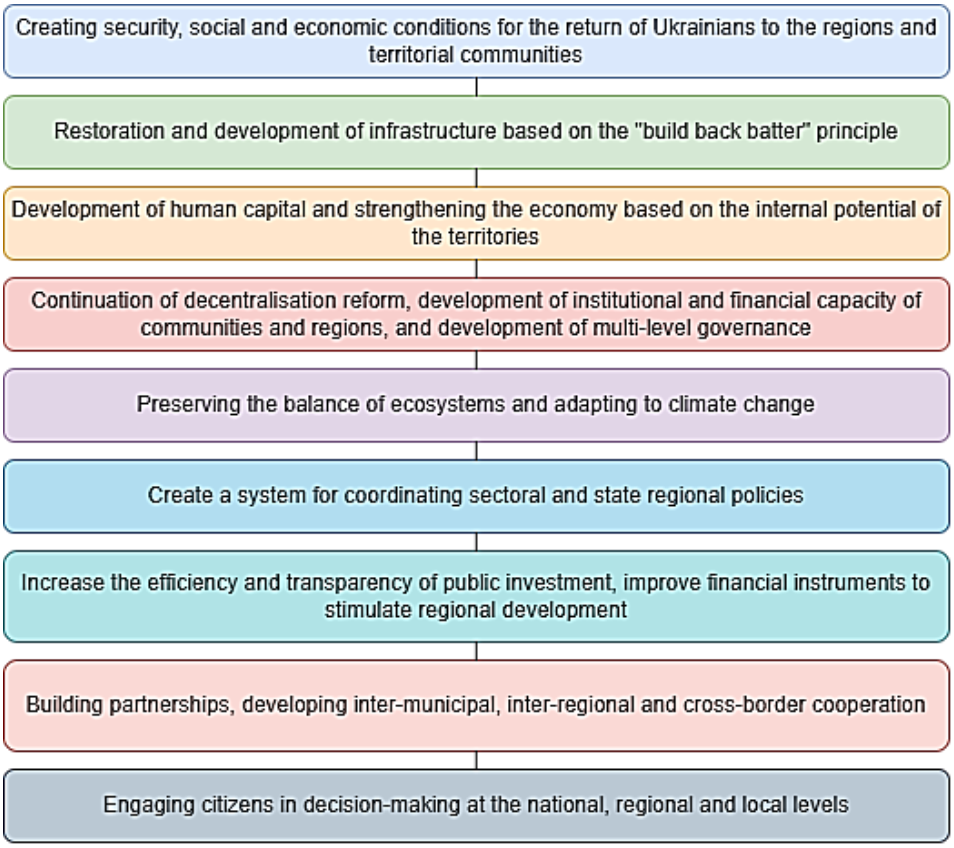
The full-scale invasion of Ukraine by the Russian Federation on 24 February 2022 exacerbated the situation in all dimensions - social, economic, and territorial. Therefore, the development of a new regional development policy requires a comprehensive analysis and assessment of the current situation related to the war and the situation in Ukraine as a whole, regions and territorial communities.

In order to adapt the legislation in the field of state regional policy to the situation that has developed as a result of large-scale armed aggression against Ukraine and to introduce special mechanisms and tools by executive authorities and local self-government bodies in the process of implementing the principles of state regional policy:

- the Law establishes functional types of territories: macro-region, micro-region or territorial community, which are characterised by a set of common social, spatial, environmental, economic, security and other features;
- introduces planning for the restoration of regions and territories affected by armed aggression against Ukraine;
- and develops programmes for the comprehensive restoration of the region and territory of a territorial community (part of it).

In the context of Ukraine's post-war recovery and preparation for accession to the EU (as required by Chapter 22 of the Acquis Communautaire), it is necessary to reform the state regional policy in the areas of legislative harmonisation, ensuring the establishment of relevant institutions at the central and regional levels with clear tasks and powers, administrative capacity, creating conditions for the formation of a sufficient number of regional development projects, developing operational programmes for regional development, monitoring and evaluation, financial management and control.

In the process of research, the main conceptual priorities that should be guided by the geoinformation system for regional development and post-war reconstruction based on the State Strategy for Regional Development of Ukraine for the period until 2027 were determined (Fig. 1)



Source: author's formation based on data of Ministry for Communities, Territories and Infrastructure Development of Ukraine

Fig. 1. **Priorities of strategic development and post-war reconstruction of Ukraine based on the geoinformation system**

Thus, based on the priorities presented in Fig. 1, the technical concept of a geographic information system for regional development, strategic planning and post-war recovery of territorial communities, including monitoring of relevant processes, should be developed.

In the legal context, the Cabinet of Ministers of Ukraine adopted Resolution No. 522 of 23 May 2023 "On Approval of the Procedure for the Functioning of a Unified Geographic Information System for Monitoring and Evaluation of the Development of Regions and Territorial Communities", which approves the Procedure for the functioning of the geographic information system for control, monitoring and development of regional policy. In particular, this Procedure defines the mechanism for creating, implementing and ensuring the functioning of a unified geoinformation system for monitoring and evaluating the development of regions and territorial communities. It is envisaged that the database of the geographic information system of regional development is a set of data on socio-economic processes and results of socio-economic development of regions and territorial communities (macro-regions, micro-regions, functional types of territories) and/or their parts (districts, cities, towns, villages), activities of central and local executive authorities, local self-government bodies to implement the goals and objectives of the state regional policy contained in the geographic information system of regional development.

According to the Procedure, the tasks of the geographic information system for regional development are as follows:

- integration of external information resources, in particular statistical, administrative information and geospatial data in the field of development of regions and territorial communities;
- creation and management of a data warehouse and thematic databases of socio-economic, budgetary and financial indicators established for the purposes of the state regional policy;
- modelling and analysing the socio-economic state of the objects of the state regional policy defined by the legislation, forecasting the socio-economic development of regions and territorial communities;
- preparation of proposals on the directions and methods of adjusting strategic planning documents and implementation of the state regional policy;
- automation of interaction between authorised and external users and provision of access to open data in the field of regional and territorial community development.
- The functions of the geographic information system of regional development are as follows:
- collection and processing of information received in the course of interaction with external information sources and activities of authorised users;
- systematisation, generalisation and verification of information in order to transform it into a data format suitable for further analysis and functioning of various modules;
- ensuring electronic interaction between data providers and authorised users;
- analysing and visualising geospatial information to support management decisions, in particular in the area of regional development and recovery planning;
- ensuring compatibility and electronic interaction of the regional development geographic information system database with external information sources in accordance with the current legislation;
- protection of data, including personal data, from unauthorised access, interference and destruction;
- ensuring the accuracy and integrity of data, including personal data;
- provision of different levels of access to authorised and external users to the information contained in the database of the regional development geographic information system in accordance with the established rights;
- possibility of registration and identification of authorised users, in particular, by means of electronic means of identification that ensure unambiguous identification of a person;
- performing other functions of the regional development geographic information system.

The state of regional development in Ukraine is characterised by different levels of economic and social development in different regions of the country. In order to balance these processes and the need for effective post-war reconstruction, the organisation of geoinformation space, collection and processing of geospatial data, analysis and visualisation of results, interactive access to data, as well as ensuring the security and confidentiality of information, are essential.

The following factors should be taken into account for the effective management of regional development and post-war reconstruction in Ukraine and for the purpose of monitoring and evaluating the effectiveness of strategic planning:

- economic potential of the region, including the availability of natural resources, infrastructure, level of entrepreneurship and other important economic indicators;
- social indicators, such as the level of education, healthcare, housing conditions and other aspects of life;
- transport infrastructure and accessibility of the region for investment and business development;
- environmental situation in the region and compliance with environmental safety standards;
- opportunities for the development of tourism and cultural heritage of the region;
- availability and quality of institutional support for the region's development and attractiveness for investment;
- peculiarities of the region's geographical location and its connection with other regions of the country and the world.

Important elements that substantiate the scientific novelty of the scientific article in comparison with the available data are the formation of methodology and methodological recommendations for the integration of information resources of monitoring subjects, including statistical and geospatial information; formation and maintenance of a data warehouse and thematic databases of socio-economic and budgetary-financial indicators established for the purposes of regional development and post-war reconstruction of the country; modelling and analysis of the socio-economic status of objects of the state regional strategy (Ben-David, Papell, 1998; Beugelsdijk, Klasing, Milionis, 2018; Crescenzi, Iammarino, 2017; Dijkstra, Poelman, Rodríguez-Pose, 2020; European Commission, 2022; Rodríguez-Pose, Ganau, 2022).

In this regard, it is important to research the development of conceptual foundations of a geographic information system for regional development for effective management of strategic planning and post-war reconstruction of territories in Ukraine, which will provide a modern level of digitalisation in monitoring and evaluating the development of regions and communities and will facilitate a full transition to decision-making based on geospatial and analytical data.

Regional development and post-war recovery are complex and multifaceted processes that require a comprehensive approach and the use of various tools. In this context, a geographic information system can become a powerful tool to support regional development and post-war reconstruction in Ukraine.

On the one hand, the use of a geographic information system will allow obtaining more accurate and complete information about the territories and their socio-economic features. This can help to address issues related to territorial development planning, monitoring and evaluation of strategic planning, efficient use of natural resources, environmental protection, etc.

On the other hand, the use of a geographic information system will allow for a quick and effective response to the negative effects of war and various natural and man-made disasters. In particular, it can be useful for planning recovery operations, monitoring and evaluating the effectiveness of strategic planning, and ensuring efficient allocation of resources for the restoration of infrastructure and the social sphere.

The objects of the geographic information system for monitoring and evaluation are socio-economic processes and results of socio-economic development of regions, and in cases specified by law – macro-regions, micro-regions, territorial communities, territories requiring special attention from the state, characterised by quantitative and qualitative, static or dynamic parameters.

The urgent issues addressed by the scientific approach are the formation of a mechanism for tracking regional development indicators based on geoinformation support, which is based on available official statistics, information from central executive authorities and local governments, as well as tracking and analysing territorial trends, dynamics and structural changes in accordance with the goals, directions and objectives of strategic planning at all levels.

Thus, the use of a geographic information system as a tool to support regional development and post-war reconstruction in Ukraine is an extremely important task that has great potential for improving the welfare of the population and ensuring sustainable development of the country as a whole. At the same time, the geographic information system of regional development in Ukraine is aimed at improving the efficiency of regional development management (analysis of the state of territories, their potential and problems) to develop and implement effective regional development strategies, ensure optimal use of resources, increase the competitiveness of regions and attractiveness for investors, ensure environmental safety, improve the welfare of the population and overcome territorial differences.

Conclusions, proposals, recommendations

1) Taking into account international experience, it is important for Ukraine to choose a model of regional policy that would take into account the basic legal, economic, social, environmental, humanitarian and organisational principles of the state regional policy as an integral part of Ukraine's domestic policy and the conditions of martial law.
2) Scientific approaches to the formation of geoinformation support for regional development and post-war reconstruction of territorial communities of Ukraine should include the possibility of collecting and systematising geospatial and semantic data on the socio-economic life of communities and regions, which, in turn, will allow identifying problems at the local level.
3) Development of the documents of the state regional policy system should be based on indicators of the socio-economic situation, and the decision-making process in this area will become reasonable, predictable and objective based on the use of geospatial data.
4) Establishing the relationship between strategic goals, objectives, measures and indicators will automate the assessment of strategic goals from the local to the state level, as well as monitoring and evaluation of the implementation of the state regional policy.
5) Based on the automated assessment of socio-economic development indicators in the geographic information system, it is possible to significantly improve the quality of further management decisions in the field of strategic planning and to promote investment potential through openness to investors, business and stakeholders of regional development and post-war restoration of territorial communities in Ukraine.

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Proceedings of the 2024 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" No 58
Jelgava, LBTU ESAF, 16-17 May 2024, pp. 199-208
DOI: 10.22616/ESRD.2024.58.020

RESIDENTS' PARTICIPATION IN THE DECISION-MAKING OF THE MUNICIPALITY OF MARUPE

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Abstract. The right of society to participate in the decision-making processes of the state and local governments, in the development and management of development policy is one of the basic principles of a democratic state system. Taking into account the direct communication link between local governments and their residents and their role as organizations that MPs, residents of the territory, non-governmental organizations and other interest representatives jointly create, maintain and participate in, it is municipalities that have the most significant opportunities to unite various representative groups of society, as well as to solve issues and problems with an interdisciplinary approach, which is why participation issues are most often viewed directly at the level of local municipalities. The purpose of the article is to study and analyse the participation of residents in the decision-making of the municipality of Marupe region and the factors affecting it. The study used a combined research approach using a population survey and semi-structured interviews. The most significant results of the study are related to the fact that residents' participation in the decision-making process of the Marupe region municipality is concentrated at the lowest levels of participation, where the municipality promotes informing and consulting residents. The lack of transport infrastructure, the actions of municipality and residents after the previous division of counties and the involvement of individuals in the environment are the lack of a sense of belonging as a factor hindering the participation of residents in the participation processes in the newly created Marupe county.

Key words: residents' participation, decision-making, Marupe Municipality.

JEL code: Z18; R59

Introduction

The involvement of society, especially local residents, or participation in public administration decision-making has now become an important and topical issue in social sciences both in the world and in Latvia (Pirannejad et al., 2019; Roman & Fellnhofer, 2022; Sęk & Czarnowski, 2022; Levits, 2023).

One of the most effective ways to increase participation and involve residents in governance, as well as to improve the stability and security of communities, is the so-called *decentralization* of power and decision-making (Adnan et al., 2022; Pirannejad et al., 2019). Since decentralization is based on the principle of subsidiarity, it means bringing power closer to residents. This requires sustainable and organized work of the involved institutions, both at the local and central level. It also involves continuously realigning the relationship between different stakeholders through constant dialogue and communication.

On 1 July 2021, as a result of the administrative territorial reform, Marupe parish of Marupe County with the former Salas parish of Babite County and Babite parish were merged into the new Marupe County with the administrative centre - Marupe village. The changes have affected the daily work of the municipality's structure, services and institutions, as well as the residents' participation in discussing topical issues of the development of the county; therefore it is currently relevant to conduct a study to find out whether and in what way residents are provided with information about the decisions made by the Council in the municipality, and what the opportunities to participate in municipal decision-making are.

The purpose of the article is to study and analyze the participation of residents in the decision-making of the municipality of Marupe region and the factors affecting it. The tasks of the article are to theoretically characterize citizen participation and to conduct empirical research in order to find out what factors influence citizen participation in decision-making in the municipality of Marupe County and what methods are used to promote it. In Latvia, by citizens we understand a native or naturalized persons who owe

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allegiance to the state and has a right to vote on the state level. Group of people living in Latvia are residents or non-citizens; they do not vote in state or local elections, but they can take part in civic activities. The authors put forward two hypotheses: 1) residents' participation in the decision-making process of the municipality of Marupe region is concentrated at the lowest levels of participation, in which the municipality promotes informing and consulting residents; 2) the factor hindering residents' involvement in participation processes is the lack of a sense of belonging to the newly created Marupe County.

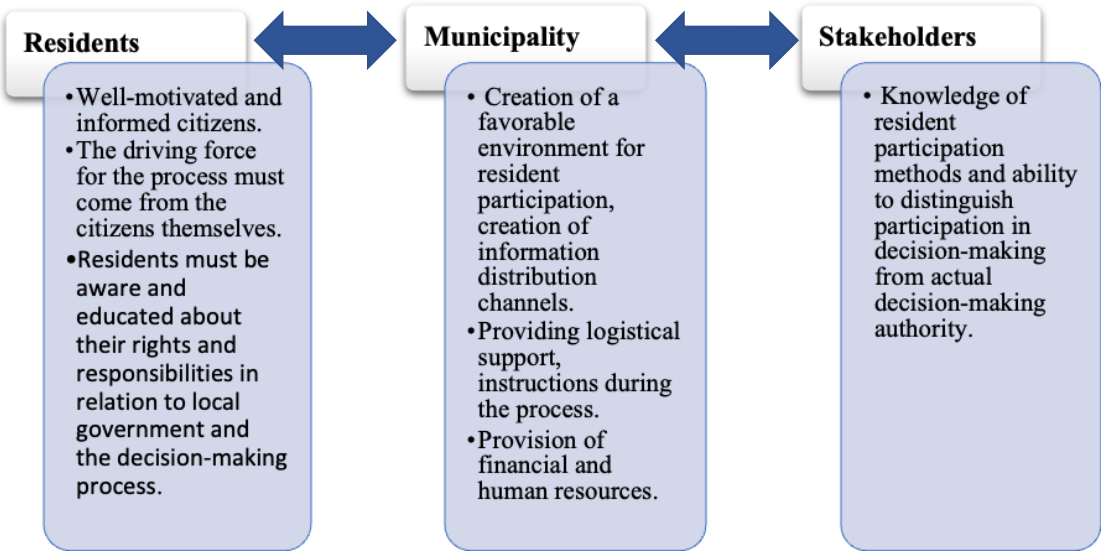
To achieve the objective, a combined research approach was applied using a population survey and semi-structured face-to-face interviews. 325 respondents aged from 18 to 89 years participated in the survey. The sample of respondents was created according to the principles of convenience or available sampling. The fieldwork took place from 21 February 2023 to 5 April 2023 in Marupe, Babite and Sala parishes. The survey was available on google.doc. Information about the survey was distributed through the communication channels of the Marupe County municipality, in cooperation with schools, using the e-class system, as well as in printed form in the Mazcenas library of the Marupe County municipality and the library of the Cultural Education Centre of the Babite parish, in order to better reach the County's senior residents. As part of the qualitative method, 3 semi-structured interviews were conducted (one with a representative of the municipality, two with the residents of the county). The sample of informants was formed according to the principles of purposive and snowball sampling; one local government representative and two socially active residents from Sala and Babite parishes participated in the interview.

Theoretical characteristics of resident participation

The main prerequisite for the implementation of a sustainable democratic reform process is the ability to make residents trust the elected leadership. The stronger the connection between the two sides (*residents on the one hand and elected officials on the other*), the more successful and democratic the society will be (Krupiy 2020). Undoubtedly, these relations will strengthen in proportion to the readiness of elected officials to respond to the true needs of residents, represent their interests and improve their quality of life. This factor becomes increasingly important at the local level of governance, where the relationship between the two parties is more evident. Individuals and groups involved in the decision-making process are called stakeholders. These parties have an interest in local policy decision-making and implementation, as these decisions affect residents' well-being and daily life (Roman & Fellnhofer, 2022).

There is an opinion that the public is not aware of its role in the decision-making process, because it is not informed (or does not feel that the municipality needs public support by evaluating, analysing or getting involved), but it is clearly known that the municipality acts in the interests of its residents. In the framework of the article, the authors understand the concept of citizen participation as a process in which interested parties living in a certain geographical area participate in planning the development of the territory, making important decisions of the territory and creating new projects. Residents jointly control the setting of priorities, the identification of needs and values, the creation of their mechanisms, the allocation of resources and access to public goods and services (Pilsoniskas iesaistes veicinasana pasvaldiba, 2017; Definition of Participation, 2004). Citizen participation can also be explained and analysed by the code of good practice of citizen participation, which includes four levels of resident participation in decision-making - information, consultation, dialogue and partnership (PanTERA- WP6, 2019), which explains the levels of public participation, starting from the lowest involvement - transfer of information for society, consultations, dialogues, up to the greatest involvement - creating a partnership between non-governmental organizations, state institutions and residents. It is important to note that these levels of

participation are adaptable to every decision-making process, but are especially important in specific and topical processes.



Source: created by the authors based on Pirannejad et al. 2019

Fig. 1. **Basic principles of citizen participation**

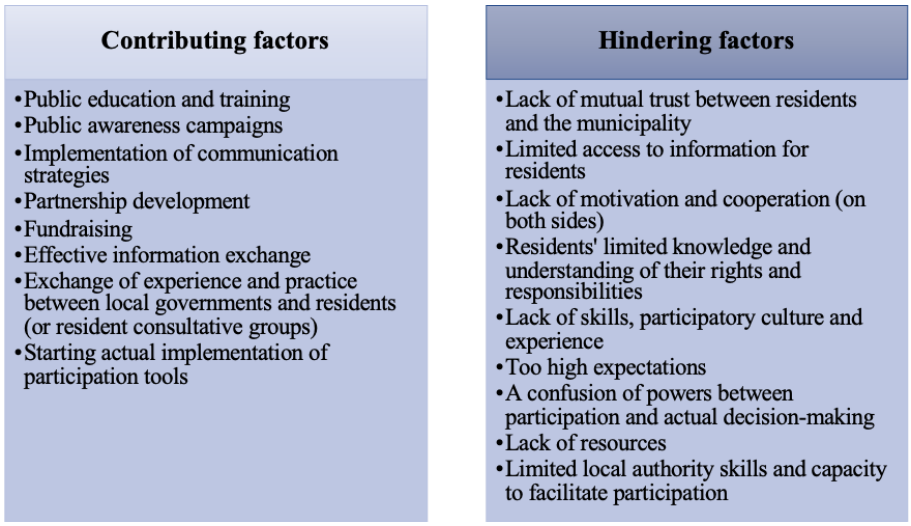
Decision-making, on the other hand, is explained as a process that brings individuals together in a group to solve problems and settle on a commonly chosen course of action among several alternative scenarios. Figure 1 shows the basic principles of citizen participation (Roman & Fellnhofer, 2022) between the involved parties.

Residents of any municipality must be aware and educated about their rights and responsibilities in relation to local government and the decision-making process. According to the authors, involved parties must be open about their actions, as well as flexible and able to negotiate and cooperate.

Cooperation is provided by **the residents' advisory group model**, which is one of the tools to ensure participation in order to provide ongoing consultations to municipal councils and administrations on various issues of interest to local residents. The advantages and positive aspects of using resident advisory groups as a local decision-making tool are as follows: first, increased transparency in the work of local elected officials; secondly, positive conditions have been created for building bonds of confidence and assurance between the two parties; thirdly, technical and quality assessment expertise of residents to support the work of local officials and, fourthly, organized relations between the municipality and representatives of different communities - especially valid to ethnically and politically mixed municipalities (Sęk & Czarnowski, 2022).

The initiative for the practical implementation and creation of such an approach must come from the residents, trying to influence local officials in making decisions that have a direct impact on their daily lives. However, practice, as research shows, has also revealed the opposite: the municipality, wanting to popularize its work as transparent, forms advisory groups of residents (composed of representatives loyal to the municipality) and involves residents in local decision-making to solve specific, practical issues common to local residents (Kopackova, Komarkova & Horak, 2022). In essence, residents' consultative groups are created whenever the local government has to perform a task that would benefit from residents' involvement in the decision-making process (Duygan, Fischer & Ingold, 2023).

The review of literature allows identifying the main factors promoting and hindering residents' participation (Figure 2).



Source: created by the authors based on Roman & Fellnhofer 2022

Fig. 2. **Facilitating and hindering factors of residents' participation**

Among the essential factors for the execution of municipal communication and cooperation with residents is not only the circulation of information and the presentation of current events, but also the promotion of a sense of belonging to the municipality among residents.

Regarding the sense of belonging, four basic aspects are distinguished:

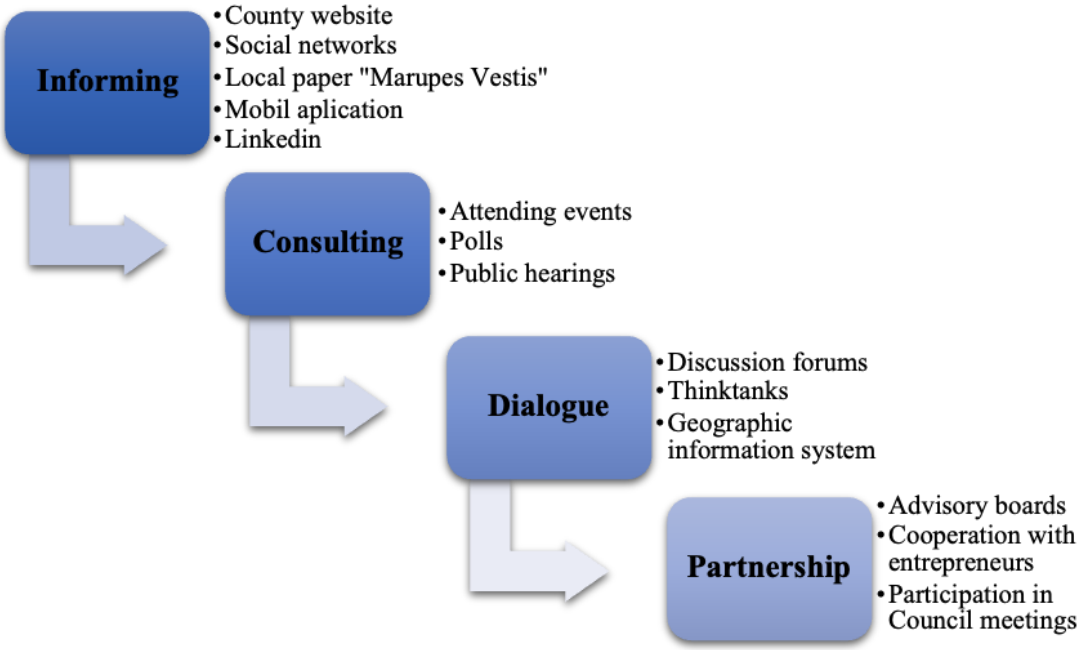
1) cultural aspect (maintenance and preservation of cultural values and norms in the environment, as well as a sense of equality with the local community/group);
2) structural aspect (equality of rights in the expression of opinions, preferences, for example, in local government elections, the right to participate in organizational life, equality in the availability of infrastructure, as well as other related aspects);
3) socially interactive aspect (interaction with the local community/group, participation in social life, events etc.);
4) and identity aspect (the preservation of a person's or group's identity, such as symbols, traditions, values and their equality for their further development) (Martiny et al., 2020).

The sense of belonging to a place is closely related to environmental factors, infrastructure availability, personal preferences and choices. It is very important to appreciate that belonging to a place or a municipality can change in a person's life cycle depending on various external and internal conditions, such as social, economic status, age, gender, occupation. It should also be noted that a person's internal environment (emotional experiences, general level of satisfaction and other factors) is closely related to the sense of belonging to the surrounding environment (Scannell & Gifford, 2017). A person's overall satisfaction and belonging to the surrounding environment, particularly to the municipality is largely determined by the socioeconomic status - the higher it is, the higher the sense of belonging, and vice versa (Duffy et al., 2020).

Citizen participation in decision-making as a cornerstone of a democratic society model increases transparency and makes local government officials more accountable for their decisions, bringing the involved parties closer and uniting them. One of the models for strengthening this link is the creation of advisory groups of residents, which ensure continuous dialogue and co-responsibility in decision-making between the two parties.

Research results and discussion

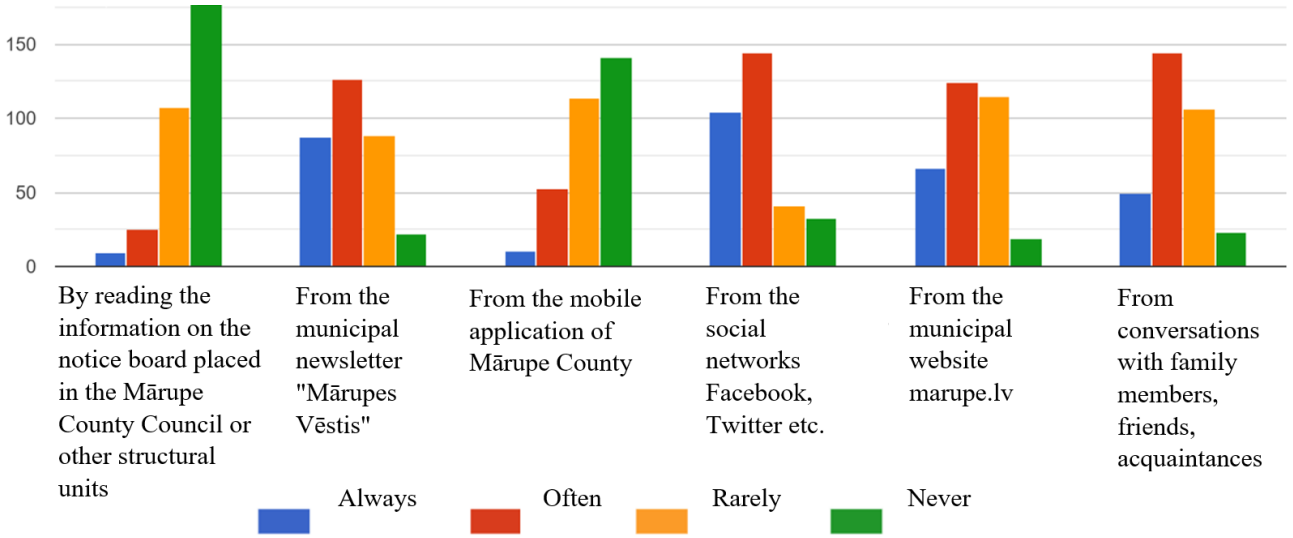
The obtained results are summarized in Figure 3, which shows the levels of public participation in the Municipality of Marupe County.



Source: compiled by the authors based on survey results

Fig. 3. **The model of participation of residents of Marupe County**

Informing. Analysing the question of the survey questionnaire of residents of Marupe County: "Are you informed about the possibility to participate in the decision-making processes and public activities of the municipality?", 57.2% admit that they are informed, 20.9% admit that they are not informed, but 21.8% explain that there is no information about municipal decision-making and public activities in general. The level of awareness is closely related to the interest and initiative of residents. Residents mostly use social networks like Facebook to get information (Figure 4). The statistical significance of this issue appears in several aspects: social networks in Marupe county are mostly used by residents in the age group from 18 to 35 years old, the municipal newsletter "Marupes Vestis" is used by residents in the age group 56 years and older; in addition, the residents of Babite parish use conversations with family members, friends, relatives, and acquaintances to obtain information.

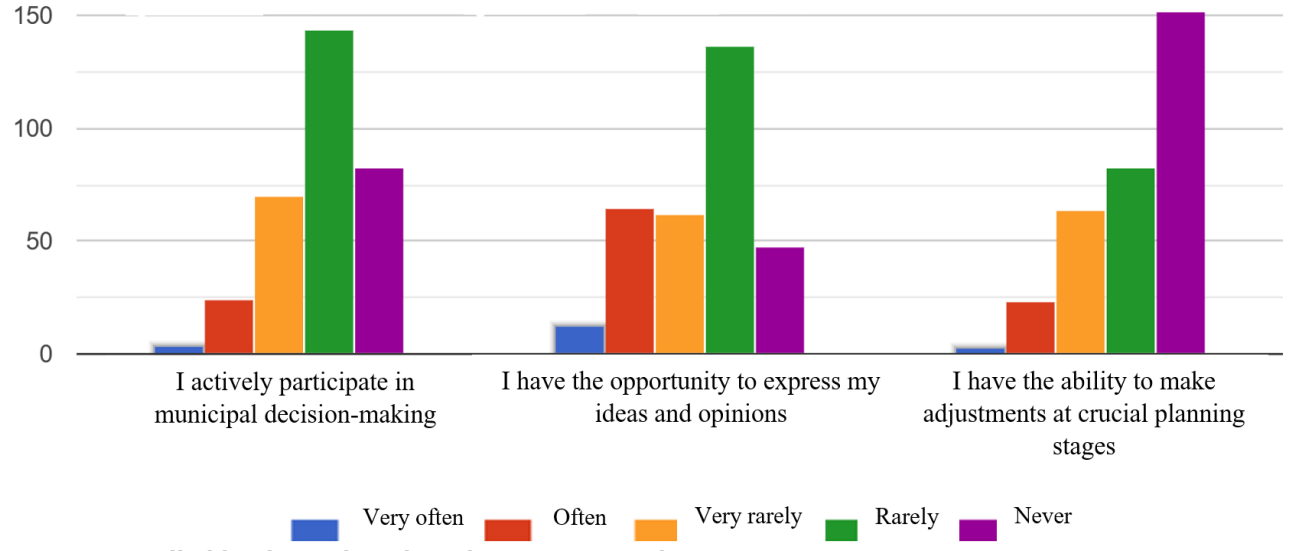


Source: compiled by the authors based on survey results

Fig. 4. **Sources of information used by residents in the municipality of Marupe County, n>325**

Currently, residents lack information about the existence, use, and functions of the mobile app, so residents rarely or never use it as a channel for obtaining information. In the Municipality of Marupe County, information is available to residents, but the saturation of information in the existing information channels is an influencing and hindering factor.

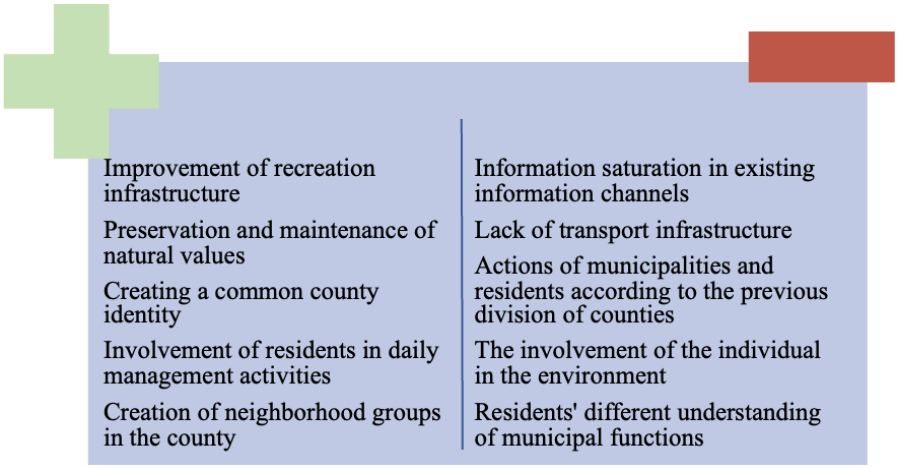
Consulting. Residents rarely or never get involved in municipal work and decision-making (Fig. 5). The statistical significance of this issue appears in the following aspects: the largest percentage (54%) of the residents of Babite parish actively participate in the decision-making of the municipality, 9% of residents in the age group of 56 years and older express the position that they are given the opportunity to express their ideas and opinions often; 62% of the inhabitants of Babite parish express the opinion that there has never been an opportunity to make corrections in the crucial stages of planning.



Source: compiled by the authors based on survey results

Fig. 5. **Residents' participation in municipal work and decision-making, n>325**

It is important to note that the availability of infrastructure and mobility and the political and organizational environment directly affect the sense of belonging to the county. Figure 6 summarizes the enabling (+) and hindering (-) factors that affect participation from the perspective of residents of Marupe County.



Source: created by the author, based on the results of interviews and questionnaires

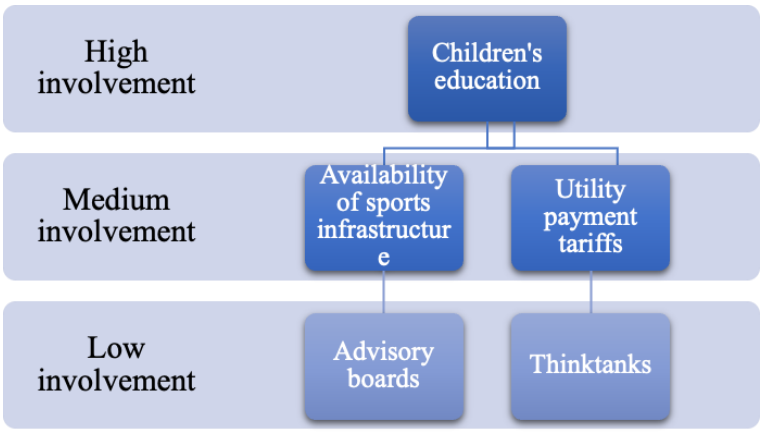
Fig. 6. **Facilitating and hindering factors affecting the participation of residents of Marupe region for the promotion of participation**

An important factor hindering residents' participation is the lack of transport infrastructure, which directly affects the sense of belonging in the newly created Marupe County. Residents explain that in the new county, all activities are oriented towards densely populated areas; this is especially proven by the absence of public transport between parishes.

Dialogue and partnership. The level of dialogue and partnership in the municipality of Marupe region in the answers is also related to the feeling of belonging and the factors affecting it and the individual's involvement in the living environment. If the municipality provides residents with information about current events in the municipality, organizes public consultations, creates residents' forums and discussions - this is a very important factor promoting the feeling of belonging. The involvement of the individual in the social, political and organizational environment also contributes to the feeling of belonging in the residents, but in this matter it is very important to observe the balance, so that the resident does not feel taken advantage of, if too much of a burden is "placed" on him. In an interview, the representative of the municipality admits that he is confused why people write various objections about current issues, but do not want to get involved in advisory councils, noting that residents may not participate in advisory councils as participants, but they have the opportunity to be listeners in meetings where they have the opportunity to express their position on the issue under discussion.

The Municipality of Marupe County expresses its desire for residents' participation in decision-making, the desire for residents to respond to surveys, as well as to come to think tanks in greater numbers. Think tanks as a form of citizen participation in the Municipality of Marupe County are a novelty that was created within the framework of the participation budget. They are conducted in small groups, in a specific neighbourhood, talking about what a participatory budget is, how the resident has the opportunity to present his idea, as well as present his needs, creating a dialogue. Looking at the results of the open question of the survey questionnaire, it should be concluded that at the level of consultation, the residents lack arguments from the municipality, why the involvement of the residents is important and how it can affect them. Residents lack a visible result of the respective implemented cases in social networks, on the website, in the regional newspaper and in other channels. The authors of the paper conclude that the residents of Marupe County lack motivation to participate in such events. According to residents, informational campaigns are necessary to provide residents with information about the functions of advisory councils and the advantages of Thinktanks. Residents also express their view that there should be more interactive polling, not only about future projects, but also about problems today.

Issues that touch the lives of each individual in the most direct way earn the greatest feedback and response - engagement. On the other hand, if there is more talk about entertainment issues, in the direction of less important issues, then this feedback link is also weaker. Basic needs are very important to the population and it is important for the municipality to provide these basic needs to the population. Figure 7 shows the participation levels for the issues with the highest involvement and vice versa - the least involvement.



Source: Compiled by the authors based on the results of the interviews

Fig. 7. **Hierarchical structure of the basic needs of the population**

Residents want to solve issues of interest to them by forming interest associations in order to engage in discussions that will contribute to the improvement of their quality of life. It is important to emphasize that there is no dialogue between the residents of the County parishes, because each parish acts in its own interests, for the benefit of its own parish. According to the authors, the municipality in the united county should promote cooperation by uniting voluntary neighbourhood associations and like-minded groups of residents, invite to create dialogue and partnership that would promote the growth of the County and the cohesion of the residents.

Overall, it should be concluded that the proposed hypotheses will be confirmed, the factors contributing to residents' participation are: improvement of recreation infrastructure, preservation and maintenance of natural values, formation of a common county identity, involvement of residents in daily management activities and creation of neighbourhood groups in the county. In the county, there are positive features of the residents' desire to come together, for example, creating neighbourhood groups in parishes, where it would be possible to solve various issues of infrastructure, natural values and daily management. The factors hindering residents' participation are: saturation of information in existing information channels and residents' different understanding of municipal functions. The functions of the public sector are significantly different from the functions of the private sector, so the residents have a lack of understanding of what the municipality is entitled to do and what it is not entitled to do. The municipality needs to carry out explanatory work with the residents in order to reach a consensus on specific issues through the exchange of arguments, as well as to carry out effective circulation of current information through the municipality's information channels. Regarding the sense of belonging of the population, the main hindering factors are: the lack of transport infrastructure, the actions of municipalities and residents after the previous division of counties and the involvement of the individual in the environment. The residents' sense of belonging to the newly created Marupe County is not encouraged, because the residents believe that each party defends its interests after the previous division of counties and there are differences between parishes, for example,

the absence of a public transport network, which affects the involvement of residents in making current decisions of the county.

Conclusions, proposals, recommendations

1) Residents' participation in decision-making unites both society members with each other and society with the local government - it promotes transparency and the responsibility of local government officials for their decisions.

2) The establishment of advisory groups in municipalities ensures continuous dialogue and co-responsibility in decision-making between residents, municipal employees and interested parties, creating mutual feedback, which is the essence of the basic principles of effective citizen participation.

3) In general, the residents of Marupe County are informed about the work of the municipality and social activities in the county, but there is a lack of support and motivation to participate within the consultation level, as there is a lack of explanation from the municipality about the impact and result of the involvement.

4) At the level of dialogue and partnership, residents' involvement is determined by whether the issue affects the residents directly and whether the problem situation is territorially adjacent to them. Basic needs such as children's education, infrastructure and mobility, as well as utility bills are also very important to residents. Residents admit that they do not want to participate in creating a dialogue with the municipality, for example in thinktanks, because until now there has been no opportunity to make sure that their opinion is taken into account and that they are able to influence decision-making.

5) In order to promote residents' participation in municipal work and decision-making, it would be advisable for the municipality to provide hybrid meetings of both public consultation and advisory boards, so that as many residents as possible can participate and make suggestions. It is necessary to attract various specialists so that the residents can also receive answers to questions of interest to them.

6) In the Municipality of Marupe County, it is necessary to improve the public transport network, so that the residents of Babite and Sala also have the opportunity to reach the administrative centre, thus providing the residents with the opportunity to receive services in person and attend activities organized by the County.

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Proceedings of the 2024 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" No 58
Jelgava, LBTU ESAF, 16-17 May 2024, pp. 209-219
DOI: 10.22616/ESRD.2024.58.021

POLICY-PLANNING INITIATIVES AND HYDROGEN APPLICATION FACILITATION PROJECTS IN LATVIA

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Abstract. The European Union Green Deal agenda calls for cleaner and more environmentally friendly energy sources for future development. One of the most promising renewable fuels that has the potential to replace fossil energy sources in the next few decades is hydrogen. The aim of the research is to determine the main directions of Latvian policy for hydrogen utilisation in the economy and discover the nature of hydrogen projects. Research provides a review of the Latvian policy initiatives regarding hydrogen, analyses hydrogen projects, and determines common pathways between projects and policy planning documents. Many projects within the research framework can be described as multidimensional and are pilot projects examining possible scenarios for developing some elements of the overall hydrogen industry. More than two of the largest initiatives concerning green hydrogen production and hydrogen application in civil aviation are in the research phase. While renewable resources are often included in major Latvian policy planning documents, hydrogen is often neglected in the aolicy-building process. However, current and future hydrogen projects are associated with two main sectoral policy planning documents: Transport Development Guidelines 2021-2027 and Latvia's National Energy and Climate Plan 2021-2030. According to existing policy and projects, transport, along with storage and refiling infrastructure, will be the first beneficiaries of hydrogen. Finally, the Latvian government must adopt an overall policy roadmap on the hydrogen agenda.

Key words: green hydrogen, policy planning, hydrogen projects, renewable energy.
JEL code: R00

Introduction

The EU Green Agenda establishes the need for cleaner and more sustainable energy sources for further economic development. One of the most promising renewable energy sources that can already be produced in large amounts is hydrogen. Moreover, hydrogen obtained from renewable resources like wind and solar power is one of the most promising energy sources for replacing fossil fuels in the next few decades. According to this paradigm, the policies of every EU member state serve as crucial pillars for the growth of the hydrogen sector.

The EU hydrogen policy reflects an idea about the government's importance for new industry development within a particular area. Currently, these initiatives are offering significant funding for various green and low-carbon hydrogen-related projects. This financial support must encourage EU member states to create their own visions and policy planning documents about the use of hydrogen in their local economies, thereby assisting in the energy transition from fossil fuels to carbon-neutral energy sources. Of the 27 EU member states, 16 have adopted hydrogen roadmaps for their economies. At this moment, Latvia is one of the 11 countries within the Union without that kind of policy-planning document. However, since last year, some projects in the field of hydrogen production and application have been on their way in Latvia.

Discourse regarding hydrogen uses widely accepted three-colour typology. Hydrogen retrieved from renewable sources is marked as green hydrogen; blue (low-carbon) hydrogen is produced from fossil fuels, and emissions from this process are captured, stored, or used in other industrial processes; grey hydrogen is retrieved from fossil fuels without absorption of emission gases from the production process (International Energy Agency, 2023). With respect to the EU energy transition initiative, this paper analyses policies and projects regarding green and blue hydrogen.

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The hypothesis of the study suggests that, despite the insufficiency of hydrogen policy guidelines in Latvia, projects are aimed at hydrogen application in the transport sector. The object of the research is Latvian policy-planning initiatives in the area of hydrogen application in the economy. The subject of this study is hydrogen-related projects reflecting policy initiatives along local or regional boundaries.

The aim of the research is to determine the main directions of Latvian policy for hydrogen utilisation in the economy and discover the nature of hydrogen projects. The specified aim is accompanied by the following tasks: to review the Latvian policy documents and initiatives mentioning hydrogen research and application scenarios; assess hydrogen-related projects, and determine common pathways between projects and policy planning documents in Latvia.

The authors employed the monographic study method and quantitative content analysis to complete the tasks that were stated in the study. Policy planning documents and normative acts across different fields of the economy, press releases, presentations, project assessments, and other sources are the foundation of the study's information base. The information basis for the study topic corresponds to the time period until March 2024. The authors emphasise the high dynamism of the hydrogen field and possible rapid changes in different aspects of the researched topic.

Research provides novelty by bringing forth analyses of Latvian policy and projects in the field of hydrogen application within the economy. These topics haven't been highlighted in previous papers concerning the hydrogen agenda in Latvia.

Research results and discussion

This section of the study is divided into three parts. The first part represents the analysis of Latvian policy planning documents and normative acts concerning hydrogen application within the economy. The second part describes and assesses different hydrogen-related projects in Latvia. And the final part is designed for discussion corresponding to policy initiatives and characteristics of hydrogen projects within Latvia.

1. Hydrogen-related initiatives in Latvian policy planning

Throughout the history of theoretical thought, a wide list of authors has emphasised the importance of the government in economic affairs. Proponents of larger government involvement highlight the importance of public administration actions promoting demand, employment, investments, and other building blocks of economic growth (Keynes, 2018; Myrdal, 1957; Thirlwall, 2002; Stiglitz, 2021). In this perspective, it is obvious that government policy planning documents with large field priorities and tasks are present for the purpose of the development of different parts of the economy.

Policy-planning initiatives of individual member states of the EU derive from policy patterns within EU institutions, especially the European Commission. Moreover, national policy planning is derived not only from the guidelines of EU planning documents but also from EU budget priorities and programmes (Wolff, 2015; Economidou et al., 2022; Teixeira, Tavares-Lehmann, 2022; Wappler et al., 2022). This is the case for the implementation of new frameworks for the energy transition process from fossil fuels to carbon-neutral energy sources.

Discussion concerning the further economic development of EU member states is impossible without the 17 sustainable development objectives set by the United Nations in 2015, which are considered the cornerstones of further policy-planning patterns in the EU (European Commission, 2023). Moreover, the seventh aim of the Paris agreement calls for a significantly increased share of renewables in the global energy mix and requires large amounts of investment in clean energy technologies and infrastructure

(United Nations, 2015). As might be expected, hydrogen derived from renewable energy sources such as hydropower, biomass, solar, wind, and other forms of energy should also be perceived as the foundation for new energy initiatives among EU member states (2023a).

At the beginning, it must be highlighted that since the Latvian government doesn't have a particular hydrogen strategy or roadmap, hydrogen policy planning issues in Latvia have been very limited and mostly integrated into the general term of renewable energy. Despite this fact, some direct measures and goals can be spotted in different fields of policy planning agendas. According to the main Latvian government planning document, Sustainable Development Strategy of Latvia until 2030, hydrogen is mentioned as a possible source of renewable energy in the transport sector (Saeima of the Republic of Latvia, 2010).

If policy documents with particular actions are observed, it must be noted that there is no mention of hydrogen of any kind in the major Latvian policy planning action plan, the National Development Plan of Latvia for 2021–2027. According to this document, the replacement of fossil fuels in the economy is outlined by using local renewable sources like wind and solar power for electricity production (Cross-Sectoral Coordination Centre, 2020). However, there are some hydrogen references and specific actions inside specific action plans concerning particular areas of public policy or the economy itself.

The main policy-planning documents of Latvia highlight renewable energy application in the transport sector, and transport is often viewed as the primary area of application of hydrogen (Singh et al., 2015; Zemite et al., 2023; Le gouvernement luxembourgeois, 2021; Danish Ministry of Climate, Energy and Utilities, 2021). In the absence of industries like refining, mineral fertiliser, and steel production where hydrogen can be applied in relative short terms, transportation is another attractive area for its utilisation. By constructing hydrogen filling stations and investigating applications for this gas in major commercial or public transportation (trucks, trains, buses, ships etc.), the transportation industry may reduce its carbon footprint.

The implementation plan of the Transport Development Guidelines 2021-2027 sets out a number of measures in the area of hydrogen application. Firstly, the development and maintenance of alternative fuel infrastructure, including refuelling stations. Secondly, the research of scenarios for the development of hydrogen fuel use in Latvia, the most cost-effective solutions for the provision of renewable hydrogen in the transport sector, and evaluating the most appropriate types of hydrogen production, refuelling, and supply possibilities. Finally, it assesses the feasibility of using hydrogen cell technology in trains (Ministry of Transport…, 2021). As can be noted, these policy guidelines until 2027 provide a more ground-level, project-oriented approach that is focused on research, scenario building for hydrogen utilisation, and pilot projects for commercialization.

Moreover, the importance of defossilization of the transport sector is promoted in Latvia's Air Pollution Reduction Action Plan 2020–2030. It states that transport policy should focus on promoting the long-term transition towards more environmentally friendly vehicles, including through hydrogen fuel transport (Cabinet of Ministers, 2020). Furthermore, within Latvia's Strategic Plan for the Common Agricultural Policy 2023-2027 there is one general assumption about the possibility of hydrogen utilisation in machinery (Ministry of Agriculture…, 2023).

According to Latvia's National Energy and Climate Plan 2021–2030, hydrogen is perceived as an alternative power source instead of fossil fuels in the transportation sector in the long term. Moreover, the government is committed to supporting research into alternative fuels, including hydrogen, production, infrastructure development, and the integration of innovative solutions in the energy system, transport, and logistics sectors. Three clear actions can be identified within the document. First, there is a plan to implement transnational projects for the construction of offshore wind farms in cooperation with Lithuania

and Estonia, as well as to evaluate the possibility of installing equipment for producing hydrogen from wind energy. Second, as part of the modernization of energy infrastructure, it was planned to carry out a study on the possibilities of adapting the local natural gas transmission system for hydrogen transportation by the end of 2023. Third, it is intended to develop an action plan for the development of hydrogen infrastructure and market conditions (Ministry of Economics…, 2021).

While the domination of hydrogen initiatives in the transport sector is obvious in the policy planning agenda, evident at the same time is the commitment to creating green hydrogen production and developing transmission infrastructure for this fuel. Since Latvia lacks industry capable of hydrogen utilisation in large amounts, another major hydrogen application area could be the local energy sector. It must be mentioned that the National Industrial Policy Guidelines 2021-2027 don't provide any reference to hydrogen but declare the role of renewables in the efficient use of energy sources, reduction of energy consumption, and transition to the use of renewable energy sources in manufacturing through the transition to a clean circular economy in the EU (Ministry of Economics…, 2023).

It must be noted that the current government, within its Action Plan for the Implementation of the Declaration on the Planned Activities of the Cabinet of Ministers, has included an action providing development of the Latvian Hydrogen and Green Fuels Industrial Development Plan and setting out infrastructure development projects in Latvia, including main pipelines, ports, storage infrastructure, and industrial parks for hydrogen (Cabinet of Ministers…, 2024).

2. Hydrogen-related projects with Latvia participation

In the last couple of years, there has been a notable increase in project numbers dealing with hydrogen agendas in different sectors of the economy. The majority of the projects are in the framework of international cooperation within EU financial support schemes, but there are some initiatives designed by local market participants aimed at increasing hydrogen utilisation.

The Freeport of Ventspils authority has signed a contract with PurpleGreen Energy Ltd. for the research stage of building the green hydrogen plant in Ventspils. The project aims to develop Ventspils into a hub for future energy production and export, providing a competitive advantage for companies. The project initiators are planning to produce different products and fuels from green hydrogen. For example, the hydrogen plant will use existing Ventspils Freeport infrastructure and collaborate with local companies to export energy in the form of e-methanol or "green" ammonia (Freeport of Ventspils Authority, 2023).

The Latvian Hydrogen Association and Riga Airport are partnering to promote hydrogen solutions in the Latvian aviation sector in support of Hamburg Airport's initiative BSR HyAirport. The project, initiated by Hamburg Airport, aims to connect rural regions of the Baltic Sea with existing aviation routes using small hydrogen-powered planes. The project, which began in November 2023 and will take about three years, involves 16 partners, including Riga Airport, Latvia University of Life Sciences and Technologies, aviation fuel supplier Gulfsteram Oil, and 24 associated organizations. The project has a budget of around 4.8 million euros, with 20% of the sum going to Hamburg Airport and 80% EU funding for the remaining partners. The project aims to revive regional air travel and develop a green, gaseous hydrogen supply chain from production to refuelling of aircraft or airport ground equipment. The project also pursued to develop preconditions for airport infrastructure designed to hydrogen-powered planes (Riga Airport, 2023).

The first interregional green hydrogen value chain project (H_2Value) since the end of 2022 is taking place in South Estonia, Tartu region, and Northern Latvia, Vidzeme region, with nine partners from Estonia, Latvia, and the Netherlands. It will be implemented for three years, and it aims to establish two pilot projects in the Tartu and Vidzeme regions, including setting up a small-scale green hydrogen production

plant, establishing a green hydrogen refuelling station, testing hydrogen transportation via road, and using this gas as a zero-emissions fuel source. The project partners will focus on developing an interregional business and investment plan. The total budget of the project is almost 4.3 million euros. Among the participants in the project is one of the largest waste management companies in Latvia, SIA "ZAAO" (H_2Value, 2023).

HyTruck is a project focusing on designing a network of hydrogen refuelling stations for large trucks, aiming to reduce emissions in road freight transport. The initiative aims to help public authorities develop a transnational network of green hydrogen refuelling stations for large trucks. The network would provide refuelling possibilities for trucks travelling from Poznan to Tartu. HyTruck is developing solutions to equip public authorities with the capacity to elaborate spatial development concepts, provide a regulatory framework, ensure common standards, and design public co-funding programmes. The total budget of the project is a little less than 2.6 million euros and will continue from 2023 to 2025. The project partner from Latvia, Vidzeme Planning Region, will receive 274 thousand euros (Interreg Baltic Sea Region, 2023).

The Green Tech Cluster from Latvia is participating in the BalticSeaH2 project, which intends to create a large-scale, cross-border hydrogen valley around the Baltic Sea and an integrated hydrogen economy within the region. The project includes 40 partners from nine Baltic Sea area countries. The goal of the project is to create an integrated hydrogen economy to ensure the self-sufficiency of energy resources and minimise carbon emissions from different sectors of the economy. The main hydrogen valley is planned between southern Finland and Estonia. This area is an optimal location for a cross-border hydrogen market and is equipped with necessary infrastructure like gas pipelines, electricity grids, and marine traffic. The BalticSeaH2 initiative enables 25 demonstration and investment cases to emphasise the different sectors of the hydrogen economy. The total volume of the project is 33 million euros; 25 million of the funding is from the EU. It started in 2023 and will last for five years. The Green Tech Cluster in this project will focus on the studies for the use cases of green ammonia and will contribute to other work aimed at facilitating and supporting the hydrogen valleys in Latvia (Green Tech Cluster, 2023).

The Latvian gas transmission system operator Conexus Baltic Grid is participating in the Nordic-Baltic Hydrogen Corridor project, which has the status of being of common interest to the European Commission. The goal of the project is to create a connection between green energy production regions in Northern Europe and the major consumers in Central Europe. It is expected to be implemented in 2030. At the end of 2022, the six partners—gas transmission system operators—within the project signed a cooperation agreement on project promotion (Conexus Baltic Grid, 2023). At the end of 2023, Conexus conducted a market study on hydrogen infrastructure development in Latvia. The research assessed the level of interest of potential hydrogen producers and consumers in the development of hydrogen transmission initiatives, including their readiness to use the pipeline and storage services for hydrogen (Conexus Baltic Grid, 2023a).

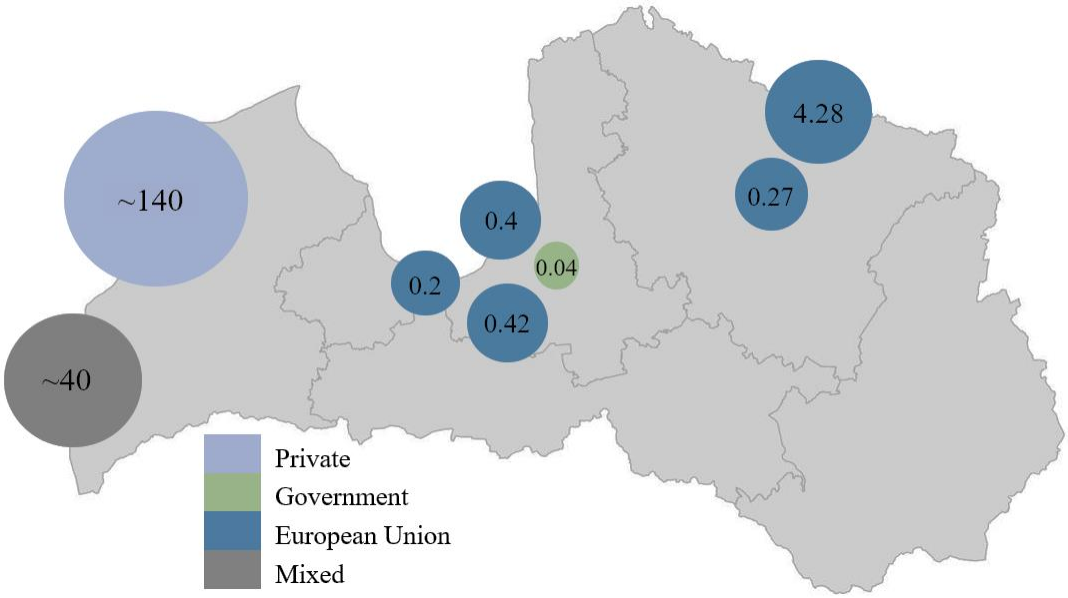
Apart from projects that focus on hydrogen production and infrastructure, there are initiatives that include the production of hydrogen-powered transport. For example, the Dutch company "Fokker Next Gena" has signed a memorandum of cooperation with the Ministry of Economics, the Liepaja Special Economic Zone Authority, and Riga Technical University and plans to develop a hydrogen plane project in the territory of Liepaja International Airport. The company intends to develop a hydrogen-powered passenger jet model that could hold up to 150 passenger seats, cover a distance of up to 2,500 kilometres, and build a final assembly line in Liepaja. Alongside, the company is committed to creating a hydrogen aircraft operations excellence centre in Latvia focused on the ground handling of aircraft and maintenance. This activity could create up to 100 new jobs in Latvia during the initial phase of the project in the next three years (Liepaja, 2023).

Furthermore, the Latvian company AS "Electrify H_2," which produces electric buses, is in the process of developing cutting-edge boats that use hydrogen power. This motor boat is intended to meet the expected demand for that type of vessel in the various areas of service, freight, and passenger transport sectors across Europe (CrowdedHero, 2023).

Within the discussion concerning hydrogen-powered transport, it must be noted that, at the time of writing this paper, the only hydrogen refiling station in the Baltic States is located in Riga. The refilling station is equipped with a steam methane reformation system, which is able to produce 300 kg of this fuel per day (H_2NODES, 2024). For example, the hydrogen-powered passenger car Toyota Mirai fuel tank capacity is 5.6 kg (Toyota UK Media site, 2023). In this way, the station can fully refill 53 such vehicles in 24 hours.

In recent years, there has been a focus on hydrogen research within the scientific community. For example, projects aiming to develop an innovative solution for compressing gaseous hydrogen, the assessment of possibilities for hydrogen production from biogas, the usage of artificial technology for automatic monitoring and optimisation of these renewable fuel production processes, and others are ongoing or are being implemented. Meanwhile, in order to prepare the industry for the hydrogen economy, the Institute of Solid State Physics at the University of Latvia has developed a unique training programme for hydrogen technologies and their application to energy companies. In the fall of 2023, specialists from the state-owned energy company Latvenergo graduated from this course (Labs of Latvia, 2023).

The hydrogen projects cover different regions of Latvia and can potentially positively influence the local economy and encourage the energy transition process (Figure 1). At the same time, Latgale region doesn't benefit as much from hydrogen projects as other parts of the country. However, it must be assessed that two large projects in Kurzeme region are only in the exploration phase, and there is no estimated amount of investment or time frame for the project to begin. Possible amounts of investment are calculated based on similar projects in Europe and other parts of the world. For example, a green hydrogen power plant with a capacity of 10,000 metric tonnes per year of produced hydrogen will require approximately 140 million euros in investment.



Source: official project information and author's estimates according to similar projects in the aviation industry (plane assembly lines of Boeing, Airbus, and Bombardier) and green hydrogen production (hydrogen plant projects of Shell, Plug Power, Masdar, and Verbund)

Fig. 1. **Ongoing and potential projects concerning hydrogen application in the Latvian economy in 2024, according to their financing amount in millions of euros**

The above-mentioned projects can be divided into four major groups within the hydrogen issue: production, infrastructure, equipment, and knowledge. Production is reflecting issues concerning hydrogen derived from renewable energy sources or fossil fuels and nature of these power sources (wind, solar, natural gas, hydro etc.). Whereas infrastructure group deals with hydrogen transmission, storage, and distribution networks issues. In turn, equipment projects focus on a wide range of means of hydrogen utilisation, for example, divergent transport (land, sea, air), different kinds of hydrogen pressuring or cooling techniques etc. Finally, knowledge aspect includes not only scientific research but also overall knowledge of different specialists working in distinct fields.

Furthermore, it must be pointed out that not all projects are aimed at using only green hydrogen for their declared purposes. It must be admitted that hydrogen infrastructure development focuses on using all types of this fuel, but in light of the EU fuel transmission process, refiling, and storage capacities, these are notable catalysts for a wider usage of green hydrogen. Moreover, the development of wind farms is a major facilitating factor for the production of green hydrogen in larger amounts. At this period of time, the big success for Latvia's energy transition from fossil fuels would be a green hydrogen production plant and distribution network for this fuel to start a notable inflow of this fuel in the local transport sector and facilitate possible export opportunities.

Many projects within the research framework can be described as multimodal or multidimensional in the view of the fact that many of them are pilot projects and are examining possible scenarios of developing some element of the overall hydrogen industry. These elements are building blocks for hydrogen valleys that are seen as facilitators of the energy transmission process towards renewable energy sources (European Commission, 2023; Clean Hydrogen Partnership, 2023; Capurso et al., 2022; Majka, et al., 2023).

3. Hydrogen projects within corresponding policy initiatives

For the research to be successful, it must be identified how many times green hydrogen and hydrogen are mentioned in different policy documents. Content analysis can shed light on the actuality of this energy source in the discussion about the energy transformation of the economy of Latvia. In this paper, a summary of the content analyses of eight major Latvia's policy planning documents is presented (Table 1).

Table 1

The overview of how many times hydrogen and other renewables are mentioned in Latvia's major policy planning documents

Policy planning document	Hydrogen	Green or renewable hydrogen	Renewable resources, fuels or energy	Wind power, energy or utilities	Solar power, energy or utilities
Sustainable Development Strategy of Latvia until 2030	1	0	52	9	7
National Development Plan of Latvia for 2021–2027	0	0	8	1	1
Transport Development Guidelines 2021–2027	31	8	26	1	2
National Energy and Climate Plan 2021–2030	20	0	468	97	42
National Industrial Policy Guidelines 2021-2027	0	0	14	0	0
Air Pollution Reduction Action Plan 2020–2030	2	0	64	3	2
Regional Policy Guidelines 2021-2027	0	0	4	0	0
Strategic Plan for the Common Agricultural Policy 2023-2027	2	0	32	8	10

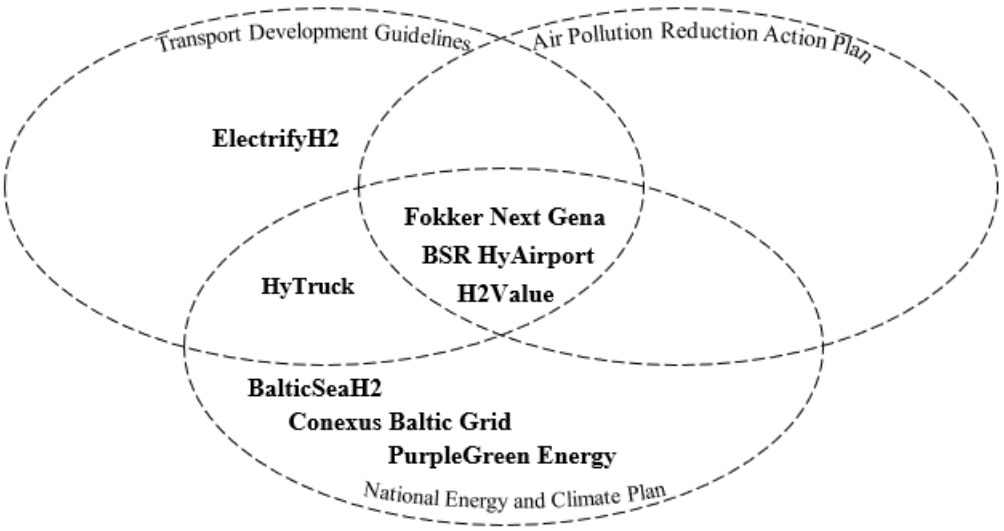
Source: author's content analyses of corresponding policy planning documents

The acquired results support the assumption that renewable energy resources are an important point of interest within major Latvia's policy planning documents, while specifying renewable energy sources is less common. Hydrogen is mentioned in five main policy planning documents but is more detailed discussed in Transport Development Guidelines 2021–2027 and the National Energy and Climate Plan 2021–2030. It must be noted that the National Industrial Policy Guidelines 2021–2027 do not provide a clear indication of how hydrogen can be beneficial for local industry development in light of the EU Green Deal framework.

It should be emphasised that the most important document in Latvia's policy planning concerning regional development (Regional Policy Guidelines 2021-2027 of Latvia) has only a few references to renewable energy and not to hydrogen, any sort, or other types of renewable energy sources. Moreover, within Latvia's Strategic Plan for the Common Agricultural Policy 2023-2027, there is only one general assumption about the hypothetical use of hydrogen. This can lead to the perception that regional economic development issues and the agricultural sector policy evolution at this moment are not based on the premise of hydrogen as a fundamental source of energy.

Finally, despite the fact that the Sustainable Development Strategy of Latvia was adopted in 2010, renewables are widely mentioned in this document, indicating that renewable energy has been on the table for a long time. Unfortunately, green hydrogen is not included in the national planning documents. To facilitate the hydrogen agenda in all the connected fields of policy planning, the Latvian government must adopt an overall policy roadmap for hydrogen utilisation in the economy.

Furthermore, the study tries to answer the question of what hydrogen policy initiatives are evolving alongside practical actions and what is different in the national policy agenda and direction of hydrogen projects. For that purpose, the research provided a comparative scheme with policy documents and corresponding hydrogen projects (Figure 2)**.** Currently, major projects are linked with three national policy planning documents. Particularly two of them, Transport Development Guidelines 2021–2027 and Latvia's National Energy and Climate Plan 2021–2030, include the activities within their action plans that correspond to some current projects.



Source: author's analyses of corresponding policy planning documents within the hydrogen issue

Fig. 2. **The synergy of Latvia's policy planning documents and hydrogen projects in 2024**

After the analysis of these policy documents' guidelines, it can be confirmed that the majority of the large projects have a multisectoral nature and they are designed to contribute to the transport and energy sectors of the economy in the process of energy transition from fossil fuels to renewable sources. The important catalysts for hydrogen application are initiatives for local hydrogen production, which are linked with the manufacturing of equipment and utilities for hydrogen utilisation in Latvia.

The results of the research indicate that the current framework for policy planning and project realisation, along with developed policy guidelines, suggests that within the coming decades Latvia could develop green hydrogen production and ensure hydrogen refilling infrastructure and utilisation for large-scale transport (ships, planes, trucks, and different types of public transport).

Conclusions, proposals, recommendations

1) Regardless of the fact that renewable energy has been within the Latvian policy planning workframe for a long time and practical actions concerning these energy resources are often included in major Latvian policy planning documents, hydrogen is largely neglected in this process. At present, current and potential hydrogen projects are associated with two main sectoral policy planning documents: Transport Development Guidelines 2021–2027 and Latvia's National Energy and Climate Plan 2021–2030.

2) To facilitate the hydrogen agenda in all connected fields of policy planning, the Latvian government must adopt a common policy roadmap for hydrogen application in the local economy. Moreover, the study identified the probability that, at present, Latvian policies regarding major areas of the economy, including industry, regional development, and the agricultural sector, are not based on the assumption that hydrogen will be an important source of energy in the coming decades. This premise must be tested in further studies regarding these spheres of economic development.

3) The analysed projects within the research can be described as multidimensional in view of the fact that many of them are pilot projects and are examining possible scenarios of developing different elements of the whole hydrogen industry. These components serve as the basis for the hydrogen valley's evolution and are facilitators of the entire energy transmission process.

4) Gathered evidence supports the hypothesis that potential and current projects, along with existing policy guidelines in the transport and energy sectors, reveal Latvia's capacity for green hydrogen

production, the development of refilling infrastructure, and hydrogen utilisation in large-scale transport, including public transportation. At this moment, policy recommendations are about this renewable fuel application in the industry sector are not clearly formulated.

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Proceedings of the 2024 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" No 58
Jelgava, LBTU ESAF, 16-17 May 2024, pp. 220-230
DOI: 10.22616/ESRD.2024.58.022

GREEN METRICS: INTERNET OF THINGS BASED ECOLOGICAL MONITORING AND MANAGEMENT FOR SUSTAINABLE URBAN LIVING IN KYIV

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Abstract. Given the importance of the ecological component as part of the Internet of Things (IoT) green city platform, it is necessary to constantly monitor the ecological situation in the cities and sub-urban areas. The Kyiv city (Ukraine) has been chosen as a test subject for the study. As a part of sustainability process management systems, we focused on modelling and analysis of the green city service systems. Objective of the study is to research and compare various economic and ecological data from large cities; outline the scope of the green city model that is used for web service design, which is part of larger internet of things sustainable information system platform. The following categories of data had been processed, but not limited to the total cost of the system, the total loss of a natural resource, the amount of investment in restoration or maintenance, the cost of natural materials, oxygen supply, the price of conversion for the exploitation or destruction of a natural resource, land prices dynamics, the tax on the restoration of the territory, the total economic benefit from the territory and the volume of CO_2 emissions. Green City e-service platform has been constructed to enable the users to calculate the net cost, losses associated with natural resources available, and replenishment costs, both per unit of area and per unit of time. One of the most important outcomes of the service presented in this paper is the correlation between the urbanization processes (the increase in pollution, densification of buildings, the formation of agglomerations, new transportation, and infrastructure development) and their impact on the overall state of local ecosystems. The presented process management and monitoring service can further be enhanced to create a dynamic forecasting and situational assessment system as part of a green city management platform.

Key words: smart city, sustainable development, service economy, green city, e-platform.
JEL code: Q50, C80

Introduction

The interdependence between urban development and environmental transformation represents a critical nexus in contemporary urban studies. Urban expansion, characterized by the augmentation of city boundaries and suburban areas, exerts profound impacts on environmental quality, encompassing alterations in land use, heightened concentrations of planned infrastructure such as roads, and the strategic placement of industrial entities. This urban sprawl is concomitant with escalated emissions of pollutants and overall environmental degradation, manifesting in adverse health outcomes for inhabitants, as well as deleterious effects on local biodiversity, soil quality, and atmospheric conditions. A pivotal challenge in sustainable urban planning involves the comprehensive evaluation of the urban ecological footprint, encompassing an assessment of existing natural resources, their quality, and resilience in the face of dynamic alterations, including ecological catastrophes, military conflicts, technological disasters, and urban expansion (Loiseau, E., 2016; Victor, P. A., 2012). The criticality of the ecological dimension in urbanization research necessitates the ongoing surveillance of urban environments, predicated on standardized criteria that facilitate comparative analyses across diverse geographic locales, from densely populated cities to rural communities and unoccupied territories.

The ecological dynamics of urban areas are influenced by a multitude of factors, including the extent and conservation status of green spaces, urban sprawl, regional specificities, and the strategic positioning

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of industrial activities (Georgeson, L., 2017; Zhang, L., 2022). These elements collectively contribute to the urban ecological profile, necessitating a nuanced understanding of the primary drivers of urbanization and their prospective impacts on environmental health and sustainability.

In this context, the delineation of key parameters for urbanization studies is imperative, aiming to elucidate their influence on ecological outcomes and to project future environmental trajectories. The multifaceted interactions between land utilization—including forested areas, agricultural lands, and urban development-play a pivotal role in shaping the regional environmental landscape. Consequently, economic planning and development strategies must incorporate environmental considerations, forecasting the ecological ramifications of land resource exploitation and the construction of new industrial and residential complexes (Hammer, J., 2017).

The exigency for an integrated approach to environmental cost assessment within the framework of territorial and economic planning is underscored. Such an approach necessitates the collaboration of municipal authorities and territorial community councils in devising methodologies that quantify environmental losses and incorporate environmental costs into comprehensive planning models (Brilhante, O., 2018). This strategic orientation towards environmental stewardship within urban and territorial planning underscores the imperative for a balanced coalescence of economic development and environmental conservation, ensuring the sustainability of urban ecosystems in the face of escalating urbanization pressures (Jenks, M., 2009).

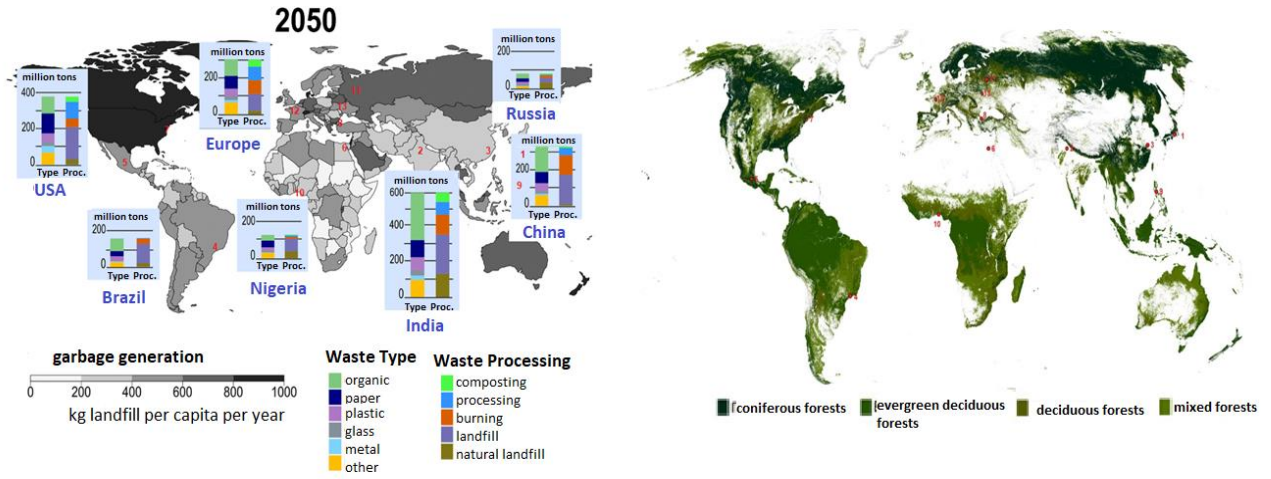
The aim of the study is to determine major ecology related metrics parameters based on real data from number of cities worldwide that will be used to model internet of things information monitoring and management system for future detailed development of Kyiv city sustainable development plan.

Materials and Methods

Exemplary instances of the integration of environmental sustainability within economic policy frameworks are observed in select urban centres globally, including but not limited to European Union cities such as Vienna, Copenhagen, Amsterdam, and Paris, as well as Singapore, specific municipalities in the United States, and at the national level in countries like Finland and Canada. These locales have embarked on comprehensive environmental initiatives that encompass the enhancement of municipal wastewater treatment infrastructures, the implementation of advanced waste treatment and recycling protocols, the restoration of agricultural lands, and the formulation of urban development strategies aligned with the principles of sustainable development.

To methodologically examine the urbanization phenomenon from a green economy perspective, a novel global framework has been proposed. This framework is underpinned by a sophisticated information model and leverages principal methodologies from ecological and economic research disciplines. It incorporates detailed schematics, methodological guidelines, and environmental monitoring data pertinent to the urbanization context. The model facilitates an in-depth analysis of environmental metrics, including waste management practices, carbon dioxide emission levels, and the preservation of green spaces across 13 strategically selected urban entities.

Furthermore, this approach entails a rigorous computation of the proportionality between total environmental expenditures and the aggregate economic outlays within these cities. This analytical research yields a comprehensive environmental and economic projection, charting a course towards sustainable development through to the year 2035. Such forward-looking assessments are pivotal in informing policy decisions and strategic planning, ensuring that urban development trajectories are sustainable, resilient, and conducive to the well-being of both the environment and urban populations.



Source: Chen D.; World Bank, 2022

Fig. 1. **Forecast for 2050 on waste generation with its distribution by type and different options for waste recycling in the countries selected for research (left). Map of the current state of the world's forest cover by tree types and highlighted locations of selected cities (right)**

Figure 1 elucidates the outcomes of an extensive investigation into urban environmental management strategies, showcasing the integration of waste management systems, municipal initiatives for carbon dioxide (CO_2) emission reduction, and comprehensive plans for the cultivation and maintenance of urban green spaces within the cities under review (with the research dataset extending up to the year 2023). This study meticulously compiled, analysed, and synthesized key economic, social, financial, and environmental metrics to construct an information model elucidating the urbanization dynamics. This model served as a foundation for the application of system modelling techniques and the prognostication of land use evolution.

The research encompassed a global selection of 13 cities, alongside Kyiv, Ukraine, providing a diverse geographical and socio-economic scope. An analytical focus was placed on the year 2022, presenting a detailed comparison between the aggregate environmental expenditures and the overall financial outlays of the cities in question. Furthermore, the study ventures into predictive analytics, offering environmental and economic forecasts within the framework of a sustainable development agenda projected up to the year 2035. This forward-looking perspective aims to furnish policymakers, urban planners, and stakeholders with insights essential for aligning urban development trajectories with the principles of sustainability, thereby facilitating informed decision-making processes in urban governance and environmental stewardship.

Table 1

Cities budget and ecology-related expenses

№	City	Total City annual budget, $	Total city annual expenses, $	Waste collection and recycling costs, $	Emissions reduction policy social costs, $	Green covers annual expenses, $
1	Kyiv	2433M.	2000M.	9.4M.	265M.	216.6M.
2	Paris	18500M.	12000M.	721M.	842.2M.	900M.
3	New York	101000M.	92500M.	9604M. 432M (export)	7850M.	891M.
4	Shanghai	287000M.	108000M.	1197M.	425M.	3245M.
5	Mexico City	11200M.	11200M.	156.5M.	300M.	224M.

Source: created by the authors based on their research

For detailed analytics and research, we focused on five cities for further studies (Table 1). For present calculations, official statistical and scientific data were used. The social cost of carbon emissions is $ 50 per ton, the optimal size of the green area is 9 square meters per city inhabitant, and 270 kg of waste per year per capita, according to average data from all over the world. Costs of waste collection and recycling for chosen cities - Kyiv (waste storage) - $9.44 per kg; Paris - €60 per kg; New York City- $686 per ton; Shanghai - $149 per kg; Mexico City $21.45 per kg. Green cover area in city zone: Kyiv – 450 km^2; Paris – 250 km^2; New York – 2546 km^2; Shanghai – 1201 km^2; Mexico City – 33 km^2. Part of total ecology-related expenses for picked cities is as follows for the 2035 plan - Kyiv – 7%; Paris – 25.4%; New York – 3.2%; Shanghai – 3%; Mexico City – 27.4%. Data presented in Table 1 proves that carbon emissions should be reduced as carbon emission reduction can take around 8.5% of the total city expenses (in NY city). Besides densely populated and heavily urbanized city now spend more than 900 million dollars annually to restore green coved within the city and its suburbs. These factors alone prove the need of a complex approach to model and improve sustainable development of the large cities. An analysis has been carried out and the main economic indicators of activity of enterprises in the agricultural and food industries have been calculated, which have been used to carry out an economic assessment of the consequences of urbanization processes and an analysis of the impact of various factors on urbanization. The above-mentioned research data and materials have been used to create a general green city concept model.

The development of the city and the change in the state of the environment in it are inextricably linked factors. The size of the city and the size of its suburbs have a huge impact on the environment, as well as the concentration of roads, the location of industrial enterprises, plants, factories, etc. And because of their activities, we have an increase in harmful emissions and pollution, which affects the health of residents, as well as the state of local flora and fauna, soil, and air. The development of urbanization also has a significant impact on water resources, the state of rivers, and reservoirs. There are many aspects to the economic costs associated with ecology expense policies. The list of the policies and their components are presented in Table 2. Among the most important are national or local tax policies, the costs of technological adaptation the cessation of deforestation, and the restoration of ecological biomass. Materials presented in Table 2 are basis for the green city conceptual model and are used to build IoT information system platform.

Table 2

City ecology-related policies classification

№	Policy name	Policy Components	Data	Result of policy implementation
1	Urban economy and financial planning	Social and labor policies Total ecology-related budget Green taxes Land rant	Budget Price Cost	National expenditure on healthcare Quality of the environment
2	Sustainable land management	Property usage Land market surveillance	Green cover area Value of the property	Land cover changes Land usage optimization Land zoning and division
3	Power supply and resource consumption	Power supply efficiency Available resources Electricity production technology by source The level of taxation by technology	Price per unit Market price Taxe rate Annual emissions The ratio of green and fossil fuel energy	The cost of electricity production The cost of new technologies Cost of adaptation New costs for electricity
4	Climate change counter	Reduction of carbon emissions Subsidizing green energy Health Care Environmental taxation	The stock of atmospheric CO2 Temperature deviation	Melting ice Rising levels in the ocean Emissions reduction
5	Natural resources and ecosystem recovery	Quality of natural resources Biodiversity Microclimate and biological heritage	Resources price Natural resources restoration price	New technology research and development Tax on reforestation

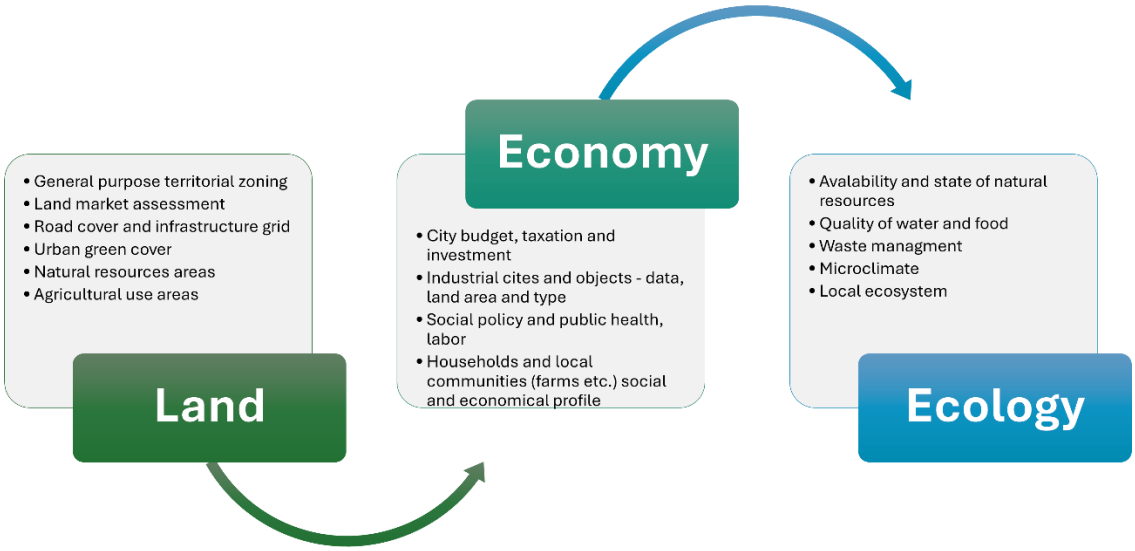
Source: created by the authors based on their research

Research results and discussion

1. Green City concept – land and economy

Figure 2 illustrates a critical facet of the green urban paradigm, emphasizing the valuation of land use within the urbanization continuum. This analysis recognizes a plethora of socio-economic and market determinants that orchestrate the appraisal of potential land use costs. In scrutinizing urban and suburban land dynamics, this discourse homes in on pivotal factors that significantly influence the evolution of the green city concept. For analytical clarity, urban and peri-urban land allocations are categorized into quintessential segments: residential, agricultural, industrial, institutional, and green spaces. Beyond the aggregate valuation of real estate, this examination contemplates additional variables including land use regulations, maintenance obligations, and environmental liabilities, which collectively impact urban land management practices.

Land utilization and stewardship emerge as foundational elements of green urban economics, facilitating diverse agricultural productions, and supporting the sustenance of various industrial sectors through the judicious exploitation of natural resources. Expanding this perspective, land cover is systematically classified into distinct landscape archetypes such as grasslands, wetlands, forests, arable terrains, and mixed landscapes, among other terrestrial forms. This stratification aids in the comprehensive understanding of land resource management, underscoring the necessity for sustainable practices in nurturing the green city ethos, thereby enhancing urban resilience and ecological balance.



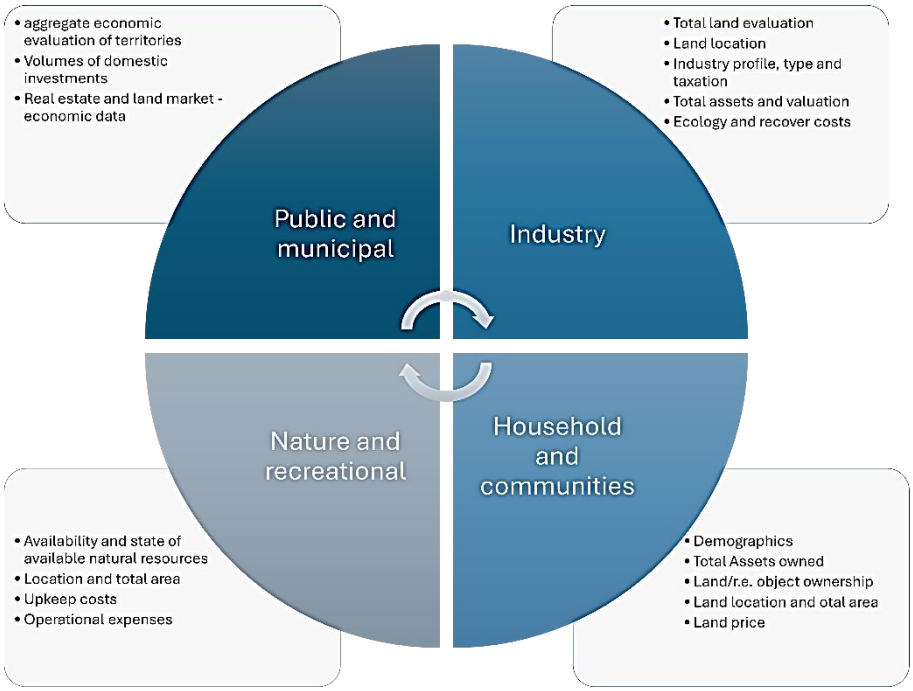
Source: created by the authors based on their research

Fig. 2. **Green city components – Land, Economy and Ecology**

Figure 3 elucidates the integral role of forest cover within the paradigm of the Green City economic model, proposing its recognition as a pivotal economic asset within economic analyses. This framework delineates urban forests under several classifications: as landed assets for potential development projects; as foundational elements of the raw material inventory; and as central recreational zones within urban landscapes. However, this categorization potentially underrepresents the multifaceted contributions of forest and green spaces to urban ecosystems. A more expansive analysis is warranted, one that encompasses the strategic integration of long-term economic and environmental planning for urban and surrounding regions.

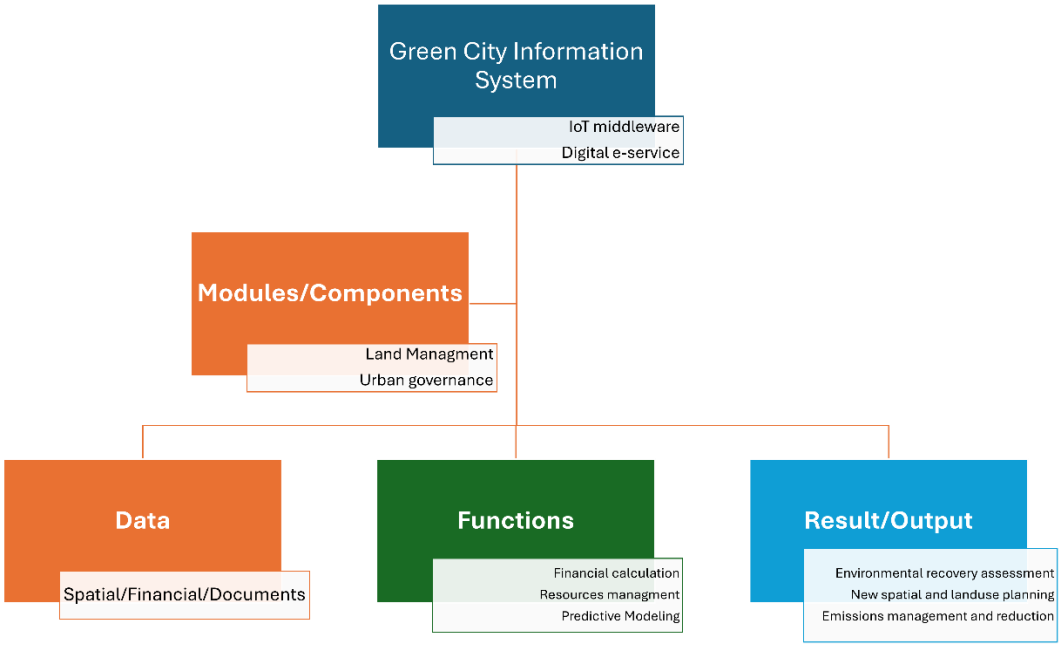
Forests represent critical ecosystems that underpin biodiversity and offer essential ecosystem services vital for sustaining life on Earth. They engender extensive biosystems, playing a pivotal role in the ecological and atmospheric equilibrium. The exploration of forest cover's influence on urban development is of paramount importance, particularly in an era where urbanization trends have culminated in a significant portion of the global population residing within city confines. The ramifications of alterations in green cover manifest conspicuously in everyday urban life, influencing climate regulation, air quality, and public health.

Urban land use extends beyond residential and commercial development, incorporating agricultural activities and the utilization of natural resources to support various industrial sectors. Land cover is broadly categorized into ecosystems such as grasslands, wetlands, forests, arable lands, mixed landscapes, among others, each contributing uniquely to the urban environmental matrix. While forests may not be directly quantified within gross domestic product (GDP) calculations or mainstream economic development strategies, their intrinsic value to the economy, through ecosystem services like carbon sequestration, water regulation, and biodiversity conservation, cannot be overstated. Acknowledging and integrating the ecological and economic functions of forests into urban planning and economic modelling is essential for fostering sustainable urban growth and enhancing the resilience of urban ecosystems against environmental challenges. Figure 4 showcases the Green City Information City model, divided into software modules, functions, and data types.



Source: created by the authors based on their research

Fig. 3. **Land areas' economic development under the Green City concept**



Source: created by the authors based on their research

Fig. 4. **Green city information system model**

2. Green City Service Model

The nexus between urban development and environmental transformation is undeniably profound, with urban expansion - encompassing the growth of city perimeters and suburban vicinities - exerting considerable influence on ecological systems. This influence manifests through the densification of infrastructure, such as road networks, and the spatial allocation of industrial entities, leading to escalated emissions of pollutants and degradation of environmental quality. Such anthropogenic pressures adversely impact public health, biodiversity, soil integrity, and atmospheric conditions. Additionally, the urbanization trajectory significantly affects aquatic ecosystems, including the health of rivers and reservoirs.

Table 3 delineates a comprehensive economic model for quantifying the ecological and economic dimensions of urbanization. This model facilitates the precise calculation of costs, expenditures, and losses associated with the exploitation of natural resources, alongside the financial gains derived from the commercialization of such resources. The parameters encapsulated within this model include the total valuation of the ecological system or territory, quantifiable losses of natural resources, financial inputs toward restoration or maintenance efforts, tax implications, valuation of natural and raw materials, export volumes of raw materials, leasing fees, contributions to oxygen production, aggregate real estate or land value, cost implications of resource exploitation or depletion, post-depletion land value, net profits from raw material or finished product sales, restoration taxation, overall economic returns from the territory, and carbon dioxide emission volumes.

Table 3

Green City Information System list of major system data, functions, and output

Information System Module	Data types and units of measurements	Functions	Output
Land management	Interest rate, % Object location, spatial Object profile, mix. Object valuation, $ Natural resource price, $ Natural resource profile, mix. Harmful emission, tons per type per year	Property tax calculation The total value of real estate/land Profit from the sale of raw materials or finished products by the enterprise	Land lease payment for the use of an area with available natural resources The total value of the land after the loss of natural resource
Urban governance – economy, social and financial	City budget and expenditures (volume), $ per year Volume of investments by type of economic activity, $ per year Profit of companies by type of economic activity, $ per year City GDP growth rate, %	Green Tax Calculation Cost of land and resources restoration	Social (public) benefit from the presence of a certain type of territory within the city or adjacent territories Cumulative economic benefits from the land/object
Ecology and sustainable development	Climate and weather monitoring data, numerical State and availability of natural resources, mix. Price of natural resources, $ (per ha.)	The cost of untreated, clean natural resources before they are used Economic value of the territory of a forest or nature reserve Investment in recovery or support req.	City Waste Management Program Cumulative losses/gains of natural resource The cost of conversion for the exploitation or destruction of a natural resource

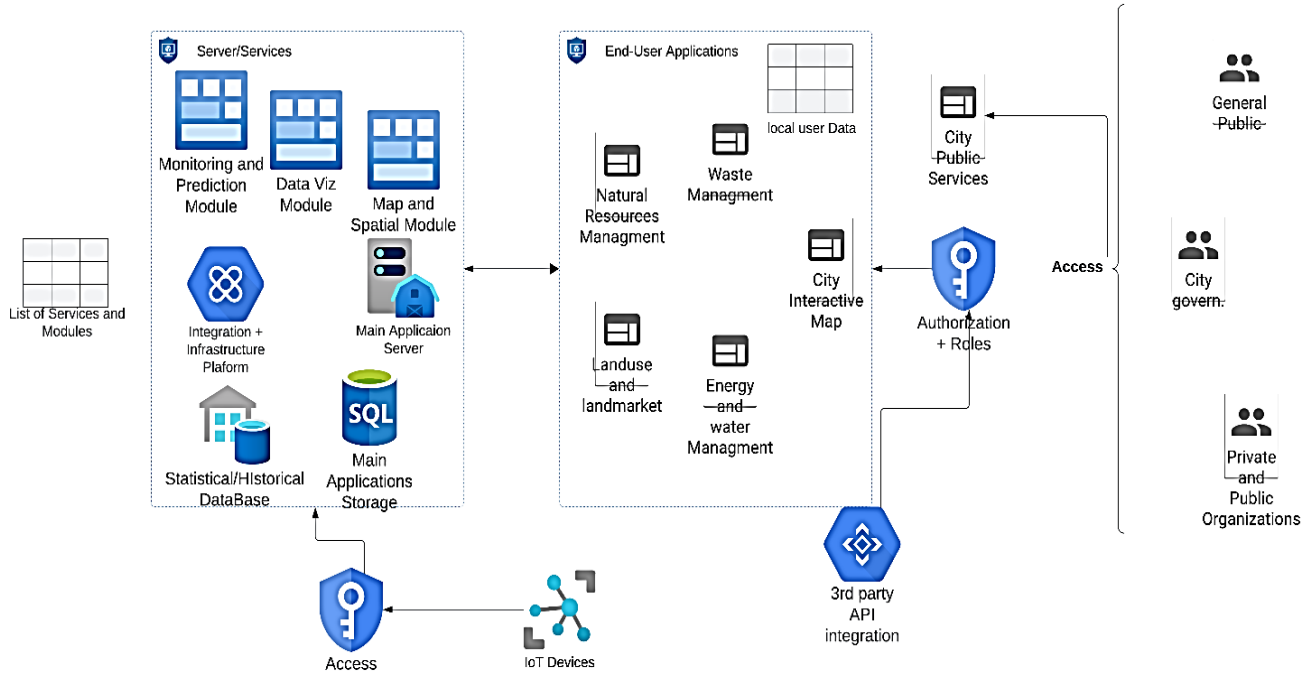
Source: created by the authors based on their research

This integrative economic model provides a robust framework for assessing the fiscal and ecological footprint of urban development on natural resources, enabling calculations on a per-area or temporal basis, and facilitating a comprehensive understanding of the economic viability of resource utilization strategies. Through such analytical rigor, it becomes possible to harmonize urban expansion with environmental stewardship, thereby fostering sustainable development paradigms that acknowledge the intrinsic value of ecological assets within the urban planning discourse.

The use of land areas, forests, lands occupied by agricultural production, life, and urban development - all these factors have a significant impact on the environmental situation in the region. Therefore, it is always necessary to take into account and plan the economic consequences of such events and calculate options for the development of the use of amalgamated territorial communities, both in the country as a whole and around large cities and adjacent and suburban areas. As presented above, the intensive use of

land resources and the construction of new industrial and residential facilities entails significant environmental consequences. The author notes the expediency of developing an integrated approach to assessing the cost of environmental losses and environmental costs in the context of territorial and economic planning by city authorities and amalgamated territorial community councils. It is necessary to develop a new legislative and legal framework for economic and legal levers of control over the impact on the environment in cities and settlements. Environmental programs in prominent urban centres include the development of wastewater treatment systems at the municipal level, wastewater treatment and integrated waste recycling, reclamation of agricultural land, and new urban development plans taking into account the concept of sustainable development.

3. Green City IoT-based Information System



Source: created by the authors based on their research

Fig. 5. **Green City Information System Concept**

Green City Information System (Figure 5) can be used for urban governance, especially city management, resource planning, and general city surveillance. Green City's software model highlights horizontal IoT-based system architecture with several layers – software systems and servers, applications, integration points, and user roles. In the future, this System can be used to develop an initial porotype or implement integration software modules into existing smart city management software suits. The valuation of aquatic resources within urban environments poses a complex challenge, encompassing the assessment of their influence on real estate valuations, environmental quality, biodiversity, and urban aesthetics. This necessitates the compilation of comprehensive catalogues delineating various urban water zones, alongside the proposition of strategic frameworks for their management, enhancement, and ecological integration. Such evaluations must consider the dynamics of hydrological replenishment, including precipitation patterns and their implications for urban water sustainability.

Future research endeavours must prioritize the examination of urban water bodies, scrutinizing the transformations induced by urban activities and expansion. A critical area of inquiry involves the correlation between the proximity of real estate to aquatic environments and the consequent trends in property values. This investigation should extend to the exploration of how these relationships vary across cities of differing

sizes-from small towns to metropolises-and how access to water bodies influences urban planning and development trajectories.

A comparative analysis of cities from diverse geographical contexts, such as Kyiv, Dnipro, and Odesa in Ukraine, and Warsaw and Gdansk in Poland, would illuminate the economic and environmental impacts of urban water bodies. Furthermore, cities like Amsterdam in the Netherlands and Bruges in Belgium, renowned for their rich integration of natural water resources within urban fabrics, offer unique case studies for exploring the symbiosis between urban development and aquatic ecosystems.

The development of a green city economic growth plan entails a sequential approach:

1) Implement territorial zoning to categorize regions into suburban areas, transitional zones around cities, urban development types, and economic profiles, including metropolitan areas, based on their economic characteristics.
2) Forge a holistic model of the urban social fabric to evaluate the effects of territorial expansion on population well-being and living standards, employing socio-economic models to dissect the impacts of urbanization on household economic and social dynamics.
3) Execute ecological and economic projections to gauge the repercussions of urbanization on the economic vitality of specific areas, the broader metropolis, and the regional ecosystem, aiming to quantify the aggregate ecological worth of natural resources or ecosystems implicated in urbanization.
4) Articulate a set of guidelines for identifying emerging spatial economic and investment hubs, alongside an environmental and economic appraisal of potential risks stemming from ecological alterations.
5) Design an overarching strategy for green urban economic development, leveraging information system models for its implementation and operationalization.

This structured methodology underscores the integration of environmental stewardship with urban economic planning, advocating for a sustainable urban development paradigm that harmonizes economic growth with ecological preservation.

The function of determining the total ecological value of a natural resource or ecosystem related to the urbanization process

$$TECu = f(C) = \int_0^n f(C)dt \quad (1)$$

Where:

C - the total economic value of natural resources or ecosystems affected by the urbanization process;

n - time for complete restoration of the state of the ecosystem (up to a certain time period);

t - time to restore the ecosystem or natural resources.

Formulae 1 shows the mathematical representation of the data we have shown in Fig. 5 on the economic information model of costs associated with green spaces and Table 3 on economic data for the economic information model of costs associated with green spaces in the context of urbanization development process. The total economic value of natural resources or ecosystems affected by the urbanization process (C) can be calculated based on the social costs of ecosystem and/or resource (per type), cost for resource restoration, cost of resources lost, green tax rate, and several other components. The function will be further developed, evaluated, and presented in future research work.

Conclusions, proposals, recommendations

Within the ambit of urbanization and its attendant ecological impacts, a sophisticated ecological and economic framework has been conceptualized to elucidate the economic ramifications of land utilization and urban development. This framework pioneers the integration of sustainable development principles with rational land use practices, underpinning the genesis of the "green city" concept. Central to this innovative model is a meticulously curated classification of analytical tools and methodologies designed to quantify the economic costs engendered by ecological considerations. These methodologies serve as the foundational pillars for the "green city" paradigm, harmonizing economic development objectives with environmental stewardship. This integrative approach underscores the imperative of sustainable urban planning, advocating for a balanced coexistence between urban expansion and the preservation of ecological integrity. Through the application of this model, urban development strategies can be reoriented towards sustainability, ensuring that economic growth and environmental conservation are pursued in tandem for the betterment of urban ecosystems and their inhabitants.

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Proceedings of the 2024 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" No 58
Jelgava, LBTU ESAF, 16-17 May 2024, pp. 231-241
DOI: 10.22616/ESRD.2024.58.023

THE CONCEPT OF BIO-REGIONS AND ITS RELEVANCE IN ACHIEVING GREEN GOALS

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Abstract. Various initiatives worldwide promote sustainable, locally-based food systems and rural development, including Community Supported Agriculture (CSA), Farmers Markets, Food Hubs, Slow Food Movement, Regenerative Agriculture, and Agroecology Networks. These approaches often address specific challenges within narrower contexts. The concept of bio-regions offers a holistic approach to sustainable development, integrating ecological, social, economic, and cultural dimensions, demonstrating promising socio-economic and environmental impacts, and fostering community engagement and local development. Examples of good practices of bio-regions in European countries allow us to evaluate the relevance and possibility of application of this concept in Uzbekistan, as a strategy to promote sustainable development and resilience at the local and regional level. In the context of Uzbekistan, bio-regions can play a crucial role in achieving the country's green goals by addressing various environmental and socio-economic challenges while fostering sustainable development. By addressing these actualities and research on bio-region impact on local development in EU countries, researchers can contribute to advancing knowledge on community resilience and social cohesion in rural areas of Uzbekistan within the context of bio-regions. This can inform evidence-based policies, programmes, and interventions aimed at promoting sustainable development, environmental conservation, and social well-being in rural communities. The present research aims to investigate the theoretical and policy frameworks for the concept of bio-regions in the EU, which could be applied in achieving sustainability goals and solving environmental and socio-economic problems in Uzbekistan. Although there is no bio-regional policy in Uzbekistan, existing policy documents related to sustainable development, environmental conservation and rural development provide a basis for integrating bio-regional approaches into national strategies.

Key words: bio-region, rural development, organic farming.
JEL code: R58, Q38

Introduction

The environmental impacts of food consumption, particularly concerning greenhouse gas emissions, are increasingly recognised as a critical concern for sustainability (Parente et al., 2018). Globally, society's quality of life depends on the planet's resources and biodiversity. Based on this assumption, it is possible to look at the economy as a part of society, while society is part of the planet's biosphere. Unfortunately, very often society sees itself as part of the economic system, leaving the environment a completely insignificant role. An ecologically sustainable future can be ensured in an economic system where the economy is a part of the environmental system. Sustainable management of the environment is possible when problems are addressed in an interdisciplinary manner. It is necessary to find solutions, to nationally strengthen small and medium-sized enterprises, purposefully creating tools, which would contribute to the sustainable development of the territories.

One of the areas of sustainable agriculture is organic farming. In 2022, there was a substantial expansion in the global organic farming sector, with the cultivated area experiencing a growth of more than 20 million hectares, culminating in a total of 96 million hectares worldwide, representing an increase of 26.6 percent or 20.3 million hectares compared with 2021. The global organic market reached nearly 135 billion euros (IFOAM, 2024). By adopting environmentally friendly farming practices, farmers can reduce their ecological footprint, mitigate climate change, protect natural resources, and contribute to the long-term sustainability of agricultural systems while maintaining productivity and profitability. It includes several key principles (Stotten, Froning, 2023). Environmental sustainability: these food systems prioritise

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practices that conserve natural resources, minimise pollution, and promote biodiversity. Social equity and inclusivity: sustainable, resilient, and inclusive food systems aim to address issues of food insecurity, poverty, and inequality (Paula, Kaufmane, 2020). Economic viability: these food systems promote fair and equitable economic relationships throughout the food supply chain. Resilience and adaptation: sustainable, resilient, and inclusive food systems are designed to withstand and recover from shocks and stresses, such as extreme weather events, crop failures, and economic downturns. They promote diversification in food production and distribution systems, as well as the adoption of climate-smart agricultural practices that enhance resilience to changing environmental conditions (Douwe van der Ploeg et al., 2019).

There are numerous initiatives worldwide aimed at promoting sustainable and locally-based food systems while fostering community engagement and environmental stewardship. These initiatives vary in scale, scope, and approach but share common goals of promoting ecological sustainability, supporting local economies, and empowering communities. The most significant is as follows: *Community Supported Agriculture (CSA)* initiatives connect consumers directly with local farmers, allowing individuals to purchase seasonal produce directly from the farm. By fostering relationships between farmers and consumers, CSA promotes transparency, trust, and mutual support within the local food system (Egli et al. 2023). *Farmers markets* provide a platform for local farmers, artisans, and food producers to sell their products directly to consumers. These markets often prioritize locally grown, seasonal, and organic foods, thereby promoting sustainable agriculture, supporting small-scale producers, and reducing food miles. *Food hubs* are centralized facilities that aggregate, process, and distribute locally sourced food to consumers, institutions, and businesses. Food hubs play a critical role in connecting small-scale producers with larger markets, increasing access to local foods, and promoting regional food economies. *The Slow Food movement* advocates for a food system that is good, clean, and fair for all. Slow Food initiatives promote local food cultures, traditional culinary practices, and biodiversity conservation, while also advocating for social justice, food sovereignty, and environmental sustainability (Kinley, 2012; Askin, 2021). *Regenerative agriculture* focuses on improving soil health, enhancing ecosystem services, and sequestering carbon through farming practices such as no-till farming, cover cropping, and rotational grazing. These approaches promote ecological resilience, mitigate climate change, and restore degraded landscapes. *Agroecology networks* bring together farmers, researchers, activists, and policymakers to promote agroecological principles and practices. These networks advocate for policies that support agroecology, provide technical assistance to farmers, and facilitate knowledge sharing and capacity building. However, each of these approaches is focused on a narrower set of problem solutions (Zanasi et al., 2020; Stotten et al., 2017). A bio-region initiative, sometimes referred to as a bio-regional development initiative or bio-district initiative (or Organic District or Bio District or Eco Region), is a community-based effort aimed at promoting sustainable development and resilience within a specific geographic area, typically defined by ecological and cultural boundaries rather than political or administrative ones (Dias et al., 2021). In general, the bio-region concept is based on the combination of the culture in a region with focus on organic farming and highlighting its considerable potential for fostering sustainable territorial development (Pugliese and Antonelli, 2015). To sum up, the experience of European countries in fostering organic farming by developing a strategy for bioregions at the regional level shows how environmental protection, social justice and cultural preservation can be combined for sustainable and professional food production.

In this context, Uzbekistan with its rich agricultural heritage and potential seeks best practices applied in European countries to adapt and successfully apply them in achieving the country's green goals. In the Republic of Uzbekistan, just like in many other countries, the development of organic farming has become

one of the important strategic priorities that can contribute to the sustainable development of the rural sector and the creation of the "green" future of mankind. It should be noted that the EU-Uzbekistan Cooperation Council appreciate the growing cooperation between Uzbekistan and the EU, including that in the green and sustainable economy (EU-Uzbekistan Cooperation Council, 2021). Therefore, the authors believe that the experience of European countries in using the concept of bioregions can make a positive contribution to agricultural and rural development, environmental sustainability and the socio-economic development of Uzbekistan. The present research aims to investigate the theoretical and policy frameworks for the concept of bio-regions in the EU, which could be applied in achieving sustainability goals and solving environmental and socio-economic problems in Uzbekistan.

Materials and methods

The monographic method, analysis and synthesis, and induction and deduction methods were applied to discuss the theoretical and controversial aspects within the context of research aim. The paper encompasses a comprehensive description of the bio-region concept and the corresponding policy framework in Europe and presents the analysis of the relevance of the bio-region concept in achieving "green" objectives in Uzbekistan.

Research results and discussion

1. Characteristics of the bio-region concept in Europe

By integrating ecological, social, economic, and cultural dimensions, bio-regions offer a holistic approach to sustainable development that prioritizes the well-being of both people and the planet (Oliver, 2019). The objectives of the bio-regions can be grouped in three main areas: 1) economic; 2) environmental and 3) social. Accordingly, to achieve the goals of the bio-region, initiatives are focused on (Report on Organic…, 2021): *Local Resource Management.* Bio-region initiatives prioritize the sustainable management of natural resources within the region, including land, water, forests, and biodiversity. This may involve promoting practices such as organic farming, agroforestry, watershed management, and habitat restoration to enhance ecosystem health and resilience. *Environmental Education.* Bio-regions provide opportunities for environmental education, awareness-raising, and capacity-building within local communities. This includes promoting ecological literacy, fostering a deeper understanding of local ecosystems, and empowering residents to become stewards of their environment. *Local Food Systems.* Bio-region initiatives often focus on developing local food systems that prioritize food security, nutrition, and community resilience. This may involve supporting small-scale farmers, promoting agroecological practices, and creating networks for local food production, distribution, and consumption. *Community Engagement.* Bio-region initiatives actively engage local communities in decision-making processes related to environmental stewardship, economic development, and social equity. This may include participatory planning, community-based research, and collaborative partnerships among stakeholders from diverse backgrounds (Zeverte-Rivza et al., 2023). *Regional Cooperation.* Bio-regions encourage collaboration and cooperation among diverse stakeholders, including government agencies, NGOs, businesses, and community organizations. By working together, these stakeholders can leverage resources, share knowledge, and implement collective actions to address common challenges and achieve shared goals (Chatzichristos et al. 2021). *Economic Development.* Bio-region initiatives aim to foster economic development that is ecologically sustainable, socially equitable, and culturally appropriate. This may involve supporting local businesses, cooperatives, and social enterprises that prioritize environmental stewardship and community well-being. Cultural Preservation. Bio-region initiatives recognize the importance of cultural heritage and

traditional knowledge in shaping sustainable futures. This may involve efforts to preserve indigenous cultures, promote local arts and crafts, and celebrate cultural diversity as integral components of bio-regional identity. *Regional identity.* BioRegion promotes regional identity (The role of local..., 2020). It creates openness to new things and future developments. Member companies also raise awareness through their products from the BioRegion by increasing the number of products through cooperation between agriculture and trade (Guareschi et al., 2020).

The experience of Bio-districts in Italy (The experience of..., 2017) indicates promising prospects, with a noticeable increase in active participants and demand for organic products. The shortening of the supply chain has led to loyal customers and boosted development in the sector, with more farms transitioning to organic production. Farmers are recognized as essential ecosystem managers, enhancing their social role and identity. The bio-district has empowered rural communities in their interactions with local authorities through consultations and participatory planning. Additionally, associations, cooperatives, and academia provide platforms for knowledge sharing and support. The Cilento bio-district leverages its short value chain as a key strength, with 75% of economic flow stemming from direct marketing channels like on-farm sales, farmer's markets, and e-commerce platforms. Public procurement, restaurants, and tourist facilities contribute 15%, while traditional distribution and exports make up the remaining 10%. Local consumption and the tourist sector absorb the majority of production. Associations within the bio-district play a crucial role in facilitating economic relationships, providing assistance to farmers, and promoting sustainable production and local purchasing. This collaborative approach ensures the active involvement of various consumer types in enhancing products, services, and production processes (The role of local..., 2020).

The Bio-district Cilento serves as a bottom-up organizational innovation, fostering multi-level territorial governance and mobilizing political actors, public institutions, and civil society to harness the area's heritage for innovation and rural development (Dias et al., 2021). Initiatives such as the document "Costruire una strategia condivisa di sviluppo dei territori" and the "La carta di Padula" Agreement demonstrate a commitment to agroecology and organic farming within Italy's parks and protected areas. The success of Cilento has catalyzed the establishment of numerous bio-districts across Italy, Europe, and Africa, with ongoing efforts to promote legislative support and international cooperation through platforms like the International Network of Eco Regions (IN.N.E.R). These initiatives aim to strengthen governance, promote sustainable agriculture, and address global agricultural challenges through collaboration and knowledge exchange (Pugliese, Antonelli, 2015).

The implementation of bio-regional approaches in the European Union (EU) countries has evolved over several decades, with roots in various environmental and sustainability movements to mainstream policies and strategies for sustainable development (Heimann, 2019).

The concept of sustainable development gained prominence in EU policy discourse in the 1990s. The Rio Earth Summit in 1992 and the subsequent adoption of Agenda 21 encouraged the EU countries to integrate environmental, social, and economic considerations into their development strategies. This period saw the emergence of initiatives promoting regional self-sufficiency, local food systems, and eco-communities, laying the foundation for bio-regional approaches.

In the early 2000s, EU countries began mainstreaming sustainability policies into national and regional planning frameworks. The European Commission's adoption of the Lisbon Strategy in 2000, followed by the Europe 2020 Strategy in 2010, emphasized the importance of promoting smart, sustainable, and inclusive growth. This period witnessed increasing recognition of bio-regional concepts in EU policy documents and research agendas. During the next decade a proliferation of regional initiatives and projects promote bio-regional approaches across EU countries. EU-funded programmes such as INTERREG and LEADER also

supported bio-regional development projects at the regional and local levels (Bosworth et al., 2016). The European Green Deal, launched in 2019 (The European Green deal, 2019), aims to make the EU's economy sustainable and climate-neutral by 2050. Bio-regional approaches, including initiatives promoting circular economy, renewable energy, and regenerative agriculture, are increasingly recognized as integral to achieving the goals of the European Green Deal (Tetere et al., 2023). While there isn't a specific legal framework or regulatory system at the European Union level that directly governs bio-regions, EU policies and initiatives provide a supportive framework for promoting sustainable development, rural revitalization, and environmental conservation, which are central to the objectives of bio-regional initiatives (A long-term Vision …, 2021).

The Common Agricultural Policy (CAP) sets out the agricultural policy framework for the EU and provides financial support for farmers and rural development and is not specifically targeted to bio-regions, nevertheless includes measures that promote sustainable agriculture, rural development, and environmental conservation, which are relevant to bio-regional initiatives (Key policy objectives..., 2023).

European Innovation Partnership for Agricultural Productivity and Sustainability (EIP-AGRI): EIP-AGRI is an EU initiative that promotes innovation in agriculture and forestry to improve productivity and sustainability. It supports networking and knowledge exchange among stakeholders, which can facilitate the exchange of best practices and ideas relevant to bio-regional development. European Regional Development Fund (ERDF) and Cohesion Policy: These EU funding programmes support economic and social cohesion across the EU regions. While not specifically focused on bio-regions, they can provide funding for projects that contribute to sustainable development, innovation, and job creation in rural areas, which are often key components of bio-regional initiatives. Natura 2000 is a network of protected areas established under EU law to conserve biodiversity and protect habitats and species of European significance. While not specifically related to bio-regions, Natura 2000 sites can overlap with bio-regional boundaries and contribute to the conservation of natural resources and ecosystems (EU funding programmes, 2023).

2. Relevance of the bio-regional concept in achieving Uzbekistan's green goals

Being aware of the scale of environmental problems in the world, the Uzbek government prioritizes an increase in the efficiency of the agricultural sector and a reduction in the impact on the environment and natural resources. In this context, the development of organic farming and the promotion of environmentally friendly sustainable production systems is an essential factor in increasing the competitiveness of food products and developing the export potential. Uzbekistan's efforts in the field of organic farming are also appreciated internationally (FAO, 2018) However, despite the steady growth of organic farming in recent years (Table 1), Uzbekistan is at the early stages of organic farming development.

Table 1

Main indicators of agriculture sectors in Uzbekistan, 2016-2021

Agriculture	2016	2017	2019	2020	2021
Total number of enterprises, units, inter alia*	4 626070	4 669263	4 707873	4 736957	4 692554
Micro-size (dekhkan farms)	4 525000	4 535000	4 560040	4 585000	4 600000
Small-size	x	x	x	x	x
Medium-size (farms)	101 070	134 263	147 833	151 957	92 554
Large-size (organizations engaged in agricultural activities)	17 621	18 319	21 019	24 480	29 379
Total output in agriculture, in billion EUR	14.5	15.1	13.7	17.7	18.4
Output in crop production (in billion EUR)	8.0	7.9	7.5	9.1	9.3
Output in livestock production (in billion EUR)	6.4	7.2	6.1	8.6	9.1
Cattle as the main species of livestock (thou. heads)	11 641	12 181	12 471	12 814	12 950
Cows as the main species of livestock (thou. heads)	4 174	4 217	4 337	4 626	4 664
Sheep and goats as the main species of livestock (thou. heads)	19 119	19 698	20 641	21 581	21 907
Poultry as the main species of livestock (thousand heads)	61 349	67 038	74 870	86 375	87 860
Meat (in billion EUR)	4.1	4.7	4.1	5.9	5.9
Milk (in billion EUR)	2.0	2.1	1.7	2.3	2.8
Eggs (in billion EUR)	0.2	0.3	0.2	0.3	0.3
Total import of agricultural produce, in billion EUR	0.4	0.4	0.4	0.5	0.7
Total export of agricultural produce, thou. in EUR	1.5	1.0	0.9	0.8	1.1
Utilized agricultural area (UAA), thou. ha	25 366	25 344	25 280	25 259	25 252
Utilized agricultural area (UAA) as % of total country's area	57	57	57	57	57
Number of farms engaged in organic farming, units	2 054	2 713	3 392	4 198	4 628
Utilised agricultural area (UAA) in organic farming, thou. ha	6.0	-	-	-	17.2

* ***In the statistics of Uzbekistan, agricultural production enterprises are divided into: a) Large-scale enterprises engaged into agricultural production: joint-stock companies, cooperatives, agro-clusters, state-owned farms; b) Farms (medium-size) are private commodity producers with a long-term lease of land from the state (they have different production volumes, which depend on their specialization); c) Dekhkan (household or subsistence) farms (micro-size) are private farms of the population that produce agricultural products on personal land plots with or without the formation of a legal entity; d) Small-size – small business entities include: Microenterprises with an average annual number of employees involved in the manufacturing industries of no more than twenty people, in the service sector and other non-manufacturing industries – of no more than ten people, and in wholesale, retail and catering – of no more than five people; Small enterprises with an average annual number of employees involved in production and processing of agricultural products – no more than fifty people.***
Source: Statistics Agency of Uzbekistan, 2023

Organic farming is recognized as a promising type of farming for dekhkan (micro-size) farms representing the absolute majority of agricultural enterprises (Table 1) in Uzbekistan, as well as small farms and other economic operators in agriculture. The fast and efficient development of organic practices in agriculture, forestry and fisheries requires significant investments and scientific research to remove barriers to more intensive growth in organic farming and to increase the engagement of all actors in the market of organic products. On the one hand, it relates to the development and introduction of new scientifically based organic technologies; on the other hand, the need for a supportive government policy

and a clear strategic vision for organic farming, considering the economic, environmental and social components of it, cannot be denied.

One of the strategies contributing to the development of organic farming is the bio-regional approach, which can be highly relevant and beneficial for Uzbekistan. Uzbekistan, like many other countries, may not have specific policies or legal initiatives explicitly labelled as "bio-regional policies." However, the country has several broader policies and legal frameworks that address organic farming development, environmental conservation, sustainable development, and rural revitalization, which align with the objectives and principles of bio-regional initiatives as well as international agreements that encompass elements relevant to bio-regional initiatives and sustainable development in the region. These policies often focus on environmental conservation, sustainable agriculture, water resource management, and regional cooperation.

It is important to emphasize that bio-regional initiatives offer a holistic approach to sustainable development that is well-suited to the ecological, cultural, and socioeconomic context of Uzbekistan. One of the primary benefits of the bio-region concept is its focus on organic production in the agriculture sector that include ecosystem conservation and biodiversity preservation as well.

Central Asian countries, incl. Uzbekistan, are signatories to international agreements and initiatives addressing environmental sustainability, such as the United Nations Sustainable Development Goals (SDGs) and the Convention on Biological Diversity (CBD). These agreements provide overarching frameworks for promoting biodiversity conservation, sustainable agriculture, and inclusive development, which are central to the objectives of bio-regional initiatives. The Framework Convention for the Protection of the Environment for Sustainable Development in Central Asia (The Framework Convention..., 2006) focuses on transboundary water management, biodiversity conservation, and environmental governance in the region.

By prioritizing the protection of natural habitats, wildlife, and critical ecosystems, bio-regions contribute to maintaining ecological balance and resilience. This leads to benefits such as improved water quality, enhanced soil fertility, and increased carbon sequestration, which are vital for sustaining healthy ecosystems and supporting diverse forms of life.

Another key benefit of the bio-region concept is its emphasis on building community resilience and social cohesion. Bio-regions foster strong connections among local residents, businesses, and institutions, creating a sense of shared purpose and collective responsibility for environmental stewardship. Through collaborative efforts, knowledge sharing, and mutual support networks, bio-regions empower communities to address challenges such as climate change, food security, and economic volatility, leading to greater resilience and well-being for residents.

Uzbekistan is characterized by diverse ecosystems, rich biodiversity, and unique cultural heritage, making it an ideal region for implementing bio-regional approaches to sustainable development. By integrating environmental conservation, community empowerment, and regional cooperation, bio-regional initiatives can contribute to a more resilient and prosperous future for the region. It includes community empowerment, regional cooperation, biodiversity conservation and sustainable agriculture.

Uzbekistan has developed national strategies and plans for sustainable development, which include objectives related to environmental protection, biodiversity conservation, and rural development. These strategies may provide a basis for promoting bio-regional approaches to sustainable development within the country (Development Strategy of ..., 2022).

Community Empowerment. Rural communities in Uzbekistan have rich cultural heritage and traditional knowledge systems that are closely linked to their environment and way of life. Examining how cultural

identity contributes to community resilience and social cohesion within bio-regions can provide insights into the importance of cultural preservation and indigenous wisdom in sustainable development. The permanent population of the country amounted to 33,375.8 thousand people, the urban population amounted to 16,865.1 thousand people (50.5 % of the total population) and the rural population amounted to 16,510.7 thousand people (49.5%) (Statistics Agency, 2023). Bio-regional initiatives can build on these strengths by empowering local communities to participate in decision-making processes related to land use, natural resource management, and sustainable development. This can help foster a sense of ownership and stewardship among local residents, leading to more effective and sustainable outcomes. The Decree of the President of the Republic of Uzbekistan *Regarding the measures to radically update the state policy in the economic development and poverty reduction 2020–2030* (Collection of legislation..., 2023) is aimed to reducing poverty can only be solved through the parallel development of all areas of human life, including meeting minimum needs for food, drink, housing and human empowerment through increased access to education, health care and professional and creative development. In Uzbekistan, the strategically important and consistently solvable task is to improve the well-being of the population. However, in recent years the fight against poverty has been consistently implemented in the state economic policy and is included in the national goal, which is taken into account in the development and implementation of Uzbekistan's strategic programmes and development plans. *Regional Cooperation.* Central Asia is a region of diverse ethnicities, languages, and political boundaries. Bio-regional initiatives can serve as platforms for fostering regional cooperation and dialogue on shared environmental challenges, such as water management, biodiversity conservation, and climate change adaptation. By promoting collaboration among neighbouring countries, bio-regional initiatives can help build trust, enhance resilience, and create opportunities for mutual benefit.

Biodiversity Conservation. However, rural areas of Uzbekistan face environmental challenges such as water scarcity, soil degradation, and climate change impacts. Understanding how these vulnerabilities affect community resilience within the bio-region context is crucial for developing effective adaptation strategies and sustainable land management practices. Bio-regional initiatives can help conserve this rich biodiversity by promoting sustainable land use practices, habitat restoration, and wildlife conservation efforts tailored to the specific ecological characteristics of each bio-region (Strategy for Biodiversity..., 2019). *Water Resource Management.* Water is a critical resource in Central Asia, where major rivers such as the Amu Darya and Syr Darya are vital for agriculture, industry, and human consumption. Bio-regional initiatives can focus on integrated water resource management, including watershed protection, water conservation, and water-efficient farming practices such as drip irrigation, rainwater harvesting, and mulching to help conserve water resources and improve water-use efficiency in agriculture. Uzbekistan has undergone legislative reform improving existing ecology and environmental protection legislation that meets world standards. An important step in improving the organisational structure of environmental activity is the Law on Environmental Control of the Republic of Uzbekistan, which provides a legal basis for active participation of all civil society institutions in the environmental protection system and the process of solving environmental problems.

Sustainable Agriculture. Uzbekistan's agricultural policies aim to promote modernization, diversification, and sustainability in the agricultural sector. These policies may include measures to support sustainable farming practices, agroecology, and rural development, which can contribute to the goals of bio-regional initiatives focused on sustainable agriculture and food systems. Agriculture is a key economic sector in Uzbekistan, providing livelihoods for millions of people. Agriculture is one of the dominating sectors of the Uzbekistan's economy and developing intensively. In 2020, agriculture accounted for 28.2 % of GDP and

26.8 % of employment. About 16 million tons of fruit and vegetable products are produced in Uzbekistan every year, the country has formed substantial stocks of grain and food essentials – meat, vegetable oil, sugar and rice (Agriculture Sector in ..., 2022). Bio-regional initiatives can promote sustainable agriculture practices that enhance soil fertility, conserve water, and minimize the use of agrochemicals. This may include organic farming, crop diversification, and the use of traditional farming techniques adapted to local conditions. One of the priority directions of the Strategy of Actions for the Further Development of the Republic of Uzbekistan adopted at the beginning of 2017 is the modernisation and intensive development of agriculture. On October 23, 2019 the *Strategy for the Development of Agriculture* of the Republic of Uzbekistan for 2020-2030 was approved (Agriculture development strategy ..., 2019). Priority directions for the implementation of the Strategy are fulfilment of the state policy on food security, providing for food safety and improvement of the consumer intake, production of food products in the required quantity; creation of a favourable agribusiness climate and value-added chain, production of agro-food products with high added value competitive on target international markets; introduction of mechanisms to reduce the role of the state and increase the investment attractiveness of the industry. *Uzbekistan's Agri-food Development Strategy 2020-2030* (Agrifood sector trends..., 2023) aims to diversify production, improve land and water relations, create a favourable agribusiness climate and high-value chain, support the development of cooperative relations, broad implementation of market mechanisms and information and communication solutions into the industry, as well as effective use of scientific advances and increase human resources in the agricultural sector. As a result, it is expected to achieve job growth, food security and security of the country's population, as well as to increase farm incomes and ensure sustainable use of natural resources.

Uzbekistan has implemented community-based development programmes and initiatives aimed at empowering local communities, supporting small-scale agriculture, and promoting sustainable natural resource management. These initiatives may provide opportunities for integrating bio-regional approaches to development at the grassroots level. While Uzbekistan do not have specific policies or legal initiatives labelled as "bio-regional policies," the country's existing policy frameworks and legal instruments provide a basis for advancing sustainable development and environmental conservation efforts that align with the principles of bio-regional initiatives. By integrating environmental conservation, community empowerment, and regional cooperation, bio-regions can help the country achieve its green goals while promoting resilience, prosperity, and well-being for current and future generations in Uzbekistan.

Conclusions, proposals, recommendations

1) The bio-region approach, using the principles of agroecology, is aimed at promoting the local economy and sustainable agriculture, developing the rural environment in a specific geographical area, protection of natural resources and biological diversity, preservation of scenic values, and preserving the quality of the cultural environment.
2) Uzbekistan has strategies and policies related to environmental, social, and economic development. They are similar to and different from the EU strategies and policies, and national strategies and policies of the EU countries as well.
3) By integrating bio-regional approaches into national policies and programmes, Uzbekistan can promote holistic and locally appropriate solutions to environmental, social, and economic challenges in the country.

Acknowledgement

The research received funding from the fundamental and applied research project No. lzp-2022/1-0519 "Bio-Regions as an Integrated Strategy for the Sustainable Development of Rural Territories in Latvia.

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Proceedings of the 2024 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" No 58
Jelgava, LBTU ESAF, 16-17 May 2024, pp. 242-251
DOI: 10.22616/ESRD.2024.58.024

IMPACT OF MARKETING FACTORS ON CUSTOMER EQUITY

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Abstract. This article examines marketing factors and elements that influence customer equity associated with building sustainable relationships with profitable clients, which are attracting increasing interest from marketers. Recently, consumers have acquired technical opportunities to influence brands more actively and traditional marketing methods and means often do not ensure the success of the company. In today's conditions, price competition and mass advertising are losing their power of influence, so companies are looking for new methods to fight for the customer attention. Building relationships between the company and the consumer and retaining existing consumers is of great importance. One of the most promising research areas in marketing is the development of customer equity. A basic assumption of customer equity is that a customer, like any other asset, is a financial asset. Customer equity is the total discounted lifetime value of all the company's customers. It helps measure the financial returns that can be made from all customers over the course of a relationship. This enables businesses to assess the value of their clients' assets and make sound financial decisions. By evaluating empirical studies and examining contemporary trends, the article provides both theoretical insights and practical guidance for marketers. The objective is to uncover the impact of marketing factors on customer equity, offering valuable resources for academics and practitioners. As a result of the article, the opinion of various factors and conceptual models influencing customer equity are summarized.

Key words: customer equity, customer loyalty, brand equity, value equity, relationship equity.

JEL code: M3

Introduction

This article reviews saturation of markets for goods and services has led to the fact that the problems associated with building sustainable relationships with profitable customers attract an increase interest of marketers. Customers are the engine of any organization, because without them a company has no revenue, no profit, and also no market value. These days, the on-demand economy model is becoming more widespread. Technology platforms offering services and services based only on the trust and needs of customers are receiving more and more capital and growth. For example, Uber does not own vehicles, Facebook does not create content, Alibaba does not own inventory, and Airbnb does not own real estate. The on-demand economy model, when the company essentially does not have its own capital, and business is based on trust and relationships with the consumer, also affects the distribution and influence of such an indicator as customer equity. In today's conditions, price competition and mass advertising are losing their power of influence, so companies are looking for new methods to fight for the buyer's attention and ways to influence it. Building relationships between the company and the consumer and retaining existing consumers is very important. One of the most promising research areas in marketing is the development of customer equity. A basic assumption of customer equity is that a customer, like any other asset, is a financial asset. Customer equity is the total discounted lifetime value of all the company's customers. In today's market, customer equity is essential because it helps measure the financial returns that can be made from all customers over the course of a relationship. This enables businesses to assess the value of their clients' assets and make sound financial decisions. The value that a customer provides to a company is not limited to the profit from each transaction, but is the total profit that the customer can provide during the relationship with the company. In the current competitive market scenario, it is necessary to monitor customer equity as a key indicator of expected future behaviour.

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For literature review, the main keywords in platforms like the Web of Science, Science Direct, Sage Research and Research Gate were traced. The initial search comprised more than 40 English-language resources. Review article discuss the studies identified by presenting the customer equity theoretical contributions made, marketing factors influencing the customer equity and potential ways of researched for future.

The approach for the selection of review articles has certain implications. Firstly, the customer equity is very modern indication that only grows its popularity and application among big international companies and very small number of publications exist in other languages. This affects the number of articles founded. Also, there is a language limitation, as attention was paid only to English-language publications. English-language articles constitute a majority of the international research community. Nevertheless, it cannot be stated that publications made in other languages have only local focus and a lower level of trustworthiness. As also was mentioned, there are very small researches made in other language due to status that the indicator is only growing its application and studies.

In addition, the review article concentrates mostly on marketing field, not financial one. It can reveal more insights into how to satisfy customers, how to attract them and make long-term relationships, not how to measure the customer equity financially.

The objective of the research is to uncover the impact of marketing factors on customer equity, offering valuable resources for academics and practitioners. The article is based on a systematic compilation of key innovations in customer relationship models to identify factors influencing customer equity. First, the general trends of the impact of customer equity on business and the factors affecting customer equity are mapped. Second, suggestions for future research are provided.

The article seeks to answer the following research questions.

1) What are the main factors that affect customer equity?
2) Which relevant topics in customer equity research remain underexplored, and what are the implications of the current findings for future research?

Research results and discussion

Customer equity is the sum of the discounted lifetime values of all of a company's customers, and customer equity modelling involves understanding how customer lifetime values can be accurately estimated (Martin, 2015). The goal of customer equity is to get the most out of customers during their relationship with the company. One of the major obstacles to accurately measuring customer equity is the fact that consumers are switching brands, and this switching makes measuring customer lifetime values very difficult (Blattberg et al., 2001).

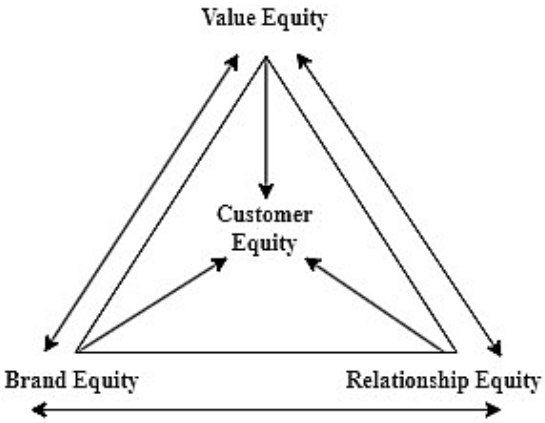
From the budgeting perspective customer equity is the present value of the anticipated lifetime revenue the company's customers will generate, minus company's acquisition and retention costs (Hanssens et al., 2008). Acknowledging the increase of customer equity as a main company's goal leads that a marketing tactic that boosts sales in the short term can have a negative effect on customer lifetime value. Customer equity purpose is to determine the optimal balance between acquisition and retention for particular companies (Blattberg and Deighton, 1996). Blattberg and Deighton also determine that the optimal balance of customer equity is when a customer equity is at its maximum amount. This is the calculation of customer's expected contribution toward offsetting the company's fixed costs over the expected life of that customer.

Customer equity is directly related to the finances and value of an enterprise. Since customers are the main buyers who generate profits, they are a very important resource for the company. A company's financial performance and value are also linked to brand equity and reputation, which is how customers perceive the brand. To develop a brand, positively influence customers and develop long-term relationships, companies need to invest. Therefore, the stable financial position of the company directly affects the allocation of the budget for attracting customers, and also provides an opportunity to enter new markets and platforms (Saksonova and Katalkina, 2022). Furthermore, the ability to buy customers depends on the economic situation as a whole the major macroeconomic indicators – turnover, value added, employment, and investment in fixed assets (Saksonova and Papiashvil, 2019).

Customer equity is also defined as a composite of value equity, relationship equity, that established between service provider and consumer, and brand equity, the additional value that the customer attributes to the underlying product as a result of branding efforts (Rust et al., 2014) (Figure 1).

The three main components of brand equity are the consumer's perception of the brand, their feelings about it, and the efficiency of the company's customer service (Bhadra et al., 2019). By definition, brand equity is a collection of brand-related assets and liabilities that increase or decrease the value that a business offers its clients through a product or service (Gani et al., 2014). Customer-based brand equity is an alternative definition of brand equity that refers to the variations in consumer reactions to a brand depending on their level of familiarity with it. Sources of brand equity influence consumers' behaviours including attention, interest, desire, and purchases, brand awareness and brand image are crucial. A view of brand equity suggests that its value arises from the incremental discounted cash flow from the sale of a set of products or services, as a result of the brand being associated with those products or services (Rust et al., 2004). Strong brand equity influences consumer behaviour in a number of ways, including increased profitability, reduced susceptibility to rival marketing campaigns, increased loyalty, and more adaptable consumer reactions to price adjustments through brand extensions.

Value equity is the objective assessment of an offer's utility based on the advantages it is thought to have in comparison to its costs (Hajipour et al., 2013). A combination of price, convenience, quality, and service makes up the core value. Innovation is a tactic for generating, distributing, upholding, and continually enhancing consumer value (Mane, 2016). If a customer thinks a brand is innovative, this could imply that the client has a dispassionate opinion on the products the brand offers. Therefore, a key element of perceived brand innovation may be also the value equity.



Source: Aravindakshan, A., Rust, R., Lemon, K.,Zeithaml, V. (2014). Customer equity: Making marketing strategy financially accountable, Journal of Systems Science and Systems Engineering, 13(4), p. 405-422.

Fig. 1. **Three dimensions of customer equity**

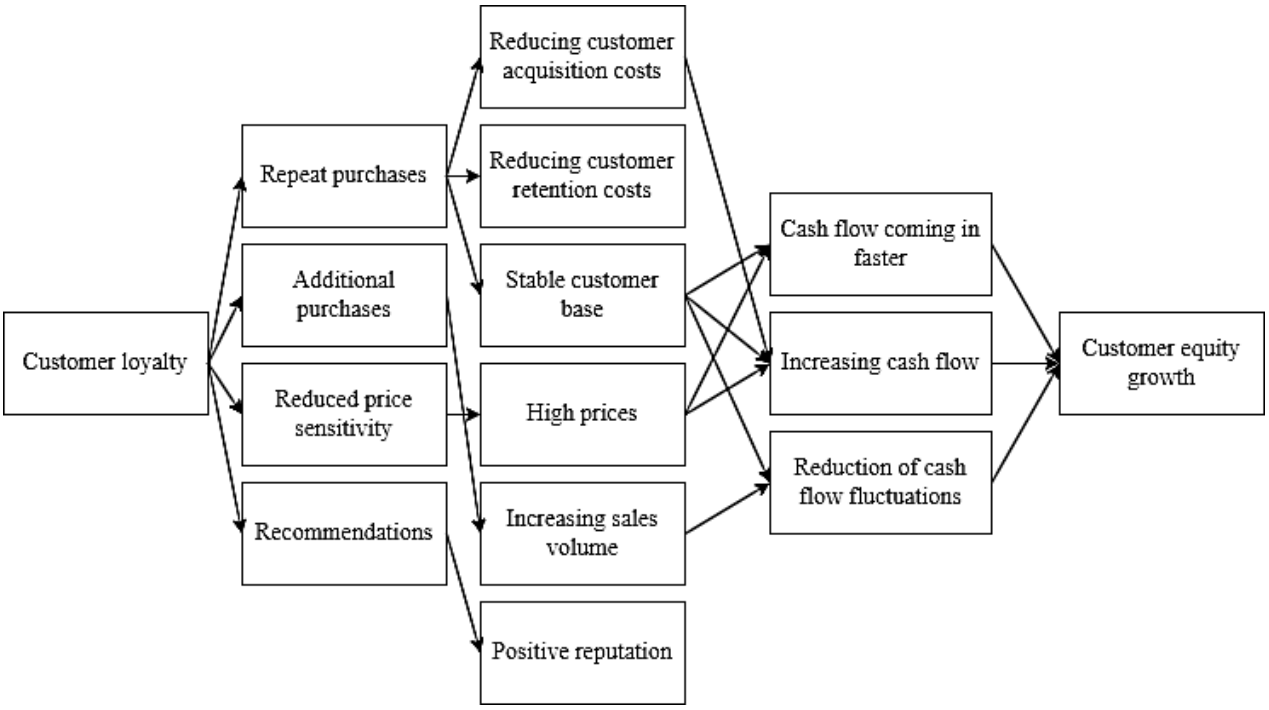
Perceived justice, customer pleasure, and brand loyalty are all included in relationship equity. Relationship equity looks at the link between consumers and brand equity as well as how well marketing campaigns work to build a rapport between target consumers and brand equity (Bhadra and Rego, 2019). Millions of people, for instance, update their status on social media every day to share the events in their lives. They use the chat feature to communicate, post on their walls to share ideas and opinions, send photos and videos, and write personal notes and comments on other people's notes.

It's evident that consumers' reactions to marketing initiatives are changing quickly. To send targeted messages to clients, this calls for a strategy framework that integrates numerous channels and multiple media. Individual customer preferences and interactions must be included and integrated with a consumer emphasis. In order to successfully execute marketing communications, businesses must put in place a multi-channel, multimedia consumer management system.

Customer Equity Management is a dynamic, integrated marketing system that uses information about consumer behaviour and techniques for financial evaluation. Thus, the purpose of the customer equity is to obtain the highest benefit from customers during their relationship with the company (Hogan et al., 2002). To define this benefit, it is important to judge if new products and customer service initiatives will affect customer positive and will grow the customer equity (Blattberg and Deighton, 1996). This is a discussion on how companies should distribute resources across various channels focusing on marketing mix to reach loyal customer base and to attract new customers. Determining the factors that influence customers' decision-making regarding budget allocation for new product marketing and brand building assessing their impact.

The majority of sales are usually from repeat customers (Figure 2). Attracting a new customer is usually significantly more expensive than satisfying an existing one. Despite this, companies often place more emphasis on attracting new consumers than retaining existing ones. However, key customers form the basis of the company's success and the strengthening and increase of stable customer equity. It is important to note that the value of a consumer relationship is not only the ability to make a profit from the sale of goods. Satisfied customers spread positive word of mouth and allow the company to increase profits by attracting new consumers.

Customer equity management is based on regular measurement of indicators characterizing the profitability and degree of retention of existing and potential clients of the enterprise. For these purposes, customer surveys, analysis of sales statistics, and monitoring of customer behaviour are used. The attitude of customers towards the enterprise is reflected in their behaviour. Beneficial customer behaviour is manifested in the following: repeat purchases, recommending the company to acquaintances and friends, switching to more expensive products, purchasing additional goods from the company's range, weakening the reaction to price increases of the company, providing the company with information that allows it to increase the efficiency of its work. As a result of this behaviour of customers, the company achieves high and growing financial results. To ensure the stable development of customer equity, a certain part of the profit must be invested in strengthening relationships with profitable clients.



Source: created by the authors based on theory sources

Fig. 2. **The relationship between customer loyalty and customer equity**

The level of customer loyalty (repeat purchase rate, number of referrals, and volume of related purchases) depends on factors focusing on three dimensions and drivers of customer equity: value equity, brand equity, and relationship equity (Table 1).

Brand equity, unlike value equity, is a more subjective and emotional concept based on the consumer's image and opinion of the brand. Brand equity factors that influence customer loyalty and customer equity are: advertising of serviced or products, company's participation in social projects, brand reputation, brand image and brand association. The role of brand association is crucial for trust goods when it is difficult to assess quality before consumption. For many products and services, it is possible to try it before buying or to easily assess the quality of certain attributes before purchase (Rahman et al., 2023). However, other consumers need to use different quality metrics. This aspect of brand equity is particularly important to recognize the value of a strong brand identity as a key tool for attracting new consumers.

The brand-switching approach explicitly models the brand-switching pattern of individual customers using Markov switching matrices that represent brand-switching patterns in consumer packaged goods. For example, an approximate Markov switching matrix can indicate the probability that a consumer who previously purchased a new brand will repurchase other brands. We can then estimate future acquisition opportunities for all of his future purchases, given that the competitive situation remains unchanged (Rust et al., 2005). Of course, the company would like to change the competitive situation in a positive direction, which means that the company needs to understand what drives the exchange matrix and, therefore, the customer equity. In other words, the company tries to identify the attributes and factors that will influence customers. For example, for the banking sector, the behavioural costs of rebranding are not only detrimental to current profits, but also to future revenues. Existing customers not only use banking services, but will continue to use these services at higher rates. By losing existing customers, banks cannot take advantage of these benefits (Mohsin et al., 2012).

Table 1

Factors affecting consumer behaviour and customer equity formation

Dimension groups of customer equity	Factors
Brand equity	Company reputation
	Advertising of services/products
	Company's participation in social projects
	Brand image
	Brand associations
Value equity	Value added services
	The variety of products and services
	Location and environment (technical capabilities, visual appeal etc.)
	Buying security, guarantees
	The quality of services/products
	Cost of service/product
	Speed of service
	Ease of obtaining information
	Ease of use of website and online shopping
	Quality of customer service (customer attention, personalized services, no queues etc.)
	Qualification and professionalism of employees
Relationship equity	Reviews on the Internet
	Word of mouth recommendations
	Previous experience

Source: created by the authors based on theory sources

The biggest number of factors are detected from value equity. It is important to define how much a customer is willing to pay for a product or a service over and above its selling price. So, it could be said that value equity factors are all factors that directly affects customer buying experience. Customer service quality is an important strategic indicator. To ensure growth and future sales, it is important to make the customer experience with the brand as pleasant as possible. Satisfied customers will tell their friends and acquaintances about the brand, which remains the most effective and reliable advertising, despite all technological advances. So, value equity strongly affects relationship equity and brand equity overall. It is important to create surveys and ratings to track customer perceptions of service quality across multiple touchpoints, adjusting strategic and tactical activities based on customer desire to purchase the product.

Promotion of discounts has a positive and significant effect on purchase decisions. Although effectiveness is not easy to measure, the promotional tool has a huge impact on marketing performance. Promotion is defined as communication that informs potential consumers about a product that can satisfy consumer needs and wants and encourage them to buy (Prianggoro, 2019). The purpose of promotion is to reach target consumers and persuade them to buy. They help consumers increase the utility of obtaining a purchase and improve the shopping experience. Non-monetary offers (such as contests, sweepstakes, free gifts, loyalty programs) are associated with benefits, experiences and emotional nature because they are inherently rewarding and associated with experienced emotions, pleasure and self-esteem.

In the current fast-paced business world, companies require adaptable and strategic business practices to adjust to market changes caused by evolving consumer preferences, improved manufacturing techniques, and advancements in technology. Effective product and service delivery timelines are crucial

for success in this competitive environment, where consumer satisfaction plays a key role in fostering customer loyalty through value.

The faster the customer can get the desired product and satisfy his wants and needs, the more satisfied he will be. Often, customers make impulse purchases during times of high emotion. If they receive the item at that exact moment, they are most satisfied and are more likely to leave a very good review. It is important to release products faster than the competitors in order to be the first to meet the needs of the consumer and make him satisfied. Taking into account that a lot of enterprises work remotely, there is an increasing demand for skilled professionals in the information and communication technology (ICT) sector in both Latvia and globally, that are important to provide amazing customer service even when the employee is not at the office and to attract potential customers (Cekuls et al., 2017).

The increased importance of communications in modern business raises the issue of conceptualizing a new form of relationship model with customers and determining the content of the concept of relationship equity. In the process of digitalization, new environments for information interaction are created, new technologies for the communication process are introduced, resulting in numerous effects, including those related to the economic and financial achievements of firms, and the growth of business capitalization. It is no longer enough for communications to be considered as an auxiliary element that performs infrastructural functions and is considered more as an object of expenditure. Communication costs and the relationship equity of product sales have already become for many enterprises an integral condition for market success, obtaining key competencies and income. Relationship equity factors affecting customer loyalty and customer equity are positive experience with this brand before, word of mouth feedback and recommendations and reviews on the Internet.

Providing a strong consumer experience is crucial to keeping audience's attention and can give them the confidence they need to look away and stay with the particular brand. It is important to value the experience based on the brand and not just the consumer's perspective, as a unique brand experience will serve as a sustainable competitive advantage. It is crucial when organizations can improve the speed and quality of the decision making by paying more attention to the process approach that will drive faster and better customer service (Cekuls, 2018). Furthermore, brand experience has a positive relationship with loyalty where it drives profits. This is because consumers who are more satisfied with the product will buy more next time.

Positive recommendations allow companies to successfully promote their products, building long-term relationships with customers and making them more profitable. Thus, it can be said that positive word-of-mouth recommendation is a significant predictor of trust and consumer repurchase behaviour.

For marketers, often the most difficult decisions involve the marketing mix, or how resources should be allocated across all possible ways to reach and serve potential and existing consumers. Often the choice here is whether to focus more on customer service improvements and less on sales promotion. However, the marketing mix and the choice of factor combinations shape the impact of different levels of spending on customer equity.

In addition to the previously discussed factors, elements of environment and competition have frequently been shown to be important factors in marketing productivity. The firm's skill in adapting to the environment and competition can do no more than improve performance relative to what would otherwise be the case (Rust et al., 2004).

All the above factors indicate how strongly all dimensions influence customer loyalty and customer equity. Figure 3 also shows the importance of working on all dimensions simultaneously, considering Brand Equity, Relationship Equity and Value Equity.

All the factors together will give the best and strongest result and affect the consumer. The reason for this conclusion is that each of the three concepts is universally applicable. Consumers look for value in the products they buy, regardless of which region of the world they belong to. Likewise, consumers are more likely to value relationships regardless of their regional affiliation. Each group will have differences based on demographics such as age and education. Consumers in different regions are likely to have equal appeal for a given brand within a demographic range defined by age, income, and education.

The key question here is how much brand equity plays a significant role in driving loyalty. Emerging retail businesses typically do not attempt to build brand equity beyond building credibility and trust because of the high investment and lengthy onboarding process involved. Brand equity strategy is increasingly seen in established brands. The other two dimensions, value equity and relationship equity, are likely to be generalizable across both developing and developed brands.

Source: created by the authors based on theory sources

Fig. 3. **The influence of marketing factors on customer equity**

Conclusions, proposals, recommendations

1) Consumer response to marketing efforts is evolving rapidly. This requires a strategic framework that combines multiple channels and multiple media to deliver targeted messages to customers. A consumer focus is required to include and integrate individual consumer preferences and interactions.
2) Many companies face the problem of how to leverage customer equity and which driver to focus on first. To fully determine the model for determining customer equity, it is necessary to integrate all dimensions of customer equity such as value equity, brand equity and relationship equity, which develop and drive the size of customer equity.
3) Customer loyalty is the end result of customer brand equity in the customer equity concept. The research literature review provides important theoretical and practical implications as well as future research directions to identify factors that influence customer equity growth.
4) The value of loyal customers for a company lies primarily in repeat purchases, recommendations, and provision of valuable information.
5) It is important for companies to implement a multi-channel, multimedia consumer management system that will help companies effectively implement marketing communications.
6) The present study is very relevant for service organizations in evaluating different loyalty programs and also in segmenting customers depending on the amount of customer equity.
7) Customer Equity Management purpose is to obtain the highest benefit from the customer and decide on budget allocation on customer retention and customer acquisition.
8) Customer equity and it depending factors are important for the financial evaluation and budget allocation. Definition of factors' impact and importance for the customer helps of using marketing mix and decide whether invest more in new-product marketing or in brand building.

This study provides a universal set of factors that influence the size and development of customer equity. Further steps in the research could focus on identifying and testing specific factors in the context of customer loyalty. Different markets and consumer groups with different psychographic characteristics may have different loyalty attitudes and behaviours determined by different combinations of loyalty factors. It would be interesting to know the industry-specific set of factors that determine loyalty.

Furthermore, it is important to make quantitative research to measure the correlation and relationship between factors and customer equity to verify their validity. Customer equity is influenced by various factors to varying degrees. Significant consideration should be given to calculating their contribution to the overall evaluation of customer equity, as all of these factors are interconnected with other influencers. For example, ensuring a high level of product quality is frequently associated with achieving customer satisfaction.

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Proceedings of the 2024 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" No 58
Jelgava, LBTU ESAF, 16-17 May 2024, pp. 252-258
DOI: 10.22616/ESRD.2024.58.025

ANALYSIS OF PUBLIC DEBT TRENDS IN LATVIA

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Abstract. In recent years, the size of public debt has increased significantly in Latvia and the European Union. However, a huge level of public debt negatively affects economic development - both at the regional and state levels. Moreover, increased interest rates increase the financial burden on the state budget. Therefore, one of the goals of the EU financial policy will be to stabilize public debt in the coming years. The purpose of the work is to analyse trends in changes in public debt and identify the main factors influencing the growth of public debt. Using the Domar model, the author will develop the main scenarios for changes in public debt. The risks that public debt poses to the economy will also be assessed.

Key words: public debt, GDP growth, inflation.

JEL code: H60, H68, O11

Introduction

Public debt is of great importance in the economy of the state. On the one hand, public debt allows you to temporarily increase state budget expenditures, finance important projects and support the state economy. On the other hand, the national debt places a heavy burden on the shoulders of future generations who will have to pay it off. Nevertheless, with developed financial markets, government debt can be refinanced almost indefinitely; all you need to do is service the debt and pay interest on time. Therefore, a logical question arises - what should be the optimal size of public debt. At the end of 2023, Latvia's public debt reached 16.5 billion euros, or approximately 8,698 euros per resident of Latvia (Eurostat database, 2023). Is this dangerous for the Latvian economy and how effective is public debt management policy in general? Neither absolute nor per capita figures are sufficient to assess the sustainability of public finances, as this benchmark does not provide sufficient information about solvency. Essentially, when assessing a government's creditworthiness, it makes sense to act like a bank. The loan amount must be assessed in relation to the borrower's income, assets and pre-existing financial obligations. The aim of the research is to analyse the main trends in Latvian public debt in the future. The tasks are to analyse the main factors influencing public debt and make the main scenarios for the development of Latvian public debt. In the paper, the following research methods are used: analysis of primary and secondary data, method of mathematical modelling (Domar model), scenario analysis method.

1. Domar model

Since the national government has access to the income and assets of the national economy through taxation or other coercive measures, aggregate economic indicators are a useful indicator of government debt. Accordingly, the Maastricht criteria apply gross domestic product (GDP) as the denominator of the ceilings for the public debt-to-GDP ratio (60 percent) and the deficit ratio (three percent). (*Council of European Communities, 1992*). The leverage ratio (relative to government spending) and the borrowing ratio (relative to GDP) are related to the deficit ratio; the difference is that the former are derived from fiscal statistics, while the deficit ratio is derived from national accounts. In addition to the deficit ratio, the primary fiscal balance is an important indicator of the sustainability of government finances. It is calculated as the difference between income and expenses of the current budget after deducting individual budget items. It excludes expenses in the form of interest payments and contributions to reserves, as well as income from net borrowings, withdrawals from reserves, and income from the sale of government assets (for example, through privatization). The primary balance sheet shows whether the government is making

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progress on fiscal consolidation. It is similar to the ratio of net borrowing to interest expenses of central, regional or local governments. If there is a primary surplus (positive primary balance), then there is enough income to cover current expenses (excluding interest payments). If the primary surplus exceeds interest payments (interest on previous borrowings), debt falls. However, if the primary surplus is not sufficient to finance interest payments (or if there is a primary deficit), then the debt increases. (Holtfrerich et al., 2015).

If GDP growth lags behind debt growth, it creates a higher debt burden for future generations. Other ratios for assessing the dynamics of public debt are the interest-to-tax ratio and the interest-to-expenditure ratio. They are determined from fiscal statistics and refer to interest payments on tax revenues or government expenditures, respectively. These relationships have been criticized as having limited information value. They provide information only on the designated indicator, without indicating when the danger threshold for public debt is exceeded (Escolano, 2010).

The government can increase its fiscal space in the short and medium term by borrowing over longer periods. The answer to the question to what extent government debt makes sense in the long term and whether it can be raised without any risk essentially depends on whether the government can finance its expenditures in a way that does not damage its future creditworthiness and solvency. The consequences of public debt on the state's ability to act have, to a large extent, already been illustrated by Domar (1944).

Assuming (in the long run) a constant real growth rate γ, a constant inflation rate π and a constant real interest rate ρ, and a constant rate of net new debt (deficit ratio) k, then the debt ratio (total government debt D over national output Y) is independent from the initial value converges to the following value:

$$\frac{D}{Y} = \frac{k}{\gamma+\pi} \quad (1)$$

The debt ratio (government debt divided by nominal national product) converges over time to the ratio of the deficit ratio and the growth rate of nominal national product. This equation becomes clear if we express it as $(\gamma + \pi)D = kY$. The left side represents the annual increase in debt if it grows as fast as nominal national product. The right-hand side also represents the annual increase in debt expressed using the deficit ratio. Accordingly, the higher the long-term deficit ratio, the higher the long-term debt ratio will be, and it will be lower the higher the growth of nominal national product. This is the result of the sum of the real growth rate and the inflation rate. While deficits and government debt can rise over the long term under sustainable policies, neither should grow faster than nominal national product. The long-term debt ratio, together with the difference between the real interest rate ρ (also assumed constant) and the real growth rate γ, determines the fiscal capacity of the public sector in the long run: these parameters determine the primary surplus - expressed as the difference between tax receipts T and (net) government expenditure (excluding interest payments) G – the state must generate in the long term to remain solvent (Holtfrerich et al., 2015). Equation (2), derived from equation (1), shows the relationship between primary surplus and national product:

$$\frac{T-G}{Y} = (\rho - \gamma)\frac{D}{Y} \quad (2)$$

As long as the real interest rate exceeds the rate of economic growth, a continuous primary surplus must be created in the long run to finance interest payments. The higher the long-term debt ratio and the greater the difference between the real interest rate and the constant growth rate, the higher the interest expense will be. In the long run, a primary budget deficit is possible only if the real national product grows faster than the real interest rate. γ and ρ are real rates. The creation of money can also change this

condition only slightly: In addition to tax revenues, seigniorage arises, that is, the profit received by the central bank by issuing money (Baum et al., 2013). However, they constitute only a very small share of the national product. There are theoretical models that show that the real growth rate can be higher than the real interest rate even in long-run equilibrium. This is also called a state of "dynamic inefficiency". In this state, the economy is so capitalized that short-term declines will not have a negative impact on future prosperity. This is because sustainable consumption peaks when the interest rate equals the growth rate, which is also known as the "golden rule of savings"(Klaus et al., 2017). In such a case of dynamic inefficiency, public debt can be increased without negatively affecting both future ability to act as well as economic development. However, there is disagreement as to how long this phase will last. In addition, there are theoretical models that demonstrate that even with a negative real interest rate, a long-run equilibrium can exist. Since the nominal interest rate cannot usually become negative, negative real interest rates are only possible if the inflation rate is positive. On the other hand, there are theoretical arguments that argue that in the long run the real interest rate cannot be lower than the growth rate of the economy. Their proponents especially point to the existence of non-reproducible factors of production, such as land, whose scarcity rent increases in proportion to the national product (Albu et al., 2021).

These future scarcity annuities will have an "infinite" present value of capital at a constant interest rate that is below the growth rate, meaning that there is no balanced investment market. Therefore, the interest rate will constantly exceed the growth rate. Under these conditions, higher public debt reduces the government's fiscal capacity. Either taxes must be increased over the long term without the government providing additional services, or the government must reduce those services accordingly. If borrowing leads to higher interest rates, which becomes more likely when government debt increases, it can also "crowd out" private investment. All of these factors can constrain an economy's growth and therefore its international competitiveness and job creation potential. The higher the debt ratio, the more likely it is that debt sustainability limits will be reached if shocks cause debt to increase. The academic debate about whether the rate at which a national government can raise debt is above or below the rate of economic growth, and under what conditions, is by no means settled (Holtfrerich et al., 2015).

From an empirical perspective, the interest rate that private borrowers with excellent credit scores must pay generally exceeds economic growth. Many economists view this as an indication that public debt must be reduced to allow private investment on better financing terms. However, other economists suggest that, firstly, interest on debts paid by governments has often been below the rate of growth of national product in the past and that, secondly, especially over time, the increased propensity to save is an indicator that current and future interest rates are even lower than in the past. From this point of view, there is a lot to argue against reducing the public debt ratio (Vanlaer et al., 2015)

Domar's model allows for the calculation of a "natural limit" on government debt, which is distinct from other types of limits on government debt (such as legal, political, or psychological). The key result of Domar's model is that if the government's net borrowing to GDP ratio is higher than the sum of the real growth rate and the inflation rate, the debt ratio will not reach a fixed limit in the long run. The more the two measures diverge (deficit ratio > economic growth rate plus inflation rate), the faster the debt ratio will increase and the more likely it is that the government debt will "explode" (Holtfrerich et al., 2015). If we assume (over the long run) a constant rate of real growth, a constant rate of inflation, and a constant rate of net new debt (deficit ratio), then in the long run the ratio of government debt to GDP will approach the following limit, regardless of the initial value:

$$Debt\ limit = \frac{nominal\ government\ debt}{nominal\ gross\ domestic\ product} = \frac{deficit\ ratio}{economic\ growth + rate\ of\ inflation}$$

2. Improved Escolano model

Domar model was later improved by Escolano (2010). With these notations, the basic equations are summarized as follows: B is the government debt, r is the nominal interest rate on government debt, g is the growth rate of nominal GDP (or GNI), P is the primary balance, and D is the overall budget balance. Lowercase letters take these variables as ratios to nominal GDP or GNI. Equation (3) shows the determinants of government debt in period t, namely the debt in the previous period $t-1$, the interest payments in t on the debt that prevailed at the end of the previous period, and the primary balance, which is defined in equation (4). Debt may increase or decrease by adjusting the stock flow (i.e., debt-deficit) of the SFA, which totals the debt issued to purchase financial assets (or the proceeds from the sale of financial assets), excluding statistical errors. This type of debt is part of gross debt but does not include financial assets owned by the government. A primary surplus will reduce the budget deficit or result in a budget surplus of t and a lower B, if everything else remains constant. It should be noted that all variables used in this section are adjusted for cyclicality, as the focus is on the long term, abstracting from the cyclicality of growth (Priewe, 2018).

$$B_t = B_{t-1} + rB_{t-1} - P_t + SFA_t \tag{3}$$

The primary balance of period t is the overall budget balance, total tax revenues (T) less total expenditures (G), which are reduced by interest payments on debt of the previous period. This implies that the overall budget balance plus the interest payments equal the primary balance. P shows the degree at which government revenues are used for the prime expenditures for purchasing goods and services, public investment and transfers (Priewe, 2018).

$$P_t = (T_t - (G_t - rB_{t-1})) = D_t + rB_{t-1} \tag{4}$$

The budget balance D is $T-G$, relative to GDP denoted as d, and the interest payments on public debt, as a share of GDP is denoted as z. Hence, we obtain for the budget balance (4a), all variables as share of GDP

$$d_t = p_t - z \tag{4a}$$

The change of the debt-to-GDP ratio against the previous period is shown in equation (5)

$$\frac{B_t}{Y_t} - \frac{B_{t-1}}{Y_{t-1}} = \frac{B_{t-1} + rB_{t-1} - P_t + SFA_t}{Y_t} \tag{5}$$

If all components of (5) are taken as shares of GDP, denoted in lower case letters, we obtain with a few re-arrangements of equation (6):

$$b_t - b_{t-1} = \frac{r-g}{1+g} b_{t-1} - p_t + sfa_t \tag{6}$$

Assuming that SFA is zero and that $1+g$ differs not much from 1, the change in the debt ratio is approximated by

$$\Delta b_t \approx (r-g) b_{t-1} - p_t \tag{7}$$

This leads us to the key conclusion that the change of the debt ratio depends on the growth-adjusted interest payments on debt and the primary balance (7). If the debt level shall be held constant, a positive growth-adjusted interest payment obligation must be offset by a primary surplus of the same size, vice versa in the case of $g > r$. The sustainable primary balance, i.e. the one that keeps the prevailing debt ratio stable, is p', and the corresponding budget balance is d' (Priewe, 2018)

$$p'_t = (r-g)b_{t-1} \quad \text{if } \Delta b_t = 0,\ d'_t = p'_t - z,\ \text{if } b_t = b' = constant \tag{8}$$

For the Euro area, the simple equation portrays the sustainable budget deficit d' that maintains the debt ratio b' at the official ceiling of 60 percent. This equation is often used to derive the 3 percent deficit rule from a given 60 percent debt level and 5 percent nominal growth, as shown in (8a)

$$-d'_t = g'b'_t \tag{8(a)}$$

If d' is split into the primary balance and z (equation 4a), the interest payments on debt as share of the GDP, and the equation solved for p', we obtain

$$P' = (r-g)b' \tag{8(b)}$$

If we go back to equation (6) and use λ as in (9), and disregard sfa, we obtain equation (10) for the debt ratio in t.

$$\lambda = \frac{r-g}{1+g} \tag{9}$$

$$b_t = (1+\lambda)\mathrm{b}_{t-1} - p_t \tag{10}$$

If $t0$ is the initial period and tN the Nth period, equation (11) shows the value of growth adjusted interest payments until N and minus the sum of future primary balances.

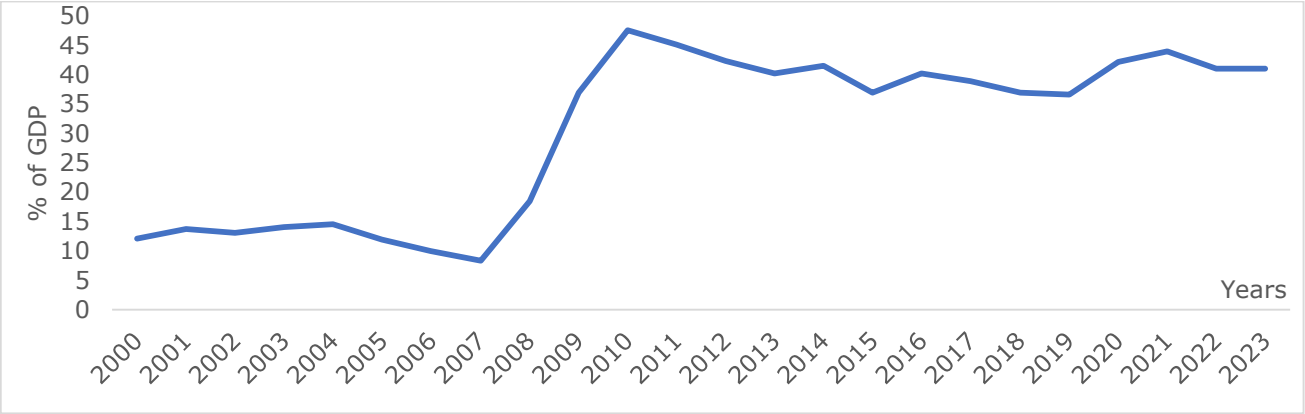
$$b_N = b_0(1+\lambda)^N - \sum_{t-1}^{N}(1-\lambda)^{N-t}\,p_t \tag{11}$$

Solving (9) for the present value of debt in $t0$, leads us finally to (12).

$$b_0 = b_N(1+\lambda)^{-N} + \sum_{t-1}^{N}(1-\lambda)^{-t}\,p_t \tag{12}$$

3. Analysis of the factors affecting the public debt of Latvia

Since the introduction of the national currency - the lat - Latvia has pursued a fixed exchange rate policy, which requires a low level of budget deficit. Later, after joining the European Union, Latvia strictly complied with the Maastricht criteria and did not allow the budget deficit to grow above 3% of GDP. As a result, a policy of low budget deficits made it possible to control external debt and prevent its growth. Until 2008, the Domar model showed its effectiveness - Latvia's public debt was at a very low level. However, in conditions of economic crisis, it is very difficult to comply with all the conditions of the Domar model. During a crisis, budget revenues sharply decline and in order to maintain financing of public expenditures, the government is forced to increase the size of public debt. In addition, during a crisis, GDP declines, which puts additional pressure on public debt. Over the past 20 years in the history of Latvia, there have been two crisis periods when public debt grew. The first is the 2008 crisis, when the budget deficit rose to 8-9%, and the fall in GDP in 2009 was -14.3%. As a result, the level of public debt increased from 8.4% in 2007 to 47.6% in 2010. The second period was the 2020 coronavirus pandemic, when due to the government's stimulating policies, public debt rose from 36.7% of GDP in 2019 to 44% in 2021 (Fig. 1).



Source: author's calculations based on Eurostat database

Fig. 1. **Public debt of Latvia, % of GDP**

And although in the short term an increase in external debt is allowed, in the long term it is necessary to take measures to stabilize the debt. In this case, the Domar model offers two options for stabilizing public debt. The first option allows you to reduce public debt through economic growth - in this case, the contribution of GDP growth should exceed 50%. This is an ideal option that allows you to painlessly reduce public debt. The government debt ratio is falling gradually, while real incomes of households and businesses are growing. At the same time, the economy itself is in a stable state. Calculations in Table 1. show that from 2012 to 2019, the contribution of economic growth to the reduction of public debt was 74% - this is a very high figure. As a result, public debt decreased from 47.6% in 2010 to 37.6% in 2019. The second way to reduce government is related to inflation. In this case, a sharp rise in prices depreciates the value of government debt. This is not a very effective way to reduce public debt - the purchasing power of households and businesses is reduced.

Table 1.

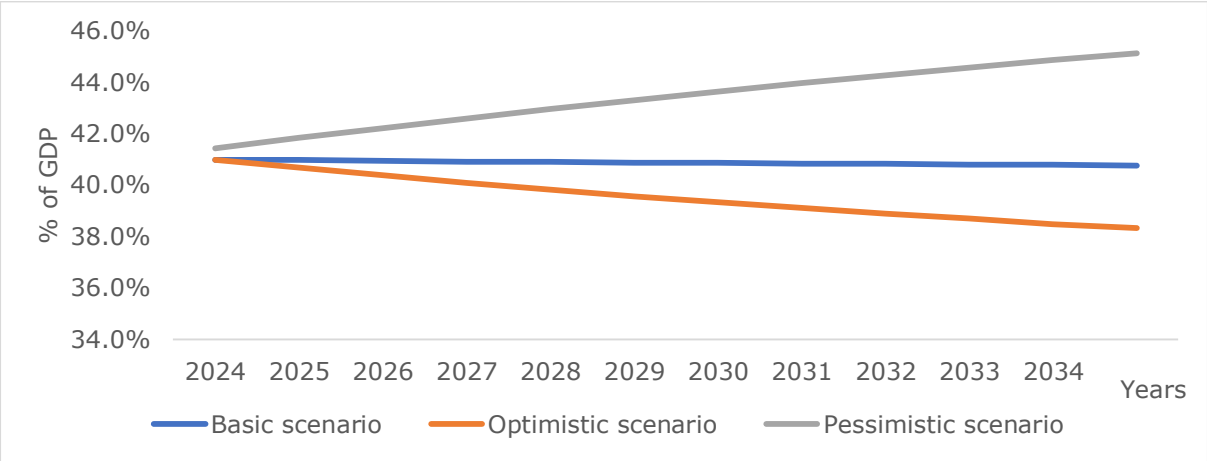
Factors influencing the decrease in the Latvian public debt ratio, in %

Factors	2012-2019	2022
GDP growth contribution	74%	15%
Inflation growth contribution	26%	85%

Source: author's calculations based on Eurostat database

Calculations in Table 1 show that in 2022, the contribution of inflation to the reduction of public debt was 85%. In this case, inflation acts as an additional tax that is imposed on households and businesses.

When forecasting government debt, Domar's model reveals another flaw. The Domar model works effectively only with stable economic growth. In a near-depression environment, when economic growth is close to zero and inflation is also low, even a small budget deficit will lead to an increase in public debt in the long run. This is a Japanese script. When forecasting the public debt of Latvia, the author developed three possible scenarios for the development of events. In the base scenario, inflation should be 2.2%, the budget deficit - 2%, and GDP growth - 3%. In this case, it will be possible to maintain the level of public debt at the current level of 41%. The optimistic scenario envisages inflation at 2%, budget deficit at 2%, and GDP growth at 4%. This will allow the government debt to be gradually reduced. In the pessimistic scenario, inflation is 2%, budget deficit - 2%, GDP growth = 2%. In addition, in a pessimistic scenario, it will not be possible to maintain public debt at the current level of 41% of GDP and it will begin to grow (Fig. 2).This means that in a depression, the government must abandon budget deficits to limit public debt.



Source: author's calculations based on Eurostat database

Fig. 2. **Latvian Public debt scenarios, % of GDP**

Conclusions

The Domar model allows to effectively control the level of public debt. Maintaining a low budget deficit allowed Latvia to maintain a low level of public debt until 2008. The Domar model can also be used to reduce government debt levels. The most preferable option is to reduce public debt through economic growth. Reducing government debt due to inflation does not have a positive effect and leads to a decrease in the purchasing power of the population. The Domar model works effectively only in stable economic conditions. In conditions of stagnation and depression, the Domar model requires abandoning the budget deficit, which does not allow stimulating the economy.

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Proceedings of the 2024 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" No 58
Jelgava, LBTU ESAF, 16-17 May 2024, pp. 259-266
DOI: 10.22616/ESRD.2024.58.026

SYSTEM-DYNAMIC APPROACH TO ASSESSING SUSTAINABLE DEVELOPMENT: THE EXAMPLE OF THE USA

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Abstract. The aim of the article is to study the influence of the sectoral structure of the economy and technological efficiency on ensuring continuous positive growth of the total useful capacity of the socio-economic system during the selected period. The novelty of the approach lies in the fact that, based on the analysis of socio-economic, technical and environmental factors that determine the sustainable development, natural science meters are determined, reduced to one unit of measurement in systems that are open at the input and output in terms of energy. The article focuses on the main questions related to the creation of the dynamic model of the sustainable development model of the system for different scenarios of useful power changes with two types of the impact parameters and algorithms. The results of the main positions of the dynamic models of the systems and their interpretation are presented based on the historical statistical data of the United States of America in the period from 1950 to 2019. The correction was made four times over the period from 1949 to 2019 with different impact factors and scenarios. The purpose of the correction was to model the changes in the useful power of the industry and technological efficiency in order to obtain a continuous positive increase in the total useful power of the system during the selected period.

Key words: sustainable development, system dynamic, industry, technology, power.

JEL code: E19, F69, Q59, R10

Introduction

Existing tools for economic and mathematical descriptions do not allow us to identify the place and time of origin of the root causes of economic changes, taking into account the forecasting of the nature of their growth. In addition, traditional economic and mathematical methods are not able to identify the paths and rates of change in economic structures from the place and time of their occurrence to the place and time of their future manifestation. Economy is the purposeful activity of people in resource management, based on a comparison of projected acquisitions and losses of resources with the planned expenditure of resources necessary to achieve set goals. It follows that without the skills of planning the distribution of resources and the ability to predict future gains and losses from the implementation of planned management, it is impossible to solve any specific economic problem and sustainable development tasks. The main reasons for the weakness of traditional methods of economic and mathematical tools for the formation of proposals for economic management include several provisions (Kulik, 2016). *Firstly*, traditionally, for current economic management, statistical information is used, which is information from the past. It follows that it is impossible to calculate and predict the results of statistically independent events. Statistics approaches are most suitable for assessing the quality of past management and for preparing the initial conditions for forecasting economic dynamics. It must be taken into account that future economic changes arise on the basis of future economic structures, which are currently still uncertain and are not predicted by stochastic methods. Stochastic methods of economic forecasting, for example extrapolation of time series, are based on the hypothesis that future changes depend only on time, but not on the controls performed in the current

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and future times and the resulting structural changes in the economy. Therefore, such economic forecasts about future states that last more than a year are always not correct enough. *Secondly*, when extrapolating time series, the dependence of the rate of change of the resulting parameter on the values of any resource investments is not modelled, and this leads to the fact that traditionally it is not the speeds and accelerations of parameters that are predicted, but the states of the system, which rarely come true. *Thirdly*, the real economy operates in conditions of continuous changes in its structures (Kuznetsov, 2015). Namely, these structural changes, not detected by traditional forecasting methods, mainly serve as the reasons for the generation of unpredictable chaotic dynamics of future real processes. A real socioeconomic system is a dynamic system with many structural feedbacks. Real economic systems always have many dynamic elements, and a large number of different (positive and negative) structural feedbacks. Forecasting future structural changes in socio-economic systems can be performed by methods of dynamic modelling of the economic original based on a system of nonlinear differential equations that take into account in their calculations not only the time factor, but also feedback and structural changes. Such dynamic models with a high degree of correctness predict the speed and acceleration of changes in system parameters (i.e. economic dynamics), as a consequence of the effects of various internal controls and expected external influences on it. The results obtained can model not only crisis-free processes, but also future sudden changes that reduce the degree of sustainable development (Kuznetsov, 2015). Within the framework of the concept of ecological economic (Capra, Jakobsen, 2017) and taking into account the conclusions of the energy theory of cost (Costanza, 2004), in order to formalize the tasks of sustainable development, a sustainable development designing model was developed using the method of power and energy flows changes analysing in open dynamic socio-economic systems (Trusina, Jermolajeva, 2022). Based on the main provisions of the model, a necessary condition for the sustainable development of a socio-economic system is a positive increase in useful power. A sufficient condition is the increase in the technological efficiency of the system (Kuznetsov, 2015; Bolshakov, Karibaev & Shamaeva, 2019).

The aim of the article is to study the influence of the sectoral structure of the economy and technological efficiency on ensuring continuous positive growth of the total useful capacity of the socio-economic system during the selected period. The authors were faced with the task: the development of the socio-economic system's useful power dynamic model under various industrial and technological scenarios, based on the methodology of system dynamics and socio-economic system energies flows' changes analysis a as a necessary condition for sustainable development. The results of the main positions of the dynamic models of the systems and their interpretation are presented based on the historical statistical data of the United States of America in the period from 1950 to 2019. The correction was made four times over the period from 1949 to 2019 with different impact factors and scenarios. The authors used the United Nations, the World Bank and the International Energy Association databases to develop the research.

The novelty of the approach lies in the fact that, based on the analysis of socio-economic, technical and environmental factors that determine the sustainable development, natural science meters are determined, reduced to one unit of measurement in systems that are open at the input and output in terms of energy. The relevance of the topic is associated with the growing requirements for the rational justification of management decisions that affect various aspects of the functioning of socio-economic systems.

Methodology

Dynamic modelling is a new direction in the technology of economic and mathematical research. The new direction contains a fundamentally new logic of synthesis, conditioned by taking into account the influence of the time factor in the economy. Often it is more significant than a change in proportions in the

distribution of material, financial, information and other resources. Such parameters of a socio-economic object as the speed of flows and accumulation of resources, the lag time in decision making, the time sequence of resource allocation, the forecasting time interval, the time intervals of weaning or getting used to something, the length of time to tolerate something and a number of other parameters, being function of time, largely determine the nature of socio-economic processes. To avoid serious mistakes when making decisions in managing the real economy, it is necessary to learn to understand the influence of time factors on social processes. Since time flows continuously and endlessly, and social systems (economic, political, social, etc.) are non-stationary and also continuously change their structure, there cannot be stable algorithms and unshakable recommendations in economic management. The ability to manage the economy is not only the ability to redistribute resources, but also the ability to predict the results of this redistribution. In economy, results do not appear immediately and often in the form of processes. If we accept that economy is a social activity of people based on comparing the results of activities with costs, then the ability to predict the nature of losses, the magnitude and time of their occurrence and compare them with useful gains allows us to avoid many mistakes. In this regard, there are several problems (Kuznetsov, 2015). *Firstly*, it is necessary to determine the criterion for the quality of management and what changes in this criterion are expected in the future. *Secondly*, to establish what losses will be and when they will be. *Thirdly*, to justify the value of the predicted time interval taken to evaluate the criterion. *Fourthly*, to determine the strategy for evaluating the criterion (when, frequency). *Fifthly,* to find out what should serve as the levers for controlling the object, in what sequence and with what intensity they should be used to obtain the desired socio-economic processes.

Dynamic simulators are based on dynamic models of these objects. The main difference between dynamic models and statistical ones is the presence of dynamic algorithms. They form changes in model parameters taking into account the influence of time factors. In addition to the ability to take into account the time factor, dynamic models of simulators have a number of properties that transfer economic and mathematical calculations from the field of traditional methods to fundamentally new technologies (Radziski, 2010). *Firstly,* dynamic models have many feedbacks similar to those in real objects. One part of the feedback (negative) under certain conditions contributes to the stabilization of the dynamic model, and the other part (positive) gives rise to avalanche-like socio-economic processes. The continuously changing imbalance of positive and negative connections affecting the dynamics of modelling leads to processes of different nature. One of the most difficult tasks of managing socio-economic objects is finding and correctly implementing such a ratio of positive and negative feedbacks that will allow the desired rate of development of the object to be achieved without its destruction or stagnation at every moment of its life. *Secondly*, socio-economic models have a non-stationary structure, which means that ongoing continuous changes lead to the disappearance or emergence of new connections between model elements. Nonstationary structures lead to many unexpected consequences. *Thirdly,* nonlinear dynamic models with a non-stationary structure used in simulators require compliance with three necessary conditions:

- logical and mathematical correspondence between all information transformation algorithms;
- correspondence of the starting digital information to the initial structure of the model;
- compliance of the completeness of the set of parameters with the given modelling accuracy.

Of particular importance is the parameter of impact on the object (algorithm) in material or information form. The impact parameter in its form can be constant, not changing throughout the entire duration of the study, or variable. Three main types of changes in the impact parameter can be distinguished:

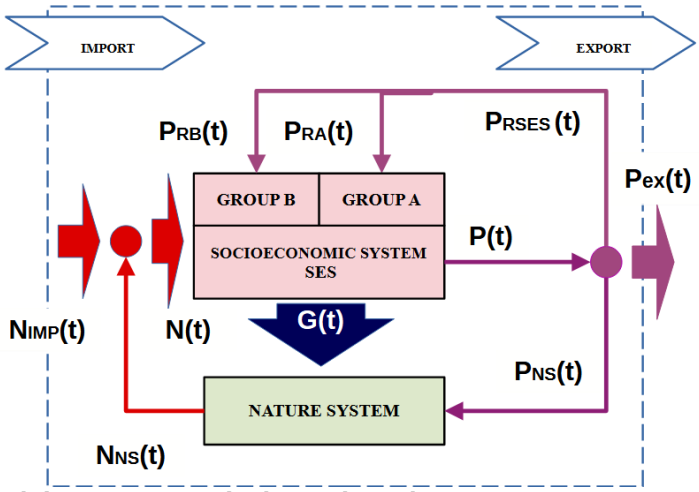
- "smooth" change in the form of a smooth differentiable function;
- "step" change in impact, when the impact instantly changes by an amount that significantly affects the calculation results;
- "impulse" change in the form of an impulse of a certain size.

Thus, the main problem of modelling complex systems with insufficient information about their functioning is to ensure the adequacy of the created model to the modelled object. The task of such modelling goes beyond formal formulations and significantly limits the possibility of using mathematical methods for describing the behaviour of systems based on statistical material. In addition, modelling socio-economic systems involves modelling the behaviour of systems in situations that have not previously been encountered and modelling situations the observation of which is complicated by the long duration of their development (Bolshakov et al., 2019).

A dynamic model of a real socio-economic system with many feedbacks, non-stationary structure and non-linear transformations of parameters are represented as a "black box" with stochastic switching of communication circuits of model elements. However, all changes in the structure of the dynamic model are completely deterministic, and the emerging processes are generated by a complex non-stationary structure, the changes of which are determined by deterministic algorithms (Radziski, 2010). The search for ways to overcome problems in the study of socio-economic systems led to the emergence in the 1960s of a specialized method of simulation modelling - the method of system dynamics (Forrester, 2003). This method, proposed by Jay Forester, has proven to be an effective approach to studying the behaviour of complex systems that are difficult to formalize. Unlike "traditional" methods of computer modelling, system dynamics does not require constructing a mathematical model of the object under study in a traditional form, but provides the researcher with tools for modelling. This allows you to build models of completely different degrees of complexity and quickly obtain simulation results for different model parameters. System dynamics is aimed at studying not the systems themselves, but the problems associated with these systems. The process of synthesizing system dynamics models is very difficult. It is based on mental models: dynamic models are created by teams of experts and the synthesis of a dynamic model acceptable for practical use can take a lot of time.

Research results and discussion

Modelling socio-economic systems to obtain practically significant results forces us to consider them as complex dynamic systems with a large number of external and internal connections, and also to take into account a variety of information, financial, material, and energy flows, and to provide for an analysis of the consequences of changes in their structure. In an interdisciplinary study, a methodology for evaluating indicators of sustainable development of socio-economic systems (countries) was developed, perfecting the theory of sustainable development, using the processes of natural sciences and connecting the regularities of economy, mathematics, physics and the environment. In context of system dynamic approach, the mental model of the energy flows (power) for socio-economic systems was created and presented on Fig. 1 (Trusina & Jermolajeva, 2023).



Source: Trusina, I., Jermolajeva, E. & Gopejenko, V. (2023)

Fig. 1. **The mental model of socio-economic system with energy flows**

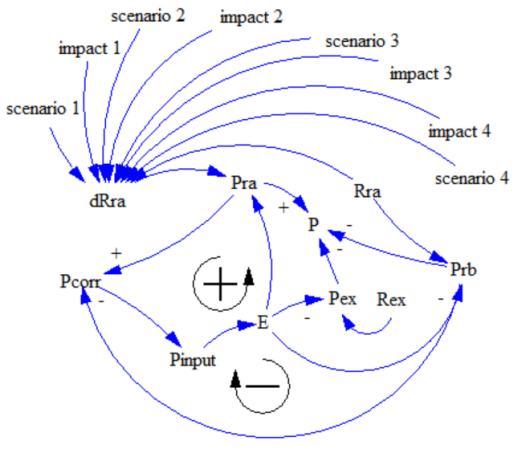
The mental model construction is based on the law of conservation of the power in units of energy necessary for the development and provision of all processes of the socio-economic system in invariant coordinate system (Trusina, Jermolajeva, 2022). During the modelling process, the authors used two types of impact parameters on the object (algorithm) and two types of objects (algorithm or scenario). The process of modelling changes in useful power was considered from the point of view of the industrial approach and the technological approach.

Industrial approach

The industrial approach assumes that changes in the useful power of the system depend on the structure of the economy and the proportion between the production and non-production sectors of the economy. For the modelling process construction, the authors used as:

- types of impact parameters on the object (algorithm or scenario) - change in the share of the manufacturing industry sector of the economy, impulse type of impact;
- types of objects (algorithm or scenario) – the influence of the sectoral structure of the economy on the level of useful power of the socio-economic system, as a necessary condition for sustainable development.

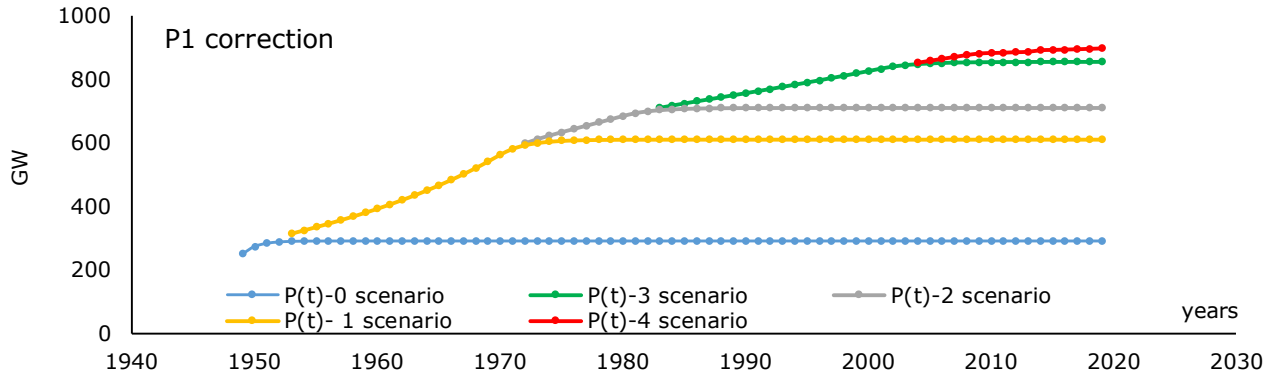
The causal relationship diagram (industrial approach) in accordance with the conditions is presented in Figure 2.



Source: Trusina, I., Jermolajeva, E. & Gopejenko, V. (2023)

Fig. 2. **Causal relationship diagram (industrial approach)**

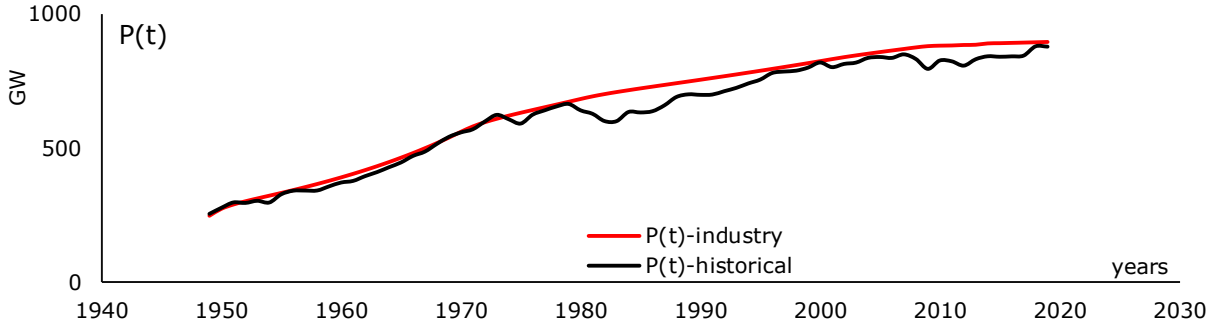
A dynamic model of changes in useful power for the US socio-economic system was implemented as a result of four impulse impacts in 1949, 1972, 1983 and 2001. The scheme of impact on the system is presented in Fig. 3.



Source: the authors' calculations

Fig. 3. **The scheme of useful power $P(t)$ dynamic as impact on the USA system for the period 1949-2019 (Industrial approach)**

The data of the USA system dynamic modelling and calculated historical useful power p(t) for the period 1949–2019 (industrial approach) are presented in Fig. 4



Source: the authors' calculations

Fig. 4. **The USA useful power $P(t)$ dynamic modelling and calculated historical for the period 1949-2019 (industrial approach)**

Historical data were used to validate the model. Correlation coefficients of final scenario and historical data in the frame of industrial approach is $R^2 = 0.99$.

Technological approach

The technological approach assumes that changes in the useful power of the system depend on the level of technological development. For the modelling process construction, the authors used as:

- types of impact parameters on the object (algorithm) - change in the technological efficiency of the economy, type of impact stepwise;
- types of objects (algorithm or scenario) – the impact of the technological efficiency of the economy on the level of useful power of the socio-economic system, as a sufficient condition for sustainable development.

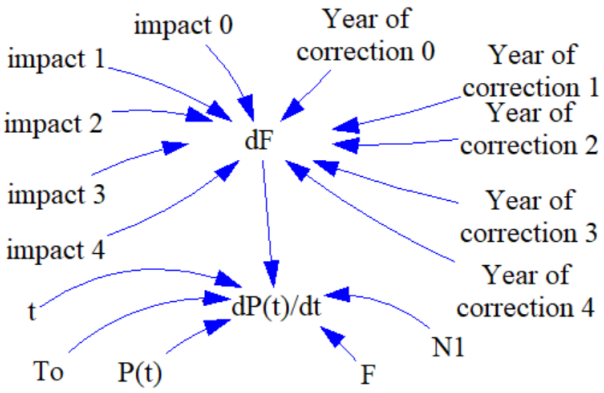
According the mental model, the useful power $P1(t)$ correction as function of technological efficient $F1(t)$ is modelled using formulas 1, that is adapted to research from Kuznetsov model (Kuznetsov, 2015):

$$\frac{dP1(t)}{dt} = -\frac{t}{T}P1(t) + (F1(t) + \Delta F1)N1(t) \quad (1)$$

where initial conditions are:

$P1(0) = 254GW$; $N1(0) = 953GW$; $F1(0) = 0.27$

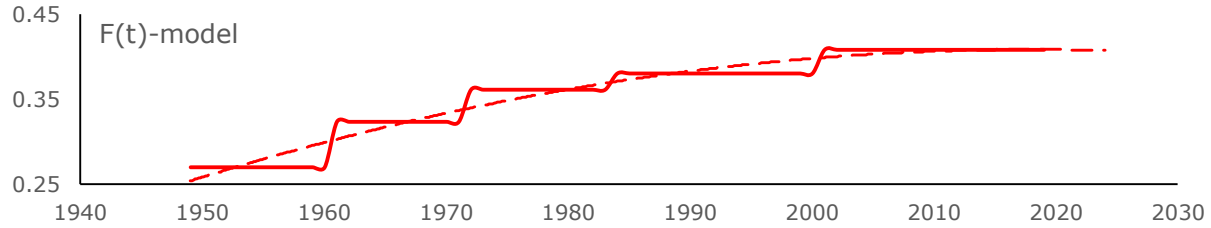
The causal relationship diagram (technological approach) in accordance with the conditions is presented in Figure 5.



Source: created by the authors

Fig. 5. **Causal relationship diagram (technological approach)**

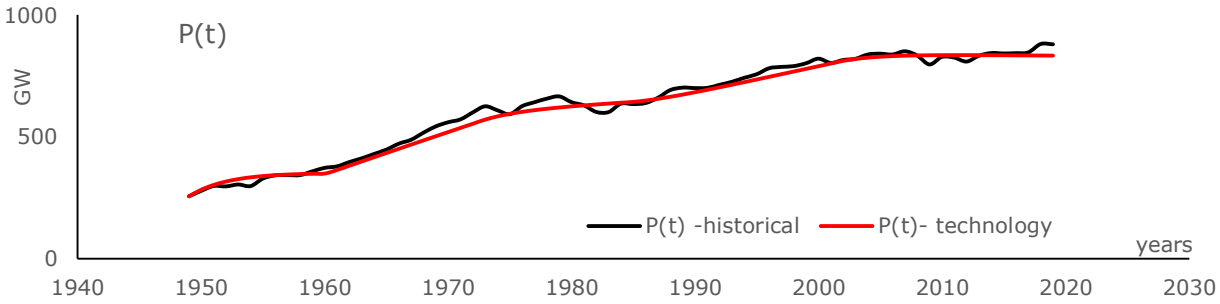
A dynamic model of changes in useful power for the US socio-economic system was implemented as a result of four step change in impact in 1960, 1972, 1983 and 2001 (Fig. 5). The scheme of impact on the system is presented in Fig. 6.



Source: the authors' calculations

Fig. 6. **The scheme of technological efficiency $F(t)$ dynamic as impact on the USA system for the period 1949–2019 (technological approach)**

The data of the USA system dynamic modelling and calculated historical useful power $P(t)$ for the period 1949–2019 are presented in Figure 7. Correlation coefficients of final scenario and historical data in the frame of industrial approach is $R^2 = 0.98$.



Source: the authors' calculations

Fig. 7. **The USA useful power $P(t)$ dynamic modelling and calculated historical for the period 1949–2019 (Technological approach)**

Modelling data show that, the structure of the economy and the technological level of socio-economical system are an important factor in building the sustainable development dynamic model.

Conclusions, proposals, recommendations

1) The authors in an interdisciplinary study have developed a methodology for evaluating indicators of sustainable development of socio-economic systems (countries), thus supplementing the theory of

sustainable development, using the processes of natural sciences and connecting the regularities of economy, mathematics, physics and the environment.

2) Existing tools for economic and mathematical descriptions do not allow us to identify the place and time of origin of the root causes of economic changes, taking into account the forecasting of the nature of their growth. In addition, traditional economic and mathematical methods are not able to identify the paths and rates of change in economic structures from the place and time of their occurrence to the place and time of their future manifestation.

3) The modelling of the data of the USA useful power dynamic shows that the structure of the economy and the ratio of the industrial and non-industrial parts of GDP are important factors in building the transition to sustainable development.

4) The modelling of the data of the USA useful power dynamic also reveals that the technological level and efficiency of socio-economical system are important factors in building the transition to sustainable development.

5) System dynamics is a contemporary approach for modelling sustainability issues using the long-term perspective and feedback dynamics inherent in such issues. System dynamics is aimed at studying not only the systems themselves, but the problems associated with these systems. The process of synthesizing system dynamics models is very difficult. It is based on mental models and causal relationship diagrams.

Funding

This work was supported by the project of Latvia University of Life Sciences and Technologies Nr. Z70 "Integrated approach to determining socio-economic indicators of sustainable development".

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NEW DIMENSIONS IN THE DEVELOPMENT OF SOCIETY

Proceedings of the 2024 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" No 58
Jelgava, LBTU ESAF, 16-17 May 2024, pp. 268-278
DOI: 10.22616/ESRD.2024.58.027

THE PROBLEMS OF THE PROFESSION OF COMMUNICATION SPECIALISTS IN THE PROCESSES OF LOCAL GOVERNMENT CHANGES AFTER THE ADMINISTRATIVE TERRITORIAL REFORM IN LATVIA

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Abstract. In recent decades, Latvia has been affected by several administrative and territorial reforms, the last of them in 2021. Consequently, 43 new municipalities were created instead of the previous 119 municipalities. One of the reform's goals was to reduce local governments' administrative costs, which meant reducing the number of deputies and employees, including communication specialists. However, reorganizing the work processes of the new administrative territories created new professional challenges for the municipal communication specialists, as there was a need to explain these often problematic processes to the public.

The study aims to identify the problems of the profession of communication specialists in the processes of changes in local governments after the administrative-territorial reform in Latvia. Research question: what are the most common problems in the professional activities of communication and public relations specialists of Latvian municipalities in the period after the implementation of the administrative-territorial reform? Both qualitative and quantitative data collection and analysis methods are used in the research. A survey of these specialists was conducted to clarify the professional activity problems of communication specialists, which have arisen under the influence of the municipal change process. The results of the focus group discussion supplemented the survey results and showed the nature of the problems by looking at them from a deeper perspective. The interviews of local governments and communication experts provided insight into public relations and communication problems in the industry, both in local governments and in Latvia as a whole.

As a result of the study, the authors conclude that, in general, the administrative-territorial reform in Latvia has mainly addressed issues of an economic and infrastructural nature. In such a situation, the role of vital professional communication specialists is increasing. Currently, it can be observed that, in general, communication specialists' involvement in managing municipal change processes in Latvia is low. It is hindered by factors such as the lack of understanding on the part of the municipal administration, as well as the inconsistency of the skills and knowledge of public relations specialists.

Key words: administrative territorial reform, change processes, municipalities, organizational communication, public relations.

JEL code: R58, O21, Z18

Introduction

Today, corporate communication has become an essential function of organizational development and occupies an important place in organizations of various types and fields. This function covers all aspects of communication-related to an organization's identity, reputation and goals. It affects many areas, including process efficiency, productivity, employee relations, management and company culture, and it helps to increase credibility with different audiences both inside and outside the organization (Cornelissen, 2020). In addition, the importance of corporate communication is growing year by year – thanks to the development of new forms and channels of communication, including the Internet and other media, the communication environment of the 21st century is inclusive, diverse and dynamic, and the possibility of rapidly reaching the required target audience through various channels has increased (Ohme, Araujo, Boeschoten, Freelon, Ram, Reeves, & Robinson, 2023). Nevertheless, it also creates problems. For example, the amount of information in the public environment has become immense, the information environment is oversaturated, and in the last decade, the formation of information overload can be observed at various levels when the audiences to whom the communication is directed no longer perceive

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the content of the communication, and even actively avoid it. In turn, this problem in corporate communication can be prevented by creating a smartly coordinated and precisely focused strategic management of communication content and channels. Thus, corporate communication has become essential not only for the organization but also for strategic functions.

One of the branches of corporate communication is public relations. The term "public relations" was conceptualized in the 1970s by one of the central public relations theorists and practitioners, James E. Grunig, to denote a specific part of corporate communication: "Public relations (PR) is a strategic communication process that aims to build mutually beneficial relationships between an organization and its various stakeholders, including the public, customers, employees, investors, and the media. The primary goal of PR is to manage and shape the public perception of an organization, brand, product, or individual. This involves creating positive publicity, managing crises and negative publicity, fostering goodwill, and enhancing the organization's reputation. PR professionals often use a variety of communication channels and tactics, such as media relations, social media, events, speeches, newsletters, and community outreach, to achieve these objectives" (Grunig, Hunt, 1984). In essence, public relations is about managing the flow of information between an organization and its audience to maintain a positive image and cultivate trust and credibility. It plays a crucial role in shaping public opinion, influencing consumer behaviour, and ultimately contributing to the success of an organization.

Both Grunig and his predecessor PR classicist Edward L.Bernays and other authors emphasize an essential aspect of public relations – to achieve an effective result, public relations must be implemented as a management function, and not only at the operational level (Grunig, 1992; Bernays, 1952; Cameron, Wilcox, Reber, Shin, 2008; L`Etang, 2008). However, in practice, this has turned out to be one of the fundamental problems of the profession, about which there have always been discussions among PR industry professionals – how to achieve that PR is a management function in every organization and company. In addition, often, even PR specialists themselves do not understand their functions because they do not always have good two-way communication with the management; therefore, they do not perform management-level tasks, and the questions arise: "Why am I in this organization at all? Am I here just to follow the instructions, or to be present at management decision-making moments, to explain the impact on society and its possible impact on the organizations' reputation?" From this connection and mutual understanding of public relations, the role of a public relations specialist in the organization is also formed.

The purpose of this study is to identify the problems of the profession of communication and public relations specialists in the processes of change in municipalities after the administrative-territorial reform in Latvia. Research question: What are the most common problems in the professional activities of communication and public relations specialists of Latvian municipalities in the period after the implementation of the administrative-territorial reform? Research tasks and methodology: 1) to analyse literature and documents on public relations, corporate communication, change processes, and communication in municipalities; 2) to analyse the data obtained from the previously conducted research – a survey with public relations specialists of local governments in Latvia, chairpersons and executive directors of local governments; 3) to conduct a focus group discussion of municipal public relations specialists in order to find out in depth the problems and possible solutions of the mentioned specialists in their professional activities in change processes; 4) to conduct interviews with the municipality and communication experts in order to evaluate not only the problems faced by municipal PR specialists in municipalities and search the reasons for this, but also to examine the PR industry in Latvia as a whole.

Research results and discussion

1. The concept of public relations in organizational communication

In the Latvian National Encyclopedia, public relations is defined as "a component of communication that includes organized relations between the organization and its target audience. The purpose of public relations is to influence society or a part of it. Public relations are used to build reputation, crises, receive public support, motivate employees, find cooperation partners etc." (Petersons, 2019). So, the main thing that follows from this definition is – relationships and their formation. In relationship formation and reputation, it is necessary to receive public support, which, for example, in the case of municipalities, is very long. In order to build relations and communication with the public, this process must be managed, and this is a public relations specialist, which is also confirmed by the following definitions in the encyclopedia: "The organization ensures its public relations using the specialists employed in it (press secretary, public relations manager, public relations manager. head of a structural unit, adviser), or by buying them as an outsourcing service (managers of public relations projects in public relations companies)." (Petersons, 2019).

The duties of PR specialists include a wide range of both external and internal communication tasks, which are succinctly called "key processes" in their book "Public Relations. Concepts, Practice and Critique", and are also mentioned by public relations professor Jacquie L`Etang: research, goal setting, publicity, news, development and implementation of strategy and tactics, evaluation (L`Etang, 2008). In order to carry out such duties qualitatively, a public relations specialist must have both professional skills and a specific role in the organization. "Over time, public relations professionals develop patterns of how to behave in different situations and adapt to the perceptions of the people around them about what they should do in the performance of their duties," states the book "Public Relations" (Cutlip, Center, & Broom, 2006), in addition the authors have also distinguished several roles, which are most often performed by PR specialists in organizations, which in the end also most often determine the scope and quality of the work performed by these specialists. "With the help of the description of the four main roles, it is possible to give an idea of the main roles of this profession. At different times and in different situations, public relations workers perform all these and many other roles to varying degrees, but in their daily work and interactions with other people, one role usually stands out – the main role" (Cutlip, Center, & Broom, 2006). Such roles in daily work can be attributed to local government PR specialists, mainly because they often have to perform several roles and many others in their daily work, which is also mentioned by the authors of the book and which is confirmed by further research carried out by the authors of this article.

Cutlip, Center, & Broom distinguish four prominent roles of PR professionals in an organization.

1) Communications technician – the main feature of this role is a more technical performance in his position, without involvement in the decision-making process, so in this case, the PR specialist is not a management-level specialist. "Communications technicians are hired to compile and edit employee newsletters, press releases and descriptions, manage website content, and liaise with mass media. Public relations staff in this role are not usually invited to participate in management-level staff meetings where problems are clarified and solutions are sought. They get involved in the work after the decisions have been made, and their responsibility is to ensure communications and implement the program" (Cutlip, Center, & Broom, 2006). The authors of the book attribute this role more to PR specialists – beginners; however, in this role, different competencies are expected from the PR specialist.

2) Expert organizer – as the definition of the role shows, these PR specialists are given a higher priority both for the role of the specialist in the organization and for the organization of the work to be performed. "Those public relations employees who assume the role of expert organizers are considered by other employees as authorities in identifying and solving public relations problems. Senior managers leave public relations management to an expert organizer and play a relatively passive role in this area themselves. Those employees who work as expert organizers themselves determine the issues to be resolved, develop the program for solving these issues and are fully responsible for the implementation of the programs. The rest of the leaders believe that only an expert organizer is responsible for public relations" (Cutlip, Center, & Broom, 2006). In addition, the authors of the book point out that this role is highly prestigious among both PR professionals and employers. In particular, this role is relevant from the point of view of employers because every head of an organization wants to have high-class specialists working in his organization who perform their work as professionals, which is also pointed out by Scott M. Cutlip, Allen H. Senter, and Glenn M. Broom. The negative feature of this role is that the leaders of the organization are too passive, not getting involved in PR issues believing that only the expert organizer himself has to deal with everything. From the point of view of the organization's management, an expert organizer should be involved only in crisis situations, which does not contribute to the structured and long-term, well-thought-out development of the organization and the creation of the external image as a whole. "If the role of an expert organizer is requested only in crisis situations or periodically during the execution of a specific program, the end result is that the understanding and implementation of the importance of public relations throughout the organization is hindered. In addition, public relations specialists are not satisfied with this situation because they are the only ones responsible for the results of the program, but at the same time, they are almost unable to influence the critical points of the situation and the factors that have brought public relations problems to the fore" (Cutlip, Senter, & Broom, 2006). The situation when a PR specialist is attracted only in case of crisis communication is not rare in Latvian organizations, and it is understandable that this does not satisfy the PR specialists themselves because, in such situations, they often feel not as experts but as executors.

3) Communication coordinator – the main task of PR specialists in this role is to create two-way communication, both internal and external. "In the role of a communication coordinator, a public relations officer's duty is to listen carefully and fulfil the duties of an information intermediary. Communication coordinators are coordinators, interpreters and mediators between the organization and its related public. They maintain two-way communication and coordinate the exchange of information, breaking down relationship barriers and keeping communication channels open. The purpose of their activity is to provide both the organization and society with the information necessary to ensure mutually beneficial decision-making" (Cutlip, Senter, & Broom, 2006). So, as the name of the role suggests, the PR specialist is a mediator between the organization and its target groups, including the organization's employees, and also in internal communication. His role as a mediator also largely determines the quality of decisions made by the organization and the level of public awareness.

4) The problem-solving coordinator – as the role definition says – is the PR specialist who identifies problems in the organization and is the main driving force in solving them. However, the essential difference between the three roles described above is that he is a problem-solving coordinator and a member of the strategic planning team; namely, he is also a management-level specialist. "The problem-solving coordinator helps other leaders of organizations, and the organization as a whole has its own public relations management process – step by step – which is used when solving other

organizational problems" (Cutlip, Senter, & Broom, 2006). Namely, in this case, the active involvement of the managers themselves in the strategic planning process of public relations is provided. So, in this case, it is a matter of close cooperation between the PR specialist and management. "Problem-solving coordinators are brought into the management team because they have demonstrated that they have the skills and knowledge to help other managers avoid or solve problems. Thus, the factor of promoting public relations is involved in management decision-making" (Cutlip, Senter, & Broom, 2006).

The authors of the book also mention that studies have been conducted on how PR specialists adapt to different roles in organizations. There are several determining factors, but the most important of them are opportunities for a salary supplement, the opportunity to move up the career ladder, opportunities for growth, the opportunity to participate in the decision-making of the organization, and, therefore, to be management-level specialists. Undoubtedly, the knowledge and professional skills of a PR specialist are also necessary, which Olga Kazaka calls "competencies" in her book "The First PR Book". According to Kazaka, "Successful development in the field of public relations is ensured in three important directions of development. First of all, it is important to understand the processes – everything related to the strategic vision of the situation, the ability to combine individual actions into the overall work of the organization, and the ability to analyse and logically reach the right decision. Secondly, important practical skills are the ability to write, speak, persuade, and create new ideas. Thirdly, process management skills are essential: time management, skilful project management, working with your emotions" (Kazaka, 2019). Thus, the PR specialist must be competent, with the ability to analyse and logically reason about the various processes that are necessary when performing the PR as a management function, as well as the practical skills that form the daily work of the PR specialist, which are essential.

2. Professional problems and challenges of municipal public relations specialists in Latvia

After the municipal elections of 2021, Latvia switched to 43 municipalities instead of the 119 local municipalities. This is stipulated by the Law on Administrative Territories and Settlements, which entered into force on 23 June 2020. The work of the new municipal council began in July 2021. As a result of the unification of administrative territories, public relations (PR) and communication positions were also optimized; namely, the sphere of responsibility of PR specialists increased in many places due to the creation of larger administrative units, while in other places PR and communication specialists lost their jobs. Therefore, the aim of the research is to find out the problems of PR and communication specialists after the reform, taking into account that this is not the only administrative-territorial reform that has taken place since Latvia regained its independence in 1991.

One hundred seventy-four respondents took part in the survey of municipal public relations specialists, 101 respondents in the survey of chairpersons and executive directors of municipalities, but six municipal PR specialists participated in the focus group. Two public relations specialists specializing in public sector communication and public relations, as well as a long-term local government employee, were interviewed as experts.

Table 1

List of experts

Nr.	Name	Status
1.	Andris Jaunsleinis	Ex-Chairman of the Latvian Association of Local and Regional Governments
2.	Inga Latkovska	Strategic Consultant of Communication company LEAD
3.	Liga Mirlina	Turiba University, lecturer, Communication Specialist

Source: created by the authors

In general, there are approximately 200 public relations specialists in all municipalities in Latvia, whose positions are called differently: public relations specialist, communication specialist, senior or public relations manager, head of the information department, editor of the municipal newsletter, marketing specialist or manager, communication project manager, website administrator, secretary, HR specialist, tourism affairs specialist, youth affairs specialist etc. However, the functions of these specialists are more or less related to public relations.

The role of communication in any change process is high, which was also proven by the time of the COVID-19 pandemic – timely and professional information was most expected among the population. Likewise, in the daily life of local governments and especially during the reform, it is essential for local government residents to understand the progress of the reform and its impact on the future fate of the specific local government. In local governments, just like anywhere else, and in the private sector, PR specialists are the ones who prepare and distribute information to citizens or target groups. However, the speed and quality of communication may be reduced if PR specialists cannot or are unable to perform their duties because there are objective reasons for this.

The survey of public relations specialists revealed that the majority – 71.83% or 125 respondents – have more than three years of experience in the PR sector; of these, 16.1% or 28 respondents have more than 15 years of experience in this sector, which is very a lot of experience, if it is assumed that entered Latvia in the last 30 years or so. In contrast, only 28.2% or 49 PR specialists have less than three years of experience, which could be called a small or beginner's experience. Experience in the industry is one of the decisive factors in being able to perform one's job professionally – to see and analyse processes, to find the best and most appropriate communication solutions for the situation, to form long-term PR, thus to see the impact of any process on the reputation as a whole.

The survey revealed that Latvian municipalities have a broad understanding of the PR position title. This can be explained by the fact that PR specialists as a profession were included in the classification of Latvian professions relatively recently – around 2004. Therefore, the interpretation of the title of the PR position of the local government management is to be explained.

The different understanding of the PR profession is also reflected in other survey questions. For instance, the answers to the question "Do you combine several positions?" reveal that 126 respondents or 72% of local government PR specialists, combine several positions. This is a large number and is closely related to both the scope of the duties to be performed, the quality of the work performed and the overall feeling of well-being while performing the duties of a PR specialist in the municipality. The correlation between these aspects can be seen in the following survey questions.

Some of the mentioned positions can be attributed as part of public relations, for example, website administrator editor of the municipal newsletter (although in some municipalities, this publication is very voluminous and filled with diverse content, which requires a lot of time and investment), event organizer (in some municipalities this position includes work in a cultural institution of a municipality, therefore it is not about events as a function of PR, but as a separate job unit), social media administrator (for large

municipalities, communication on social media is very active, so these duties are even defined as a separate position etc.

However, most of the mentioned positions are full-time – in the case of municipal PR specialists, they are combined with the PR position. Basically, it means managing of two full-time positions. The following serious positions: tourism organizer, youth affairs specialist, personnel specialist, clerk, external relations specialist, office manager, PR specialist also in another municipal institution or capital company, sports methodologist, IT specialist, head of the Development Department, teacher, assistant to the chairman, deputy etc. connecting requires not only much time but also high-stress resistance, because the management of the municipality undoubtedly expects that the results of both positions will be in accordance with the settings of the management and the municipality.

Answers to the survey question "Do you have to perform duties not related to your position?" show a completely different situation – 68% or 119 respondents answered "yes" and only 32% or 55 answered "no", so in this situation also it becomes clear that the PR specialist must combine not only several positions but also fulfil non-official duties. One of the answers to the open-ended question accurately describes the problems raised in this article: "In small municipalities, every employee performs several functions and is involved in events and activities in order to achieve the common goal of the municipality – to create good governance and provide the best range of services to citizens. In this case, you should be involved in the technical support of events, maintaining the website, creating publicity, customer service, improving the business environment, and youth affairs".

The range of duties not related to the position is vast, and the tasks to be performed are time-consuming and often as responsible as the direct duties of a PR specialist. From the variety of additional responsibilities, it can be understood that PR specialists are entrusted with more than even one person can do, which undoubtedly leads to overtime,w or k, and the specialist feels stressed. Respondents in the survey indicate that most of them work more than what is stipulated in the contract; six but six respondents, or 3, or .5%, work up to five or more hours a day. As a result, 58% of the respondents emphasize that the work of PR requires high resistance to stress.

According to the results of the survey, internal and external communication are also among the most popular duties of a PR specialist, respectively – 75% or 130 and 82% or 143 responses. In external communication, municipalities use different types of meetings as the most popular tool for creating a dialogue with the public, which should usually be organized by a PR specialist, which is also consistent with the duties mentioned in question 9 of the survey – organizing various meetings is generally very popular in the activities of PR specialists. Many of these meetings are related to direct duties, but some, such as the organization of entertainment events at the local cultural centre, are not related to non-mediated events.

In the answers to the question "Please indicate what, in your opinion, will be the most pressing challenges in public relations and communication management in municipalities in the next three years (please choose the five most important trends)", the respondents see the following challenges as priorities: the need to simultaneously address different audiences using different channels with limited resources – 124 responses; building and maintaining trust with target groups – 112 responses; managing digital evolution and social platforms in daily work – 110 answers; closer connection between the municipal strategy and its internal and external communication – 95 answers etc. Therefore, the survey participants anticipate that the multifaceted role of PR will continue to grow, and the issue of reputation building and maintenance will become more and more important, increasing the respect of the target groups for the organization. The challenge that is relevant for all industries in the 21st century is also highly valued – the

rapid development of the digital environment and the diversity of communication in it. PR specialists are also aware that a strategic approach to communication is necessary to implement all of this successfully.

To the survey question "Do you think that public relations is a management-level function in the work of your municipality?" the opinions of the respondents are divided almost equally in half. However, there are more of those who believe that in the municipality where the specialist works, public relations is a function of the management level. Eighty-nine respondents answered in the affirmative; however, 39% or 68 – do not consider PR to be a management-level function in their workplace.

Undoubtedly, it is a positive trend that in more than half of cases, PR specialists in their municipality feel that it is a management-level function, which also agrees with what was mentioned in the theoretical section - this is one of the most critical prerequisites for public relations to be a strategically thought-out function. However, 39% or 68 respondents express that they are not involved in management-level discussions and decision-making processes.

The respondents' answers to the final question of the survey, "Do you think that public relations should be a management-level function in the work of the municipality?" reveal that the majority – 93% – of respondents believe that PR should be a management-level function, therefore the author concludes that in this matter there is an understanding of how important a role public relations play in the work of the municipality. A slightly different picture is revealed in the results of the survey of chairpersons and executive directors of local governments, where only a little more than half, namely 52 respondents, believe precisely the same. Thirty-four respondents believe that the PR specialist does not need to be a management-level specialist, which is only about a third of the total number of respondents; however, this is a lot in the context if you consider that every case when a manager treats such a position negatively is subject to discussion and research – it is essential to understand why there is such an opinion that does not agree with what was mentioned in the theoretical part. Likewise, the municipal administration is not transparent in its answer as to whether the PR specialist is invited to make meaningful and strategic decisions. Almost half of 42 respondents answered that everything depends on the situation, which, however, is not the direction of strategically formed communication. A few more respondents, respectively - 67, admit that they consulted with the PR specialist on communication issues.

The results of the focus group discussion complement the results of the survey and show the nature of the problems, giving them a deeper perspective. Thus, for example, five out of six focus group participants confirmed that, when working in one of the municipalities of Latvia, it is necessary to combine several positions or perform duties unrelated to the position. Such results were also shown by the public relations specialists of Latvian municipalities.

Among the problematic issues, the following aspects were mentioned:

- it is difficult to cooperate with the management, because the management does not understand the functions of public relations, are also mentioned among the problematic issues;
- the management avoids communication with the public, which contradicts the aspects mentioned in the theoretical part, that communication with the target audiences is primary for local governments – its decisions must be aimed at the welfare of the public, and this must also be explained in order to form a dialogue between the local government and the public; the management does not inform about essential meetings, therefore there is no possibility to reflect them or participate in order to professionally support the management;

- the PR specialist is also not invited to employee meetings and thus is not informed of what was discussed in them, therefore the PR specialist cannot fully participate in the creation of internal communication, which, as also stated in the theory section, is one of the duties of every PR specialist.

Summarizing the opinions of three experts, it should be concluded that the vision and understanding of PR and communication functions is much broader and more correlated with the theoretical positions. Key takeaways from expert interviews:

- over time, the influence of PR specialists has changed – it has become more assertive;
- PR specialists must be loyal to the head of the municipality;
- the PR specialist is primarily the one who takes information to the public; thus, the reputation of the municipality is formed;
- "communication is effective if you are the first";
- the PR specialist must be a mediator between the management and the team, between the municipality and society;
- public relations is intellectual work, so flexible working hours and remote work are crucial so that the specialist can work at the time and place that suits him best;
- PR specialists in many areas are often under evaluated;
- if the management appreciates the importance of public relations, the PR specialist will definitely be a management-level specialist;
- if the PR specialist has to combine several positions and perform duties unrelated to the position, he can only be an executor and not a specialist;
- if the manager does not understand the importance of the PR specialist, the one must go and speak, defend one's existence, and stop complaining;
- high stress and long-term dissatisfaction with the situation can lead the PR specialist to decision to quit his job or even change his profession;
- considering the fact how different municipalities are, their management's perception of public relations can also significantly differ;
- if the PR specialist sees his role in the municipality in the way that significantly differs from manager's expectations, a clash of opinions may occur;
- for local governments, communication with the public is almost mandatory, whereas for companies, it is optional;
- the main task of the PR of municipalities is to provide information about their goals, plans, budget execution, and other topical issues of the municipality.

Summarizing the research results, it can be concluded that public relations specialists in Latvia undoubtedly fulfil the functions described in the scientific guidelines; however, in practice, the real work in this profession has introduced corrections, especially under the influence of reforms, which on the one hand should be seen as a transformation of the profession in accordance with the requirements of the era, but on the other hand, it increases the risk that the lack of understanding about this profession is increasing, the number of problems is increasing – the amount of responsibilities is increasing, but the salary does not change, there are uncertainties about the goals and tasks of this profession; thus the reputation of the public relations profession as a whole is suffering.

Undoubtedly, a big problem in the creation of communication is differences in opinions of PR specialists and municipality management about the nature and necessity of public relations and communication. The

research findings conducted globally on PR issues show that the creation and delivery of communication content to the target audience can be timely and of high-quality only provided that PR specialist is a management-level specialist as, during the creation of the content, PR and communication specialists must be well informed of the strategic decisions of the management.

Any reform – external or internal – is a process of change, in which the management of the organization plays an important role, as well as PR and communication specialists. Their joint cooperation forms a synergy. However, synergy is impossible if there are various hindering factors – not only in the understanding of the communication goals, but also related with the overload, extra duties, lack of time, burnout etc.

Conclusions, proposals, recommendations

1) It is vital for organizations today to be approachable, open and available in creating beneficial and meaningful corporate communication, therefore both private and public sector organizations are increasingly aware of the need to be present and involved in communication processes, thus getting closer to their target audience.
2) There is a frequent turnover of public relations specialists in local governments, which does not allow local governments to plan strategic long-term public relations. In order to reduce this, the primary duties of the position of PR specialist should be explained, which would change the attitude of both sides – the administration and specialists, and thus increase the understanding of PR as a complete, part-time position, where additional duties may be an exception rather than permanent practice.
3) Latvian municipal PR specialists and municipal chairs and executive directors often do not have a common understanding of the goals and tasks of the PR in the work of the municipality, which hinders professional cooperation between the two parties. Therefore, it is necessary to introduce the heads of municipalities to show the main problems of PR specialists, including combining several positions, which causes overload and stress and reduces the quality of communication, which in turn affects the reputation of the municipality and corporate communication.
4) The performance of duties that are not directly related to their position should be an exception, not a system; therefore, in the meetings with municipal chairs and executive directors, a solution should be found to change the situation, possibly by delegating some additional duties to other municipal specialists, thus relieving the workload of PR specialists and giving them the opportunity qualitatively perform their duties, which is directly related to the formation of the reputation of local governments. A uniform of the PR specialist's job description should also be developed, which would be an example for all local governments.
5) Only half of the municipal leaders in the survey indicate that the PR specialist should be a management-level specialist in the municipality, which means that often PR specialist is not invited to participate in the decision-making process, therefore, cannot fully communicate these decisions to the public. At meetings and seminars, municipal managers and CEOs should be given an understanding of why a municipal PR specialist should be a management-level specialist and participate in management-level meetings - to advise the management on the impact of decisions on target audiences, their reactions and the necessary PR activities, corporate communication tasks, it generally refers to the reputation of municipalities.
6) It is difficult to manage change processes in both the internal and external environment of the organization if there is a lack of shared understanding and a common vision of the organization's achievable goals and their impact on the well-being of the population, so it is necessary to strengthen

the role of PR and communication. This function can be undertaken by PR specialists and industry experts, as well as by relevant non-governmental organizations, such as the Latvian Association of Local and Regional Governments and the Latvian Association for Public Relations Professionals.

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Proceedings of the 2024 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" No 58
Jelgava, LBTU ESAF, 16-17 May 2024, pp. 279-289
DOI: 10.22616/ESRD.2024.58.028

VANGUARD AND LAGGARD RURAL POPULATION CLUSTERS IN LATVIA

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Abstract. Previous studies have shown stark differences in terms of demographic development among rural municipalities of Latvia. Application of the non-hierarchical cluster analysis methodology allowed classifying distinct groups of municipalities based on their demographic potential and vulnerabilities. This study aims to provide an update to the demographic typology of rural municipalities and to discuss main differences between vanguard and laggard municipality groups, using latest statistical information and the available population survey data. Study employs established four-cluster model for the rural municipality typology and relies on latest official statistics, as well as the data obtained during 2021 "DemoMig" population survey. Study results confirm the validity and utility of the four-cluster model, highlighting extreme disparity in population dynamics between the municipalities assigned to "Population growth" and "Accelerated depopulation" groups. Understanding the differences between the two moderate groups of municipalities – "Balanced population change" and "Moderate depopulation" is found to be highly important from academic and policy perspective. Thorough review of the municipalities included in specific clusters sheds some light on the internal regional processes and factors shaping their demographic situation. Study demonstrates that these factors often go beyond mere differences in spatial location. Different groups show some surprising similarities in their core demographic indicators, which provide grounds for cautious speculations on possible long-term recovery scenarios. Analysis of the survey responses of local residents gives hints for implementing some corrective policy measures.

Key words: regional demography, cluster analysis, population survey data.
JEL code: J11, I38, R11

Introduction (data and methods)

Many studies (Krisjane et al., 2017; Berzins et al., 2018; Baranauskiene and Burneika, 2021) have confirmed differences in demographic situation and changes between rural municipalities of Latvia and other two Baltic States. Available data and previous research results (CSB, 2023; Berzins and Zvidrins, 2001; Pluschke-Altof et al., 2020) identify a progressing core-periphery divide among rural municipalities in Latvia and its neighbouring countries. That is highlighting a need to elaborate a robust evaluation and monitoring framework in order to properly evaluate and address this issue (Apsite-Berina et al., 2020; Brzozowska et al., 2023). Close connection between the socio economic determinants and general demographic indicators are well established (Zarins and Paiders, 2020; Berzins et al., 2018). However, when looking at individual municipalities, one may notice distinct variations and unexpected outliers requiring closer examination. Application of the non-hierarchical cluster analysis methodology allows quickly and effectively to classify, to evaluate and monitor distinct groups of municipalities based on their demographic characteristics, while highlighting nuanced demographic topography and indicating outlier cases for further review.

The aim of this study is to provide an update to the demographic typology of rural municipalities and to discuss differences between vanguard and laggard municipality groups by using the latest statistical information and survey data.

Since 2020, the number of rural population in Latvia has remained rather stable, forming approximately 0.6 million residents. At the beginning of 2023, the share of rural area residents in the total population was 30.2 % (CSB, 2023) residing in all 36 municipalities (novadi) of Latvia. Seven cities, which form urban municipalities, are not forming the object of this research. Among 36 municipalities, included in the

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analysis, there is only one – Jelgava municipality without any towns, 15 are with single town, 11 with two towns and 9 with 3 to 4 towns. Therefore, the terms used in this paper – "rural population clusters" and "rural population municipalities" are conditional, because all municipalities (excluding Jelgava municipality) still have some proportion of urban population (usually less than 50%).

From the methodology perspective, this study employs a slightly revised version of the previously established four-cluster model (Krisjane et al., 2021) for the rural municipality typology. Use of different cluster analysis models for categorisation of territorial units of Latvia has been successfully tested in the past and demonstrated valuable results (Melluma et al., 1996; Brauksa, 2013). Clustering approach used in this study relies on the unsupervised non-hierarchical clustering - a well-proven K-medoids PAM (Partitioning around Medoids) algorithm (Kaufman and Rousseeuw, 2009). This approach is considered a good option to achieve the aim of this study, because it allows greater freedom in choice of selected parameters, particularly when compared to a classical regression tools. The main benefit of this methodology is underlined by the fact that the clusters are assigned by an impartial machine-learning algorithm. Unlike more traditional hierarchical clustering methods, it is independent of any subjective measures or expectations of similarity between observations (Peters, 1958), which is a very important aspect for this study.

The data used in this study were obtained from the national statistical database (Official Statistics Portal, 2024). A four-year period from 2018 to 2021 is used for capturing the dynamic elements of the cluster model. The data published in 2022 are not used in this study to avoid irregularities introduced by the settlement of refugees from Ukraine. The fixed data observations are provided for 01.01.2021 - the latest nationwide Population census. The study also relies on the findings of the population survey (n=4457) carried out in 2021 throughout the country within the framework of the research project "DemoMig".

The study results confirm validity and utility of the four-cluster model, highlighting disparity in population dynamics between the municipalities assigned to "growth areas" and "depopulation crisis areas" groups. Understanding the differences between the two moderate groups of municipalities – "stagnating areas" and "areas of emigration" is found to be highly important from academic and policy perspective. The analysis of the municipalities located on the fringes of these clusters helps uncovering and explaining the processes driving the transition of municipalities between clusters.

Thorough review of the municipalities included in specific clusters sheds some light on the internal regional processes and factors shaping their demographic situation. The study demonstrates that these factors often go beyond mere differences in spatial location. Different groups show some surprising similarities in their core demographic indicators, which provide grounds for cautious speculations on possible long-term recovery scenarios. The analysis of the survey responses of local residents gives hints for implementing corrective policy measures.

Research results and discussion

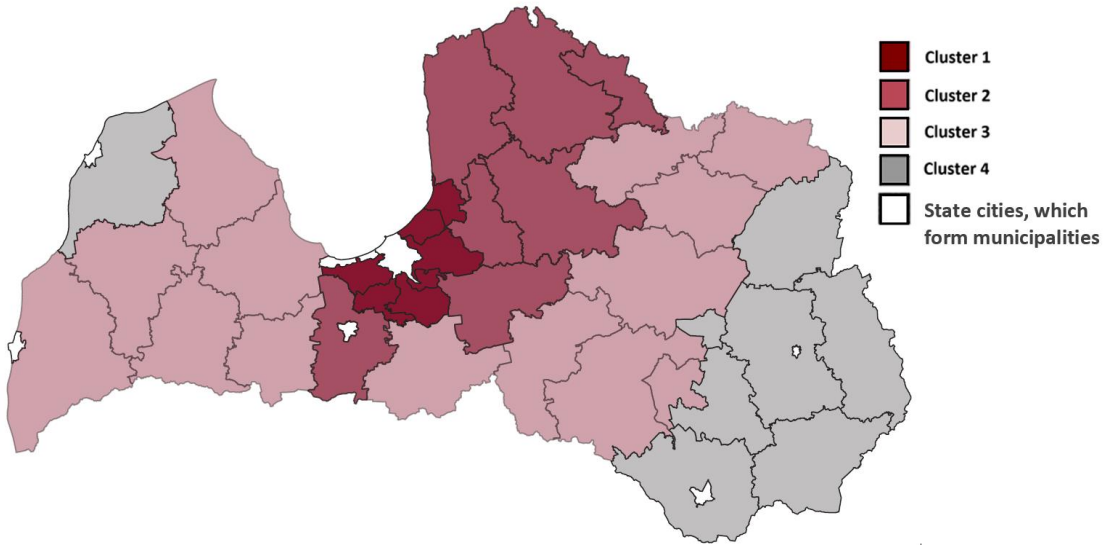
This research is structured in tree sections identifying, explaining and discussing disparities of population development among rural municipalities. The first sub-section provides the results and review of the most recent cluster analysis utilising the four-cluster model produced by non-hierarchical clustering algorithm. The second section compares municipalities included in each cluster and addresses observed disparities between the identified groups. The third section utilises the results of the population survey data among residents of the municipalities falling under each identified cluster and provides discussion on possible corrective measures.

1. Defining clusters

According to the study's aim and methodology established in the introduction, the authors begin by conducting a cluster analysis of the rural municipalities (novads) of Latvia using PAM clustering methodology. In order to ensure relevance of the study, the authors use the municipal structure of Latvia established after the 2021 Administrative-territorial reform. Urban municipalities designated as State cities are omitted form the cluster analysis in order to avoid outliers and other data issues.

In order to ensure continuity with previous research, a previously established and tested four-cluster model is used in a slightly modified form. The four-cluster model is adjusted to include new parameters better capturing the local demographic situation and processes. The model parameters include population density in 2021 (residents per square kilometre), natural population growth (%) and net migration (%) between 2018 and 2021, as well as demographic load in 2021, and number of children (0-14) per 100 senior (64+) residents in 2021. Taking into account the recent findings on the importance of gender ratio in the local demographic processes (Dahs et al., 2023), another statistical parameter – Percentage of male population in working age (15-63) is also added to the model.

Figure 1 shows the clustering results on the map of Latvia.



Source: author's calculations based on Official Statistics Portal of Latvia, 2024

Fig. 1. **Results of the unsupervised clustering of Latvian municipalities based on selected demographic indicators, 2018-2021**

In order to better explore and describe the obtained cluster assignments, it is useful to look at the individual municipalities representing each group. Table 1 provides information on the demographic indicators of the municipalities identified at the centre of each respective cluster.

Table 1

Demographic characteristics of rural municipalities in Latvia representing four clusters in accordance to the chosen data set, 2018-2021

Cluster	Municipality	Population density (residents per sq km, 2021)	Natural population growth (2018-2021)	Migration saldo (2018-2021)	Percentage of males in 15-63 age group (2021)	Number of children (0-14) per 100 senior (64+) residents in 2021	Demographic load in 2021
1	Ādaži municipality	93.94	0.53	10.36	50.05	130.37	60.67
2	Ogre municipality	32.61	-1.55	1.17	49.54	86.21	63.65
3	Talsi municipality	13.35	-2.75	-2.81	51.32	65.66	61.23
4	Balvi municipality	8.13	-5.39	-3.70	52.27	56.13	57.15

Source: author's calculations based on Official Statistics Portal of Latvia, 2024

Based on the information provided above, it is now possible to describe each of the identified municipality types.

1) Population growth areas – municipalities located within the metropolitan area of Riga city, showing high population density, favourable age structure, positive population growth and average demographic load. These municipalities also show a stable proportion of working age females in their population composition.
2) Balanced population change areas – municipalities with average population density, slightly negative natural population change and stable or positive migration balance. These municipalities usually have the highest demographic load numbers, somewhat unstable population age structure with almost equal numbers of minor and senior residents. These areas demonstrate gender distribution with higher share of females within working age cohort.
3) Moderate depopulation areas – municipalities with sub-average population density, relatively high demographic load and high rates of out-migration. These areas also demonstrate unstable population structures, stagnant or negative natural population change and above-average predominance of working age males.
4) Accelerated depopulation areas – municipalities with especially low population density, very low share of young residents and extremely high levels of depopulation due to negative natural movement and negative net migration. These municipalities also demonstrate the highest population share within the working age group and biggest male-to-female gender disparity within working age population.

One can immediately notice a presence of a strong core-periphery dichotomy among the identified clusters (Lang et al., 2015). Clustering results highlight significant disparity in population dynamics between the municipalities assigned to "Population growth areas" located around Riga city and "Accelerated depopulation areas" situated primarily within the Latgale region. Differences between the two moderate groups of municipalities – "Balanced population change areas" and "Moderate depopulation areas" are less extreme and more nuanced. Further analysis of these two clusters may prove valuable from both academic and policy perspective.

Cluster analysis results also confirm presence of a strong link between gender balance among working age population and local population dynamics. This parameter should be considered in future research and modelling efforts in this field of study.

Based on these observations one can make provisional conclusions about the growing influence of Riga city and its metropolitan area on the demographic landscape throughout the country. The spill-over effects of the Riga metropolitan area are also evident among municipalities assigned to the second cluster, where stable population numbers are linked mainly to the neutral or positive net-migration driven by extended sub-urbanisation processes and easier access to the social and economic infrastructure of Riga. State cities located outside of the extended Riga metropolitan area show no positive effects on their surrounding rural areas. Specific cases and variations of these trends will be addresses in the next section of this study.

2. Understanding disparities

In this section, the authors review municipalities included in each cluster and address disparities between the identified groups. Particular attention is devoted to clusters two and three, as well as municipalities located on the statistical fringes of these clusters.

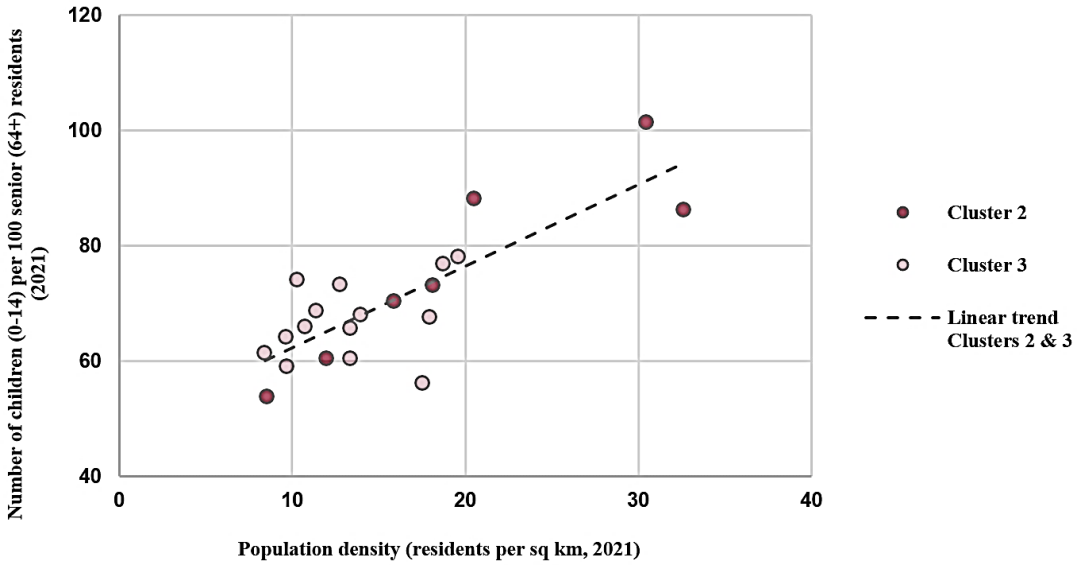
The first cluster consists mainly of the municipalities of the Riga planning region. The nearby Saulkrasti municipality (Vidzeme planning region) is added to them. In four of the seven municipalities of this cluster,

the natural population change is positive. Therefore, the number of children also exceeds the number of seniors. Like in the city of Riga, the number of women in this cluster exceeds the number of men at working age. The migration rate is especially high in this cluster, which indicates the move of young families to the urban area of Riga. However, it should be considered that in the period under review, legislative changes have taken place in several municipalities, which provide for increased real estate tax for dwellings in which no person has been declared. Therefore, in municipalities with a large proportion of summerhouses (mainly in coastal areas - in the Saulkrasti and Ādazi municipalities), sometimes the increase in the number of residents also occurs when someone from the family declares in a summerhouse. However, even without this reason, the net migration in these municipalities would probably be positive.

The second cluster consists of seven municipalities, and the third - 14. Geographically, the second cluster mainly includes municipalities located in the North-West part of the Vidzeme planning region. The nearby Sigulda municipality (Riga planning region) and Jelgava municipality (Zemgale planning region) have been added to them. The third cluster is geographically broader – it includes the municipalities of all the planning regions except Riga. However, in terms of demographic indicators, the municipalities united in the third cluster are more similar to each other than those ones united in the second cluster - the amplitude of all indicators is smaller. This allows to judge the third cluster as a group with a similar demographic situation and to assume that the problems and solutions in these municipalities could also be similar.

Analysing the differences between the second and third clusters, the reviewed indicators are related to each other. Briefly, this difference could be described as the level of aging of the area as a direct product of population composition and level of public and private investment (Grube and Paiders, 2020; Ubareviciene et al., 2016). The number of children per 100 seniors in the second cluster is below 70 only in two municipalities, while in the third cluster such situation is typical in most of the municipalities. Aging is also evidenced by the natural population change, which is more negative in the third cluster than in the second one. The third cluster also has a lower population density. This is a very worrying factor, considering the latest state policy in the optimization of the school network, where schools and kindergartens are closed in municipalities with low population density. This could contribute to the emigration of families with children from the municipalities of the third cluster, thus affecting the age structure and further strengthening the differences with the second cluster.

The chart in Figure 2 shows the relationship between two indicators – "population density" and "number of children per 100 seniors" in municipalities of the second and third clusters. The clearly visible, linear relationship shows that families with children prefer to choose more densely populated areas, while seniors continue to live in areas that are gradually emptying out. The unbalanced age structure causes multiple problems and requires tailored solutions (Schorn, 2023). The large proportion of single seniors in less populated areas creates additional tasks for municipalities in terms of social support. On the other hand, the support that seniors could provide in looking after their grandchildren is not possible because grandparents live far from their family.



Source: author's calculations based on Official Statistics Portal of Latvia, 2024

Fig. 2. **Correlation between population density and number of children (0-14) per 100 senior residents (64+) in clusters 2 and 3, 2021**

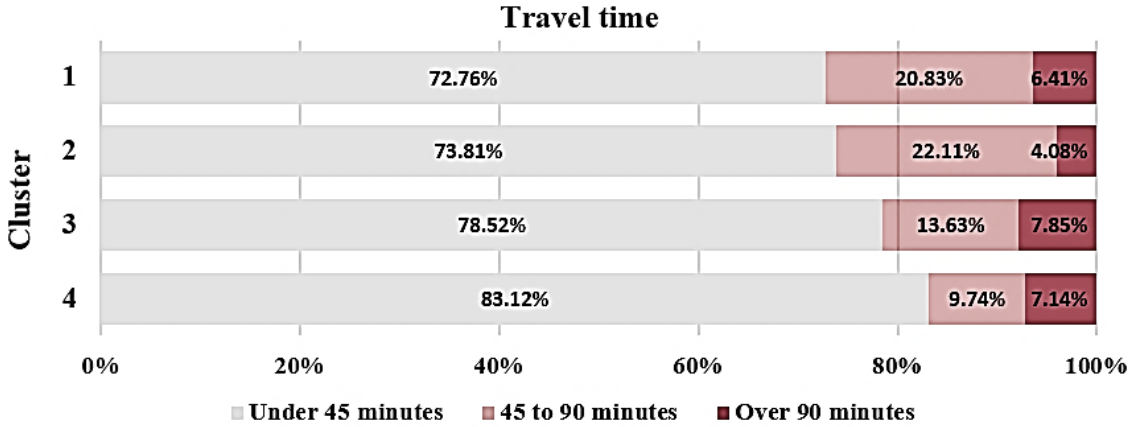
The fourth cluster includes mainly the municipalities of the Latgale planning region. The nearby Varaklani municipality (Vidzeme planning region) is added to them. This cluster also includes Ventspils municipality (Kurzeme planning region), which is geographically far from the other municipalities of the fourth cluster. The indicators of this region show the need to pay special attention to the demographic situation of Latgale region, which is in a state of depopulation crisis. It is possible that the studies carried out in the regional workshops of "DemoMig" project on the perspective of the inhabitants of Latgale on the reasons for migration and aging in the region would be useful for the further analysis of the situation.

Ventspils municipality is included in this cluster due to the low population density as well as the large proportion of men of working age. The other indicators for Ventspils municipality are closer to the third cluster. However, it is possible that cooperation and exchange of ideas between Ventspils municipality and Latgale municipalities regarding solutions in areas with low population density is possible, which would make a positive contribution to both Ventspils and Latgale. In addition, municipalities of cluster four demonstrate significantly lower demographic load highlighting the untapped economic and social development potential of these areas.

3. Development obstacles and future prospects

This section builds on the results of the population survey data carried out among residents of Latvia in 2021 (n=4457) within the framework of "DemoMig" project. By addressing the discrepancies in survey answers among residents of municipalities falling under different clusters, authors examine the subjective dimension of the observed demographic disparities and search for possible improvement scenarios.

Following the observations from the previous sections, the authors proceed to exploring the role of accessibility and transport infrastructure in the distribution of municipalities among various clusters. Figure 3 demonstrates the aggregated results of questionnaire responses regarding the average travel times to the place of work or study provided by survey respondents residing in each cluster municipalities.



Source: author's calculations based on 2021 "DemoMig" population survey

Fig. 3. **Average travel times to the place of work or study, as indicated by survey respondents residing in each cluster municipalities in 2021 (% of answers)**

Over 70% of responders in all four clusters have indicated that they spend less than 45 minutes for a one-way commute. Furthermore, the share of short commute times increases progressively with each cluster – up to 83% in the fourth cluster. Demographically stable first and second clusters show the highest proportion of population spending 45 to 90 minutes to reach their place of work or education (over 20% and 22% respectively). The highest share of long commute times over 90 minutes was indicated by residents of cluster three and four (over 7%).

These results indicate that daily commute times play an important role in shaping the demographic conditions in rural municipalities. Municipalities with better interconnection with Riga metropolitan areas (first and second clusters) show greater willingness of population to spend moderate time for the daily commute in exchange for access to opportunities provided by Riga metropolitan area. At the same time, residents of the more distant municipalities (clusters three and four) look for local work and education prospects as an alternative to enduring very long travel times. This observation for third and fourth cluster also highlights the lack of appropriate substitute employment and education places in the regional urban centres situated within the average travel time limits. Solutions to this issue include the promotion of remote work, improving the rapid transportation infrastructure and facilitating the development of substitute social and economic infrastructure in the regional development centres located within the average travel time (under 90 minutes).

Results of the survey questions regarding the migration plans have shown generally low mobility intentions across all clusters. Residents of municipalities in the first cluster have demonstrated the highest migration intentions (over 8% of respondents), preferring to change residence within the current municipality (3%) or move to a different municipality (3.2%). Residents of the second cluster show the lowest willingness to move (just over 5% or respondents) and prefer changing residence within the same municipality. Clusters three and four show high willingness of residents to move to a different municipality, while residents of cluster four also demonstrate the highest intentions to move abroad (3.6%). Table 2 provides breakdown of the survey results regarding migration intentions among residents of all four clusters.

Table 2

Migration intentions within the next year, as indicated by survey respondents residing in each cluster municipalities in 2021 (% of answers)

Cluster	Migration plans			
	No	*Within current municipality*	*To a different municipality*	*To a different country*
1	91.37%	2.96%	3.23%	2.43%
2	94.63%	2.80%	1.64%	0.93%
3	93.99%	1.84%	3.01%	1.17%
4	92.00%	1.20%	3.20%	3.60%

Source: author's calculations based on 2021 "DemoMig" population survey

It is possible to conclude, that survey responses for cluster one are generally in line with migratory behaviour of economically active and younger population (Skrbis et al., 2014). The responses from residents of cluster two confirm previous conclusion about these municipalities being attractive for immigration and long-term settlement, suggesting the presence of extended sub-urbanisation process in these municipalities driven by the expansion of Riga metropolitan area. Migratory intentions of residents in cluster three also confirm this cluster's classification and statistical observations on the accelerating out-migration of its economically active population to other regions within Latvia. Residents of cluster four show little interest in moving within the same municipality, accompanied by prevalent plans to migrate to a different municipality or abroad (Kozlovs, 2019).

These observations support conclusions about the role of extended sub-urbanisations effects presented by Riga city. State cities and urban centres geographically situated in clusters three and four show no such effects and in some cases (e.g. Ventspils municipality) drain economically active population form their surrounding rural areas. With this in mind, restarting and encouraging the sub-urbanisation processes of the population centres outside Riga metropolitan area is crucial for revitalisation of the surrounding rural areas (Camaioni, et al., 2019).

Table 3 provides the summary of survey responses regarding population opinion on necessary demographic policy measures. Although the general trend of responses is quite even throughout the rural municipalities of all four clusters, there are notable differences present in the support level for specific policy actions between the clusters. Support for measures aimed at increasing birth-rate is highest in cluster two (over 25%) and lowest in cluster four (below 17%). Cluster four residents also showed the highest interest in policies aimed at promoting healthy and active lifespan, reducing out-migration and supporting re-migration. Residents of the first cluster municipalities are more welcoming to the idea of limited immigration of foreign nationals (over 4%), while cluster four residents overwhelmingly reject this idea (below 1% support). Residents of the third cluster showed significantly high interest in policies reducing social inequalities (over 26%), while the first and second cluster respondents showed somewhat higher support for improvement of education and professional skills.

Table 3

Necessary demographic policy measures, as indicated by survey respondents residing in each cluster municipalities in 2021 (multiple-choice, % of answers)

Cluster	Policy measures						
	Measures aimed at increasing birthrate	*Improving health and active lifespan*	*Measures aimed at reducing out-migation*	*Measures supporting re-migration*	*Supporting limited immigration of foreign nationals*	*Reducing social inequalities*	*Supporting education and development of professional skills*
1	22.34%	19.93%	12.03%	8.59%	4.12%	19.24%	13.75%
2	25.59%	16.47%	11.47%	8.24%	1.47%	22.94%	13.82%
3	20.87%	16.97%	12.61%	8.72%	2.29%	26.15%	12.39%
4	16.67%	21.90%	17.14%	10.95%	0.95%	20.48%	11.90%

Note: Multiple-choice question – row totals may exceed 100%.
Source: author's calculations based on 2021 "DemoMig" population survey

These responses fall in line with previous observations and support conclusions about extended sub-urbanisation processes in cluster two, as well as growing social inequalities and increasing pressure to migrate within cluster three. Sub-urban areas located in cluster one show greater acceptance of foreign workforce, although the overall level of support for this policy remains very low. Policy options supported by residents of cluster four correspond with the priorities exhibited by ageing population; however, these options seem to be less realistic in the current situation and require cautious implementation (Kruzmetra et al., 2016). On the contrary, policies aimed at promoting birth-rate, immigration of foreign workforce and development of professional skills were least popular in cluster four. This underlines the urgent need for better communication strategy in support of the national regional development objectives (Saeima, 2010).

Conclusions, proposals, recommendations

1) Clustering results highlight a significant disparity in population dynamics between the municipalities assigned to four clusters: (1) "Population growth areas"; (2) "Balanced population change areas"; (3) "Moderate depopulation areas", and (4) "Accelerated depopulation areas".

2) The social and economic spill-over effects of the Riga metropolitan area are evident among municipalities assigned to the second cluster, where stable population numbers are supported mainly by the neutral or positive net-migration driven by extended sub-urbanisation processes of Riga metropolitan area.

3) State cities and urban centres geographically situated in clusters three and four show no positive sub-urbanisation effects. With this in mind, restarting and encouraging the sub-urbanisation processes of the population centres outside Riga metropolitan area are crucial for revitalisation of the rural areas in these territories.

4) The difference between the second and third cluster is mainly related to the population density and level of aging. Analysis results show that families with children choose more densely populated areas, while seniors continue to live in areas that are gradually emptying out.

5) Migratory intentions of residents in cluster three confirm observations on the accelerating out-migration of its economically active population to other regions within Latvia driven by growing local social inequalities.

6) Daily commute time plays an important role in shaping the demographic conditions in rural municipalities. The difficult demographic situation in clusters three and four is exacerbated by the diminishing accessibility of employment and education infrastructure located within reasonable travel time.

7) Corrective policy options supported by residents of cluster four correspond with the priorities exhibited by ageing population. Rejection of more urgent and effective policies within this cluster leads to conclusion about the urgent need for better communication strategy.

Acknowledgements

This study was supported by National Research Programme "Letonica for the development of Latvian and European society" Project No. VPP Letonika-2021/4-0002 "New solutions in the study of demographic and migration processes for the development of the Latvian and European knowledge society".

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Proceedings of the 2024 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" No 58
Jelgava, LBTU ESAF, 16-17 May 2024, pp. 290-298
DOI: 10.22616/ESRD.2024.58.029

NEWCOMER INTEGRATION IN THE RURAL AREAS

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Abstract. Demographic trends in recent decades and forecasts for the coming decades indicate that a significant portion of Latvia's territories, particularly rural areas, will experience a decline in population. Therefore, attracting and retaining newcomers to these areas plays a crucial role in their sustainable development, as they contribute to the growth of the local economy and society and provide new social and cultural services to the community. However, the impact of newcomers on permanent residents is largely determined by their willingness and ability to integrate into the local society and systems. To assess the integration process of newcomers in rural Latvia, this empirical study is based on interviews with individuals who have moved to rural areas. The research reveals that the integration process is multifaceted and can occur through various channels, including workplaces, communities, homes, and organizations. Facilitating factors of integration are mechanisms that enable the formation of active communities and facilitate the successful integration of newcomers, while hindering factors arise when newcomers are dissatisfied with aspects of life that resulted directly from their move to rural areas.

Key words: newcomers; rural areas; integration.

JEL code: O18; P25; R23

Introduction

Rural areas play an important role in fostering sustainable regional development, and their significance is increasingly recognized also in the European Union and national-level planning documents. However, the sustainable development of rural areas cannot be achieved without the people who live in them; and, considering the current negative demographic trends in rural Latvia (Krisjane et al., 2017; Krumins et al., 2020; Dahs et al., 2023; Krisjane et al., 2023), newcomers play an important role in restoring the composition of the population. The arrival of newcomers in rural areas has the potential to positively influence not only the demographic and economic situation of the locality, but also to provide new social and cultural services to the local community. The knowledge, skills, and potential entrepreneurial activities of newcomers can be viewed as assets that can improve the economic climate and enrich social relations (Nugin, Kasemets, 2021; Aure et al., 2018). Therefore, the attraction and retention of newcomers has the potential to ensure the sustainable development of rural areas.

In light of the aforementioned, it is essential to investigate the phenomenon of newcomers in rural areas, the motivations behind such migration patterns and the subsequent integration processes experienced by newcomers. Since newcomers more often overestimate the aspects of staying in a certain territory, compared to local residents (Haartsen, Stockdale, 2017), it is important to evaluate those integration factors that are significant obstacles and enablers for successful integration into the rural social fabric. Despite the growing interest in rural in-migration in European level, Latvia currently lacks qualitative sociological research that explores the integration experiences of newcomers in rural areas and their motivations for relocation. Thereby **the aim of the research** is to investigate what is the integration process of newcomers in the rural areas of Latvia. The following **tasks** have been set to achieve the aim:

1) to examine theoretical perspectives on integration processes for newcomers in rural areas;
2) to analyse how successful is the integration process for newcomers in rural Latvia;

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3) to identify factors that promote and hinder the integration of newcomers in the rural area.

Within the framework of this research, those who have moved to rural areas from urban territory within the last 10 years are considered newcomers and is the **research object** of this study. In addition, areas outside the urban areas of national cities and counties are considered as rural areas within the scope of the study.

The empirical study is based on 12 face-to-face interviews with newcomers in different rural areas of Latvia, conducted in the period from September 2022 to June 2023 in Kurzeme region. The sample population for this study exclusively comprises individuals who migrated to rural areas within the last 10 years. These participants previously resided in urban environments or re-migrated from foreign countries, and the age of the interviewees ranged from 26 to 55 years. As part of the research, secondary data were also analysed – 13 interviews with newcomers to Latvian rural areas conducted in 2021 by the association "Latvijas Lauku Forums". These interviews were conducted mainly in the Vidzeme region.

Research results and discussion

1. The theoretical framework of the integration of newcomers in rural areas

Integration can be conceptualized as a dynamic process characterized by the strengthening of relationships within a social system, alongside the successful introduction and incorporation of new members and groups into the system and its associated institutions. According to Bosswick and Heckman (2006), when this process is achieved effectively, the society is considered to be well-integrated. Integration is most often seen as a two-way process of mutual adaptation between newcomers and members of the local society, including in a united society which is based on common values and a sense of belonging, at the same time everyone preserves their identity and culture (Kolcanovs, 2010).

Existing research underscores the value of categorizing newcomers to rural areas. This segmentation facilitates a deeper understanding of their motivations for relocation and, consequently, informs the development of targeted strategies to promote their successful integration into the rural areas. Haartsen and Stockdale (2017) distinguish two groups of newcomers: 1) *newcomers – convinced stayers,* who consciously adapt to integrate into the local community and remain in the designated rural area for the rest of their lives; and 2) *newcomers – children-led stayers*, who are only involved in community activities related to children and are not sure that they will stay in the area after the children have grown up. A study in the Netherlands confirmed that the main reason for moving people to the countryside is housing driven (Karsten, 2020) and therefore three groups of newcomers in rural area can be distinguished:

1) *pragmatic movers* – families belonging to this type move mainly because they see opportunities in the countryside, their desire is to maintain employment, cultural and social ties with the city, but they are looking for more comfortable and pleasant living conditions;
2) *displaces families* - the families' move to the countryside was not voluntary, it happened for financial or other reasons, they left the city with regret;
3) *happy movers* - families who consciously try to move away from the problems of cities and look for a rural idyll to break ties with the city and start a new life in the countryside.

Different types of integration are distinguished in the academic literature, e.g. cultural integration (a process that includes cognitive, cultural, behavioural, attitudinal changes on the part of newcomers and the local community), functional integration (includes economic integration in the labour market, political integration in democratic processes and integration in access to services provided to society)

(Geddes, 2001; Sabatini, Salcedo, 2007); however, the integration of newcomers in rural areas is best characterized by social integration which refers to the integration of individuals into the system, the formation of relationships between individuals and their attitude towards society (Lockwood, 1964). According to Bosswick and Heckman (2006), in order for social integration to be successful in society, four dimensions of social integration must be fulfilled:

1) structural integration;
2) cultural integration;
3) interactive integration;
4) identification integration.

The **structural dimension** of integration includes access to the systems of public institutions (e.g. the labour market, the housing market, the education system) and participation in them determines the socioeconomic status of an individual and the resources and opportunities available to him. The **cultural integration** dimension determines that there is a need to acquire communication competences, knowledge of local culture and society in order to occupy a place in society. The **interactive dimension** of integration refers to acceptance and inclusion in society's relations, social contacts while **identification integration** refers to the sense of belonging, identification with the place and local society.

Successful integration of newcomers also includes the individual's integration into the community and a sense of belonging to it. According to sense of Community theory (McMillian, Chavis, 1986), the sense of community is strengthened and the formation of bonds between individuals in society is facilitated by several factors, such as sense of belonging, influence of the group, satisfaction of individual and group desires and a shared emotional bond, which ensures positive and frequent contact between members of society.

2. Social integration dimensions of newcomers in rural Latvia

As part of the empirical study, the integration process of newcomers in rural Latvia was analyzed based on the social integration model of Bosswick and Heckman (2006).

Cultural integration is based on a two-way adaptation process, in which newcomers need to acquire communication skills, knowledge of local culture and society, while local society must be able to accept the newcomers' different cultural roots. In the context of Latvia, this study shows that when the population migrated inland, language, which is one of the foundations of cultural learning, was not an obstacle to successful integration, even for those individuals who were with foreign origin. The analysis of secondary data shows that the newcomer from Canada has not learned the Latvian language, but this is not an obstacle to socialize with local residents and identify with Latvian culture and rural area, as well as occupy a recognizable place in society. This shows that the language criterion is no longer as important as before, because the society itself has become more open and multicultural through a two-way adaptation process. However, interviewees admit that not fully understanding the language means losing a wide range of opportunities.

Cultural integration also includes learning about the traditions practiced by the local community. In general, the information obtained in the interviews about traditions and integration in this context does not reveal significant aspects that would create obstacles for newcomers to integrate into the local society. This could be explained by the fact that there are no significant differences in cultural traditions when migrating within the borders of the country. Several interviewed families admitted that, although they had previously lived in other municipalities with other cultural traditions, they gladly accepted the traditions of the local

community, such as participating in local festivals and local traditional dance and music groups. The biggest differences that seem obvious in rural areas are the culture of greeting neighbours and other community residents. Greetings when meeting in public places is simple but mandatory: "*And you greet people on the street, you don't pass them by, you don't roll your eyes and don't pretend you don't know anyone. Even if I don't, I greet them and they say hello back*". There are also situations when, without a simple greeting, it is necessary to exchange a few more words: "*It is important to sit down with the neighbour's prim works and drink a cup of coffee, talk for at least ten minutes. You don't experience such moments with your neighbour in the city"*. In general, newcomers to the countryside take daily interactions, observance of local norms and the local communication style as a matter of course, without even realizing it.

Structural integration includes access to the systems of public institutions, including for the labour market, the housing market, the education system and political system. Empirical research allows to conclude that this dimension of integration clearly occurs when developing entrepreneurship in rural areas. A significant portion of the interviewees were engaged in entrepreneurial activities within rural areas, providing employment and income not only for themselves but also for other members of the local community. Newcomers are engaged in typical industries in rural areas - animal husbandry, cultivation of crops, while others continue the types of business started in the cities - providing accounting services, consulting on work safety or creating design lamps. "*Not everyone in the countryside should be engaged in agriculture. There are many different things to do in the countryside. Especially in today's digital age, you can do a lot*". New initiatives of business included a cafe offering expanded cultural opportunities, an online store, development of rural tourism experiences, and the opening of a dental office. This approach fosters not only the integration of newcomers into the rural community, but also the development of the local economy. For example, the family, which opened a dental office in the countryside with the support of state funding, has successfully developed this business, and now not only local residents of rural areas, but also residents from neighbouring and distant municipalities come for dental services.

Integration in rural area can take place through business especially successfully if it is related to opening one's homestead for tourism activity, for example, creating a guest house or glamping. "*The idea of owning a house came suddenly and was meant to stay - we want a house in the countryside, where we can finally fulfil our dream, start a catering business, create a small guest house, in the yard of which various events will be held for the pleasure of ourselves and others*". Considering the fact that newcomers are socially and economically active, they willingly get involved in local civic activities – associations and meetings, participate in municipal elections, which allows to strengthen their status in the local community and promotes attachment to the community and the place.

While rural entrepreneurs contribute positively to both the economy and society, establishing a business within these regions can be challenging due to specific characteristics of the local social environment. A family that opened a cafe admitted in interviews that part of the local community perceived their new cultural space with negative emotions, complained about the noise, and even wrote complaints about it to the municipality.

Apart from business, municipalities and rural institutions also play an important role in promoting the employment of citizens in rural areas. Individuals with higher educational attainment reported encountering minimal difficulty securing employment in rural areas with relevant qualifications. A subset of participants, after relocating to rural communities, with relative ease found positions in social service organizations and local government agencies. The interviewees also admitted that starting work in municipal institutions helped in the integration process - news about opportunities and events in the municipality was learned faster, it was easier to get to know local residents.

The present study highlights schools as a significant factor in the structural integration of young families with children in rural areas. Interviewees expressed appreciation for the proximity of schools to their residences and the smaller class sizes, which facilitate increased teacher attention to individual students. Additionally, rural schools may offer unique opportunities not readily available in urban environments. For instance, one family who relocated from Riga to a rural community noted that their child was previously denied enrolment in a music school due to high competition in the city. In contrast, the rural school offered inclusive enrolment, ensuring access for all children. "*It's better to be the first in the village than the last in the city*". Schools promote the cohesion of the local community by organizing various events for both students and their families, thus facilitating the easier integration of newcomers into the local community. At the same time, newcomers are concerned about the closure of small rural schools, which has been voiced at the political level, which can significantly undermine the availability of education for children and the demographic structure of local society in rural areas.

Successful structural integration is a precondition for **interactive integration**, which refers to acceptance and inclusion in societal relationships and social contacts. Analysing the interview data, it can be concluded that among the newcomers there has been both a very positive integration into the local society and also a quite negative one. Some newcomers have not felt any distinct obstacles, but rather an encouragement to get to know the locals and participate in community activities. Many interviewees confirmed that excellent neighbourly relations develop in the countryside and that neighbours proactively get involved in solving the problems of newcomers to help them feel accepted and supported: "*The neighbours will always help and we have a community here, it's so close and supportive", "We would be lost without our neighbours", "Nature is amazing, but our neighbours are incredible. We met so many friends!", "We have great neighbours! Its simplicity and realness - this is something that cannot be found in the big city race".* This allows to conclude that it is neighbours who play a big role in ensuring interactive integration, becoming friends over time. Neighbours are an important support in the integration process, who tell and introduce the abilities, occupations and diversity of rural areas of the surrounding people. Therefore, it is not surprising that newcomers recognize that in the countryside, in contrast to the cities, where it is not so important, it is necessary to maintain positive mutual ties with neighbours. Because the limited number of people in the countryside means that in case of bad relations, you can lose both contacts, employees and customers. It should be mentioned that the understanding of neighbours in rural areas is much broader than in cities: *"In the county, we all call each other neighbours, and there is such a sense of security that you know that there is always someone to ask for help or share joy with".*

The interviewees confirm that it is easier to get to know the people around you in the countryside. "Come to the countryside, because you will make friends much easier, people here are much closer and will always be by your side". There are many good reviews about establishing contacts with other residents, for example, "I quickly got to know each other, I communicated, it was not difficult to find a contact". At the same time, another interviewee admitted that there is no desire for community events and activities, and the countryside is also a suitable place to live for the realization of this desire: "Peace, silence. No neighbours come to meet here in the morning. Do what you want and how you want".

However, some of the interviewees in the study admitted that integrating into the local society, especially in the first years of moving, was full of challenges, as the locals were reluctant to accept newcomers. One family admitted that it was difficult for them to accept that "*Everyone knows everything about us even better than we know ourselves*". In addition, newcomers admitted that they initially felt mistrust from the local community, increased interest, which was not always favourable. Similar problems in integration among peers have also been experienced by the children of newcomers, for whom there has

been increased interest among schoolmates and therefore a luck of private space in schools. Another interviewee described a negative experience with a neighbour who was unhappy with the newcomer's dog-walking habits and complained about it all the time.

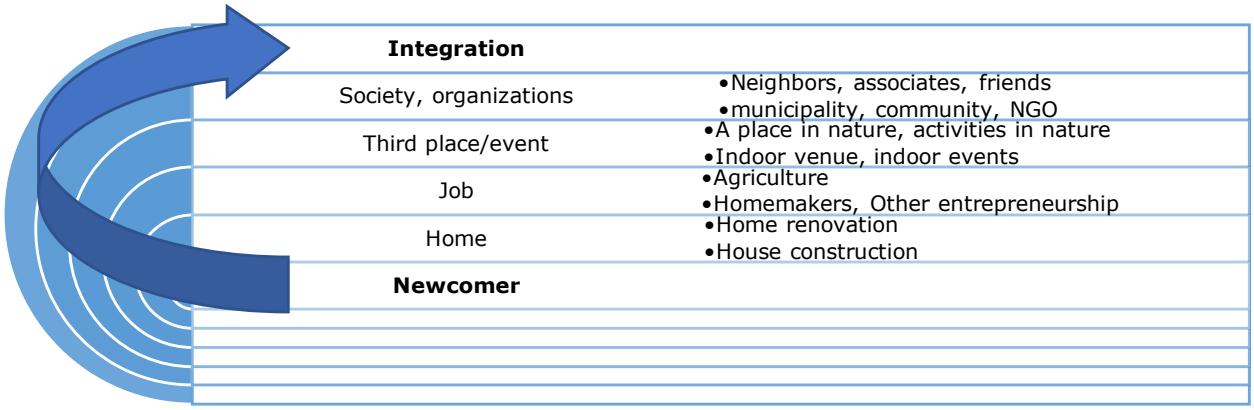
A key aspect of **identification integration** for newcomers involves the development of identification with the local population and a strong sense of belonging within the rural space. It can be reflected as caring for the surrounding environment and promoting local community activities. This study confirms that newcomers feel most strongly connected to their home, which is evidenced by the persistent work they have done to restore or make the home suitable for living. Through the stories, it can be felt a sense of satisfaction for what you have accomplished, as well as a reluctance to return to the city. "*The sun is already setting. Everything is in bushes and grass that you can't even get through. And - I realized that this is my place*". Newcomers most often get a sense of attachment to local community by getting involved in local community activities, interest groups, which allow them to get a sense of belonging and a sense of identity with the rural area.

Several interviewees revealed that they were involved in a folk-dance group, together with the locals created a regional market with local rural goods, as well as involving the region in a traditional ensemble of pipers, which allowed them to get to know the local residents better, to feel a connection with the local community and its traditions, thus promoting the formation of a sense of belonging to it.

The feeling of belonging to the community arises also in situations where conflict groups are formed - groups that arise when there are conflict situations between those groups that have authority and those that do not. In such situations, opportunities for rural integration arise, as a common feeling of "us" and "them" arises. For example, when there is a conflict between the local residents and the municipality administration: "*We all feel very underrated together. [..] In all those large populated villages, there are Easter events, there are Christmas events, there are some workshops and cook days, but we don't have nothing*". This study shows that newcomers to the rural areas have more energy to achieve their desired results and changes, not to put up with rejections, and these community battles make it easier to integrate into the rural territory, because in the process of the struggle they get to know the residents and have proven their ability to bring positive changes in the rural territory.

3. Impacting factors of the integration process in rural areas

Based on the empirical study it was concluded that the process of integration of newcomers in rural areas includes several elements that allow the newcomer to integrate into the local community and territory, such as home, work, third place and events, community and organizations of the rural territory (Figure 1). The integration process takes place gradually, through the first stage, which is usually the home to which the newcomers have moved. Integration can happen through all of these elements, but one of them can also be omitted.



Source: authors' construction based on analysis of the interviews

Fig. 1. **Integration process of newcomers in rural Latvia**

The conducted interviews also made it possible to determine the factors that contributed to the integration of newcomers in the countryside, or, on the contrary, hindered it. Among the factors that contributed to the integration of newcomers in the rural areas (Table 1) are those that the interviewees recognized as creating a positive sense of belonging and patriotic feelings and the desire to highlight their rural territory as special.

Table 1

Facilitating factors of the integration process in rural Latvia

Home	Job	Third place/ events	Society/ organizations
• creating a home story • getting to know others through house clean-up event • garden landscaping • getting to know the locals through the home renovation process • opening home to others - a creative house with workshops, an open country homestead • organizing events at home - open solstice celebration, cafe days, festivals	• carpentry • consulting for locals such as accounting, job safety • guest house • glamping • animal husbandry • beekeeping • making lamps • painting • handicrafts • pottery making • outing catering	• houses of culture • library • house cafe events • mother-child courses • amateur theatre • choir • folk dances • lake and other recreation areas	• initiatives to improve the environment • active associations • national guard • hunting • NGO activities • supportive friends, associates, neighbours

Source: authors' construction based on analysis of the interviews

In particular, the factors hindering integration summarized in Table 2 were aspects that caused the interviewees dissatisfaction with the current situation in the countryside or made them consider the idea of moving back to the city.

Table 2

The factors hindering integration of newcomers in rural area

Cultural integration	Structural integration	Interactive integration	Identification integration
	housing shortage	absence of peers in the territory	
	labour shortage	reluctance of local society to accept newcomers	
	possible rural school closure	lack of information about the possibilities at the first stage of migration	
	lack of a reliable workforce	absence of mentor networks	
	foreign big landlords in the neighbourhood	family reluctance to get involved	
	difficulties in attracting financial resources	lack of third places	
	unorganized infrastructure	lack of events	
seclusion of municipalities administrations			

Source: authors' construction based on analysis of the interviews

Factors related to the development of business in rural areas, such as the lack of qualified labour, can be considered as one of the factors hindering integration. "*There is a lack of stable employees, there is nothing to rely on. During the season, it is difficult to find people who will conscientiously do the work, come to work on time*". Also, often newcomers have limited access to resources to develop their business, for example, agricultural land, as a large part of the resources have been taken by the big business owners. "*Farmers who grow cereals, they catch every piece of land nearby. They are up for grabs. There will definitely be outbidding and at market value we could hardly get next to each other. More should be promised there*".

But newcomers also mention the lack of housing and the difficulty of attracting financial resources for their construction as an inhibiting factor for rural development. The interviewees revealed that when a vacant property appears in the nearby area, there is immediate interest in it, even regardless of the technical condition of the housing.

When newcomers are asked about the disadvantages of rural areas, they often mention the disorganized infrastructure - mainly the roads in rural areas, as well as the quality of the Internet. Disorganized roads create problems for newcomers in terms of convenient traffic with the surrounding areas, both for domestic purposes and for business development.

Conclusions, proposals, recommendations

1) Integration is a broad concept, but social integration, which has four main dimensions (cultural, structural, interactive and identification) is best able to explain the integration of newcomers and the integration process, both through relations with the society living in rural areas, the physical environment, and other systems involved.
2) The integration process of newcomers depends on the openness of the rural community. Although a large number of newcomers to rural Latvia have felt accepted and supported by the local society, for some the integration process has been full of challenges due to the non-accepting attitude of the local society.
3) The integration process in rural Latvia takes place through several elements – firstly by home, following work, third places and events, as well as society and various organizations. The integration

process takes place gradually, through the first stage, which is usually the home to which the newcomers have moved. Integration can happen through all of these elements, but one of them can also be omitted.

4) While there are many factors that contributed to the integration of newcomers in the rural areas, which are related with development of home in the rural area, different job opportunities, activities outside home and local community, there are also factors that can negatively affect newcomers' future intentions to stay in the rural area. Among them are such factors as housing shortage, lack of resources for business development, reluctance of local society to accept newcomers, concerns about school closures and unorganized infrastructure.

Acknowledgement

This study was supported by National Research Programme "Letonica for the development of Latvian and European society" Project No. VPP Letonika-2021/4-0002 "New solutions in the study of demographic and migration processes for the development of the Latvian and European knowledge society".

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Proceedings of the 2024 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" No 58
Jelgava, LBTU ESAF, 16-17 May 2024, pp. 299-308
DOI: 10.22616/ESRD.2024.58.030

THE RESEARCH OF THE SUSTAINABILITY REPORTING: THE CASE OF LITHUANIAN PUBLIC COLLEGES

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Abstract. The article examines the issues of social responsibility and sustainability reporting by higher education institutions (HEIs) and conducts an empirical study of the reports of four Lithuanian public colleges - participants of the United Nations Global Compact (UNGC). The aim is to identify the current state of the reporting of Lithuanian public colleges and prepare for changes. The problem stems from the fact that, in recognition of the importance and relevance of HEIs to the achievement of the Sustainable Development Goals and the implementation of the Ten Principles of the UNGC, there is no unified reporting framework for HEIs. A review of previous research and an empirical study also highlighted the problem. The methodology includes analysis of scientific publications and official documents, as well as quantitative methods such as clustering of report data, analysis of content volume and structure. The findings of the study are as follows: HEIs' reports vary in both form and content; it is difficult to compare information for a lack of common indicators; HEIs focuses on the fundamental Ten Principles areas that are important to them. However, the reports show the strategic attitudes of higher education institutions and disclose practical activities and achievements. This is the first summative study showing the current state of sustainability reporting of Lithuanian public colleges, UNGC participants. It can be used to improve reporting; the dissemination of the results can be useful for other HEIs, UN Global Compact participants, in preparing for the 2024 Communication on Progress and beyond.

Key words: higher education institution, sustainability reporting, communication on progress.
JEL code: I29, I23, Q56, M48

Introduction

The UN Global Compact network has 34 Lithuanian companies as participants, including 5 higher education institutions: the Kaunas University of Technology and four public colleges – UNGC participants (UNGC. Our participants., 2024). In this article, the social responsibility and sustainability reports of 4 public colleges have been selected for the research. There are a number of arguments why this study is important. Firstly, this is the first paper to review the current state of sustainability reporting in Lithuanian HEIs – public colleges. The second is the growing emphasis on the importance and quality of SR and sustainability reporting, which places new demands on UNGC participants. And the third important argument is the fact that starting in 2024, all UN Global Compact participants will be required to submit: (a) an electronic statement by the Chief Executive Officer, and (b) complete the Communication on Progress (CoP) questionnaire (UNGC. Questionnaire Guidebook, 2023). The documents are addressed to business participants there are no specific recommendations for higher education in the updated CoP (UNGC. The enhanced Communication on progress, 2023).

Academic participants would therefore benefit from a discussion/debate on the development of the CoP and the use of the questionnaire in higher education accountability practice.

The aim – based on a survey of social responsibility and sustainability reports of Lithuanian public colleges, UN Global Compact participants, to identify the current state of reporting and prepare for change. To achieve the objective: (1) the review of previous research was conducted; (2) the 2019-2022 reports of four Lithuanian public colleges were analysed, and (3) insights are provided on improving accountability and demonstrating progress towards the Ten Principles and the Sustainable Development Goals (SDGs) (UN. 2030 Agenda, 2015).

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Prior research. The issues of the reporting on social responsibility of Lithuanian HEIs have not been studied enough, there aren't many studies on this issue. Such situation was stated by Dagiliene and Mykolaitiene (2015), after investigation the social responsibility information, disclosed in the annual performance reports of 12 Lithuanian public universities. Three areas of responsibility – environmental, economic and social – have been chosen in accordance to Global Reporting Initiative (2013) GRI G4 methodology. However, "it was not possible to adapt the GRI G4 methodology fully in the research" due to insufficient data and lack of unified indicators. "The information disclosed in individual universities' reports is incomparable for a lack of uniform reporting", the authors stated. Moreover, "only a few studies address the perspectives of sustainability reporting of the Lithuanian higher education sector" (Dagiliene, Mykolaitiene, 2015). Social responsibility and sustainability issues of higher education institutions receive more attention in other European countries. Having analysed social sustainability reporting of 20 European business schools, Vila and Moya (2023) note the lack of uniformity among the reports, as well as the lack of specific frameworks and resources; the researchers note the lack of regulations regarding the types and amount of data to be collected and reveal the complexity of measuring social impact. Sepasi et al. (2018) explored sustainability reporting practices of HEIs, and the results of their study suggest that "… the quality of sustainability reporting varies quite significantly and important dimensions such as education and outreach programs are ill-treated in universities' sustainability reports". Corporate sustainability reporting is well established and addressed for business, but universities' accountability and reporting quality "... remains relatively unexamined", the study concludes (Sepasi et al., 2018). Huber and Bassen (2018) note that sustainability reporting by higher education institutions has received limited attention from researchers to date, with research in this area still at an early stage. Sustainability reports have limited value and are potentially misleading "partly because of the lack of an established and widely recognised sustainability reporting framework for higher education institutions" (Huber, Bassen, 2018). The Global Reporting Initiative (GRI) and standards are the most widely used sustainability reporting standards globally (About GRI. https://www.globalreporting.org/), "…but their relevance and practical applicability for HEIs is questionable."(Moggi, 2023; Amiano Bonatxea et al., 2022). Moggi (2023), who has expressed this view, has highlighted the contradiction between: (a) the prominent role of higher education institutions in the implementation of the Sustainable Development Goals (SDGs); (b) the growing need for and demand for sustainability reporting, and (c) "the lack of an established and widely recognised sustainability reporting framework for higher education institutions" (Moggi, 2023). The GRI guidelines are designed for business enterprises; their application in HEIs does not advance sustainability reporting and "is not effective in demonstrating the social responsibility and sustainable development activities inherent in higher education" (Moggi, 2023). A study by Amiano Bonatxea et al. (2022) shows similar results on the use of GRI in higher education. "Recognising the importance of universities in the achievement of social and global objectives, ... major limitations have been found by HEIs to account for their societal missions when using the GRI." (Amiano Bonatxea et al., 2022). The lack of empirical research on sustainability reporting was noted in a study based on a content analysis of the information disclosed on the websites of all Portuguese HEIs. Monteiro et al. (2023) argue that empirical research on HEIs' reporting on the SDGs is "still very embryonic".

Problem. Recognising the importance of higher education in achieving the SDGs and implementing the Ten Principles of UN Global Compact there are limitations in reporting on the socially responsible activities of HEIs. A lack of research on the chosen topic, as well as a lack of common methodology and guidelines for HEIs reporting on sustainability has been identified in prior research. Considering the current situation

of sustainability reporting, this article chooses a narrower scope for the study of reports by formulating the following problem questions for this research.

Question 1. What should be the structure of HEIs reports?

Question 2. What exactly should be included in the sustainability reports of higher education institutions so, that the reports contain: (a) a description of practical actions taken to implement the Ten Principles of the Global Compact and (b) a measurement of key outcomes?

Methodology. In line with the aim of the article and the problematic issue (problem *Question 1*), the study of reports structure is based on document analysis (Kardelis, 2016). Selected official documents were those in force during the analysed period (2019-2022) and the new ones coming into force in 2024, as UNGC members face significant changes in accountability. The documents under review:

(1) *Socialinio ir aplinkosauginio atsakingumo ataskaitos gairės valstybės institucijoms* (Social and Environmental Responsibility Reporting Guidelines for State Institutions). 2012, p. 11- 16;

(2) UNGC. *A Practical Guide to the United Nations Global Compact for Higher Education Institutions: Implementing the Global Compact Principles and Communicating on Progress*. 2012, p. 17;

(3) EC. *Guidelines on non-financial reporting*. (2017/C 215/01). Article 4, p. 9-19;

(4) UNGC. *Questionnaire Guidebook*. UNGC_CoP_GuideBook__Feb2023_.pdf 1table, p.5.

Following the recommendations/requirements of the official documents, the authors of this article identify 5 main parts of the HEI report:

1) the statement by the top institutional official;
2) the organisation's value system, vision, mission, values;
3) key performance and management indicators;
4) The description of practical measures used to implement the Ten Principles of the UN Global Compact;
5) the measurement of results and future plans. The empirical study analyses the design of the sustainability reports of the participating higher education institutions in this way.

Qualitative and quantitative research methods (Walter, 2019; Kardelis, 2016) are used to analyse the content of the reports (problem *Question 2*). Grouping approach is applied to the content analysis of the main body of the reports (Part 4. A description of practical actions implementing the Ten Principles of the UN Global Compact. A qualitative feature of the grouping is the fundamental responsibilities of the Ten Principles: Human Rights, Labour, the Environment and the Anti-Corruption (The Ten Principles of the UN). In the empirical study, the volume of the content of the reports is expressed in terms of the number of words (Kardelis, 2016), and statistical methods are used to determine and evaluate the structure of the content. Calculations are carried out in an MS Excel spreadsheet; data are presented graphically and a comparative analysis of the composition and content of the reports is made.

The limitations of this study are the small number of higher education institutions covered (four) and the number of reports (twelve). This is due to the aim of the paper and the relatively small number of Lithuanian public colleges participating in the UNGC. The scope of the study is rather narrow: it examines the structure and content of social responsibility and sustainability reports. However, a methodologically sound analysis of even a narrow field can be useful to identify the state of reporting in the area under study and to stimulate discussion among academic participants in the UN Global Compact on the development of CoPs in line with the new documents.

Research results and discussion

This section of the article presents the results of empirical research conducted using the methods for analysis of reports' content and structure discussed in Methodology. The aim of the empirical research is the following: to explore social responsibility and sustainability reports of Lithuanian public colleges – the UNGC participants and to determine and evaluate the state of accountability in this sector of higher education.

20 colleges operate in Lithuania currently (2023), 12 of which are public colleges and 8 – independent colleges. At the beginning of the study year 2022-2023, Lithuanian colleges employed 2376 lecturers, while the number of students was 30847 (Oficialiosios statistikos portalas, 2024; AIKOS, 2024). Four public colleges, specifically Panevezio Kolegija, Kauno Kolegija, Siauliai State College and Vilniaus Kolegija, are participants of the UN Global Compact. Table 1 provides data on the latter HEIs.

Table 1

Information about Lithuanian public colleges – participants of the UNGC

Key indicators	Panevezio Kolegija	Kauno Kolegija	Siauliai State College	Vilniaus Kolegija
Student numbers	1232	4607	1582	5333
Study programmes	20	51	22	40
Employee numbers	189	987	194	847
Teaching personnel numbers	115	645	100	435
Numbers of other personnel	74	342	94	512

Source: prepared by the authors, based on data of the annual Performance Reports of colleges (data 2022)

The four public colleges – participants of the UN Global Compact – play an important role in the Lithuanian system of colleges as the number of their students constitutes 41.3% of the total number of students studying in Lithuanian colleges, and the number of lecturers constitutes 54.5% of the total number of lecturers employed by colleges. The article provides an overview of practices of the mentioned colleges as they attempt to implement the Ten Principles of the UNGC and Sustainable Development Goals, and reveals the current situation related to reporting in an important sector of Lithuanian higher education. The insights provided by the research may be applied when adapting to procedural changes in the reporting practice and when preparing Communication on Progress reports for future periods.

The empirical research is based on the analysis of the colleges' Reports. The research methods used are qualitative and quantitative analyses of the Reports' content (Walter, 2019). The Reports produced within the period 2019-2022 were analysed: 12 Reports from 4 HEIs in total. The information for the research was taken from social responsibility and sustainability reports provided on the UN Global Compact website (Communication on Engagement) and annual performance reports provided on the websites of the colleges. The following research steps were implemented: 1) review of the reports' basic parameters; 2) analysis of the Reports' composition; 3) analysis of the Reports' content structure; 4) comparative analysis and evaluation of the collected information.

Step 1. The review of key parameters of social responsibility and sustainability Reports is provided in Table 2.

Table 2

The review of basic parameters in SR and sustainability Reports of Lithuanian colleges – participants of the UN Global Compact

Panevezio Kolegija	**Kauno Kolegija**	**Vilniaus Kolegija**	**Siauliai State College**
Membership in UN Global Compact			
Participant Since 24 August 2011	Participant Since 18 May 2012	Participant Since 27 November 2018	Participant Since 17 January 2012
Titles of the Reports			
UN Global Compact Communication on Engagement (COE)	Social Responsibility Report	Social Responsibility and Sustainability Reports (Reports of 2019, 2020, 2022). Social Responsibility and Sustainable Development Report and Activity Guidelines (Report of 2021)	Social Responsibility Report
Periodicity of issuing the Reports			
Every two years	Every two years	Each year	Each year
The scope of the Reports in pages			
Report 2019-2020: 22 p. Report 2021-2022: 13 p.	Report 2019-2020: 33 p. Report 2021-2022: 28 p.	Report 2019: 49 p. Report 2020: 75 p. Report 2021: 134 p. Report 2022: 42 p.	Report 2019: 18 p. Report 2020: 20 p. Report 2021: 26 p. Report 2022: 30 p.
Number of sections (separate section titles) in the Tables of Contents of the Reports			
Report 2019-2020: 8 sections, 5 subsections; Report 2021-2022: no Table of Contents; 5 sections can be distinguished in the Report's text.	Report 2019-2020: 9 sections; Report 2021-2022: 7 sections	Report 2019: 20 subsections Report 2020: 21 subsections Report 2021: 35 subsections Report 2022: 15 subsections	No Table of Contents; 7 sections can be distinguished in the Report's text.

Source: information compilation prepared by the authors based on data of the United Nations Global Compact, https://unglobalcompact.org/what-is-gc/participants/

The review of basic parameters revealed the following differences: the Reports have different titles, the numbers of issues within the same period are different, and differences in the scope and content are noticeable. All the titles are reasonable as reports may receive titles such as Social Responsibility Report (Lietuvos atsakingo verslo asociacija, 2023), Sustainability Report (Corporate Sustainability Reporting Directive, 2023), Communication on Progress (UNGC CoP), and Non-financial Report (EU Directive 2017/C 215/01). Periodicity of issuing the reports is in compliance with the UNGC recommendation: participants can issue reports biennially (once every two years) or annually (UNGC Guide for HEIs, 2012). The length of the Reports and the number of structural parts varies from 13 pages and 5 key structural parts (Report on Social Responsibility of Panevėžio Kolegija, 2021-2022) to 134 pages and 35 structural parts (Report on Social Responsibility of Vilniaus Kolegija, 2021). Though such differences may be partially explained by the size of the colleges and scope of conducted activities, they may also attest to different possibilities of manifesting these activities in reporting. In addition, the differences may be related to the lack of unified guidelines on sustainability reporting for HEIs (Dagiliene, Mykolaitiene, 2015; Sepasi et al., 2018; Moggi, 2023).

Step 2. Analysis of composition of Reports. Following the described Methodology, five major parts in the Reports of the colleges were discerned and are on the examination (Fig. 1).

<table>
<tr><th colspan="3">The parts of the Reports</th></tr>
<tr><td>1. A statement by the top institutional official</td><td>2. Value system of the institution: vision, mission, values</td><td>3. Key indicators of the institution's performance and management</td></tr>
<tr><td colspan="2">Included in reports of all colleges</td><td>Concise information is provided.
This information is provided in annual activity reports of the colleges and is therefore not widely covered.</td></tr>
<tr><td colspan="3">4. A description of practical actions that the HEI has taken to implement the Global Compact principles</td></tr>
<tr><td>Panevezio Kolegija</td><td rowspan="4">Provided information</td><td>Human rights, Employees' rights, Environment protection, Anti-Corruption activities. The themes relate to specific principles of the 10 Principles of the UNGC.</td></tr>
<tr><td>Kauno Kolegija</td><td>Key components of the UN Sustainable Development conception are described: Social responsibility, Economic responsibility, Environmental responsibility.</td></tr>
<tr><td>Siauliai State College</td><td>The priorities are discerned: Human rights, Rights of employees and students, Environment protection, Fight against Corruption.</td></tr>
<tr><td>Vilniaus Kolegija</td><td>Detailed descriptions of activities are provided. Information is not grouped according to The Ten Principles of the UNGC or Sustainable Development Goals.</td></tr>
<tr><td colspan="3">5. Measurement of outcomes and future plans</td></tr>
<tr><td colspan="3">The reports do not contain the parts providing measurement of outcomes.
Future plans related to the HEI strategy are discussed in the reports of Kauno Kolegija.
Vilniaus Kolegija includes activity guidelines for 32 areas in the report of 2021, and for 20 areas – in the report of 2022.</td></tr>
</table>

Source: information compilation prepared by the authors based on data of the United Nations Global Compact, https://unglobalcompact.org/what-is-gc/participants/

Fig. 1. **Arrangement of information in the Reports of colleges**

Examination of the composition of the HEIs' reports (Fig. 1) showed considerable differences in the main part of Reports (Part 4). The analysis of 12 reports (100%) from the period 2019-2022 revealed that information in this major part had been arranged following different principles and different logic:

- information on the fundamental areas of the 10 Principles, i.e. Human Rights, Labour, Environment, and Anti-Corruption, is provided (6 reports by 2 colleges – 50%);
- practical activities are described following the Sustainable Development Goals in social, environmental, and economic areas (2 reports by 1 college – 16.7%);
- practical activities of the HEI are described in detail, but the provided information is not grouped (4 reports by 1 college – 33,3%).

Measurement of outcomes is not included in the colleges' Reports; future plans or activity guidelines (in 6 reports from 2 colleges) are presented using different formats.

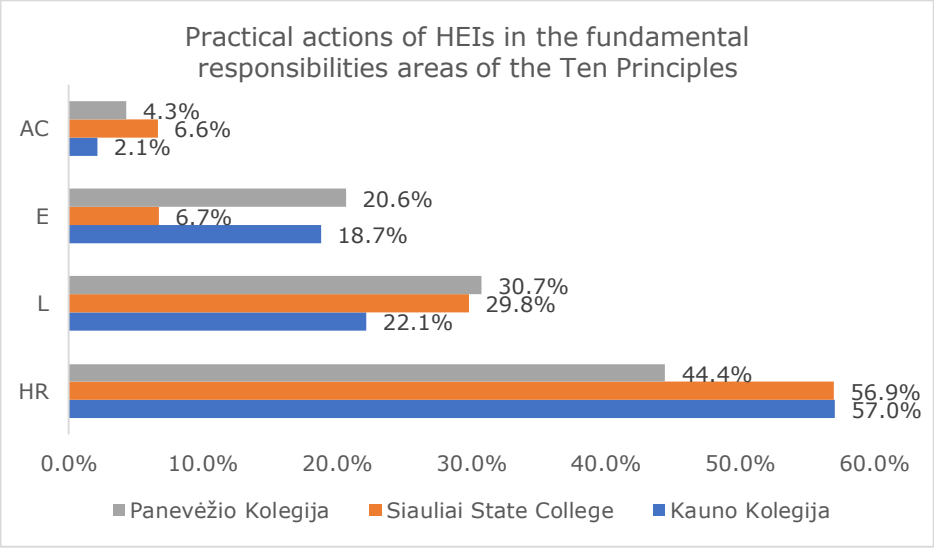
It was found out that in practice, the colleges provide social responsibility and sustainability information adhering to different principles and use different methods and formats when structuring their Reports. Different approaches to accountability may be conditioned by a lack of unified and clear methodology for

social responsibility and sustainability reporting, and this finding supports the findings of Vila and Moya (2023) who stated that "SR in the top 20 European business schools is heterogeneous and the main challenges are the lack of specific frameworks and resources" (Vila, Moya, 2023).

Step 3. Analysis of the reports' content structure was done using qualitative and quantitative methods (Walter, 2019; Kardelis, 2016). The information from major parts (Part 4. A description of the practical actions that the HEI has taken to implement the Global Compact principles) of the reports was grouped into four categories: Human Rights (HR), Labour (L), Environment (E), Anti-Corruption (AC).

Limitation. The analysis of the reports' content is incomplete as the data of Vilniaus Kolegija had not been grouped according to SDGs or to the 10 UNGC Principles. The authors of this research had not classified information from the reports of Vilnius Kolegija into categories HR-L-E-AC for two reasons: 1) unified and clear indicators that would allow to attribute specific activities of a HEI to specific categories (HR-L-E-AC) are lacking; 2) attempts to categorize the information in a specific way would be unethical when the authors of the reports had not foreseen this.

Quantitative analysis of the reports' content (Part 4) was performed as follows: the quantity of words describing each topic (i.e. data group: HR-L-E-AC) was calculated (Kardelis, 2016, pp. 285-287) and was expressed in percentages, in relation to the overall content of Part 4; averages for specific topics covered by the institutions were drawn. Calculations were done in MS Excel spreadsheet. This allowed the researchers to identify the fundamental responsibilities in the areas of the Ten principles, that received the most attention from Kauno Kolegija, Panevėžio Kolegija, and Siauliai State College in 2019-2022 (sFig. 2).



Note: HR = Human Rights, L = Labour, E = Environment, AC = Anti-Corruption
Source: prepared by the authors of the research based on data of the colleges' SR and sustainability Reports of 2019-2020 and 2021-2022

Fig. 2. **Structure of the content of the colleges' Reports (2019-2022), %**

It is evident that activities related to Human Rights (54.4% on average) and Labour (27.3% on average) received the most attention in the Reports, while activities related to Anti-Corruption (4.6% on average) received the least. The largest differences are noticeable in the area of Environment. Thus, the colleges disclosed specific information to a specific extent and demonstrated how their particular practical activities help them pursue SDGs and implement the Global Compact principles.

Step 4. Comparative analysis and assessment of the obtained information. The conducted research into social responsibility and sustainability reports of four Lithuanian public colleges – participants of the UNGC revealed the following differences in the institutions' practices of producing such Reports:

- titles, scope, and content of the reports, as well as periodicity of reporting differ;
- information about the activities of HEIs is provided adhering to different principles, using different methods and formats;
- the colleges disclose varying amounts of information on their activities in the four fundamental areas of the Ten principles of UNGC – Human Rights, Labour, Environment, and Anti-Corruption.

Currently, clear guidelines (or indicators) for attributing particular practical activities of HEIs to the areas highlighted in the UNGC are lacking. Therefore, drawing direct comparisons of the information provided in the analysed reports by different institutions would be a complex, if not fruitless, attempt. Though illustrative indicators for HEIs are listed in the document "UN Guide for HEIs" (2012), the guidance is outdated and insufficient for preparation of more or less standard, qualitatively and quantitatively comparable reports.

Despite the observed differences in reporting practices and particular reports, and the lack of uniform accountability guidelines, the information on implementing the Global Compact principles into internal operations is disclosed in the reports of all the colleges. The reports show that the colleges' heads support pursuance of SDGs and adherence to the UNGC principles. The colleges communicate progress to their communities (students, academic personnel, and alumni) on the institutional websites, and reports are posted regularly on the UN Global Compact website (United Nations Global Compact, 2024).

Perspectives of reporting for HEIs – the UNGC participants and arising issues

Currently, new regulations on sustainability reporting are being imposed, and requirements for transparency of reports, validity, and comparability of data are strengthened. To quote Sandra Ojiambo, Executive Director and CEO Assistant Secretary - General, as businesses strive toward a sustainable future, "corporate transparency and objective reporting have become increasingly important for advancing the Ten Principles, the Sustainable Development Goals, and the Paris Climate Agreement", and modern businesses should pair their ambitions "with accountability mechanisms to form the foundation of change" (UNGC. Questionnaire Guidebook. February 2023, p 3).

As stated in Communication on Progress (United Nations Global Compact, 2023), " the 2024 CoP is a mandatory requirement and must be completed by all UN Global Compact business participants". In relation to this, academic participants (HEIs) may be required to submit information through questionnaires that may not exactly correspond to the needs of higher education institutions and characteristics of their activities. Therefore, HEIs may encounter a complicated situation: on the one hand, their commitment to the Global Compact 10 principles and SDGs is actively encouraged (Findler, et al., 2019; Adhikariparajuli et al., 2021; Monteiro et al., 2024); on the other hand, adequate accountability and reporting guidelines for higher education institutions may still be lacking (Vila, Moya, 2023; Amiano Bonatxea et al., 2022; Huber, Bassen, 2018; Sepasi et al., 2018; Moggi, 2023).

These complexities notwithstanding, universities' sustainability reports should be constantly and systematically examined and evaluated as they serve as "informative tool[s] for understanding the sustainability contribution of universities" (Nikolaou et al., 2023). Pursuing this aim, the conducted research on the state of sustainability reporting of the four public Lithuanian colleges offers further insights into current non-financial disclosure practices of higher education institutions.

Conclusions

1) The conducted review of research articles highlighted the increasing importance of sustainability reporting in the area of higher education and the value of informative reports. The reports are tools for

disclosure of HEIs' contributions and progress in pursuit of sustainable development goals, while enacting the principles of the UN Global Compact. Nevertheless, a significant number of researchers note the lack of an established and widely recognised sustainability reporting framework for higher education institutions.

2) The conducted research into social responsibility and sustainability reports of four Lithuanian public colleges – participants of the UN Global Compact revealed marked differences in the institutions' practices of producing such reports. The reports have different titles, and differences in their scope and content are noticeable; in addition, the institutions issued different numbers of reports over a specific period of time. It was found out that in practice, colleges provided social responsibility and sustainability information adhering to different principles and used different methods and formats when structuring their reports. Therefore, it can be assumed that representatives of different institutions did not coordinate significant aspects of report production, such as organisation, content etc. The variety of approaches may be also related to the lack of unified and clear methodology for social responsibility and sustainability reporting in the area of higher education. Nonetheless, the analysed reports fulfilled key requirements set out in Communication on Engagement, i.e. they included the management's statements on commitment to the principles of the UN Global Compact and descriptions of practical activities. This empirical research can be considered the first generalising study revealing the current state of sustainability reporting among Lithuanian public colleges – the UNGC participants.

3) The findings of the research may be helpful to the HEIs preparing to face significant changes in the reporting. The authors of the research recommend that academic participants of the UN Global Compact initiative discuss the critical issues and particularities related to completing the Communication on Progress Questionnaire aimed at creating transparency and helping entities monitor progress. Ongoing communication between academic participants would enable the institutions to produce comprehensive individual reports and would contribute to the development of good common practices of non-financial reporting for HEIs.

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Proceedings of the 2024 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" No 58
Jelgava, LBTU ESAF, 16-17 May 2024, pp. 309-319
DOI: 10.22616/ESRD.2024.58.031

THE CONCEPT OF SOCIAL ECONOMY AND ITS CHALLENGES IN LATVIA

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Abstract. The social economy is a significant component of any economy, which generates economic and social benefits. In Latvia, however, there is no common understanding of the concept of a social economy and the economic actors. The aim is to examine the nature and challenges of the social economy concept in Latvia by giving insight into the historical evolution and nature of a social economy, challenges of defining a social economy and description of the actors of the social economy in Latvia. The study used monographic and descriptive methods, synthesis and deduction for information gathering, logical systematization and classification, as well as statistical analysis to describe the actors of social economy in Latvia. To obtain in-depth information about concept of social economy in Latvia, expert interviews were conducted. The research specifies social economy actors in Latvia context: associations, foundations, cooperatives and social enterprises. Social economy is an important part of economy, yet it is not fully assessed. In 2023 in Latvia, 27305 organizations operated in the social economy, and their number tended to increase in recent years. Most of the social economy actors (88%) represented associations. The social economy actors operate in different fields, yet the main ones were arts, entertainment and recreation (5144), real estate operations (3593) and agriculture, forestry and fishing (1108). However, the classification of associations and foundations by kind of activity does not provide accurate information, as many organizations have not indicated their field of activity or have specified "other services".

Key words: social economy, social economy entities.

JEL code: L31, L26

Introduction

The social economy has attracted considerable academic and policy interest in recent years. The social economy is a term that the European legislator is using to define a model of economic development that seeks social and territorial cohesion, sustainability, social justice and the equitable distribution of wealth. In the EU, there are 2.8 million social economy entities, accounting for 6.3% of EU employment, but their impact goes far beyond those numbers (OECD, 2020). Social economy actors are found in most sectors of the economy – from health and education to banking and utilities. Some are small non-profits, but others are large enterprises with international outreach.

Social economy enterprises play vital roles in contributing to the United Nations Sustainable Development Goals by tackling global problems such as extreme poverty, social and economic inequalities and homelessness (OECD, 2020; Seelos C., Mair J., 2005). The role that social economy plays in the socio-economic system has been addressed by various authors (World Economic Forum, 2022; Okuneviciute Neverauskiene L., Pranskeviciute I., 2018), attributing to it the role of a repairer and an innovator in products, processes and forms of organisation (Catala B. et al., 2023) and of a generator of new jobs (World Economic Forum, 2022). The social economy plays an important role in generating employment (especially for the people belonging to vulnerable groups) (Arpinte D. et al., 2010), a productive fabric and social cohesion (Matei A., Dorobantu A. D., 2015), that is, in generating social added value. In addition, social economy entities are an instrument with which to develop participatory democracy (Chaves R., Monzon J. L., 2012), financial inclusion and reduction of income inequality (Cozarescu M., 2012), local development (Bouchard M. J., 2010; Matei A., Dorobantu A. D., 2015), resilience against crisis (Catala B. et al., 2023) and fight against social exclusion (Cace S. et al., 2011). It can be concluded that the social economy plays strategic economic, political and social roles (European Economic and Social Committee, 2017). In recent crises, it has been particularly resilient and has responded to major social issues (Cancelo M. et al., 2022).

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However, the progress achieved by the social economy differs within the EU member states because the critical situations, the actions, the institutional and legal framework, the overall context of the social economy are different in each individual EU country (Cace S., Stanescu S. M., 2013). Examples of this are the many terms encompassing the concept (social economy, non-profit sector, social enterprises, third sector and volunteer sector). Another critical issue that also makes conceptual analysis difficult is its diversity depending on the territorial areas being studied and their different nuances and contexts (Ruano A. J. M. et al., 2021).

In promoting enabling policy, understanding and regulatory frameworks in the EU member states on 13 June 2023, the Commission submitted to the Council a proposal for a Council Recommendation on developing social economy framework conditions. The proposal for a Council Recommendation on developing social economy framework conditions was announced in the Action plan for the social economy presented by the European Commission in 2021. The action plan outlined measures to enhance social innovation, strengthen the social economy and its organizational models, and further develop its capacity to drive economic and societal transformation. Such activity is relevant because the new action plan is an important step for the further development of the social economy, which will help create awareness of its potential, as well as the importance of a fair and sustainable economic model.

In the context of Latvia, this action plan provides a significant stimulus for action, as there is currently no common understanding of the social economy concept, nor is there a strategy dedicated to the development of the social economy. Current issues of the social economy are temporarily mentioned only in the strategic documents – Guidelines for Social Protection and Labour Market Policy for 2021 – 2027 and Guidelines for the Development of a Cohesive and Civically Active Society for 2021 – 2027. However, taking into account that on October 9, the Council of Europe adopted the Council Recommendation on the development of basic conditions for the social economy, the member states are advised, taking into account the conditions in the country, either to adopt or update their social economy strategies, or to integrate the social economy into the relevant strategies or other policies initiatives within 24 months of the adoption of this recommendation. In order to do this, it is important to define the concept of social economy in the context of Latvia and identify its potential participants. Promoting common understanding is essential not only to formally meet the EU requirements, but also because the lack of a clear definition for the social economy results in the absence of a common set of metrics with which to measure it. This in turn limits the sector's visibility. Yet visibility is a key for social economy actors to promote their business practices and inform policy-makers on appropriate regulatory frameworks. Enhanced visibility also advances a wider understanding of the relevance of the social economy approach and inspires other entrepreneurs to build similar business models (World Economic Forum, Schwab Foundation for Social Entrepreneurship, 2022). In addition, it is also stated that development of a national strategy for social economy represents a key condition for promoting it as an efficient tool of social inclusion. Envisaged adoption of a social economy law could represent one step towards further development and support (Cace S., Stanescu S. M., 2013).

So far, the social economy is not defined in any legal or official text in Latvia. As a result, there are different perceptions of what could be understood by term "social economy" and what legal entities may be associated with the social economy. Overall, there is little understanding of the concept of a social economy at the policy-making level and among the public and academia. In academia, there are some research studies in social economy context, e.g. V. Dolacis (2014) and V. Dolacis and I. Jespere (2016) have researched the incorporation of social economy principles into the activities of community initiatives in Latvia, yet the research data were based on statistics for 2004-2005, thus not providing the most current information about the situation in the social economy in Latvia. L. Paula and A. Grinfelde (2017) have

described the case of charity shops within the social economy; however, the description covers only one social enterprise. K. Casno et al. (2021) gives practical recommendations for closing informational gaps and driving the social economy; however, their perspective is quite narrow and mostly focuses on social enterprises. In total, several research studies on social enterprises (Gintere D., Licite-Kurbe L., 2022; Kalkis H. et al., 2021) as well as associations and foundations (Civic Alliance-Latvia, 2023; Bite D., Kruzmetra Z., 2017) have been conducted in Latvia, while relatively few research studies are available on cooperatives societies (some research studies have been conducted on agricultural cooperatives) (Feldmane L., Zvirbule A., 2020; Mistris J. et al., 2020), yet there is a lack of research on the social economy as a whole. An insufficient understanding of the social economy has been emphasized by the researchers stating that in Latvia, the concept of a social economy enjoys a medium level of acceptance (Monzon J.L., Chaves R., 2008).

Hypothesis: The concept of social economy in Latvia is understood differently, which is influenced by the lack of a unified approach at the the national level. The research **aim** is to examine the nature and challenges of the social economy concept in Latvia. The following specific research **tasks** were set: 1) to give insight into the historical evolution of a social economy; 2) to define the principles and nature of social economy; 3) to identify the challenges of defining a social economy in Latvia; 4) to describe the potential actors of the social economy in Latvia.

To achieve the aim and perform the tasks, the research employed several **methods**: monographic and descriptive for theoretical discussion; analysis, synthesis and deduction for information gathering, logical systematization and classification, as well as statistical analysis. To obtain in-depth information, in July 2023 interviews were conducted with the head of the Social Entrepreneurship Association of Latvia, an official of the Ministry of Welfare responsible for social entrepreneurship and the general director of the Latvian Agricultural Cooperatives Association. The research used statistical data from the State Revenue Service (on request for research purposes) and the Ministry of Welfare. The scientific databases Scopus, Web of Science, EBSCO and ScienceDirect were used to collect information about the historical evolution and nature of a social economy. **Delimitations of research:** Data on the social economy are limited and not publicly availabe. Also, there is lack of clear understanding of social economy concept in Latvia.

1. Historical evolution of a term "social economy"

Theoretical and empirical references to the social economy date back to the 19th century, but the concept did not gain currency again until the last third of the 20th century (Levesque B., Mendell M., 2005). Identification of the social economy as it is known today began in France, in the 1970s, when the organisations representing the cooperatives, mutual societies and associations created the National Liaison Committee for Mutual, Cooperative and Associative Activities (CNLAMCA). Since the end of the Second World War until 1977, the term "social economy" had fallen out of everyday use. In June 1980, CNLAMCA published the Social Economy Charter, which defines the social economy as the set of organisations that do not belong to the public sector, operate democratically with the members having equal rights and duties and practise a particular regime of ownership and distribution of profits, employing the surpluses to expand the organisation and improve its services to its members and to society (European Economic and Social Committee, 2017). It could be stated that at the policy-making level, the social economy gained wider recognition from the year 2000, as evidenced by the fact that the European Economic and Social Committee has published numerous reports (e.g. studies entitled "The Social Economy in the European Union", carried out by CIRIEC and published in 2008 and 2012, and "Recent Evolutions of Social Economy in the European Union" published in 2017 by the European Economic and Social Committee) and opinions

on the social economy's contribution to achieving different public policy objectives. Besides, six European countries have already passed social economy laws: Belgium, Spain, Greece, Portugal, France and Romania.

In the scientific literature, the first research studies appeared relatively long ago, yet the social economy has aroused wider interest only since 2000. The first author to use this term was Dunoyer, who in 1830 published his work "Nouveau traite´ d'e´conomie sociale" (Dunoyer B. C., 1830). But the first article registered in the Scopus database can be identified as E. Cummings' research paper entitled "Social Economy at the Paris Exposition" (1890). In the case of Web of Science, the first research study was that by M. Maree and M. Saive (1984) entitled "Social Economy and Cooperative Renewal – Definition, Financing, Issues". Since 2004, there has been an increase in the number of research studies on this topic, with some researchers focusing on the historical evolution of the social economy (Ruano A. J. M. et al., 2021; Grigore A. A., 2013), giving insight into similar and different features between the social economy and the third sector, the solidarity economy (Moulaert F., Ailenei O., 2005; Lewis M., Swinney D., 2007; Villalba-Eguiluz U. et al., 2023; Arthur L. et al., 2003) and the circular economy (Villaba-Eguiluz U. et al., 2023), as well as emphasizing the role of the social economy in an economy (Evans M., Syrett S., 2007; Asiminei R., Soitu C. T., 2014; Marsden T., 1999; Peck J., Theodore N., 2000).

The term "social and solidarity economy" is also very often used among academia and policy makers. Some research studies refer to it as a synonym for "social economy" (Restakis J., Mendell M., 2014), while others emphasize the key differences. It is emphasized that the most important difference is that the solidarity economy is conceptually located at the intersection of the private, public and social economy sectors. It explicitly assumes engagement of all the three sectors. In contrast, the social economy is often referred to as the third sector, occupying the societal space between the public and private sectors (Lewis M., Swinney D., 2007). The social economy includes the voluntary sector; a range of associations, including trade unions; and the family economy. In broad terms, they share certain features and principles that are common to all entities of social economy.

2. Principles and nature of a social economy

Almost two centuries have passed since the first work related to the social economy by Charles Dunoyer. Despite this, there is still no agreed definition either internationally or within the EU itself to this day (Ruano A. J. M. et al., 2021). As a result, there are many terms to define the social economy (Espasandin-Bustelo F. et al., 2023). F. Espasandin-Bustelo et al. (2023) view the concept of social economy through such a prism: combination of economic, social, entrepreneurial, and academic motivations. From a social point of view, many stakeholders have cast their eyes on the social economy, due to its potential to address social matters, such as inequality, unemployment and poverty. Moreover, the social economy was a potential contributor or counterbalance to the reduction of the welfare state that neoliberalism has cut back. From an academic point of view, it is widely recognized that research on the matter is advancing and immense interest has been aroused in the academic community over the past decade. Academic production is growing 15% each year. From a business point of view, social economy enterprises have the following characteristics: they are regulated by specific laws; they favor equitable distribution of profits; they prioritize social needs over profit maximization; they promote local development; and they must also compete, gain competitive advantages, improve their organization and productivity, win over new customers, attract new sources of finance etc. (Espasandin-Bustelo F. et al., 2023).

A. A. Grigore (2013) offers a broader view of the definition of social economy and the classification of its participants, characterizing social economy models existing worldwide and their mechanism of operation, with a focus on European social economy models.

In general, the scientific literature refers to several indications or principles for identifying the social economy. The principles of the social economy were defined by J. L. Monzon and R. Chaves (2008), which were later referred to by other researchers, thereby creating a unified perception of the concept of a social economy.

Objective – creation of social value. The creation of social value is one of the main characteristics of the social economy (Matei A., Dorobantu A. D., 2015). It must combine a dual objective of economic performance and social value creation. (Chaves R., Monzon J. L., 2012; European Commission, 2021). Social economy generate employment, productive fabric and social cohesion, that is, to generate social added value. This social value creation function goes beyond the individual level and reaches meso and macro levels, such as in its ability to reinforce place-based dynamics, empower people-driven resilience and growth, and bring value to local economies and societies by fostering their inclusiveness, resilience and sustainability (European Commission, 2022). At the core of the social value creation process are elements such as the reciprocity, social justice, social capital, collective responsibility, commitment and solidarity. Also, in other researches it is stated that the social economy places social and environmental challenges and opportunities at the centre of economic activity. What marks out the social economy as unique is that it puts "purpose before profit". Social economy actors carry out activities in the interests of their members and beneficiaries ("collective interest") or society at large ("general interest") (World Economic Forum, Schwab Foundation for Social Entrepreneurship, 2022). The activities could include cultural production, the provision of health or social care, as well as the supply of food, shelter or other necessities to people in need. In its essence, the social economy is a space and practice where economics is at the service of social ends, not the other way round (Restakis J., 2015).

Economic performance and resources. Social value should be combined with economic performance. However, the primary aim is not the profit making but the stakeholders' welfare and socio-economic inclusion (Matei A., Dorobantu A. D., 2015). This means that organizations can use different resources for their existence. Social economy entities seek to satisfy social needs not addressed or underaddressed by governments and mainstream businesses or to solve social issues in innovative manners, such as the mobilisation of monetary and non-monetary resources (such as donations and commitment, respectively) both in market and non-market fields (Chaves R., Monzon J. L., 2012).

Governance. The governance should be based on the democratic and/or participatory governance (Chaves R., Monzon J. L., 2012; European Commission, 2021; Moulaert F., Nussbaumer J., 2005) which means 'one member, one vote' (Grigore A. A., 2013). Because of the democratic nature of social economy entities in the way they make decisions, these entities are presented as an instrument with which to develop participatory democracy (Chaves R., Monzon J. L., 2012), financial inclusion and reduction of income inequality (Albert J. F., Chaves R., 2021), local development and resilience against crises (Alvarez J. F. et al. 2022; Cancelo M. et al., 2022). Besides, whether through substantial union involvement in decision-making or through electing their own representatives to the board, or through direct democracy of all members of a small cooperative business, employees in a social economy enterprise must have genuine power to influence management decisions (Arthur L. et al., 2003). Also, it is important that a significant proportion of the value of the organization needs to be owned by its own employees (Arthur L. et al., 2003).

Distribution of profits. The distribution of profit should be limited (Grigore A. A., 2013), it should based on the primacy of people as well as social and/or environmental purpose over profit, the reinvestment of most of the profits and surpluses (Grigore A. A., 2013) to carry out activities in the interest of members/users ("collective interest") or society at large ("general interest") (Chaves R., Monzon J. L., 2012; European Commission, 2021).

According to the scientific literature, the main features of the social economy are as follows: 1) objective – carrying out activities in the interest of members/users or society at large; 2) economic performance and resources – a resource mix depending on whether an organization is market-oriented or not; 3) the distribution of profit should be limited, it should based on the primacy of people as well as social and/or environmental purpose over profit; the reinvestment of most of the profits and surpluses to carry out activities in the interest of members/users ("collective interest") or society at large ("general interest"); 4) democratic and/or participatory governance. It can be concluded that these defining features have been widely referred to in the economics literature and outline a social economy sphere that includes cooperatives, mutual societies, associations, foundations and social enterprises.

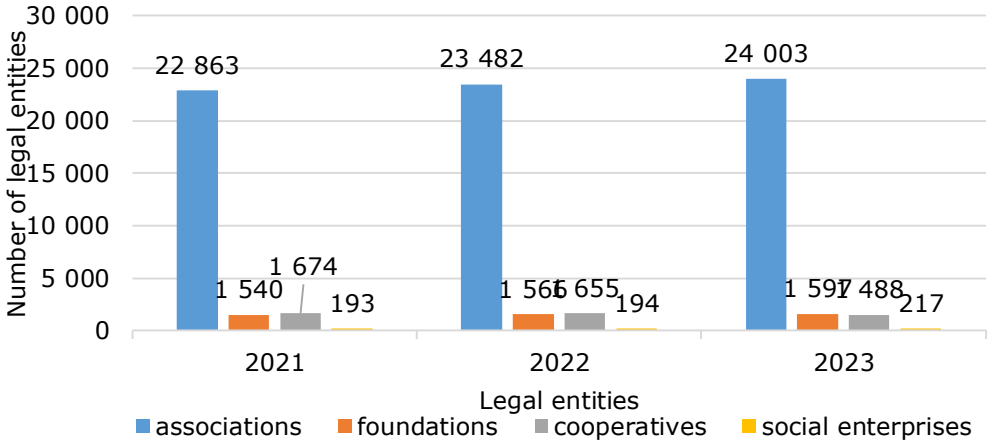
3. Understanding the concept of social economy and its challenges in Latvia

In order to quantify the aggregate data on the social economy in an internationally consistent and harmonised fashion and give them visibility, the definition of the social economy that is used needs to fit in with the national accounts systems. Such a definition needs to disregard legal and administrative criteria and to centre on analysing the behaviour of social economy actors, identifying the resemblances and differences between them and between these and other economic agents (European Economic and Social Committee, 2017). However, in Latvia there is no common understanding of the social economy. According to the opinion of the Ministry of Welfare stated in the interview, social enterprises and only the associations and foundations that have the status of public benefit organization are considered to be social economy actors. However, such a perspective is rather narrow and does not reveal the overall situation in the social economy in Latvia, nor is it consistent with the EU approach to the definition of a social economy. Therefore, cooperatives and other associations and foundations that benefit society but do not have the status of public benefit organization are disregarded. However, cooperatives represent an essential component of the social economy, as pointed out also by the head of the Social Entrepreneurship Association of Latvia in the interview. The social economy and the cooperative movement are two realities that arose simultaneously and fed off each other, and hence, the social economy cannot be understood without its primary reference to cooperative societies (Ruano A. J. M. et al., 2021). It is also not correct to distinguish "ordinary" associations and foundations from associations and foundations with the status of public benefit organization because the associations and foundations, by their very nature, fit the concept of a social economy. According to the Associations and Foundations Law (in force since 01/04/2004), an association is a voluntary union of persons founded to achieve the goal specified in the statute of the association, which shall not have a profit-making nature. A foundation, also a fund, is an aggregate of property that has been set aside for the achievement of a goal specified by the founder, which shall not have a profit-making nature.

As regards cooperatives, there are different opinions on whether all cooperative societies should be considered part of the social economy. The general director of the Latvian Agricultural Cooperatives Association has stated in the interview in relation to agricultural cooperatives that only eligible cooperatives are identified, which means that such cooperatives meet all the criteria for an entity of the social economy. However, the proportion of such cooperatives in the total number of cooperatives was relatively low

(in 2023, there were 52 such agricultural cooperatives), and such a breakdown was available only for agricultural cooperatives. Therefore, the research used the total number of cooperatives in Latvia to analyse the statistical data.

In Latvia, according to the scientific literature, social economy actors represent associations, foundations, cooperatives and social enterprises, which made up a total of 27305 entities in 2023 (Figure 1), of which the majority were associations (88%). In recent years, there has been an increasing trend in the number of social economy actors (except cooperatives). From 2021 to 2023, the number of associations has increased by 5%, foundations – by 4% and social enterprises – by 12%. Given the fact that social enterprises represent a relatively new legal form of business in Latvia (the Social Enterprise Law came into force in 2018), the fact that their number tends to increase could be viewed positively, as this indicates an increase in the recognition of social enterprises and public interest in establishing social enterprises. As regards associations, it is important to note that the large number of associations does not mean that all of them are active and actually operate. Only half of the total associations and foundations registered were active and functioned (



Source: State Revenue Service, Ministry of Welfare (2023)

Fig. 1. **Number of social economy actors in Latvia in 2021-2023**

An analysis of the economic activities of social economy actors, based on the data collected by the State Revenue Service (NACE Rev. 2, level 1), revealed that they operated in various economic fields, yet the most represented fields of economic activity were arts, entertainment and recreation (5144), real estate operations (3593) and agriculture, forestry and fishing (1108). The largest number of social economy actors performed "other services" (10279), and it should also be noted that very many did not indicate their field of economic activity (2107), which was a particularly significant problem for associations (1972 associations did not indicate their field of economic activity).

Overall, the most common kind of economic activity for societies was "other services" (9167), arts, entertainment and recreation (4930), real estate operations (2904) and education (1432). The situation was similar for foundations, as the most common kind of economic activity was "other services" (838), arts, entertainment and recreation (186), health and social care (145) and education (141). In contrast, social enterprises operated mainly in in the fields of education (52) and health and social care (48), while cooperatives performed real estate operations (676) and provided "other services" (266).

Overall, the situation regarding the fields of economic activity of associations and foundations was quite unclear in Latvia, as different classification rules were in place for such organizations. Associations and foundations must indicate their kinds of economic activity in the Register of Enterprises of the Republic of Latvia according to the classification of NGO activities (in accordance with Cabinet Regulation No.799

Classification Rules for Associations and Foundations), yet a large number of associations and foundations have indicated their economic activity by declaring the NACE code of their economic activity with the State Revenue Service. A NACE code specifies the main economic activity of the taxpayer, as specified in the Law on Taxes and Duties. The main economic activity is the kind of activity of the taxpayer, which represents the highest proportion in the total turnover in the tax year. However, such data do not provide a clear picture of the kind of economic activity an organization performs, as organizations are often unable neither to indicate their economic activity nor register their kind of activity with the Register of Enterprises the Republic of Latvia (Civic Alliance-Latvia, 2021). Data on the NACE codes of associations and foundations from the State Revenue Service showed that 2091 associations and foundations had registered no NACE code. A similar situation could be observed regarding the data collected by the Lursoft company (economic activity (NACE) codes of associations and foundations reported to the Register of Enterprises of the Republic of Latvia), as more than 30% of organizations that had registered their economic activities had indicated NACE code 94.99 "Activities of other membership organisations n.e.c." (Civic Alliance-Latvia, 2021). Only 10% of NGOs had indicated their fields of economic activity.

It could be concluded that in Latvia, there are various tools for obtaining and aggregating information on the economic activities of associations and foundations, yet none of them gives a clear picture of the organizations because no comprehensive information on the kind of activity and economic activities of the organizations could be obtained. Consequently, the NACE codes specified by organizations create misconception about NGO activities. There are many associations and foundations that cannot attribute their economic activity to a NACE code or do not understand the NACE classification and therefore are unable to indicate their real activity (Civic Alliance-Latvia, 2021). Besides, there is no single website where all information about NGOs analysed by national authorities could be available.

There are also different data on social enterprises. Based on the data from the State Revenue Service, it could be established that social enterprises mainly operated in the fields of education and health and social care. However, based on the data from the Ministry of Welfare, the picture was different, as most of the social enterprises were engaged in work integration (23%), education (21%), sports, health promotion and medicine (19%) and dealt with an inclusive civic society and cultural diversity (11%).

It can be concluded that there is no common definition of social economy in Latvia, as well as statistical data on the types of activities of social economy participants are unclear. After fuflfilment of EU requirement regarding strategy of social economy in the EU member states the more clarity may be seen regarding concept of social economy. Besides, a unified strategy for the development of the social economy is necessary, because currently the social economy is not directed in a targeted manner, there is a lack of a unified view of its development and the responsible institutions that would jointly form a long-term vision and also support mechanisms for the long-term development of the social economy in Latvia. Currently, different institutions are responsible for each of the legal forms, while in general, there is no single responsible ministry for the non-governmental sector, which would promote the growth of the sector.

Conclusions, proposals, recommendations

1) The social economy is a model of economic development that seeks social and territorial cohesion, sustainability, social justice and the equitable distribution of wealth. It includes associations, cooperatives, foundations, mutual organisations and social enterprises that operate in most sectors of the economy. Although the historical evolution of a social economy began already in the 19th century, it gained wider recognition among policy makers and academia after the year 2000, incl. six European countries have passed social economy laws.

2) In Latvia, however, the social economy still is not defined in any legal or official text in Latvia. As a result, there are different perceptions of what could be understood by term "social economy" and what legal entities may be associated with the social economy. The present research specifies the following social economy actors in accordance with the EU guidelines, scientific researches and in the context of Latvia: associations, foundations, cooperatives and social enterprises. In order to promote understanding of the social economy, the Ministry of Welfare, in cooperation with stakeholders have to develop a strategy for the social economy at the national level.

3) In 2023 in Latvia, 27305 organizations operated in the social economy, and their number tended to increase in recent years. Most of the social economy actors (88%) represented associations. Social enterprises represent a relatively new legal form of business in Latvia that began actively emerging in 2018 when the Social Enterprise Law came into force but the number of social enterprises tend to increase. However, in general, data on social economy actors is not available in a single way. In order to facilitate the collection of data on social economy participants, it is necessary to create a "one-stop agency".

4) The social economy actors were engaged in a variety of fields of economic activity, yet the main ones were arts, entertainment and recreation (5144), real estate operations (3593) and agriculture, forestry and fishing (1108). Most of the social economy actors performed "other services" (10279). However, the classification of associations and foundations by kind of activity does not provide accurate information, as many organizations have not indicated their field of activity or have specified "other services"; therefore, the data on their economic activity are not complete.

5) The paper is original and contributes to the discussion of the concept of social economy in Latvia and its role and significance in economy.

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DOI: 10.22616/ESRD.2024.58.032

FROM BYTES TO BITES. DATA CAPITALISM AND FOOD DELIVERY BUSINESS IN EUROPE

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Abstract. In today's reality, where data reigns supreme, there is a crucial need to explore how traditional analog sectors adapt and integrate data-centric business logics. This research aims to unravel the intricate ways in which digital capitalism infiltrates previously analog domains, using major European food delivery firms as an example. Employing qualitative research methods, namely content analysis, rhetorical analysis, and semi-structured expert interviews, the study delves into both internal and external dimensions of European food delivery firms (FDFs) operations. Triangulating data from diverse sources ensures a comprehensive and reliable exploration of the evolving landscape.

The research uncovers six fundamental data capitalist logics embedded in the FDFs' business models. From the establishment of multi-sided platforms to the strategic use of algorithmic decision-making, and the subtle profiling of users, the findings shed light on the complex interplay between traditional service delivery and the data-centric demands of the digital age. This paper concludes by emphasizing the paradigmatic shift within the food delivery industry, from its analog roots to a data-driven, algorithmically governed landscape. It underscores the urgency for a nuanced understanding of data capitalism's influence on traditional sectors, calling for heightened awareness, ethical considerations, and regulatory scrutiny in this evolving digital frontier.

Key words: data capitalism, food delivery, business models.

JEL code: E70, L16, L22, O11

Introduction

Internet and related Information and communications technology (ICT) developments has acted as a catalyst for experimentation and innovation in business models (Amit & Zott, 2001; Grassmann, Frankenberger, & Choudury, 2020), and entire industrial sectors have evolved along radically new trajectories of innovation and offered new logic of value creation not seen in recent business history (Massa & Tucci, 2013). In the centre of those novel business models lies data. Once considered expensive by-product, now data has become the centre of attention. Nowadays it is hard to avoid the claims by various "experts", economists and self-proclaimed business gurus that "data is the new oil" or "everything is made of data". Such statements do not only reveal or reflect the world. Those are declarations. According to American philosopher John Searle, when someone makes a declaration, they are not just describing or requesting; they are actively bringing about a new reality through the act of speaking (Searle, 2010). This emerging reality places those with data capital in a position of access and authority. In such settings, the imperative to extract as much data from numerous sources, utilizing any available means, intensifies existing practices and gives rise to the development of new ones. While data is not the same as profit, they share a similar logic, and under specific conditions data can be converted into economic capital. Just as we expected corporations to be profit-driven, we should now expect organizations to be data-driven; that is, the drive to accumulate data now propels new ways of doing business and governance (Sadowski, 2019). This new trend is often referred to as data capitalism (DC).

For a large part of society and even many economists, DC is not fully understood and is often associated only with ICT related firms. In reality, all business landscape is changing and previously analog industries are increasingly transforming and focusing on data as commodity or capital. As Zuboff points out, DC *metastasized across diverse sectors from insurance, retail and finance, to agriculture and transportation, to the most intimate and predictive data residing in the two critical sectors of education and healthcare* (Zuboff, 2022). Still, there is not enough empirical evidence of this trajectory. Thus, the research question

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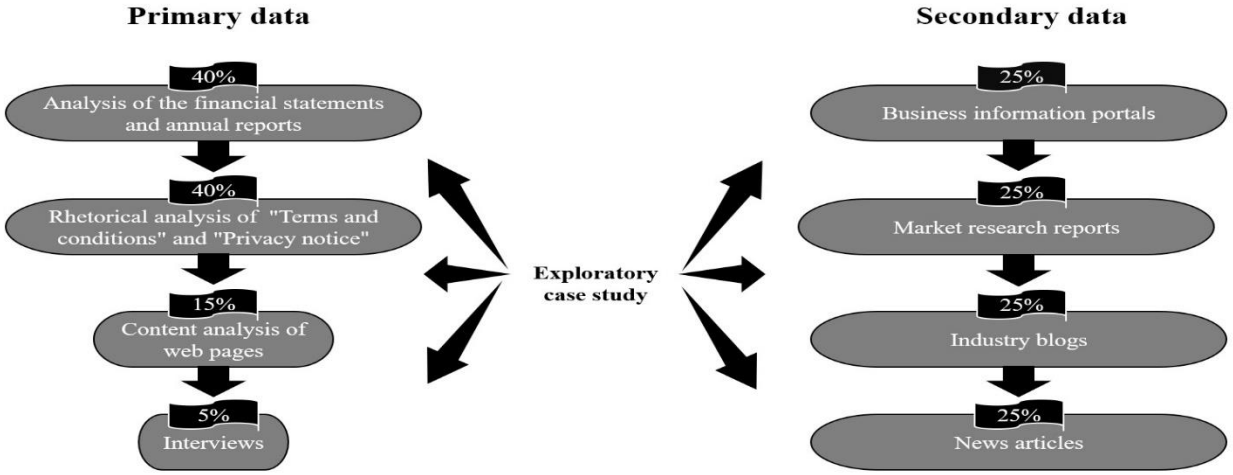
is formulated as follows: **how digital capitalism migrates into previously distinctly analog economic domains, taking the largest food delivery firms (FDF) in Europe as an example**.

To answer research question following tasks has been set. (1) Research current literature on digital capitalism. With this we are aiming to provide a foundation for understanding the main characteristics and principles of DC. (2) Explore current food delivery business scenery in Europe. We are aiming to identify the major players of the food delivery business in Europe. (3) Analyse the business models of the largest European food delivery firms to identify the presence of DC Logics. We aim to search for specific elements within their business models that align with DC logics.

Methods and methodology

Given the novelty of the subject, this study was designed using qualitative research methods – namely, content analysis, rhetorical analysis, as well as semi-structured expert interviews. For empirical data analysis, the exploratory case study is used. Stringent controls were implemented to bolster the validity and reliability of our findings. This encompassed meticulous documentation of analytical procedures and transparent reporting of methodological choices. To mitigate the potential fallibility of any single data set, this study employs triangulation across multiple sources.



Source: authors' created figure

Fig. 1. **Visual representation of data collection and analysis**

Empirical data gathering started with extensive analysis of different business information and market research portals such as MordorIntelligence.com, Euromonitor.com, and Globaldata.com to identify the main players in the food delivery field in Europe. After careful consideration, six major companies were chosen for further analysis. The next step was to gather information and data that accurately depict the main value proposition and business logic of those firms.

Some scholars have already highlighted the institutionalization of secrecy within the policies and practices governing all facets of data capitalism (Zuboff, 2019, p. 63). Little did we knew that, the similar tactics reigns in food delivery business. Persuading current or former managers of food delivery firms to talk about their business model was the most difficult task of this research. Similar as it is with Google or Facebook, all information disseminated to the public is carefully curated and polished by PR teams and employee contacts with "outsiders" are restricted. Current employees were hesitant to speak due to concerns of violating their employment contracts, while former employees are bound by non-disclosure agreements. Almost as the first rule of online food delivery business is: you do not talk about online food

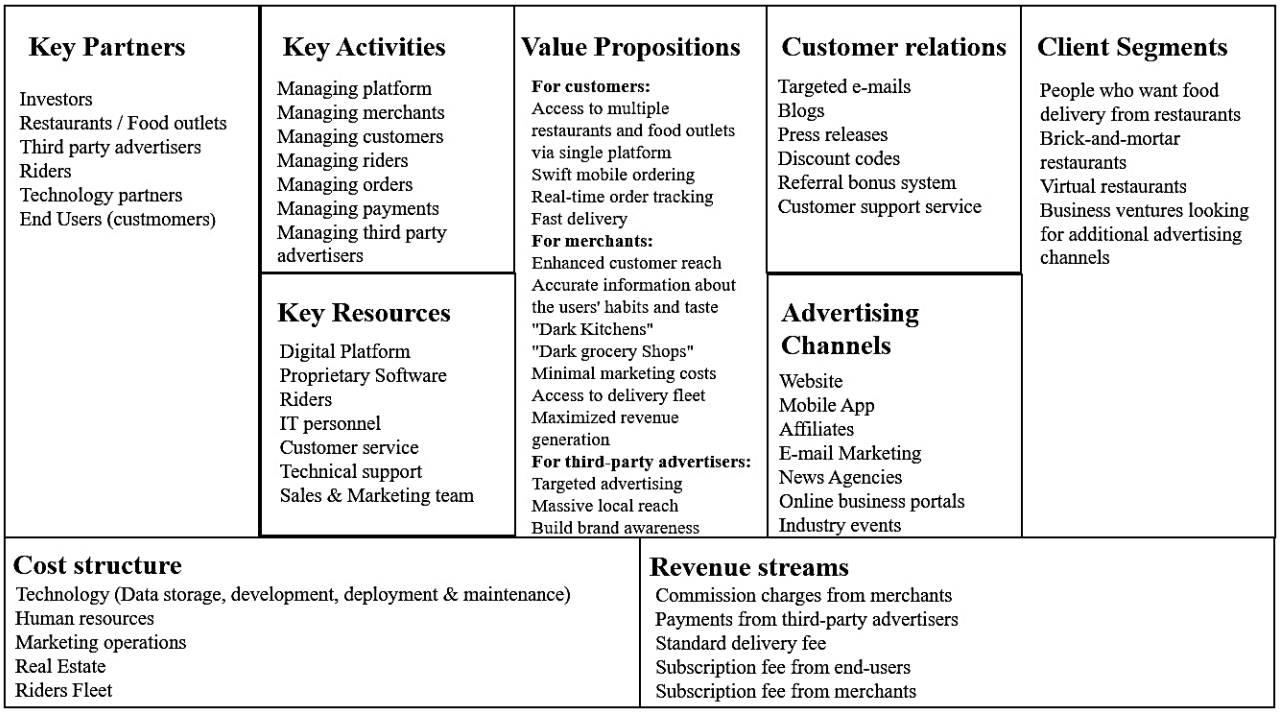
delivery business. The answer received from one of the Bolt Food managers perfectly illustrates this common trend - "Sorry it took so long to get back to you, but I can't help, because the official position is that we don't provide info even if it's student work. Too much sensitive info …I hope you understand. The only exception is if it's a study with Bolt, but then it has completely different objectives (e.g. research on improving traffic in the city x). Best regards XX". The few experts who agreed to participate in the study did so only under the strict condition of remaining anonymous. Thus, this research primarily relies on content analysis of the financial statements and annual reports, examination of corporate web pages, and rhetorical analysis of firms' documents, such as "Terms and Conditions" and "Privacy Notice." Four semi-structured interviews with one current and three former FDFs high-level managers were intended only to cross-check the facts found during the financial, rhetorical, or contingent analysis. Interviews were conducted between 14th December 2022 and 1st March 2023. All interviews were recorded, and later, interview transcripts were created. To protect the experts' identities, in the transcripts, company names were withheld, and experts were identified only by one randomly chosen alphabetic letter – A, B, C, or D.

To ensure a comprehensive and accurate analysis, the primary data was supplemented with secondary data sources, such as business information portals including Crunchbase.com, RocketReach.co, and Apollo.io, market research reports, news articles, industry blogs, and interviews given by founders and managers of 6 largest FDFs in Europe to various media outlets.

Our research methodology adopted a holistic and systematic approach to interrogate the complex interplay between data capitalism and the food delivery business. In the data analysis phase, content and archival data analysis of firms' webpages, press releases, financial statements, and other documents were deployed. To begin the data analysis process, all the clobber related to firms' annual reports, financial statements, "Terms and Conditions" and "Privacy policy" were downloaded and saved as MS Word or PDF files, all interviews' recordings were transcribed. Analytical content analysis was conducted on firms' annual reports and financial statements. This involved scrutinising numerical data from twelve documents, identifying value propositions and other key elements of firms' BM. Additionally, rhetorical analysis was employed to dissect the discourse embedded within public documents such as "Terms and Conditions" and "Privacy Policy." The process included an in-depth exploration of used language patterns and rhetoric used by companies to convey their policies and value propositions. By delving into the nuances of linguistic expressions, we were able to unmask the underlying communicative purpose and strategic intent embedded within these documents. The analysis of company website content was conducted *in vivo*. This involved the systematic analysis of firms' websites, alongside by the screenshots of the corresponding websites and the annotation of pertinent observations. This immersive approach yielded key insights into firms' business models and value propositions, laying the groundwork for further analysis.

Central to the research methodology was the adoption of a systematic approach known as critical realism, which facilitated a nuanced understanding of the interplay between ontological realism, epistemological relativism, and judgmental rationalism. This philosophical framework provided a robust ground upon which we built our analytical work, guiding our interpretation of empirical evidence and ensuring methodological rigour throughout the research process.

At the start of the analysis, each document was then systematically analysed to map out FDFs business model and value proposition. Detailed business model canvas was made for each of the companies subject of this research.



Source: authors' crafted Business Model Canvas

Fig. 2. **Visual representation of Just Eat Takeaway business model**

To uncover any potential presence of DC logics in the firms' business models, we implemented a systematic coding process. We took a deep dive into the data, circling back again and again to pick out key phrases and sentences that resonated with pre-defined categories of data capitalism logics derived from the relevant literature. Through a process of constant comparison and consolidation, these categories were refined and synthesised into a comprehensive framework, illuminating the multifaceted dimensions of data capitalism within the food delivery business.

Through diverse analysis, rigorous methods, and strict controls, the research revealed nuanced insights into European food delivery business models.

Research results and discussion

The research delves into the complex dynamics of data capitalism and its convergence with the food delivery business in Europe. Unveiling the multifaceted landscape, the study scrutinizes the economic model where data emerges as the primary source of value and profit. Drawing on extensive examination of European Food Delivery Firms, the findings unearth a transformative journey marked by the integration of various data capitalism logics within the industry. From the evolution of food delivery as a simple business model to the dominance of a few major players, the research explores the pivotal role of digital platforms, massive data extraction, algorithmic decision-making, user profiling, and possible behavioural modification.

1. Data capitalism

DC is an economic model in which data is the main source of value and profit. It is based on the extraction, analysis and use of personal data (everydayness data) to create targeted advertising, personalized products and services and other forms of monetization. It is a system in which the commoditization of data enables an asymmetric redistribution of power that is weighted toward the actors who have access and the capability to make sense of information (West, 2019). As Sadowski noted, there are a variety of labels that refer to the politeconomic relationship between data and capitalism, such as "surveillance capitalism" (Zuboff, 2015), "informational capitalism" (Fuchs, 2010), "platform capitalism"

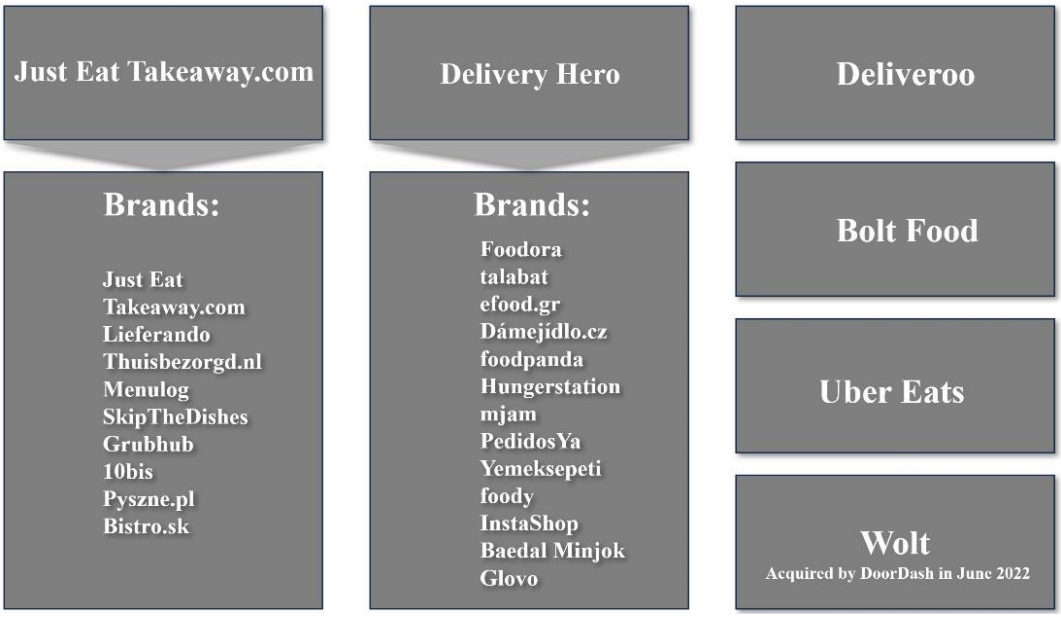
(Srnicek, 2016) and "iCapitalism" (Priestland, 2013). These different labels are not interchangeable, but they do share common themes and conclusions (Sadowski, 2019). DC is characterized by: (1) data as a commodity: personal data is seen as a valuable commodity that can be bought, sold and traded; (2) data extraction imperative: Data is collected from individuals and organizations in a variety of ways, including online activities, social media interactions and physical transactions; (3) asymmetric power dynamics: Data capitalists retain great, unilateral power over the collection, analysis and use of personal data and (4) Algorithmic governance: Algorithms are used to process and analyse data, make decisions about individuals and shape their experiences.

Many scholars have noted that under data capitalism, platform-based, data-driven, and artificial-intelligence-powered business models directly or indirectly control a growing share of economic life, and increasingly serve as role models for both start-ups and established companies (Seidl, 2023; Metra & Dobelniece, 2022; Zuboff, 2022).

2. Food delivery business

In general understanding, food delivery is a courier service in which a restaurant, store, or independent food-delivery company delivers food to a customer. This type of BM has been around for a very long time. In the late 1990s and early 2000s, several startups emerged with the goal of creating dedicated online food delivery platforms. Inexperienced observers still might think of food delivery firms as enthusiastic startups that are just trying to deliver great customer value propositions. In reality, the food delivery business is highly consolidated and attracts huge amounts of investment.

At this point, the food delivery business is dominated by a handful of large companies, some of which operate under many different brands around the world. The European market is no different. As of January 2024, the European food delivery market has become increasingly tight, with just six firms holding a significant share of the industry (Globaldata.com, 2024; Mordor Intelligence, 2024).



Source: authors' created chart based on information from Globaldata.com.

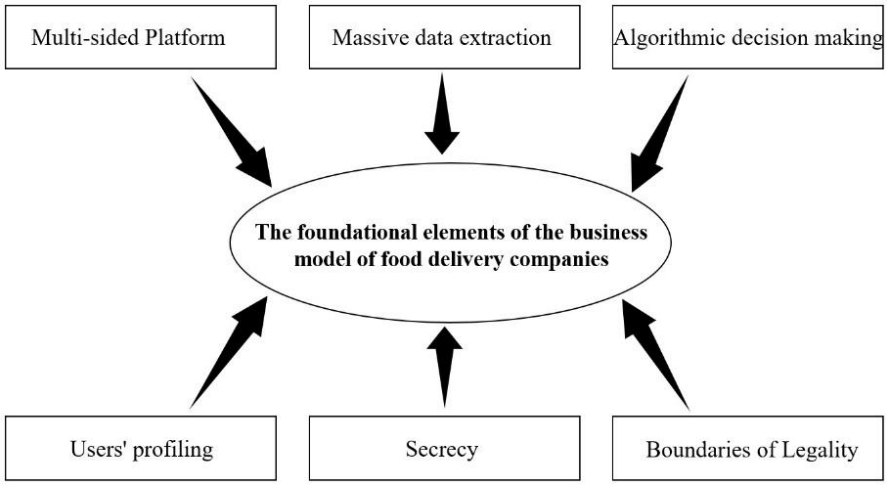
Fig. 3. **Food delivery business landscape in Europe in January 2023**

Still, the European food delivery industry remains highly competitive, and is expected to continue to grow in the coming years, with new innovations and technologies driving further disruption and change. The focus is likely to be on improving business model to achieve profitability, increase efficiency, reduce

delivery times, and enhance the overall customer experience. Therefore, the food delivering industry is interesting research object not just because their business model might incorporate logics of DC, and if so, then this is the case where data capitalism is transitioning from strictly online environment to brick-and-mortar businesses.

3. Findings

A comprehensive analysis of European FDF corporate websites, blog posts, industry news articles, interviews, and annual reports reveals a story of significant growth and transformation. Throughout this journey, the industry has embraced various DC logics.



Source: authors' created model

Fig. 4. **Building blocks of modern food delivery business model**

Multisided platform. Just before the whole world went online, food delivery BM was quite simple. As expert D counts: "We actually stared as a business-to-business express delivery company. Down the road I realize that food is a needed commodity for many offices in certain hours. So, we started the lunch delivery as an additional product to our services. Our business model was straightforward: you order food, and we'll pick it up and deliver it straight to your office. We charged a fixed delivery fee for this service.". At the core of all largest contemporary European FDFs BMs lies digital platforms. These platforms: (1) allow companies to establish themselves as market intermediaries that connect supply with demand, and (2) allows extract huge amount of data on users' activities on this platform and beyond. It is not seen on users faced webpages, but in documents meant for investors, companies are quite clear about it - "We are a technology company known for our local commerce platform…()… Wolt's platform makes it easy for customers to order whatever they need on one app, for merchants to make additional sales, and for couriers to make meaningful earnings flexibly." (Wolt, 2022), or Delivery Hero offers its partner restaurants a point-of-sale system in order for them to immediately view and accept orders made on the platform. Furthermore, Delivery Hero offers products and services for restaurants, such as advertising. In addition to the online food ordering platforms, the Group also offers own delivery services to restaurants without this capability. The own delivery fleet is coordinated using proprietary dispatch software." (Delivery Hero, 2022).

The bottom-line is that even though online food delivery companies initially focused solely on delivering food, they've managed to extend their offerings beyond that basic service. This shift evolves deploying different business logics.

Massive data extraction and accumulation. Gathering essential customer data has been a necessary component for the success of food delivery businesses, even prior to their expansion into the online realm.

As former manager of the company that was one of the pioneers of food delivery business in Latvia, expert D stated "all *what we needed was, customer name or nickname (usually first name was enough), order information, delivery address and payment type (cash or card). Basically, that was it…we did not collect anything else because it was unnecessary"*. Modest customer information collected in the past is no longer enough for complex operations of a modern food delivery business. As per European law, organizations are obligated to disclose their data collection practices to their customers or users; therefore, all FDFs provide information in their "Privacy Notice" and other documents outlining the data they collect. For illustration let's look at the Wolt's "Privacy Statement" - "We use various technologies to collect and store Usage Data and other information when the Users visit the Wolt Services, including cookies, storing website data, and using web and application telemetry." Their list contains 20 different data points, including "In addition to User Data collected from you and the Customer Organization, we process certain personal data third party service providers provide about you", "If you connect or login to your account with Facebook, Facebook shares with us personal information about you such as your profile picture, a sample of your Facebook friends and your Facebook ID", and "Where you followed a link to Wolt Services, and links you followed from Wolt Services". All firms examined in this research follow similar practices. Besides, FDFs don't focus on the instantaneous application of an extracted data. Instead, emphasis lies on the continuous flow of data creation. Data is frequently collected without specific purposes in mind. As expert A admitted: "*In the initial stages, we had an abundance of data but struggled with how to make the most of it. We just collected it, simply because we had the ability to do so, but to be honest, we were uncertain about how to effectively handle and utilize it*". The circumstances required for the transformation of data capital into economic capital might never come, yet this does not impede the ongoing cycle of accumulation.

Algorithmic decision making. Big data presents numerous possibilities not only for data monetization but also for automation and algorithmic decision making, as expert B stated: "We use algorithmic decision-making in a variety of areas, from logistics and delivery to customer service and marketing". Similarly, Deliveroo informs its investors that: "*We use deep learning to predict future network states and advanced optimization techniques to decide rider assignment, and we have vastly more data on which to train our models.*" (Deliveroo, 2022).

All FDFs claim that, apart from revenue growth and cost optimization, data analytics can help predict customer behaviour and retain valuable customers by improving customer experience, reducing fraud, and providing real time offers. For example Bolt Food's privacy policy states: "*Allowing you to use, or to continue to use our app and services - we may use information relating to the outcome of background checks, verification processes and behavioral analysis (such as where your behaviour appears to be consistent with money laundering or known fraudulent conduct, or is inconsistent with your previous submissions, or you appear to have deliberately hidden your true identity) to automatically decide whether we will allow you to use our apps and services, or to automatically stop you from using our apps and services.*". Overall, it seems that automated decision-making is becoming increasingly common in the online food delivery industry.

Users' profiling and behavioural modification. "We may apply profiles to you based on your personal data and behavioural information (such as the pages on the website or apps you have visited or interacted with, including by reference to personal data legitimately obtained and shared with us by third parties or publicly available data). Such profiles may be used as part of our advertising, analytics and provision of support.", states Bolt food "Privacy policy". Profiling could be seen as a form of behaviour modification; however, it is worth noting that usually FDFs deny using explicit behaviour modification techniques. "At this stage we can make pretty accurate predictions about consumption in general in given

district or in given city, but it is impossible to predict individual user's choices. Look at yourself for example, how often you change your eating habits, for some trivial reasons hard to predict?", assures expert C. Expert A claims: "Oh, I don't know if we're really manipulating our customers' behaviour...maybe just some trivial things like if we offer a special deal on burgers during the weekend, I can guarantee you that burgers will make up almost half of all the food sold during those days.". Just a coincidence, probably.

Secrecy. While almost all FDFs examined in this research are publicly traded companies and therefore have a legal obligation to disclose their operations and revenue streams, they tend to downplay the significance of users' data in their BM. To disguise massive data extraction operations FDFs deploy several tactics. First, the language used in FDFs privacy policy documents tends to obscure exploitative nature of dataveillance and blur the fact that it is potentially harmful process that involves people's personal information being taken without their full consent or understanding. Rhetorical analysis of firms' "Privacy policy" and "Terms and conditions" documents revealed at least three distinct rhetorical tactics deployed. Undoubtedly, the main tactic is benefiting rhetoric. Data extraction is framed as something that is primarily done in order to improve services for the user. The commercial value of the data is not mentioned. As Uber states in their privacy notice – "Uber uses personal data to enable reliable and convenient transportation, delivery, and other products and services". Another tactic used is sidelining rhetoric when practices related to the BM are downplayed or portrayed as a minor aspect of what these firms do. Therefore, indefinite grammatical forms such as 'we might' or 'we may' are used. For example, in Wolt privacy statement is written "*we may process your personal data if there is an appropriate and justifiable interest (that is, a legitimate interest) to run, maintain and develop our business or to create and maintain customer relationships*". Sometimes firms use *legal rhetoric* and operate with such terms as "our legitimate interests" and "lawful basis: to perform and fulfil our contracts with you". All the firms analysed in this research utilize at least two of the aforementioned rhetorical tactics in varying combinations.

Another technique employed by companies is use of **dark design patterns** which involves presenting desired choices in a simplified manner. In Europe, firms are obligated to obtain users consent when collecting certain behavioral data or use personal data for marketing purposes. For example, Uber's privacy notice states: "Uber does not sell or share user personal data with third parties for their direct marketing, except with users' consent.". The trick here is that all users by default are "opt-in" by clicking the "Agree" button during the registration. As Wolt's privacy statement informs: "…*you may withdraw it at any time by contacting us or amending the respective consent setting for example within the Wolt App*". So, there is action needed to "opt-out" which is often neglected from user's side.

Exploring the Boundaries of Legality. All European FDFs are constantly pushing the boundaries and testing the legal grounds for their operations. Let's start with previously mentioned "dark design" patterns. These design features that manipulate users into taking actions that they may not have intended or understood, such as giving consent for data collection are example of questionable legality. This practice clearly violates the GDPR's principle of "informed consent."

Often online food delivery firms are not keen to comply with local administrative rules either. For example, in 2017, Deliveroo was accused of bypassing planning local regulation rules and unlawfully cooking thousands of takeout meals at its "dark kitchens" without a proper permit (The Guardian, 2017). The International Consortium of Investigative Journalists (ICIJ) published a report in 2021 called "The Uber Files," which consisted of thousands of documents leaked from Uber's corporate offices. The "Uber Files" revealed a range of concerning practices, including the company's ruthless tactics against competitors and regulators, and mistreatment of drivers, including those working for Uber Eats. Among the

report's key findings were revelations that Uber had created a secretive tool called "Hell" to monitor the locations of Lyft drivers and try to lure them to work for Uber instead. Additionally, the company had a dedicated team responsible for identifying and neutralizing regulators and law enforcement officials who stood in the way of Uber's expansion (ICIJ, 2021).

All largest online food delivery companies in Europe have been embroiled in legal battles over their classification of riders as self-employed contractors instead of employees. When faced with regulatory opposition, these companies call for public support for their services and mount political campaigns, supported by lobbying efforts, to effect changes in regulations. "*In Europe traditionally there's been this almost black and white battle between flexibility and security and we're trying to end that trade-off right now. So, we've been speaking to a lot of governments to say we also want to offer benefits, but we need that flexible working model to, to remain*.", says Deiveroo founder and CEO (Shu, 2018). Similar discourse keeps Wolt Baltic CEO Liis Ristal: "*It is clear that people primarily use platforms to earn extra income due to work flexibility. If this principle of flexibility disappears from platform work, then people will most likely lose interest in this type of work. It is evident that changes in labour legislation are not only desirable but also necessary, as we no longer live in the era of industrialization when people worked a set number of hours every day in factories and when labour laws were also created. We are currently in the 21st century, where people can flexibly decide how and when to sell their work time.*" (Ristal, 2022).

Online food delivery companies have become powerful actors who set the rules of the game in their markets and exhibit monopolistic behaviour. In 2021 the Competition Council of Latvia identified certain conditions imposed by the food delivery firms Wolt and Blot Food, such as prolonged and constant promotions, one-sided platform actions that result in reduced operating hours or increased commission fees, and excessive demands for payments, which can create unfair treatment among companies that use platform services (KP, 2021).

The actions of European FDFs are marked by a continuous exploration of legal boundaries, as exemplified by questionable design patterns, non-compliance with local regulations, and contentious employment classifications. The power dynamics within the industry, characterized by monopolistic behaviour and strategic influence over market conditions, underscore the need for vigilant oversight and regulatory measures to ensure fair practices and protect the interests of all stakeholders involved.

Conclusion and recommendations

To sum it up, in today's rapidly developing technological world, businesses must be adaptable to survive and thrive. As a result, online food delivery firms have adopted various novel practices and new business logics that were not present in the traditional food delivery BM. The aim of this research was set to understand and to explore how DC migrates into previously distinctly analog economic domains, taking the largest food delivery firms in Europe as an example. After careful analysis of all empirical data, it is possible to conclude that all major European food supply companies have adopted at least 6 data capitalism logics.

1) In the centre of modern food delivery business lies multisided platform.
2) Big data plays an important role in this BM, so the existence of a digital platform is essential for data mining operations. Users' data extraction is institutionalized in the FDFs mobile apps, web infrastructure, "Privacy policy", "Terms and conditions" and other external and internal documents.
3) The BM of FDFs relies heavily on algorithms and other forms of automation.
4) Big data and algorithms lead to profiling of users and encourages behavioral modification.
5) Firms' reliance on users' data is hidden and shadowed.

6) As most of the technological firms, also FDFs see themselves as icebreakers and disruptive innovators, therefore often they have a little concern about established rules and regulations.

There was a time when digitalization and the internet were celebrated as the ultimate tools for liberation and true freedom, but unbeknownst to many, the emergence of DC led to an insatiable thirst for data. Now, it appears that data is the very fabric of our world. This all plays a major role in shaping BMs not just in the food delivery industry, but almost in all industries and sector of economy. It seems, that to succeed in this new brave world, firms must create some kind of digital platform, offer some useful product for free or at least push their prices as low as possible in order to build their customer base, increase data flow, and ultimately reap profits in the long-term.

Maybe data capitalism is our new normal. Still, the intertwining of data capitalism and the food delivery business raises critical questions about privacy, ethical practices, and the balance between market dominance and regulatory compliance. We as a society must discuss these things, because this this time blissful ignorance is no stance at all.

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Jelgava, LBTU ESAF, 16-17 May 2024, pp. 331-341
DOI: 10.22616/ESRD.2024.58.033

CONTRIBUTION OF DISPLACED UKRAINIANS TO ADDRESSING LABOUR SHORTAGES IN LATVIA

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Abstract. As part of a broader international debate on the contribution of labour migrants to national economies, especially with the rapidly growing interest in Ukrainian refugee labour, this article examines to what extent displaced Ukrainians have provided the skills that are in shortage in Latvia. This is achieved through two research methods. First, the article analyses the statistics on the number of registered vacancies and their actual fulfilment in general and those offered to displaced Ukrainians. This allows for an analysis of the demand of displaced Ukrainians in certain sectors and occupations, contrasting them with overall labour demand in the Latvian economy. Second, an assessment of employers' needs and expectations of the migrant and the displaced Ukrainian workforce and its supply is based on 14 in-depth interviews with employers. The data show that although the displaced Ukrainians have supplied labour to sectors experiencing shortages, the employment participation of this migrant group is lower than initially expected. The main reason is the skill sets offered by the displaced Ukrainian labour force that partly mismatch to the Latvian labour market needs. The most important obstacles highlighted by Latvian companies to offer jobs to Ukrainians are their lack of Latvian language skills and knowledge of local context.

Key words: migrant workers, skills shortages, Ukrainian refugees, labour market integration.

JEL code: J2, J61, J63

Introduction

For decades, liberal economies have considered labour migrants as a solution to decreasing workforce supply in their internal markets, however, the policies vary significantly even within European Union (EU) (OECD/European Union, 2016). Free movement of labour in the EU's internal labour market has encouraged mobility from East to West European countries (Ciupijus, 2011; Engbersen et al., 2010; Favell, 2008), but policies for hiring of third-country labour migrants largely depend on national considerations and tend to be more selective. This includes following to community preference principle that implies giving advantage to EU labour force over third-country nationals, proof of qualifications and skills, and national language proficiency (OECD/European Union, 2016). While intra-EU migrant workers have freedom to choose between various jobs, although most frequently, they find themselves in less qualified positions or the secondary labour market (Ciupijus, 2011; Engbersen et al., 2010; Zabko et al., 2019), non-EU labour is often tied to a single employer (De Lange & Falkenhain, 2024), which is also the case in Latvia (Saeima, 2002).

Moreover, Latvia is hindering the hiring of non-EU migrant workers, both by using the community preference principle and by requiring migrant pay above the national average (BISS, 2017). This policy has confined employers' opportunities to recruit third-country nationals, especially to deal with low-skilled labour shortages. Although Latvian employers have been calling to introduce more favourable conditions to non-EU labour immigration (RAIT, 2022), the government continuously pursues a restrictive policy. Under these circumstances, the outbreak of the war in Ukraine in 2022 had led to an influx of a significant number of working-age Ukrainians into Latvia. Initially, Ukrainian refugees were exaggeratedly considered as potential solution to the labour shortage problem (Krievins, 2022). Thus, concerned to facilitate their immediate entry into the labour market, the Latvian government adopted a more flexible requirements for the employment of Ukrainians compared to other third-country migrants and refugees. First, they were not tied to a specific employer, second, had an exception to the Latvian language proficiency requirement, and third, could receive accelerate recognition of their qualifications in certain regulated professions

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(Zabko, 2023b). However, recent Polish experience shows that pre-war and post-war Ukrainian migrants differ in terms of their socio-demographic profile (Kubiciel-Lodzinska et al., 2024; Van Tubergen et al., 2023), entry patterns into employment and challenges thereof (Duszczyk et al., 2023; Gorny & Van der Zwan, 2024). Freedom to choose employer may contribute to Ukrainians entering undeclared work (Brzozowska, 2023). This allows presuming that integration of displaced Ukrainians into the Latvian labour market might also have different outcomes, as observed in Poland (Gomolka et al., 2023; Gorny & Van der Zwan, 2024).

Since deregulations adopted by the Latvian government allowed Ukrainians to choose their workplace by responding to any job offer, employers were invited to indicate the suitable vacancies. This has created a favourable condition to analyse the capability of Ukrainian workforce to address the labour shortages in Latvia. Moreover, secondary data from employers' interviews collected by the author for her thesis (Zabko, 2023a) allows to identify the obstacles to hire displaced Ukrainian workforce.

The aim of this article is to examine to what extent displaced Ukrainians have provided the skills that are in shortage in Latvia. The analysis is guided by three assumptions: (1) deregulations adopted by the government have made available to the Ukrainian workforce economic sectors and types of companies that have been previously inaccessible to migrants; (2) the largest Ukrainian labour demand was observed in the medium-skilled and low-skilled occupations; and (3) various barriers to Ukrainian employment in the Latvian labour market arise from the organisational culture and operational practices of companies. The study is based on two research methods: (1) statistical analysis of administrative data on labour demand and supply, including, in breakdown by vacancies offered to displaced Ukrainians, collected by the State Employment Agency and (2) qualitative data from employers' interviews. The choice of the scope of the research and methods is based on the argument that previous research on the individual-level experiences of Ukrainian migrants already provides a reasonable evidence base, while employers' perspectives have remained unexplained.

Research results and discussion

1. General trends of pre-war and post-war Ukrainian labour supply in Latvia

Before the outbreak of the war, Ukrainians, as third-country nationals, were subjects of the Latvia's restrictive immigration policy. According to the data of the Office of Citizenship and Migration Affairs, at the end of 2021, temporary residence permits in Latvia had 7 075 Ukrainian citizens, including, 4 604 as employees and 16 as high-skilled employees (PMLP, 2021).

Among all third-country nationals, in 2021, Ukrainians were the most important source of migrant labour (PMLP, 2021). However, estimations showed that the number of Ukrainian workers could be even higher, as Latvian employers found opportunities to hire them through Polish companies and, as a result, involve in undeclared work (Varpina& Fredheim, 2022). Pre-war Ukrainian labour mostly consisted of men, aged 25-54, demanded for medium-skilled occupations (BISS, 2017), working in construction and transportation industries. To offer declared work in low-paid occupations for non-EU nationals was generally not profitable due to the high administrative burden of the employment permit issuance procedure (Varpina & Fredheim, 2022).

As for the end of 2023, there were 31 612 Ukrainians with temporary residence permits in Latvia, of which 26 220 persons received permit on humanitarian reasons, 3 275 as employees and 12 as high-skilled employees (PMLP, 2023). Thus, the number of Ukrainians who stayed in Latvia based on work permits, compared to 2021, has decreased by approximately one quarter, while the potential amount of labour force

provided by displaced Ukrainians is comparatively large. Due to various reasons their entry into the labour market may have various obstacles. First, displaced Ukrainians are mostly women with dependents which arrived in Latvia based non-employment related motives (Varpina & Fredheim, 2022) that causes a higher probability of this skill mismatch to the Latvian labour market needs.

2. Methods and data

The empirical material of this article consists of, first, aggregate administrative data collected by the State Employment Agency (SEA) and second, qualitative data provided by 14 in-depth interviews with Latvian employers located in Riga economic area. The qualitative data was originally collected as a part of empirical material for dissertation of the author (Zabko, 2023a), but the data presented in this article has not previously been discussed.

The administrative data contains the statistics on the number of registered vacancies and their fulfilment to the end of each quarter for the years of 2022 and 2023 in breakdown by availability to displaced Ukrainians. The time frame allows to describe dynamics of labour demand and supply since the beginning of outbreak of the war. The data are collected as follows: (1) all vacancies that shows total labour demand (mainly suitable for Latvian residents) and (2) vacancies also opened to Ukrainian candidates. To analyse provision of skills in more detailed breakdown, the data were further divided by NACE Rev. 2 economic activities (Eurostat, 2008) and nine major occupational groups (ILO, n.d.). In data analysis, 22 original economic sectors of NACE Rev. 2 were consolidated into 10 broader groups as used by Official statistics of Latvia (2024). The number of fulfilled vacancies show actual labour supply for both types of job offer – general and that available for Ukrainians.

Both types of vacancies are not mutually exclusive. Those offered to Ukrainians are also available to the entire labour market which means that they form a part of the total number of vacancies. This indicates some data limitations regarding the real contribution of displaced Ukrainians to the Latvian labour market as the vacancies might be fulfilled by any job seeker, not Ukrainians exclusively. With regard to fulfilment of vacancies, employers are not obliged to report at SEA any details of candidates. Although the data on displaced Ukrainians having declared employment status in Latvia is recorded by the State Revenue Service, that information cannot been compared directly with the labour demand declared at SEA. As both information sources have their own limitations, the author consider the comparison of data on demand and fulfilment of vacancies registered at SEA as more coherent approach. To overcome the lack of information about the nationality of those who filled the vacancies, the author uses aggregated data on Ukrainians who received a single employment start-up allowance that is special incentive for facilitation their entry into Latvian labour market (Zabko, 2023b).

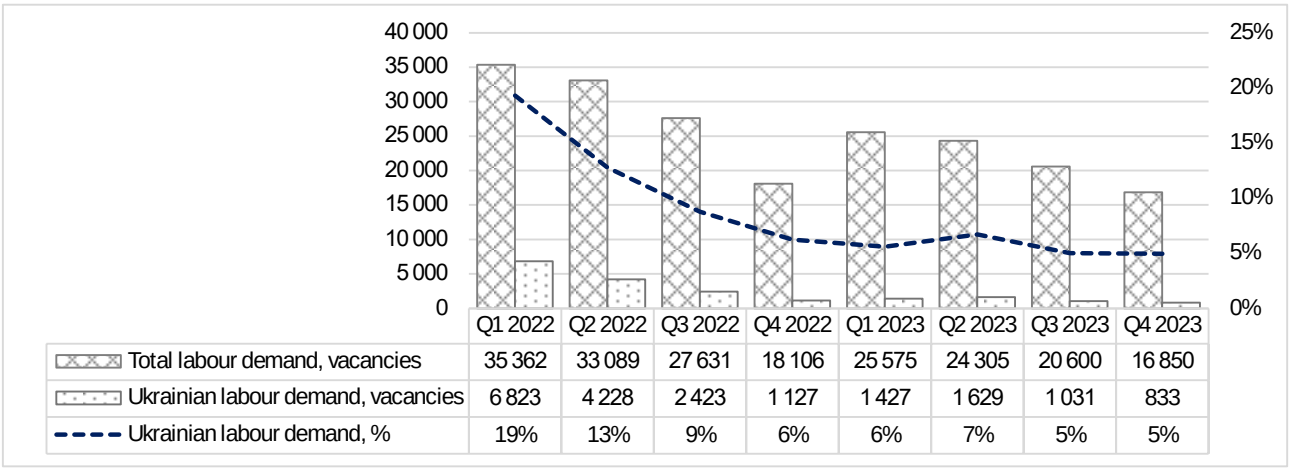
Structured in-depth interviews with Latvian employers characterize employers' needs and expectations regarding migrant labour in general and displaced Ukrainian labour and an assessment of their supply. This issue was a part of broader research interest to collect a variety of labour attraction strategies, especially, if employers experiencing labour shortages. The data were gathered between January and July 2022, so the initial guidelines that included overarching questions about employers' attitude towards non-EU migrant labour were adjusted by expanding the inquiry of their expectations towards displaced Ukrainians. Consequently, the limitation of these data is the reflection of the short-term trends, as at the time of data collection, Ukrainians have just entered the Latvian labour market. Thus, the data analysed have a shortage to provide an overview of the dynamics of employers' opinions throughout the entire period. However, their value lies in the unique insight into the immediate adjustments made by Latvian employers in anticipation of the influx of Ukrainian labour, less accurate discovered in retrospective interviews. Relevant sections of

interviews were thematically coded by the author, at the second stage, aggregating initial codes into more meaningful groups and usable concepts (Belgrave & Seide, 2019).

3. Accumulation of displaced Ukrainians into Latvian labour market

Displaced Ukrainians has increased labour force available in Latvia by 1.0-1.5% (But et al., 2023). According to the SEA, since the outbreak of war, single employment start-up allowance was received by 14 018 persons and single self-employed start-up allowance – by 320 persons. The largest share of employment start-up allowance was received in 2022 (10 303 persons vs 3 715 persons in 2023) indicating that the supply of displaced Ukrainian labour has reached its maximum already in 2022 (also presented in Figure 1 and Figure 2). For self-employment start-up allowance the trend is opposite – the largest share is received in 2023 (79 and 241, respectively) which may suggest that with accumulation knowledge about options available in Latvian labour market, self-employment seems the most attractive.

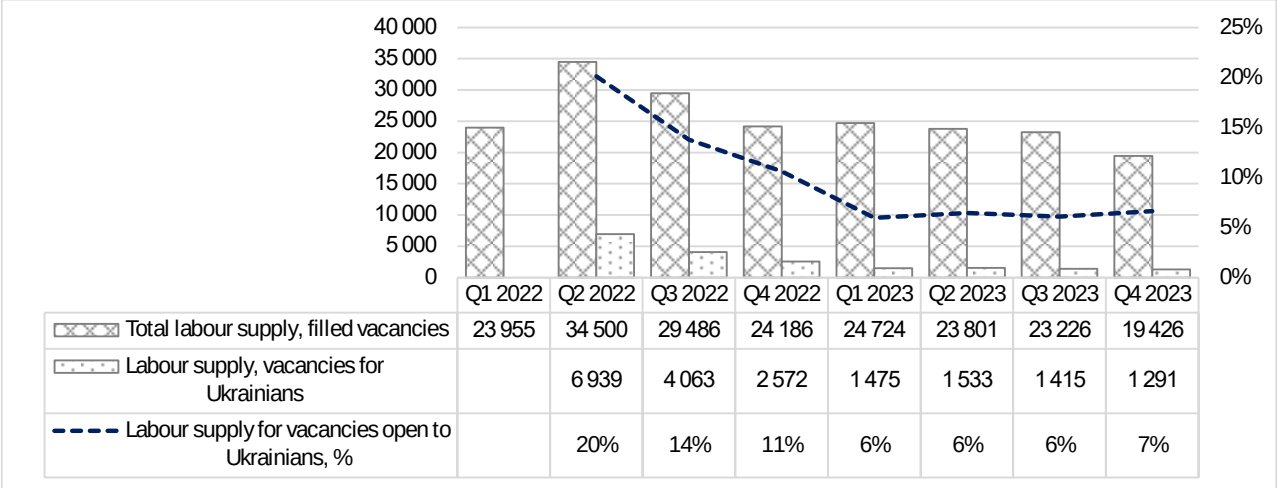
The following figures show labour demand and supply in various breakdowns as described in methods section. They are organised in the same manner. The left axis shows number of vacancies presented (either labour demand or supply), the right axis shows share of vacancies which relates to Ukrainian labour. In a breakdown by sectors (Figure 3), public administration and education were excluded as had offered Ukrainians an insignificant number of vacancies. In a breakdown by occupational groups (Figure 4), managers were excluded for the same reason. The analysis of the demand or supply for Ukrainian labour is made based on comparison of the total number of vacancies offered in a sector or occupation and the percentage of vacancies attributed to Ukrainians. Important feature of data is the lag in time, which manifests as a higher number of filled vacancies (labour supply) in those reference periods that follow the increase in the number of registered vacancies (labour demand). Due to limitation of the length of the article, all conclusions regarding the data are given in the short for at the end of each data panel.



	Q1 2022	Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023
Total labour demand, vacancies	35 362	33 089	27 631	18 106	25 575	24 305	20 600	16 850
Ukrainian labour demand, vacancies	6 823	4 228	2 423	1 127	1 427	1 629	1 031	833
Ukrainian labour demand, %	19%	13%	9%	6%	6%	7%	5%	5%

Notes: Total labour demand – number of vacancies registered in the respective period; UA labour demand – number and share of vacancies available for Ukrainians
Source: State Employment Agency; author's calculations

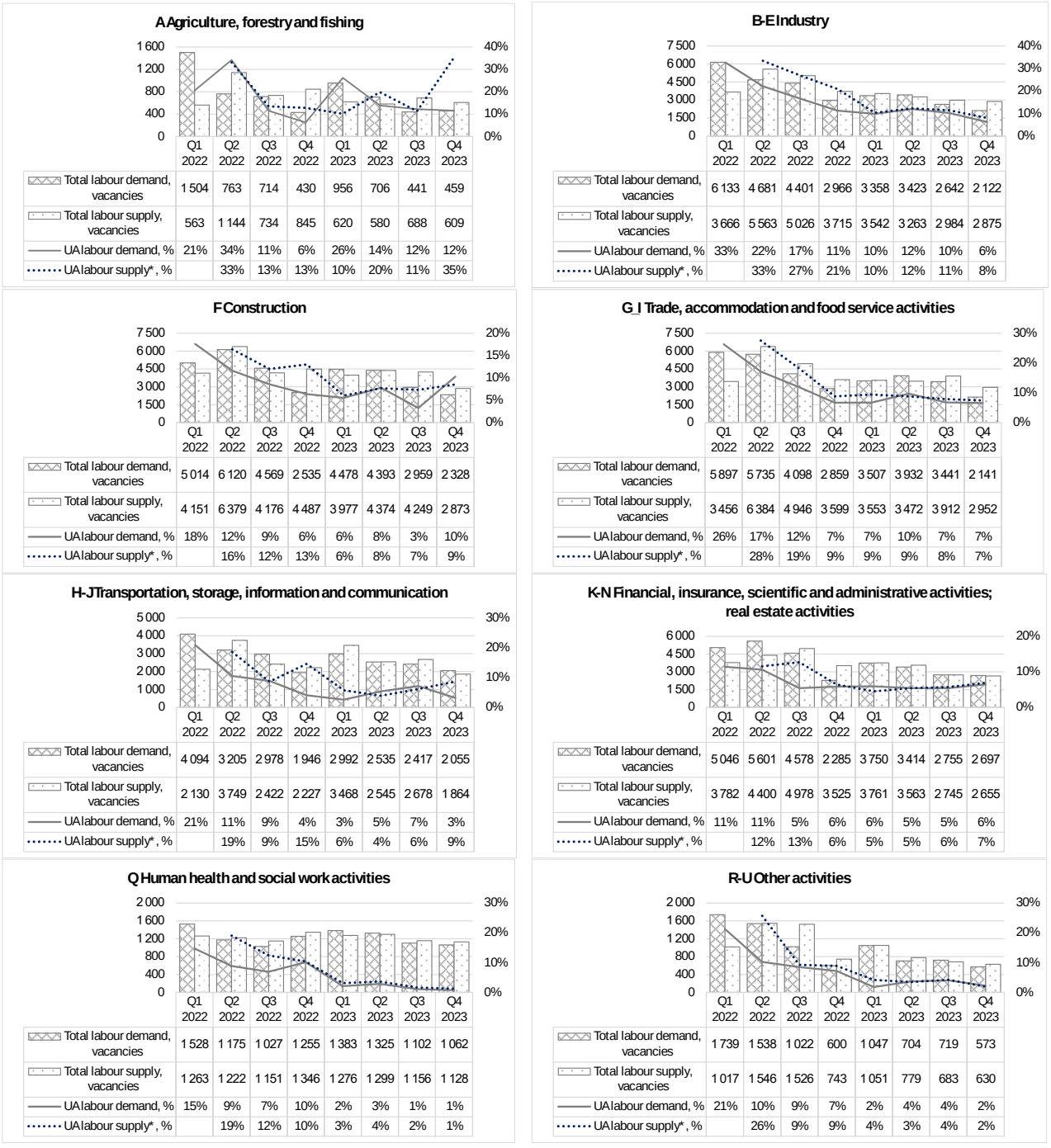
Fig. 1. **Total labour demand and Ukrainian labour demand in 2022-2023**



	Q1 2022	Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023
Total labour supply, filled vacancies	23 955	34 500	29 486	24 186	24 724	23 801	23 226	19 426
Labour supply, vacancies for Ukrainians		6 939	4 063	2 572	1 475	1 533	1 415	1 291
Labour supply for vacancies open to Ukrainians, %		20%	14%	11%	6%	6%	6%	7%

Notes: Total labour supply – all fulfilled vacancies in the respective period; UA labour supply – number and share of filled vacancies available for Ukrainians, * indicates that vacancy can be fulfilled by any candidate irrespective nationality
Source: State Employment Agency; author's calculations

Fig. 2. **Total labour supply and labour supply for vacancies open to Ukrainians in 2022-2023**

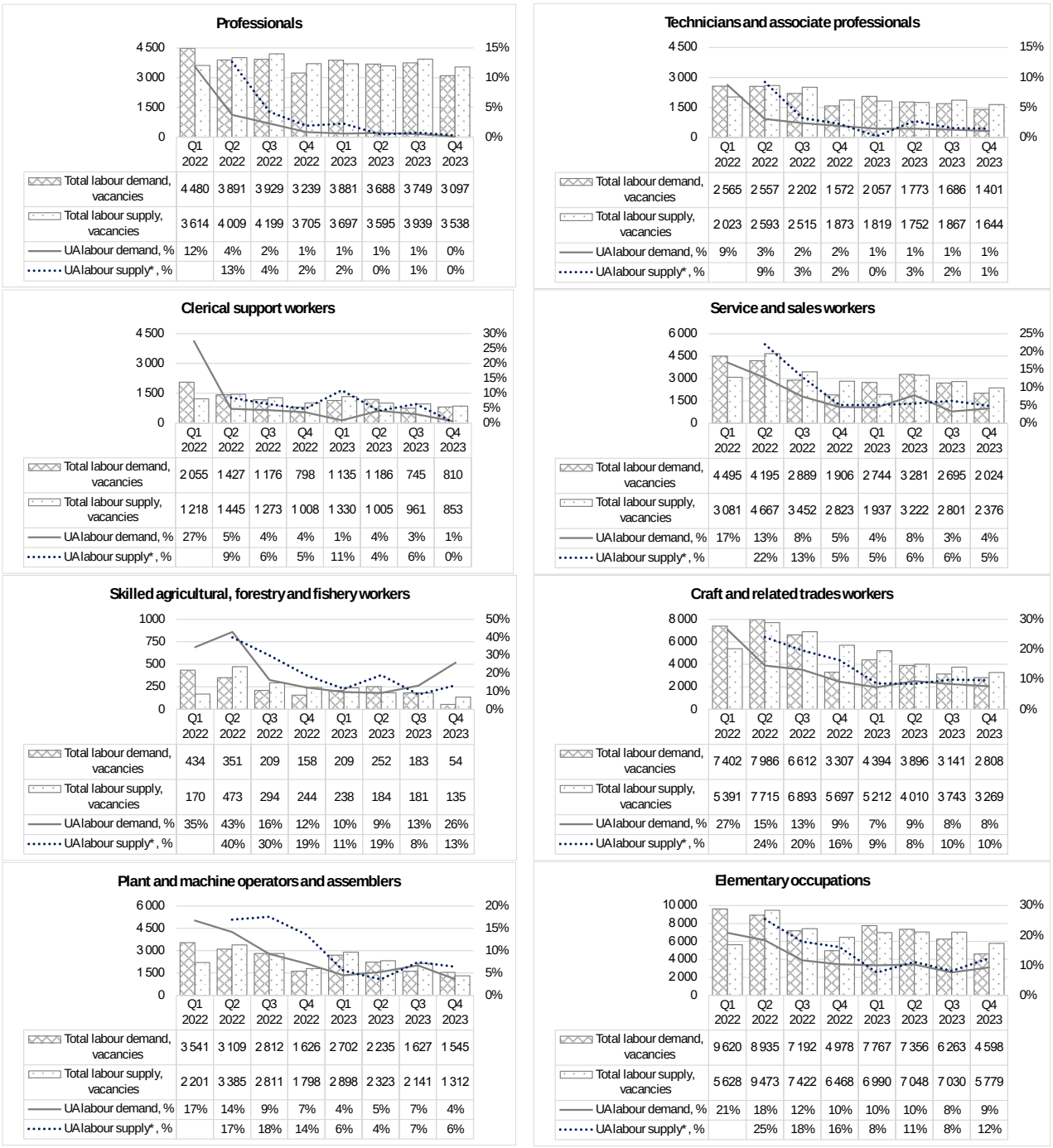


	Q1 2022	Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023
A Agriculture, forestry and fishing								
Total labour demand, vacancies	1 504	763	714	430	956	706	441	459
Total labour supply, vacancies	563	1 144	734	845	620	580	688	609
UA labour demand, %	21%	34%	11%	6%	26%	14%	12%	12%
UA labour supply*, %		33%	13%	13%	10%	20%	11%	35%
B-E Industry								
Total labour demand, vacancies	6 133	4 681	4 401	2 966	3 358	3 423	2 642	2 122
Total labour supply, vacancies	3 666	5 563	5 026	3 715	3 542	3 263	2 984	2 875
UA labour demand, %	33%	22%	17%	11%	10%	12%	10%	6%
UA labour supply*, %		33%	27%	21%	10%	12%	11%	8%
F Construction								
Total labour demand, vacancies	5 014	6 120	4 569	2 535	4 478	4 393	2 959	2 328
Total labour supply, vacancies	4 151	6 379	4 176	4 487	3 977	4 374	4 249	2 873
UA labour demand, %	18%	12%	9%	6%	6%	8%	3%	10%
UA labour supply*, %		16%	12%	13%	6%	8%	7%	9%
G_I Trade, accommodation and food service activities								
Total labour demand, vacancies	5 897	5 735	4 098	2 859	3 507	3 932	3 441	2 141
Total labour supply, vacancies	3 456	6 384	4 946	3 599	3 553	3 472	3 912	2 952
UA labour demand, %	26%	17%	12%	7%	7%	10%	7%	7%
UA labour supply*, %		28%	19%	9%	9%	9%	8%	7%
H-J Transportation, storage, information and communication								
Total labour demand, vacancies	4 094	3 205	2 978	1 946	2 992	2 535	2 417	2 055
Total labour supply, vacancies	2 130	3 749	2 422	2 227	3 468	2 545	2 678	1 864
UA labour demand, %	21%	11%	9%	4%	3%	5%	7%	3%
UA labour supply*, %		19%	9%	15%	6%	4%	6%	9%
K-N Financial, insurance, scientific and administrative activities; real estate activities								
Total labour demand, vacancies	5 046	5 601	4 578	2 285	3 750	3 414	2 755	2 697
Total labour supply, vacancies	3 782	4 400	4 978	3 525	3 761	3 563	2 745	2 655
UA labour demand, %	11%	11%	5%	6%	6%	5%	5%	6%
UA labour supply*, %		12%	13%	6%	5%	5%	6%	7%
Q Human health and social work activities								
Total labour demand, vacancies	1 528	1 175	1 027	1 255	1 383	1 325	1 102	1 062
Total labour supply, vacancies	1 263	1 222	1 151	1 346	1 276	1 299	1 156	1 128
UA labour demand, %	15%	9%	7%	10%	2%	3%	1%	1%
UA labour supply*, %		19%	12%	10%	3%	4%	2%	1%
R-U Other activities								
Total labour demand, vacancies	1 739	1 538	1 022	600	1 047	704	719	573
Total labour supply, vacancies	1 017	1 546	1 526	743	1 051	779	683	630
UA labour demand, %	21%	10%	9%	7%	2%	4%	4%	2%
UA labour supply*, %		26%	9%	9%	4%	3%	4%	2%

Notes: Total labour demand – number of vacancies registered in the respective period; total labour supply – all fulfilled vacancies in the respective period; UA labour demand – share of vacancies available for Ukrainians, UA labour supply*, % - share of filled vacancies available for Ukrainians considering that it can be fulfilled by any candidate irrespective nationality
Source: State Employment Agency; author's calculations

Fig. 3. Labour demand and supply in breakdown by economic sectors

In breakdown by economic sectors (Figure 3), the highest Ukrainian labour demand was observed in industry (mining and manufacturing), trade, accommodation and food service activities and construction. Like in Poland (Gorny & Van der Zwan, 2024), industry and trade, accommodation and food service activities are new sectors for migrant labour in Latvia. However, the data also show that Ukrainian labour was demanded in human health and social work activities that is direct response to government initiatives to decrease a burden for Ukrainian entry into these sectors.



Professionals	Q1 2022	Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023
Total labour demand, vacancies	4 480	3 891	3 929	3 239	3 881	3 688	3 749	3 097
Total labour supply, vacancies	3 614	4 009	4 199	3 705	3 697	3 595	3 939	3 538
UA labour demand, %	12%	4%	2%	1%	1%	1%	1%	0%
UA labour supply*, %		13%	4%	2%	2%	0%	1%	0%

Technicians and associate professionals	Q1 2022	Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023
Total labour demand, vacancies	2 565	2 557	2 202	1 572	2 057	1 773	1 686	1 401
Total labour supply, vacancies	2 023	2 593	2 515	1 873	1 819	1 752	1 867	1 644
UA labour demand, %	9%	3%	2%	2%	1%	1%	1%	1%
UA labour supply*, %		9%	3%	2%	0%	3%	2%	1%

Clerical support workers	Q1 2022	Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023
Total labour demand, vacancies	2 055	1 427	1 176	798	1 135	1 186	745	810
Total labour supply, vacancies	1 218	1 445	1 273	1 008	1 330	1 005	961	853
UA labour demand, %	27%	5%	4%	4%	1%	4%	3%	1%
UA labour supply*, %		9%	6%	5%	11%	4%	6%	0%

Service and sales workers	Q1 2022	Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023
Total labour demand, vacancies	4 495	4 195	2 889	1 906	2 744	3 281	2 695	2 024
Total labour supply, vacancies	3 081	4 667	3 452	2 823	1 937	3 222	2 801	2 376
UA labour demand, %	17%	13%	8%	5%	4%	8%	3%	4%
UA labour supply*, %		22%	13%	5%	5%	6%	6%	5%

Skilled agricultural, forestry and fishery workers	Q1 2022	Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023
Total labour demand, vacancies	434	351	209	158	209	252	183	54
Total labour supply, vacancies	170	473	294	244	238	184	181	135
UA labour demand, %	35%	43%	16%	12%	10%	9%	13%	26%
UA labour supply*, %		40%	30%	19%	11%	19%	8%	13%

Craft and related trades workers	Q1 2022	Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023
Total labour demand, vacancies	7 402	7 986	6 612	3 307	4 394	3 896	3 141	2 808
Total labour supply, vacancies	5 391	7 715	6 893	5 697	5 212	4 010	3 743	3 269
UA labour demand, %	27%	15%	13%	9%	7%	9%	8%	8%
UA labour supply*, %		24%	20%	16%	9%	8%	10%	10%

Plant and machine operators and assemblers	Q1 2022	Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023
Total labour demand, vacancies	3 541	3 109	2 812	1 626	2 702	2 235	1 627	1 545
Total labour supply, vacancies	2 201	3 385	2 811	1 798	2 898	2 323	2 141	1 312
UA labour demand, %	17%	14%	9%	7%	4%	5%	7%	4%
UA labour supply*, %		17%	18%	14%	6%	4%	7%	6%

Elementary occupations	Q1 2022	Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023
Total labour demand, vacancies	9 620	8 935	7 192	4 978	7 767	7 356	6 263	4 598
Total labour supply, vacancies	5 628	9 473	7 422	6 468	6 990	7 048	7 030	5 779
UA labour demand, %	21%	18%	12%	10%	10%	10%	8%	9%
UA labour supply*, %		25%	18%	16%	8%	11%	8%	12%

Notes: Total labour demand – number of vacancies registered in the respective period; total labour supply – all fulfilled vacancies in the respective period; UA labour demand – share of vacancies available for Ukrainians, UA labour supply, % - share of filled vacancies available for Ukrainians considering that it can be fulfilled by any candidate irrespective nationality
Source: State Employment Agency; author's calculations

Fig. 4. **Labour demand and supply in breakdown by major occupational groups**

In breakdown by occupations (Figure 4), the highest demand was observed elementary occupations, craft and related trades workers and service and sales workers major groups. However, in 2022, there was also a certain level of demand for Ukrainian labour in high-skilled positions of professionals and technical and associate professionals.

4. Employers' perspectives on the employment of non-EU migrants and displaced Ukrainians

Estimations calculated in autumn 2022 show that 5% of Latvian companies employed third-country nationals. There was a clear trend that the larger the company, the more likely they had hired non-EU migrants. Most frequently, the companies were hired displaced Ukrainians (41%), followed by the recruitment of other non-EU migrants already residing in Latvia with employment rights (35%), but 24% employers had hired third-country nationals according to the general procedure (RAIT, 2022). The preference for recruitment methods allowing to avoid the complex procedure of inviting non-EU migrant labour is consistent with the results of employers' interviews. They show that the general invitation procedure is perceived as a remarkable administrative burden: *"It is finances and time-consuming. You will never be sure that the person will fully comply with all the requirements of the Office of Migration Affairs."* (Employer_9) Consequently, prior the influx of Ukrainian refugees, employers assessed whether investments in administrative procedures for employing migrants would give return.

Prior to the adoption of deregulations, public sector enterprises were generally inaccessible to migrant labour for a variety of reasons. Here, arguments of validation of qualifications and language skills proficiency were both important, but the dominant reason against employing migrants was the public good, in which the community preference principle had a significant value.

"We are not a private company, we have to be very careful because we tend to be visited by the control authorities and checked for squander funds. The concern is why we don't take a [Latvian] citizen and bring someone from elsewhere." (Employer_4)

Government support for the reception and employment of Ukrainian refugees changed the meaning of this value, thus allowing public sector employers that felt a labour shortage to offer their vacancies.

Validation of qualifications and recognition of skills acquired outside the EU also emerges as a major barrier to third-country migrants entering certain high- and even medium-skilled occupations, always in regulated professions.

"Migrants also have problems with the validation of their education documents. [...] Education is definitely different. […] We have the idea that we have recognised European [diplomas], but third-country diplomas are not recognised anywhere. Diplomas have to be validated and most of candidates have to be examined, for example, doctors, in Latvian [language]." (Employer_11)

Accordingly, recognition of the qualifications of Ukrainian health workers, teachers and sports coaches under a simplified procedure allowed them to work in their original professions. However, some employers admit that the real skills possessed by Ukrainians in these professions are lower than those needed in Latvia, which have prevented them from hiring displaced Ukrainians.

"We had high hopes for the Ukrainian nurses, but we had few candidates. [...] We did not take them. We have a standard that we have to pass. Some don't know [... how to perform the task] as good as we need. There are communication problems or no experience. I am speaking about skills." (Employer_11)

In addition, to professional skills and knowledge, certain high-skilled jobs (such as in construction, law, and even IT) also require knowledge of the local Latvian context and legal framework, which the Ukrainian workforce does not possess, but which can be accumulated through additional education and training. There is no evidence that either Latvian employers or displaced Ukrainians have taken any measures to overcome this obstacle, but this issue deserves further examination.

The findings of this study expand prior knowledge and the strong belief thereof that the Ukrainian workforce is able to supply the Latvian labour market with skills that are still needed but no longer attractive

to young people entering the labour market. With regard to displaced Ukrainians, employers indicated that the skills that Ukrainians had normally supplied to Latvia before the war were supplied significantly less since the outbreak of the war, due to the different socio-demographic and skills composition of the inflowed labour. Thus, this article emphasizes that both experiences – addressing labour shortages and skills mismatches – are present in the Latvian labour market since the influx of additional workforce from Ukraine.

The importance of Latvian language proficiency appears both as a rule (fixed in legislation) and as a need determined by the organisational culture of national companies. The last is expressed as: *"In our company, all documentation and instructions are currently only in Latvian. We cannot hire employees who are not instructed in a language they know."* (Employer_3) and *"Lack of Latvian language skills is a barrier to building a robust company culture."* (Employer_12)

International companies with English as the main communication tool are less demanding for Latvian language proficiency. However, according to employers, Ukrainian workforce persisting in Latvia also has poor English language skills.

Release the Latvian language requirement for Ukrainians (Zabko, 2023b) made it possible to work them in companies that had previously imposed a probationary period and strict conditions for the migrant workers to learn the national language there while. In the case of displaced Ukrainians, Russian has become the main language of communication in companies.

"The [national language] requirement is not applied to displaced Ukrainians. Therefore, we currently translate employment contracts and job descriptions into Ukrainian. Most of the Ukrainians who already work for us and have expressed their willingness to work for us understand Russian. It [appears] to be the working language." (Employer_10)

Some other aspects of displaced Ukrainian lives, such as limited access to transportation and lack of flexible childcare services, have created barriers to any participation in employment. Although employers seek for the possibilities of how they could support Ukrainians, in choosing these methods, they do not go beyond the set of support mechanisms that already exist in their organizations.

"Displaced Ukrainians are mostly received accommodation outside Riga, somewhere in the surrounding municipalities, which immediately entails a transport problem. Many of them are families with children, and as soon as there is a smaller child to take care of, they need a nanny, that's another problem. [...] We have hired [Ukrainians], but I certainly couldn't say that it has solved the labour shortage problem. [...] We can be flexible to a certain extent, for example with flexibility of shifts." (Employer_13)

At the time when the interviews were conducted, both an influx of Ukrainians and their return was observed in Latvia, thus, employers mentioned uncertainty as another obstacle to their employment. *"Our concern is that we invest in training, but they leave* [back] *after three months, we can't really rely on them."* (Employer_11) This finding is consistent with Dustmann et al. (2017). However, it is worth examining how relevant this aspect is now, two years later, as Gorny and Van der Zwan (2024) have observed the changes of attitudes over time in the case of Poland.

Conclusions, proposals, recommendations

1) Although displaced Ukrainians has partly provided labour for certain economic sectors experiencing shortages, their contribution is limited and exhausted at the end of 2022.
2) The highest Ukrainian labour demand was observed in industry (mining and manufacturing), trade, accommodation and food service activities and construction sectors. This intertwines with the demand of labour in elementary occupations, craft and related trades workers, service and sales workers groups.

This proves the research assumption that displaced Ukrainians have been most demanded into medium- and low-skilled occupations.

3) Deregulations adopted by the government were supportive of the employment of Ukrainians. They were able to solve some, albeit significant, obstacles regarding validation of qualification and requirements to Latvian language proficiency, as far as they created structural constraints. The data show that these decisions opened certain occupations (and therefore economic sectors) to the Ukrainian workforce that are generally unavailable to migrant labour, thus, proving the second research assumption. However, government decisions were not able to impact the requirement for the Latvian language proficiency if it resulted from the operational practices of companies. This proves the third research assumption on barriers to Ukrainian employment driven by the organisational culture.

4) Among the displaced Ukrainians there is a workforce that has not yet integrated into the labour market or which, despite the demand in higher-skilled jobs, is at risk of getting stuck in low-skilled occupations. The overarching reason is the skill sets offered mismatch to the Latvian labour market needs. To facilitate further labour market integration of the displaced Ukrainians, both up- and re-skilling and Latvian language training appears as important precondition.

Acknowledgements

The author is grateful to Ilze Berzina, head of statistics division of the State Employment Agency about valuable comments regarding the administrative data analysed in the article. The author's work was supported by the research "Reception of migrants under conditions of uncertainty: governance and local level inclusion" funded by the Latvian Council of Science (grant number: LZP-2023/1-0227).

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Proceedings of the 2024 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" No 58
Jelgava, LBTU ESAF, 16-17 May 2024, pp. 342-359
DOI: 10.22616/ESRD.2024.58.034

ECO-SCHOOLS AS RESOURCE AND INSTRUMENT FOR MUNICIPAL ENVIRONMENTAL GOVERNANCE DEVELOPMENT: TOWARDS COMMUNICATION FRAME FOR COLLABORATION PARTNERSHIPS

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Abstract. With more than 200 educational institutions, covering all statutory levels of education system, participating in the international eco-schools program in Latvia, there is a large potential for combining joint efforts and collaborating with external stakeholders to increase scope, range, and effectiveness of the program's aims, particularly, in relation to local communities and municipalities. On the other hand, local municipalities are faced with challenges such as administrative resource scarcity and reachout to the communities, while having to reach their targets for sustainable regional and local development. As collaboration partnerships between eco-schools and municipalities have not yet been neither widely developed nor researched, this study follows a case-study-research approach to investigate what these already existent collaborations experienced and what their benefits and limitations are. There are examples of the two, so-called, municipal Eco-councils being established in Valmiera and Ropazi municipalities as environmental institutional and collaborative governance instruments for municipalities in Latvia.

Initially focus group discussions in both municipalities, including members of the municipal Eco-council, were held and evaluated focusing on participant's perception of the council as part of Eco-schools developments and a mutual collaboration instrument. The discussions were followed by in-depth semi structured stakeholder interviews later, after Covid-19 and administratively territorial reform for municipalities, depicting the current state of the both eco-ouncils, its recent and future developments, in order to learn and to spread gained experiences. Also other complementary study methods of the case study research framework were applied - document studies, express survey, local visits and observations. Additionally, a practice case, where both main stakeholders actually realized their partnership - pilot food waste sorting implementation bottom-up initiated by Eco-schools - being positively valued as collaboration partnership by all stakeholders involved.

The results underline the potential of such collaboration partnerships between eco-schools and local municipalities to support and upkeep of eco-school activities, foster mutual learning and information exchange to reach wider audiences, increase program effectiveness and lower hindrances like financial constraints. They also stress the importance of intrinsic motivation, time and financial resource availability for the successful implementation of eco-school out-of-door activities as well as the continuation and overall effectiveness of multi-stakeholder collaboration platforms like the municipal Eco-council for (eco)schools and municipalities collaboration for local communities/municipality environmental governance. In order to further upgrade and sustainably develop such collaboration partnerships, there were stressed the need for more development and complementary employment of the whole set of communication instruments as not only information and participation, but particularly also additional education/training activities and pro-environmental behavior enhancement work – an action-oriented and collaborative environmental communication frame.

Key words: eco-schools; eco-council, municipal and community environmental governance; environmental communication; collaboration.

JEL code: Q01, R58

Introduction

Local municipal environmental management still has to be improved in Latvia and facing the situation that municipalities currently have limited capacities and resources and that environmental management is

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not a priority for municipal development (having priorities in socio-economic fields) the often unused potential of existing of so called eco-schools or Green Flag schools in the municipality in their relation of their high involvement into community development and environmental management in the current municipality, needs to be recognized. Unfortunately, eco-schools are often not seen as a resource nor used as an instrument to reach aims of environmental management. Even though there are different types of contacts between eco-schools and municipalities and some other local stakeholders, effective organization and management of this municipal eco-school partnership have been seen only in two municipalities in Latvia even though altogether there are more than 200 eco-schools in 119 municipalities (before the administrative-territorial reform and after the reform 43 municipalities) in Latvia (Saeima, 2020).

Ropazi and Valmiera municipalities were the only ones so far who have had the experience of establishing so-called municipal "Eco-councils", as a coordination instrument of their collaboration with eco-schools and in case of Ropazi in the Eco-council there were not only municipal and school representatives, but also representatives of non-governmental organizations. However, the positive functioning of both eco-councils was kind of interrupted during Covid-19 pandemic and also by taking the case of the administrative territorial reform in Latvia, where also both former municipalities of Ropazi and Valmiera were involved and having quite crucial changes. This study follows the thesis that collaboration between municipalities and eco-schools lies in the interest of both parties, whereas the municipality is getting new capacities and opportunities of an existing resource and the eco-schools are able to realize more impactful work, widening their scope of impact on the larger community outside their school also including partnerships with other stakeholders. This fulfills the sixth step and aim of the eco-schools 7-step-methodology to have an impact on the surrounding community and establish partnerships according to the international guidelines of the FEE standing for Federation of Environmental Education in Europe (FEE, 2003) as initiators and international coordinators of Eco-schools program.

The Green Flag certification of the eco-schools program is internationally recognized to be a best practice example for an integrative environmental governance instrument that uses education and voluntary efforts to promote pro-environmental behavior. In a previous study by Truksans et al. (2020) it is suggested that there is still a lot of unused potential of the eco-school program, especially in regard to widening its scope to further develop pro-environmental governance. In the study the action-oriented environmental communication framework is used to evaluate the eco-school program, which includes four environmental communication instruments: environmental information and education, (public) participation and pro-environmental behavior aiming to improve environmental communication in a complementary and collaborative manner. The study findings conclude that both the Green Flag program and the Blue Flag program (also coordinated by FEE) could be used in order to expand municipal pro-environmental governance and foster overall sustainable development, with the Blue Flag program laying a special focus on sustainable coastal management and environmental protection and the Green Flag program showing further potential to promote pro-environmental behavior and improve educational institutions and approaches (ibid.).

In another previous study done by Truksans et al. (2017) the limitations of the eco-school program as an example for an integrative approach of pro-environmental behavior promotion, are investigated as well as responsive governance strategies to overcome them; being infrastructure, economic-financial, communication, administrative, planning, political and legal instruments. Although the first two categories are often dominating, overcoming obstacles in communication and delivery of the four environmental communication instruments is crucial for successful environmental governance. Eco-schools activities and educational approaches have proven to be very successful in improving stakeholder's as well as public's

pro-environmental behavior, especially when the four instruments of the action-oriented environmental communication framework are used with their complementary combination, evaluated and planned using measurable indicators (ibid.).

Hence, the topic of the following study is relevant because the potential of Eco-Schools to promote local environmental governance is still underutilized. By using environmental education and the Eco-Schools programme, municipalities contribute to the success of the Education for Sustainable Development objectives and to the participation of their communities in environmental issues. **The study aims** to investigate the role of existing municipal Eco-councils and their complementary participation and contribution to the both, the local municipal environmental governance and environmental education in the schools, in particular view of the recognition, cooperation and application of the local Eco-Schools programme capacity and activities as a resource and environmental management instrument in the municipalities of Valmiera and Ropazi. To achieve mentioned, the following tasks must be carried out: to develop the overview of the Eco-Schools programme's local societal contributions by mapping the out-of-school activities of existing particular Eco-Schools practice; to study the development, achieved results and perspectives of the municipal Eco-councils in both municipalities in the context of municipal environmental governance; to analyze and summarize the practice qualities of two thematic collaboration case studies realized (biodegradable waste sorting and bike a piloting case in Valmiera municipality since realized in municipal and eco-schools partnership; to gain related insights and evaluations of all involved main stakeholders, including municipalities and Eco-schools; to apply for studies the environmental communication complementary instruments frame as potential enhancement and framing instrument for mutual collaborations; lastly but not least, to propose recommendations for Eco-schools, community and municipal environmental management development.

Overview of international studies

There has been an increase in literature exploring the effectiveness of eco-schools to support aims of Education for Sustainable Development (ESD) and sustainable regional development. Furthermore, improvements of pro-environmental behavior and awareness in participants were investigated in a multitude of case study research applications all over the globe (Moreno-Fernández, 2016; Truksans and Ernsteins, 2017; Sousa, 2022). The potential of extensive collaboration between teachers participating in the eco-school program, nationally and internationally, has been researched in a study by Alves and Araya (2019). Their results recognized communication and collaboration platforms, partnerships of eco-school's educators and national operators as a useful instrument for eco-school's effectiveness, program's aims and ESD (ibid.).

In Latvia, environmental education is mostly implemented through the Foundation for Environmental Education's Eco-Schools program, in which schools both observe and reduce the impact of environmental problems, involving in its activity the whole school, municipality, and community. Eco-Schools work according to the principles of the environmental governance system (ISO 14000 series (EEA, n.d.)) and use environmental education as a tool to inform pupils about important skills such as critical thinking, problem-solving and decision-making. Eco-school programs and environmental education are also used as an instrument to broaden students' local-global perspective as these skills mentioned before can encourage not only students but also municipal residents to be aware of planetary citizenship roles, taking action beyond the school surrounding environment (Moreno-Fernández, 2017). The ideas and information that schools learn about environmental education also influence children's families and the local community, often changing their habits. This benefit also has a potential impact on the local community, as school

projects and activities tend to involve the local municipality by providing information on the benefits of the local economy, how the community contributes to climate change and, of course, how the community can mitigate it (Díaz-López et al., 2023), which can contribute effectively to the development of environmental governance principles. We have to look for ways to change parents' and local interest groups' attitudes, and build local communities that are aware of their habits and reduce their impact on the environment.

Research on the effectiveness of education for sustainable development has shown that it works at a theoretical level, with young people gaining knowledge about the SDGs and understanding possible solutions to environmental problems, but it is difficult to observe how young people can apply and promote this knowledge in practice (Boeve-de Pauw et al., 2015). The practical application of knowledge can be enhanced by the involvement of local authorities in the implementation of environmental education. Local authorities can use ESD as a tool for their environmental governance, involving young people and helping them to achieve their sustainable development goals, and they can improve their local communities through participatory action.

Currently, 59 000 schools from 74 countries in the world do participate in the Eco-Schools programme (Eco-Schools global, n.d.), including above 200 Latvian educational institutions, at all levels of education — from pre-schools to universities. Schools that receive Eco-schools status actively implement environmental education in their schools, promoting and integrating sustainable development principles into the school curriculum, as well as actively involving and informing the surrounding community about environmental issues. Such cooperation, involving the local community, can contribute to awareness and behavior change on environmental issues, however, in Latvia, schools are still the most proactive in establishing cooperation, and most Latvian municipalities do not make much use of environmental education instruments as a potential environmental management tool. Currently, only two municipalities are known and both case studies of Valmiera and Ropazi, discussed in this paper.

In order to build such a cooperation platform, not only is it important to involve the local community and young people, it is also important to support teachers, who are willing to coordinate the process. Currently, there is no platform that allows Eco-school teachers and students to communicate with other Eco-School representatives outside their region or other parts of the world to exchange with experience and good practice examples, even though this program has shown great impact on teachers' professional development in ESD. To encourage further support for teachers it would be significant to not only adjust the teaching methodologies to be more focused on public involvement and community action (Moreno-Fernández, 2017), it would also be suggested to update the Eco-school concept, as to empower schools to stay active for long (Lysgaard et al., 2015).

In order to study cases, but also eventually to ensure the success of eco-school's activities, the **model of action oriented environmental communication and collaboration** can be applied (Truksans and Ernsteins, 2020). This model defines four complementary instruments for enhancement of environmental governance at all decision making levels and sectors, but also for collaboration and overall communication developments. These four instruments are (i) environmental information, (ii) environmental education and training, (iii) environmental (public) involvement and participation (iv) pro-environmental actions and behavior. These four groups of instruments are to be used complementary and interactively and, obviously, shall include selective targeting of a multitude of all related stakeholders from all key governance segments; state, municipality, businesses, local society/citizens and four groups of mediators, that each can be further split into selective subgroups depending on the aims of the environmental communication in particular cases of municipalities. The group of Mediators' is composed of media stakeholders, NGOs, formal/non-formal educators (including libraries,

information centers etc.) and researchers/scientists, also particularly at the local level etc. (Truksans and Ernsteins, 2020).

In the policy planning cycle communication is a key element to ensure the effectiveness of governance approaches. Recent research in Latvia has investigated the growing application of the environmental communication collaboration model in practice, e.g. in the last Latvian Environmental Policy Guidelines 2014-2020, and demonstrates positive changes in environmental governance effects for example in public environmental awareness (Truksans et al., 2017). Unfortunately, implementation of the environmental communication framework in practice is limited due to several factors. On the one hand, environmental information, education, and monitoring that includes participatory elements are limited. On the other hand, public participation in environmental decision-making, integration of sustainability principles in development planning, experience sharing and peer learning at the municipal level as well as incentives and information flow promoting pro-environmental behavior are still insufficient on all governance levels (ibid.).

The research results suggest that more interest and support from local governments is needed and not only for environmental education, but also communication, in order to succeed. By using environmental communication as one of the instruments of environmental governance, municipalities are able to promote a change in the habits of citizens, greening of urbanized areas, participation of citizens in community building and protection of the surrounding environment.

Case studies areas and research methodology

Initially there were chosen two municipalities as the only ones in Latvia have had developed municipal Eco-councils as cooperation and eventual partnership platform (institutional governance instrument), where municipal staff (mainly environmental sector, but not only) and local Eco-schools (also known as Green Flag schools) eco-coordinators were jointly working. Those municipalities are Valmiera town municipality, but later after administrative territorial reform being now county municipality, as well as, Ropazi rural municipality, but also increasing its size in 2021.

Valmiera town municipality (later county). After the *Law of the Administrative Territories and Populated Areas* was passed in 2020 an administrative-territorial reform took place in all of Latvia in 2021 (Saeima, 2020), this reform also affected Valmiera, as its city municipality was expanded and joined with eight surrounding rural municipalities to one administrative county municipal body. The county municipality of Valmiera centers around its Hanseatic city of Valmiera located 110 km from national capital and around the river *Gauja* and the *Gauja national park* in Latvia's east-north Vidzeme region. Valmiera city have 24,750 inhabitants and as a strong industrial center is shaping the city's development (Valmieras Novads, 2021). Sustainability is an integrated sector of the municipality's governance. Environmental sustainability and environmental education are mostly dealt with in the following four units of municipality; Branding and public relations unit (position: manager of environmental communication projects), Development unit, Natural resources management unit and the Department of Education. In 2015 it was initiated and Valmiera's council members signed an Environmental Declaration which expresses commitments towards the city's sustainable development. The declaration also included the aim to promote environmental education in educational institutions of Valmiera municipality and using the municipality's capacities to inform, educate and involve the public in environmental issues etc. and environmental education in cooperation with all interest groups (Environmental Declaration of the City of Valmiera, 2015).

There are a total of nine educational institutions in Valmiera that participate in the international eco-school program and have been awarded with the Green Flag award in the past years. The participating institutions range from all educational levels starting at the preschool level, over primary and secondary education to one higher education institution certified as an "eco-university". The participating educational institutions are mainly from the public sector, with one exception of a private school. The eco-schools are all following the seven steps to successfully complete the eco-school program, which includes conducting a variability of projects and activities to keep the Green flag status. They are covering all areas of possible topics provided by the national head organization FEE and are working on e.g. developing competencies and habits revolving the conscious and sustainable usage of scarce resources like water or learning about the concept of circular economy or renewable energies using a multitude of educational approaches (FEE, 2003).

Ropazi rural municipality. In 2021, after the law of Administrative Territorial Reform passed in Latvia, Ropazi municipality along with Garkalne and Stopini rural municipalities, and Vangazi city municipality were united, and Ropazi county municipality was established. The center of Ropazi county municipality is Ulbroka village located just 34 km outside the capital city Riga, along the left coast of the river *Liela Jugla.* The municipality is now new developments oriented — the department for development is practicing community involvement, sustainability and environmental management in the municipality. Environmental impact assessments are carried out by the municipality and subsequently discussed in public consultations. The current Ropazi municipality's sustainable development strategy 2022-2038 ensures the continuity of the former municipality plans, inherited defined values and strategic objectives. Current strategy states a long term goal — Ropazi municipality will become "a greener region", by setting a priority to contribute to climate change mitigation. It will be done by emission reductions: renewable energy introduction for resource saving, sorting waste and water management, upgrading heating installations, introducing zero-waste technologies in manufacturing for public sector and households, thus contributing to the transition to a circular economy (Ropazu novads, 2022). There are four educational institutions participating in the eco-school program from Ropazi municipality (Ekoskolas, n.d.), that are working in the environmental sector and raising awareness of environmental issues. Currently, eco-schools as such are not used as an instrument in the sustainable development strategies, but in the sustainable development strategy for 2022-2028, using municipality, state and EU budget funds, environmental education will be promoted by giving outdoor space and equipment for environmental education activities, it will help to development a modern learning environment for expanding the range of programmes in nature sciences and environmental education as such. (Ropazu novads, 2022)

Research methodologies. There were planned a **set of complementary research activities**, framed by case study research methodology and starting with related municipal and other document studies, visits and observations in the eco-schools and related outdoors, and particularly, initial **focus group interviews with both municipal Eco-schools,** followed in the time distance by **individual semi-structured interviews** in both municipalities and with both main parties of stakeholders – specialists of municipalities and Eco-councils members, directors, and coordinators of eco-schools at various education levels in the municipalities. To investigate the current state of the municipal Eco-council and recent activities of Valmiera's eco-schools, eight **in-depth semi-structured stakeholder interviews** (around 45 minutes) were conducted with representatives of both parties, including one representative from Eco-school of each educational level (kindergarten, primary and secondary education, tertiary education). Related in Ropazi municipality four in-depth semi-structured interviews (around 40 minutes long) and one express interview were conducted.

Also, there was performed related two case studies investigations of real practice cases of Eco-councils coordinated activities in Valmiera municipality as part of the mutual collaboration, where all parties were involved: the annual Eco-Schools Friendship Bike Ride "Bicycle Unites" case and Biodegradable waste sorting piloting case. The first case study – there is a yearly kind of flash-mob activity "A bike unites" as a bike ride crossing most of the town and performing also additional promotional activities aiming to promote the use of bikes in everyday mobility and general traffic system. Not only this, but also other various activities (awarding of everyday bike riders, the "Car-free day", awarding of bike friendly employers, citizen surveys and other school-flash mobs) are a part of the yearly European Mobility Weeks' activities. The other practice example case was the current waste management system upgrading implementation in Valmiera town and, particularly, the **pilot food waste sorting implementation** bottom-up case. There are three multi-floor dormitory buildings (two municipal ones, but third – university one) in Valmiera. University of Latvia designed research-and-development (R&D) project and research methodologies and approaches used for this R&D project were especially combined, foremost, the **Case Study Research framework** shall be mentioned, incl. document studies, student surveys, semi-structured stakeholder interviews, observation studies, also waste audit/weighting studies, as well as, basic **approach of Living Laboratory** as youth from Eco-schools in partnership with all other project stakeholders developed this study and implemented waste sorting. Also, Participatory Research and action research components were necessarily applied.

To summarize all described research steps and activities, it should be recognized that within the frame and size of this paper only qualitative and summary types of results were applied.

Research results and discussion

1. Developments of municipal Eco-councils: municipalities and eco-schools

This chapter introduces and describes both Ropazi and Valmiera municipalities Eco-council cases, explaining core information of their establishment, initiation, community involvement and description of their work and activities.

1.1. Ropazi municipal Eco-council

Ropazi municipality Eco-council started its work back in 2014, as an initiative from Ropazi secondary school to form a collaboration platform with the local authorities. Coordinated by Ropazi Secondary schools' eco-council meetings generally took place on municipal or school premises once a month or more depending on the planned activities and objectives. It was learned from the interviews with the Council's former members, that council's work was rather active involving not only young people and schools and municipalities personnel but also community's families and schools parent council. Admitted by the former members, Municipality Eco-councils' greatest achievement is giving a platform to young people to express their ideas and learn about community involvement in municipalities work.

This collaboration resulted in implementing an Erasmus+ project with schools in Moldova who are not active members of the Eco-school program. During the project, students from Ropazi shared their best practices in environmental education and management and these environmental education practices were introduced in local Moldovan school planning (Ropazi Secondary school Eco Council, 2018). Ropazi municipalities eco-council was partly coordinated by municipalities public relations specialists, which led to almost every collaboration and activity organized by Ropazi municipalities eco-council to be published in the local newspaper. Ropazi municipality's first meeting was minuted, during which the coordinators of

the Council were nominated. No official document of council existence was established, making it a platform of volunteer involvement from all parties.

1.2. Valmiera municipal Eco-council

The Valmiera municipal eco-council was established in 2017 as an initiative from the environmental communication specialist at Valmiera municipality and in collaboration with the University of Latvia to implement the four sectors of an action-oriented collaborative environmental communication in Valmiera effectively (Truksans et al., 2019). Focussing on the aspect of promoting environmental education, public participation and pro-environmental behavior in Valmiera's citizens, the environmental communication strategy included the formation of the informal eco-council as a collaboration platform for all Valmiera eco-schools. This strategy was not adapted in official municipal planning documents, thus making the eco-council an informal governance instrument. Since its formation there have been four official municipal eco-council meetings taking place in the Valmiera city municipality building and a shared online communication platform has been established. Participants include representatives, mainly the designated eco-coordinators, from each educational institution that is part of the eco-school program. Currently, the group consists of nine members. There have also been some external, non eco-school stakeholders invited to meetings from institutions with similar interests, like members of local environmental groups. The council members have organized activities together like for example during the European Mobility Week the council had joint bicycle rides through the city and along the river shore including mutual exchange between representatives from all eco-schools, including both pupils and teachers, as well as municipality representatives.

2. Evaluation and planning of Eco-councils developments

In 2019, to learn about both municipality eco-council work and community involvement, focus groups in both establishments were conducted. The aim was to understand the way eco-councils operate and work, who were the involved members, how cooperation with the municipality is developed and how potential cooperation partners can be obtained to broaden their core audience. In the time of discussion motives of creation, main achievements and challenges, development history of both municipal eco-councils were learned.

2.1. Ropazi focus group discussion

The motives for creating a municipal Eco-Council in Ropazi were to create a platform for cooperation between local authorities and educational institutions, also involving and reaching other target groups that would help achieve both individual and collective goals and more efficiently implement plans and get support in the process. With a platform like this, introduction of diversified activities, innovations, raising awareness, changing attitudes and habits is easier implemented. Ropazi municipality Eco-Council was coordinated by Eco-Schools representatives and the municipality's public relations specialist. The members are Ropazi municipality Secondary Schools students, director, Eco-school coordinator and deputy director in the field of education; Ropazi municipality pre-school "Annele" deputy director in the field of education/ Eco-school coordinator; Municipal Executive Director, specialists of landscapes, environmental management and public relations, head of the day center, head of the development department, youth specialist; Local NGO representative; Representatives of the Eco-Schools Parent Council and other parents.

Ropazi municipality Eco-Council's main features are described by cooperation on different levels, enthusiasm, local patriotism, active young people and people involvement. Their long-term goals are to

educate and promote public knowledge, understanding of environmental issues to the local community and practically implement environmental initiatives, reducing human impact on the environment by preserving and conserving it. Target audience (depending on the activity) are local residents, visitors of the city, parents and other adults, preschool children, students, members of Ropazi municipality Eco-Council. The main challenges that the Eco-council experiences are finding ways to engage and reach more people - the public is not always willing to change habits, learn about the benefits, the challenges, the importance. Also, Public representatives' knowledge and expressed attitudes of their environmental values do not always result in environmentally friendly actions.

Eco-Councils key achievements are more effective addressing of environmental issues, increase in community involvement — from problem identification to improvement, monitoring and awareness increase, children's knowledge, skill, attitude and behavior change, that's affecting family behavior, getting young people interested in local government, seeing it as an opportunity to make a difference, the focus of local government has changed – when planning and realizing activities, environmental protection and sustainable development aspects are taken into account, an opportunity to do practical activities, projects, and link Ropazi municipality Eco-Council's activities to the school learning process, implementing school initiatives as community activities.

It was learned that the municipality's eco council was initiated by local eco-schools in 2014, there were common things both at school and in the municipality. Schools are encouraged to meet and to cooperate on a regular basis. National scale event the Eco-Schools Winter Forum was an external factor that led to regular cooperation. In the beginning, the initiative came from the school and the municipality supported it, cooperation developed further on both sides, the municipality came up with project ideas and saw Eco-Schools as a real cooperation partner, and schools came up with concrete ideas, a timetable of activities that encourage public participation. Until 2019 the Eco-Council involved broader society groups in their work. Ropazi municipality Eco-Council's future plans include municipality websites improvement, targeted planning, situational awareness, setting priorities, assigning responsibilities, promotion of good practice and exchange of experience. Ropazi municipality eco-council includes a broad range of local and school representatives, this collaboration has led to a great community involvement and has increased awareness of environmental issues to not only municipal residents, but also to eco-school representatives.

2.2. Valmiera focus group discussion

The motives for creating a municipal Eco-Council in Valmiera were to involve and gather like-minded people and partners from local Eco-Schools and society in general. Established to implement easier planning and realization of activities, exchange with experience, get ideas, support and motivation, to do bigger activities at community level and reach a wider audience. Valmiera municipality Eco-Council is coordinated by the municipality's environmental communication specialist. The members are Valmiera Secondary School nr. 2 eco-school coordinator; Valmiera Viestura Secondary School eco-school coordinator; Valmiera elementary school eco-school coordinator; Private primary school "Green School" Eco-Schools Coordinator, Valmiera preschool "Valodzite" and its branch "Kracites" deputy chief executives; Vidzeme University of Applied Sciences event organizer; Municipal environmental communication specialist; Representatives of the Eco-Schools Parent Council, other parents. Valmiera municipality Eco-Council's main features are cooperation, open mindedness, support, sense of community, opportunities, resources. Their long-term goals are to cooperate with each other, involving as much of society as possible, making their target audience pre-school and school children, families, and society. Eco-council's key achievements and contribution is community development. There is communication with the public and Valmiera has become

an environmentally friendly city. Jointly implemented actions have covered a broader audience than individually when holding events at school. It is seen as an opportunity for growth and a platform for cooperation, where you can meet like-minded people. Main challenges experienced are attracting additional partners, getting much broader public involvement. Opportunities to announce more widely planned events, to get a better response, have caused activity overlapping. Connection at all stages of education — from pre-schools to university, to get more students involved.

In 2017 the initiator was the municipality's environmental communication specialist and the formation was also driven by cooperation with the University of Latvia. In the beginning there is a cooperation between a few schools; Later, the whole eco-council planned and implemented activities together, they were aimed to raise public awareness, understanding, and involvement. In 2019 Valmiera municipality Eco-Councils future plans are targeted planning – schools and municipality's alignment of objectives, focusing more on pre-schools involvement and linking all stages of education — from preschool to university and Valmiera municipality Eco-Council activity coordination with educational process, e.g. project weeks and also learn about potential cooperation partners and member attraction, e.g. cooperation with the education authorities, youth council. By involving most community groups into their activities, Valmiera municipality's eco-council has driven Valmiera city to become a greener place, where families are learning from their children and adapting environmentally friendly habits.

3. Administrative-territorial reform: partnership changes and further activities

This chapter looks at the results of the school interviews, analyzing their current situations and learning how their eco-councils continue working after external events like Covid-19 pandemic and administrative-territorial reform in 2021. Their collaboration with the municipality is recognised before and after the external events mentioned studying about activities that eco-councils are planning or implementing now.

3.1. Ropazi Eco-schools

Ropazi Secondary School has been a part of the eco-school program since 2009, making it 14 years of active work in the environmental education field. In 2019 Ropazi secondary school and Zakumuiza Primary school were united and both are now called Ropazi secondary school, they organize their work in two buildings – in the Zakumuiza primary school building organizing pre-school and primary school while in Ropazi Secondary School grades from first to twelfth. Both parties are organizing their own separate eco-council, following the exact corresponding objectives and criteria by having a general meeting once a month, discussing implemented activities and future plans by giving presentations which help them collect data and activity reviews for Eco-school programs' yearly report. Both parties admit that organizing eco-council in both schools is helpful, for example each eco-school works by the 7-step program, one of them being schools surrounding and nature audit. By organizing eco-councils in both schools, it is simpler for them to gather data of Ropazi territory and plan activities to decrease identified problems.

Before the territorial reform, Ropazi Secondary school had a very great partnership with the municipality, as the school's eco council was the one who expressed the need for a municipal level cooperation platform. Situation changed when the territorial reform was passed, it caused changes not only at municipal level but also at schools. Teachers that used to work at Ropazi Secondary school and were active members of the eco-council started to work at different schools in the municipality. As learned from the interview with the school's director, they see it as an opportunity to connect and collaborate with other schools in the municipality.

Ropazi Secondary school in their 14 years of work in the eco-school program have covered all topics of interest and currently are working in the field of waste. As learned from the interview with Ropazi secondary school eco-council, this year's main goal is to decrease their school's carbon footprint by focusing on minimizing food and resource waste by implementing activities that encourage people to reflect on their actions. Ropazi Secondary school's eco-council has shown that they are not only working in the interest of their school but also for their local community's benefit by collaborating with the local authorities and implementing recycling programs in Ropazi and its surrounding areas. Current eco-school plans that require municipal involvement are introducing vegetarian days at school, activity is yet to be implemented because it depends on not only municipal but also national laws. As described from Ropazi Secondary school, this activity would effectively help them decrease their school's carbon footprint and promote healthier habits to not only children but also their families. Another project, influenced by the participation in the Eco-School Winter Forum 2023 in Valmiera, that could potentially renew schools' collaboration with the municipality is to work on infrastructure improvement around the school, as there are no safe pavements to walk on, especially in winter time. It was admitted by the school's eco-council that they currently feel unsafe to get off the bus and cross the motorway to get to school.

Annual campaigns that are run by the school, such as tree planting in April in the territory of Ropazi and Foundation for Environmental Education Latvia promoted Environment Day events in collaboration with Ropazi pre-school "Annele" are also implemented this year. This school year's biggest plan is to implement an activity – a hackathon, inviting schools in the region of Ropazi to take up the challenge for Ropazi municipality improvement. Young people would generate ideas on how to alleviate visible problems: improving infrastructure, getting involved in environmental issues, waste management etc. Ropazi Secondary school after the union with Zakumuiza primary school has shown great collaboration skills which were also used when Ropazi municipality eco-council was actively working. After the reform, the school has not given up and is still trying to re-establish connection with the municipality, in the meantime identifying their potential cooperation partners.

3.2. Valmiera eco-schools

The in-depth semi-structured interviews with selected eco-schools coordinators of each level of Valmiera's educational institutions indicate a great potential in the field of environmental education and ESD in Valmiera but also identify challenges that are currently hindering the continuous active involvement of teachers and students in the eco-school program. The nine schools have continued to participate in the program for many years and some schools have even already covered all the thematic areas and are now starting with their second round, while trying to come up with innovative approaches. Current topics cover a wide range of action areas from water, energy, waste management to circular economy. The Covid-19 pandemic has unfortunately also impacted the eco-school activities, especially coordinator's personal motivation to continue and student's engagement in the eco-committees has plummeted. While students are still eager to participate in activities, the organization and following documentation is perceived as particularly burdensome to the organizers, who are declaring this as their least favourite part about the eco-coordinator position. Time and resource constraints as well as changes in personnel have even led to the temporary discontinuation of two of Valmiera's eco-schools in the Green flag certification. Nevertheless, they were still internally motivated to continue the course towards a whole-institution greening approach of the school and its surroundings and aim to gain back the green flag certification as soon as possible.

School representatives state that their students as well as the overall institution can benefit greatly by participating in the program. Increases in pro-environmental behavior and overall environmental awareness

were noted by participants in the program, as well as a transfer of acquired knowledge and behaviors from students of eco-schools, concerning sustainability problems and solution approaches, to their surrounding environment like their parents. The education beyond the classroom, targeting also the wider public and especially families and educators of eco-schools, was stressed as an integral part of the larger impact the eco-school program can have on regional sustainable development. Applying the action-oriented collaboration environmental communication model, the current eco-school activities in Valmiera can be grouped according to the four sectors.

In the field of environmental information flows, eco-schools in all levels treat environmental issues in their curricula and as an example for informing the public, students from Valmieras 2. Secondary school did an activity educating bystanders about plastic pollution in water bodies in the local shopping centre. During the eco-school winter forum 2023, an interactive activity organized by the local eco-college took place, where eco-school teachers walked around Valmiera to note down ideas they had for improvements as well as things they liked as inspiration for their own municipalities. These ideas were then collected digitally and transferred to the municipal planning agencies. Furthermore, future visions of a utopian, green Latvia in 2050 were developed jointly between students and teachers during the creative forums. The outcomes of this visioning activity were displayed in two public buildings of Valmiera, university building and local shopping center, to inform the public about the eco-school activities.

Regarding environmental education and training, students of Valmieras Viestura secondary school have for example received waste sorting training in a series of workshops revolving around recycling, organized by the eco-schools teachers. The active waste sorting in recycling bins provided in all of Valmiera's eco-schools falls under both categories; environmental education and training as well as pro-environmental actions and behavior. In the field of pro-environmental actions and behavior, Valmieras eco-pre-chools are also doing yearly surveys for parents, where their pro-environmental behavior and habits in the respective households are observed and monitored over the years. Educators have stated that as a result of these surveys, they could conclude which behaviors should be treated more. Overall they noted a significant improvement of pro-environmental behavior and actions in the parents, but also in themselves as educators.

Inter-institutional networking events, like the yearly eco-school forums, are an example for the area of environmental (public) involvement and participation. The eco-chool winter forum took place in February 2023 in Valmieras 2. Secondary School and was organized jointly in cooperation with the Valmiera eco-schools, Valmiera municipality and FEE Latvia. The recent forum, which had been the first one taking place after February 2020, was seen as a successful instrument to improve management and communication among eco-schools within the municipality but also nation-wide eco-schools as well as external stakeholders. Additionally, ideas that were generated during the forum were exchanged to be used from the Valmiera municipality in city planning and further developments. Another example in the area of environmental participation and involvement was the presentation of a fashion show with clothes made by eco-school students out of upcycled waste.

Overall, research has shown that although external factors like the Covid-19 pandemic and internal factors like changes in management positions have caused some setbacks to eco-schools activities and collaborations among each other, eco-school activities are being picked up again and Valmiera's eco-schools are continuing to further extend their scope of actions in all areas of the environmental communication model, while closely collaborating with the local municipality.

4. Current development state of municipal eco-councils

This chapter looks at the current situation of both municipal eco-councils and updates since focus groups are done in 2019. Interview results explain how internal (school union, municipality administrative structure and personality change) and external (Covid-19 pandemic, administrative territorial reform in Latvia) events have affected municipality eco-council work and activity, and former eco-council member opinions on current municipality situations.

Ropazi municipality. In 2023 Ropazi municipality's eco council stopped its work due to multiple external and internal reasons. Main reasons being, as learned from the interviews, passing of the law of administrative territorial reform, and complete change of municipality leaders and deputies, meaning almost all the original members of Ropazi municipality's eco council are not working in the municipality anymore. Ropazi secondary school recognizes that currently it's more difficult to establish connection with the new municipality, due to reasons of moving the municipality's center from Ropazi to Ulbroka villages, having infrastructure deficiencies is causing the municipality's center not to be as accessible as it used to be. Schools have expressed that this matter is causing communication and bureaucratic issues, making document exchange and formal meetings cumbersome. Ropazi secondary school admits that they must again initiate the renewal of the Council to the municipality's new leaders. They have already started to establish new connections with different schools (both regular and other eco-schools) in the new municipality to work on projects and to educate other students about environmental issues at municipal level.

It was expressed from every interviewee that municipality level Eco-council should be renewed. It was learned from interviewing former council members that this cooperation platform led young people to be more involved in the local community life and were more invested in getting their ideas and opinions heard, it was an excellent way of developing understanding of nature issues and finding innovative solutions to them. Furthermore, it is seen as a loss because Ropazi municipality eco-council was a great cooperation platform example nationwide, where every community member was welcomed to actively learn and participate in activities. After the passing of the law of administrative territorial reform Ropazi municipality is yet to find a way to collaborate and educate about environmental issues with all the united parishes, municipality representatives admit that it is still a formal process and environmental issues are not proposed as a priority currently.

Valmiera municipality. Due to an interplay of internal and external hindrances, the municipal eco-council in Valmiera has also been inactive since the start of the Covid-19 pandemic in the beginning of 2020. Communication via a shared online chat has continued among nine members, although it has been described as very one-sided and less fruitful from the organizing municipal agent's perspective. The issue of changes in personnel at the municipality for environmental communication and hence shift of responsibility for the municipal eco-council, has been named by all former and current eco-council members to have had a substantial impact on its development. In September 2022 the position for municipal environmental communication specialist and project manager was changed, and as the formation of the municipal eco-council had been formerly initiated by the municipalities side, responsibilities for its continuation were transferred to the new municipal agent. Getting all stakeholders together and re-defining the goals and plans of the eco-council to ensure its continuation have been challenges named by both sides, which have further led to the delay of continuation. This emphasizes the importance of shared responsibility, multi-stakeholder collaboration and the availability of financial and personal resources like

time and internal motivation to ensure the success of the municipal eco-council and effectiveness of the eco-school program.

All interview partners have expressed a desire to continue the meetings, regular activities and mutual exchange in the municipal eco-council. Council members described how exchange among the other eco-coordinators helped them with realizing joint activities and projects, gaining additional resources and made them feel less alone in the process, in turn increasing their intrinsic motivation to continue with the eco-school program. Interviewees from the side of eco-schools expressed to continue the eco-council in a similar manner, with meetings initiated and organized by the municipality roughly on a quarter-yearly basis. The wish of sharing more responsibility and opening up the council to a wider variety of stakeholders from different domains like companies, NGOs or different municipal and developmental agencies, was expressed by the municipality side in order to ensure its sustainability and increase its effectiveness. Perceived benefits of this approach were for example that eco-schools could widen their scope of collaborations to increase not only opportunities for financial support and support in organizational matters but also improve the mutual learning process and generation and exchange of ideas to foster sustainable regional development.

5. Municipal Eco-councils in practice: food waste management piloting

Following and in parallel to our overall studies about experience and perspectives of the first two municipal Eco-councils in Latvia there was implemented an Eco-council work in practice – the food waste management piloting case in Valmiera county municipality, being clearly appreciated by all partnership parties involved, and as first, Eco-schools and municipality as to be seen in this short case summary. In Latvia, from January 2024, waste management operators and municipalities have to ensure the **collection and management of sorted biodegradable waste** (BDW) as requested by the National waste management plan for 2021-2028. There have been several pilot projects/studies to prepare municipalities for this date. Initially in 2022-2023 there were unanswered questions how to implement the separate collection of biodegradable waste in practice locally, e.g. whether collection service will be mandatory for all, incl. for those living in rural areas, also and particularly, how to organize BDW sorting in multi-apartment buildings and more successfully compared to the former experiences. As well as, how to implement BDW sorting in service hotels (dormitories for schools/universities etc.) and also, having in mind that most of such dormitories are to some extent similar to multi-apartment buildings in the municipality.

Subsequently, numerous municipal Eco-schools and, particularly Eco-council of Vidzeme University of Applied Sciences in Valmiera town, together with Valmiera county municipality and researchers from University of Latvia, expressed interest to learn about the current waste management system in Valmiera dormitories and **to pilot food waste sorting implementation** there. University of Latvia designed research-and-development (R&D) project for this partnership as a Latvia national case study for the Baltic region and Germany joint project "ESD for 2030 — Learning for and in sustainable and resilient communities" funded by the Deutsche Bundesstiftung Umwelt, Germany, led by Leuphana University Luneburg. Also, regional waste management company ZAAO (100% owned municipal enterprise of 8 regional municipalities) was invited to cooperate and all together joined for the aim to study the existing situation, incl. student perceptions and understanding etc., and then to pilot food waste sorting in three multi-floor dormitory buildings, also having in mind to develop recommendations to the Valmiera county municipality for the implementation of the BDW sorting process in multi-apartment buildings.

Main findings in short could be summarized like this. The issue of BDW management at the national level has been developed late. Lack of data on the actual amount of food waste in Latvia.

The implementation of biodegradable waste management in the entire county is a challenge for the municipality of Valmiera county. ZAAO's experience in food waste management is limited, but their Daibes BDW factory in the regional landfill would be able to process the biodegradable bags. Knowledge of BDW among different target groups is low. In order to involve multi-apartment residents in a wide collection of FW, the active information and training actions are necessary and quality active work of each house manager.

Dormitories require convenient and hygienic indoor food waste management. Until now, there has been formal or no waste accounting and monitoring in service hotels and quality waste management service in dormitories was underdeveloped, incl. missing in-house mutual cooperation, division of responsibility, information, training. The most common reasons for what prevents FW from sorting waste are the lack of knowledge, lack of information about sorting (pictures of waste bins, easy-to-read material), sorting takes extra time, the outdoor sorting container is not easy reachable or even waste sorting doesn't make sense as per student answers in survey. But the majority of students from the surveyed respondents in dormitories are ready to start sorting FW.

Main actions proposed have a set of several basic components to be adequately planned and finally implemented: Promoting the awareness of students/pupils; Promotion of employee awareness; Proper and variety of information sources/resources as well as practice training for students and employees; Improvement of infrastructure; Arrangement of management administration, all in all, being aimed towards both reducing and sorting of food waste. And particularly, for the development of FW sorting - a special container, availability of biobags, complementary signage, also strategic approach to the penalty and bonus system, regular monitoring.

Municipality was very positive for this pilot case full scale realization initiated by non-formal Eco-council in Valmiera municipality for school youth involvement to contribute to the local/municipal society everyday practice developments, particularly, being implemented by Eco-schools and results achieved in partnership with municipality and other stakeholders. Municipality also agreed on basic outcomes-recommendations for municipal BDW sorting complementary instruments management system necessary development. Such system shall include these but not the least activities: Training for managers and residents of apartment buildings; The work of waste managers and municipalities in the field of information and education in order to build citizens' understanding of BDW management; Punishment does not motivate, but to explain the benefits to the population; Determine organic waste containers in the city; Searching for an approach to biodegradable bags; Organize training for residents of private houses on proper home composting.

6. Municipal Eco-councils in practice: the annual Eco-Schools Friendship Bike Ride

As part of the tradition of mutual collaboration during the Eco-Council's activities in the Valmiera municipality, the annual Eco-Schools Friendship Bike Ride "Bicycle Unites'' was introduced in 2018 – a sizeable group of youngsters' bike ride intentionally planned across most of the town, having particular bicycling developments related tasks-activities of that year, but also performing promotional activities being yearly a kind of flash-mob activity too, organized at the end of September, with around 40 young people participating from all Valmiera Eco-Schools. The number of participants remained consistent each year, as by number of practical and schools representing reasons as also existent youngsters interest, but being offered as a special privilege to the most active participants of Eco Schools who also engage in the work of school's Eco-Council. The bike ride starts at one Eco-school (Valmiera Secondary School No. 2) and each year it had a different route, cycling through the city of Valmiera. The ride concludes with final camping at

the municipal recreation areas near the town's main Gauja River. The "Bicycle Unites'' bike ride was always an activity organized by the municipality during European Mobility Week, but purposely together with Eco-schools.

The main double goal of this one day open and publicly disposed activity was to attract wider attention from the local community and promote environmentally friendly mobility, as well as, to investigate along bike ride route particular elements of bicycling developments. However, it also served as a joint opening event for the new general school and particular Eco-school program year, fostering camaraderie among Valmiera Eco-Schools and students. Each year, the "Bicycle Unites" bike ride also had its own thematic priority. For example, in 2018, the focus was on a youth bike ride through Valmiera, visiting both residential neighbourhoods and courtyards. The goal of this year's event was to draw the attention of residents in residential neighbourhoods to the bicycle as an environmentally friendly mode of transportation and to play a courtyard game in each courtyard, encouraging residents to come together in a friendly manner, organize their own friendship events, and take collective action to care for the environment and improve courtyard landscaping.

In 2019, the special thematic emphasis of "Bicycle Unites" was on encouraging initiative among the participants by meeting with preschool students from Valmiera's early childhood education institutions. The bike ride route was planned so that participants also visited two Valmiera Eco-Kindergartens during the ride. The youth led outdoor games and engaged in play activities with the preschool students. This ensured mutual collaboration between the preschool education institutions involved in the Eco-School education program and the secondary education institutions. Following this positive experience, visiting kindergartens became a part of future "Bicycle Unites" rides. In 2020, the special theme of "Bicycle Unites" was related to safety and safe cycling. Therefore, an event was organized in collaboration with the State Police, and during the kindergarten visits, participants were joined by the State Police's special safety character, - a cat named Rudis. But in 2021, the thematic emphasis of "Bicycle Unites" was on safe and convenient cycling infrastructure. During the ride, the youth assessed the existing town's cycling infrastructure and participated in evaluation discussions.

Conclusions

Although the both municipal eco-councils, being under the study now, are currently not yet re-established, after the Covid and also administrative reform changing municipal borders, they are in stand-by status as after the overcoming the external and internal limiting factors, **municipal eco-councils continuation is anticipated by both main parties** – municipalities and eco-schools. Both parties have recognized many benefits noted, but, in particular, eco-school note that participants like simplifying the participation, increasing environmental awareness and pro-environmental behavior, increasing intrinsic motivation to continue efforts.

There is still a need **to improve the collaboration partnerships** among eco-schools and municipalities and other external stakeholders to improve collaboration and outcome effectiveness for all actors involved-multi-stakeholder collaboration approach and practice, what also requires, actually, mandatory, the collaboration-development approach, environmental communication action-oriented collaboration model widely application.

Both a kind of complementary short and long term practice based case studies shortly described and summarized during current study – short one day but annual flash-mob alike youngsters bike tour and PR action, being also with investigation function and, other, long term very practical multi-type step-wise practice project-based biodegradable waste sorting piloting work in student's dormitories of the town –

they were positively evaluated by the both mutual partners and invited other stakeholders as being **municipal environmental success stories** in relation to the aims and tasks proposed, and most importantly, finally confirming for municipal decision-making, that also long term, and, even complex, collaboration activities/projects can make a **impactful difference in municipal environmental management practice being done by outside municipal administration assigned capacities.** This is to be planned more systemically according to the existent municipal environmental shortcomings and eco-schools seasonal programs, even that also requires some municipal administrative and other capacities to be necessary involved. Relatedly, municipal Eco-Council, as also has been experienced during other activities, could be the **necessary administrative and coordinating instrument.**

The same positives are the general conclusions about existent practice experience and future possibilities of municipal Eco-councils as we can summarize after individual and focus group interviews with the main municipal Eco-Councils related stakeholders. From both sides there were recognized several factors, which we can compile into **three groups of preconditions for municipal environmental management** developments as it could be done via further enhancement of municipal Eco-councils and relatedly Eco-schools activities:

1) governance instruments-based formalized and also non-formal preconditions for successful development of municipal Eco-councils:

- due to the municipal functioning system first are to be mentioned **institutional-administrative instruments** and **political-legal instruments** as possibly formalized legal status of the Municipal Eco-council (even in Valmiera it is not the case yet), also formalized prescriptions into the duty functions list (and annual work plan) of municipal environmental specialist/s (as known from other municipal experiences in Latvia) and into the their whole municipal department statutory functions list – to have local **Eco-schools supportive and/or coordinative function** (and thematic working sector) established in the municipality;
- more difficult and seldom seen, accordingly to the former documented experience of the Eco-schools in Latvia and also for both municipalities studied, is to manage the same approach - **integration approach** - to be used for the integration of Eco-councils (and eco-schools) related work's components into the following municipal governance instruments' groups – **planning instruments** (integration into municipal statutory and/or voluntary planning documents) and closely related **economic-financial instruments** (integration into environmentally friendly purchases, especially into municipal budget, investment program and various projects, incl. 15% municipal co-financing assigned by Eco-schools outside granted projects),
- also the same with **infrastructure and technologies instruments** as directly depending on municipal budget and, particularly, projects assigned for upgrading Eco-school's grounds and buildings infrastructure impact also on Eco-school's content and field works necessary, as well as Eco-schools are contributing to the overall municipal infrastructure, particularly, to educational nature trails, citizen based monitoring activities etc.
- **Four environmental communication complementary instruments** shall be planned, coordinated and implemented as a system, where all main stakeholders are involved as a network and as each one separately – environmental information and education-training as well as environmental involvement-participation and pro-environmental behavior as **environmental communication frame for collaborative partnerships.**

2) **governance stakeholders-based precondition –** there was suggested to include as municipal Eco-council members/participants a **wider diversity of stakeholders** from current municipality as external, non-education institutions, environmental NGOs, entrepreneurs, public opinion leaders etc., but according to the specific situation of a particular municipality.

3) **governance sectors-based precondition –** to include representatives not only from nature/environmental sectors, but also eventually **from the health, economic, social, and culture** sectors (as partially in Ropazi municipality) according to the specific situation of a particular municipality to widen the scope and impact of the Eco-council and education process towards municipal sustainability management aspects.

Acknowledgements

Research on eco-schools and municipalities partnerships has been done based on various funding sources. Project "Eco-schools for Communities Participation" has been financially supported by the Society Integration fund from the Ministry of Culture, Republic of Latvia, and the Foundation for the Environmental Education of Latvia is responsible for the material's content. The publication was prepared at the University of Latvia in the framework of the project "ESD for 2030 — Learning for and in sustainable and resilient communities" funded by the Deutsche Bundesstiftung Umwelt, Germany. A research stay for Leuphana University Luneburg student in Latvia was supported by the PROMOS program funded by the German Academic Exchange Service.

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Proceedings of the 2024 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" No 58
Jelgava, LBTU ESAF, 16-17 May 2024, pp. 360-370
DOI: 10.22616/ESRD.2024.58.035

EU-UKRAINE AGRICULTURAL TRADE RELATIONS DURING THE 2022 WAR CRISIS

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Abstract. This article aims to examine the impact of the Russian military aggression against Ukraine in February 2022 on the EU trade policy towards Ukraine and its consequences, with a focus on the agricultural sector and mutual trade in farm products. The research employed theoretical explanations, descriptive and empirical analysis. It draws upon the review of academic literature on international trade and political economy, as well as legislation and other documents for its analytical part. For the empirical part, the study employs Eurostat statistical data to show the changes in trade in selected agricultural products between Ukraine and the EU. The comparison of trade turnover is based on a time series that includes data both before and after the Russian invasion. The research indicates that, as a response to the war, the EU has temporarily lifted restrictions on imports from Ukraine as a gesture of solidarity. The implementation of this policy has initially led to a sudden influx of cheaper Ukrainian agricultural products, including cereals, into the EU territory, particularly Ukraine's neighbouring countries. For wheat and meslin, the EU imports were 11 and 22 times higher in 2022 and 2023 than in 2021. This influx of grain has created an unbalanced market and raised concerns about the competitiveness and welfare of local agricultural producers. As a result, farmers in many EU countries organised protests and demonstrations calling for more protectionist, pro-agricultural policies at the EU level, inflaming relations with Ukraine and contributing to a loss of confidence in the EU institutions among part of the public.

Key words: Russian-Ukrainian war, European Union, trade policy, trade turnover, agricultural products.
JEL code: F13, F14, F15, Q17

Introduction

A defining feature of the contemporary global economy is the unprecedented degree of internationalization of production, financial flows, and trade. Nevertheless, a growing contradiction exists between the process of economic integration and the desire for political control and national autonomy. This phenomenon is evident in both Europe and on a global scale. The global economy is frequently disrupted by external shocks that intensify protectionist sentiment, such as the Covid-19 pandemic and the invasion of Ukraine by the Russian Federation. The increasing economic regional integration (e.g., within Europe) raises two main questions that require consideration. Firstly, how does regional trade liberalization impact the region's overall welfare? Secondly, how does liberalisation on a regional basis affect the welfare of individual nations and domestic entities, and how do their self-interested actions shape the rules of trade between nations? The article addresses the second problem in the context of the EU trade relations with Ukraine, focusing on the period preceding the war and its duration.

Russia's full-scale war against Ukraine, which began on 24 February 2022, has caused significant disruptions in global agri-food markets. This has happened both directly by limiting the supplies of agricultural goods, and indirectly through the impact of sanctions imposed on Russia and related spill-overs from other markets such as energy and fertilizers (Alexander et al., 2023; Mbah & Wasum, 2022; Odening & Hüttel, 2022). Before the outbreak of hostilities, both countries were prominent producers and exporters of agricultural and related commodities – Russia the world's largest exporter of wheat and fertilizers, while Ukraine – the largest exporter of sunflower oil and the fourth exporter of corn and wheat. The conflict has resulted in significant disruptions to the supply chain, destabilizing the export of Ukrainian products, including grain and oilseeds, to numerous countries. This situation has led to increased food prices and potential global food security threats (Chepeliev et al., 2023; Glauben et al., 2022).

The European Union (EU) and its international partners have unanimously condemned Russia's aggression and provided unprecedented humanitarian, political, military, financial, and trade support to

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Ukraine. Concerning the latter, the EU has implemented an extraordinary easing of trade policy concerning Ukrainian agricultural products: the suspension of import duties on industrial goods and tariff quotas on agri-food products, conditional trade defence measures, and the creation of the EU-Ukraine solidarity lanes.

This article aims to examine the impact of the ongoing conflict between Russia and Ukraine on the EU's economic cooperation with Ukraine in the sphere of trade policy and agricultural commodity trade. The research focuses on the import of Ukrainian grain by the EU countries following trade liberalisation, revealing conflicts of interest and disputes within the EU and between trading partners. In doing so, the study sheds light on the complex process of EU trade policy towards third countries, especially during crises such as international armed conflicts. It identifies the critical factors that influence two-way trade, including geopolitics, the solidarity paradigm, trade protectionism, trade liberalization, conflicts of interest, and the role of pressure groups. The study's originality lies in incorporating all these elements and their direct or indirect influence on wartime agricultural trade.

The research employed theoretical explanations as well as descriptive and empirical analysis. It is based on various sources such as political economy and international trade literature, Eurostat data, legal provisions, national government and EU documents, blogs and media news. In order to compare the trade turnover both in terms of value and volume, a time series was adopted which covers the period before and after Russia's invasion of Ukraine. This was presented graphically. The monthly data set on the volume of multilateral trade in the "food and beverages" category spans 11 years, from January 2013 to September 2023. The data set also includes information on the volume of selected cereals (wheat and meslin) imported from Ukraine into the EU-27, with the analysis period extending from January 2021 to January 2024.

Research results and discussion

1. The development of economic relations between the EU and Ukraine

The European Union's relationship with Ukraine has been influenced by a complex array of historical, geopolitical, economic, and security considerations (Incaltarau et al., 2022; Vidnyanskyj, 2022; Yıldız, 2023). Given Ukraine's considerable size and geopolitical importance, it was imperative that the EU adopt a clear and coherent policy in the aftermath of the Cold War and the collapse of the Soviet Union. However, up to the current war crisis, the EU focused primarily on the countries that joined the EU in 2004 and on Russia (Raik et al., 2024).

Currently, the European Neighbourhood Policy (ENP), launched in 2004 (European Commission, 2004) and complemented by the Eastern Partnership (EaP) is a foreign policy tool used by the EU towards Ukraine. The EaP was established to foster closer relations between the EU and states that emerged as a consequence of the dissolution of the Soviet Union in 1991 but were not included in the EU enlargement process. ENP's aim is to enhance and intensify political and economic connections of these states with the EU and its member countries (Council of the European Union, 2009). The objective was to implement a Western governance model, European norms, and legislation (known as "*acquis communautaire*") in those countries, and to establish a cooperation framework in various domains such as economy, society, political institutions, civil rights, and liberties (Incaltarau et al., 2022). Although the EU framework proposed to Ukraine offered enhanced political association and deeper trade relations, it did not address Ukraine's request for a membership perspective. The EU adopted a cautious approach to avoid any action that might jeopardize its relationship with Russia. Russia's full-scale invasion of Ukraine on February 24th increased

Ukrainian support for European integration, which has become crucial for Ukraine's resilience in its fight against Russian occupiers, as well as accelerated Ukraine's process of joining the EU (Raik et al., 2024).

Table 1 summarises the key developments related to trade cooperation between Ukraine and the EU member states.

Table 1

The trade relations between Ukraine and the European Union – timeline

Major events	Effective Date/Period
The European Neighbourhood Policy (ENP)	12.05.2004
The Eastern Partnership (EaP), which governs the relationship of the EU with post-Soviet countries, including Ukraine	07.05.2009
Annexation of Crimea by the Russian Federation	March 2014
The Association Agreement between the EU and Ukraine (AA)	01.09.2017
Deep and Comprehensive Free Trade Area (DCFTA)	01.01.2016
Russian invasion of Ukraine	24.02.2022
Autonomous Trade Measures (ATM)	04.06.2022-05.06.2024
Renewed EU's ATM	06.06.2024-05.06.2025
Establishment of the EU-UA Solidarity Lanes	May 2022
Granting EU candidate status to Ukraine	23.06.2022
The Black Sea Grain Initiative	22.07.2022
Termination of the Black Sea Grain Initiative by Russia	17.07.2023
Poland's unilateral ban on import of Ukrainian agricultural products	15.04.2023
Bulgaria' import restrictions on key agricultural products from Ukraine	24.04.2023
The exceptional and temporary preventive measures of the EU applied to Poland, Hungary, Slovakia, Romania and Bulgaria	02.05.2023
	05.06.2023
Lifting EU's temporary ban on imports of Ukrainian grain	16.09.2023
Poland's unilateral national ban on imports of certain agri-food products from Ukraine	16.09.2023
Hungary's ban on imports of sensitive agricultural products from Ukraine	September 2023
Ukraine's complaint to the WTO against Poland, Hungary, and Slovakia on their unilateral grain ban	18.09.2023
European Council's decision to open accession negotiations with Ukraine	14.12.2023

Source: author's compilation based on reviewed documents

In 2014, Ukraine and the EU signed the Association Agreement (Association Agreement, 2014), marking a significant achievement in their mutual economic relations. It was crucial for integrating Ukraine into the EU internal market and establishing a free trade area between the two parties. Its economic part, dealing with trade and related matters (Title IV), is known as the Deep and Comprehensive Free Trade Area. Due to pressure from Russia (which annexed Crimea in 2014), the DCFTA has been temporarily applied with a one-year delay, from 1 January 2016. The AA/DCFTA aims to boost trade in goods and services between the EU and Ukraine by gradually reducing tariffs and aligning Ukrainian regulations with those of the EU in certain industrial sectors and agricultural products. Following the military aggression of the Russian Federation against Ukraine in February 2022, the EU has implemented temporary measures to support Ukrainian exports to the EU, known as Autonomous Trade Measures (ATM), that have been in place since June 2022. They include suspension of import duties, quotas and trade defence measures on Ukrainian exports.

Prior to the Russian invasion, 89% of Ukrainian grain that was intended for export to world markets was transported through Black Sea ports (Blinov & Djankov, 2023). But for the first four months of the invasion, Russian warships blocked the ports, preventing any exports. From July 2022 to July 2023, an agreement called the 'Black Sea Grain Initiative' was in effect between Russia and Ukraine. The agreement, mediated by the UN and Turkey, allowed for the lifting of the blockade on some ports, which enabled the safe export of grain through the Black Sea via a humanitarian route. On 17 July 2023 Russia unilaterally withdrew from the treaty (European Council, 2024). Ukraine had to divert almost 50% of its exports from the blockaded Black Sea ports to Poland, Hungary, Romania and other neighbouring countries. The European Commission (EC) and EU countries backed this move by establishing alternative export routes or "Solidarity lanes" for Ukrainian agricultural goods to ensure that its exports could reach global markets. Grains, oilseeds, and other commodities were transported from Ukraine's western border through land and river to neighbouring countries for export to the rest of the world. Rather than leaving the EU's eastern member states, a significant proportion of the produce has flooded local markets. In response, on 15 April 2023, the Polish government enacted a unilateral ban on the import of Ukrainian agricultural products, citing the need to protect the Polish agricultural sector. Afterward, Bulgaria, Hungary, Slovakia, and Romania also implemented this measure.

The EC initially opposed the unilateral decisions of Eastern European countries. Finally, the EU has temporarily introduced preventative measures on imports of four agricultural products – wheat, maize, rapeseed, and sunflower seeds – originating in Ukraine due to the logistical bottlenecks and limited grain storage capacity experienced in these five states (European Commission, 2023). It is worth noting that listed sensitive products were allowed to be circulated freely in all of the EU's member states, except for mentioned frontline ones. If the products had to be transported across the territory of the five countries, this could be done under the common customs transit procedure or they could be exported outside the EU to another country or territory. The preventative measures came into effect on 2 May 2023 and were to last until 5 June 2023 but were phased out by 15 September 2023. On 16 September 2023, the EC lifted temporary ban on Ukrainian grain after Ukraine agreed to tighten controls over its agricultural exports.

As for Poland, Hungary, and Slovakia, they were not satisfied with the EU's decision to end this restrictive measure. Despite the EC's disagreement, they unilaterally announced national bans to protect their local farmers (Gijs, 2023; Liboreiro, 2023). Poland has indefinitely banned the import of certain cereals and oilseeds from Ukraine, according to a decree issued by the Minister of Development and Technology, which came into force on 16 September 2023. The prohibition did not apply to external transit and the common transit procedure provided that the transit conclude at seaports in Gdansk, Gdynia, Swinoujscie, Szczecin, Kolobrzeg, or outside Poland (Regulation of the Minister of Development and Technology.., 2023). In mid-September 2023, the Hungarian government banned imports of sensitive products, including various cereals, from Ukraine.

The Ukrainian authorities, on the other hand, welcomed the EC decision. However, they expressed dismay at the actions of Poland, Slovakia and Hungary, which had ignored it, and warned they would take retaliatory measures against these countries. These included taking the case to the World Trade Organization (WTO) and imposing restrictions on imports of Polish fruit and vegetables, among others. On 18 September 2023, Ukraine filed a lawsuit against Poland, Hungary, and Slovakia before the WTO for unilaterally banning Ukrainian grain exports, which it says "violates their international obligations" (Foote, 2023; WTO, 2023a, 2023b).

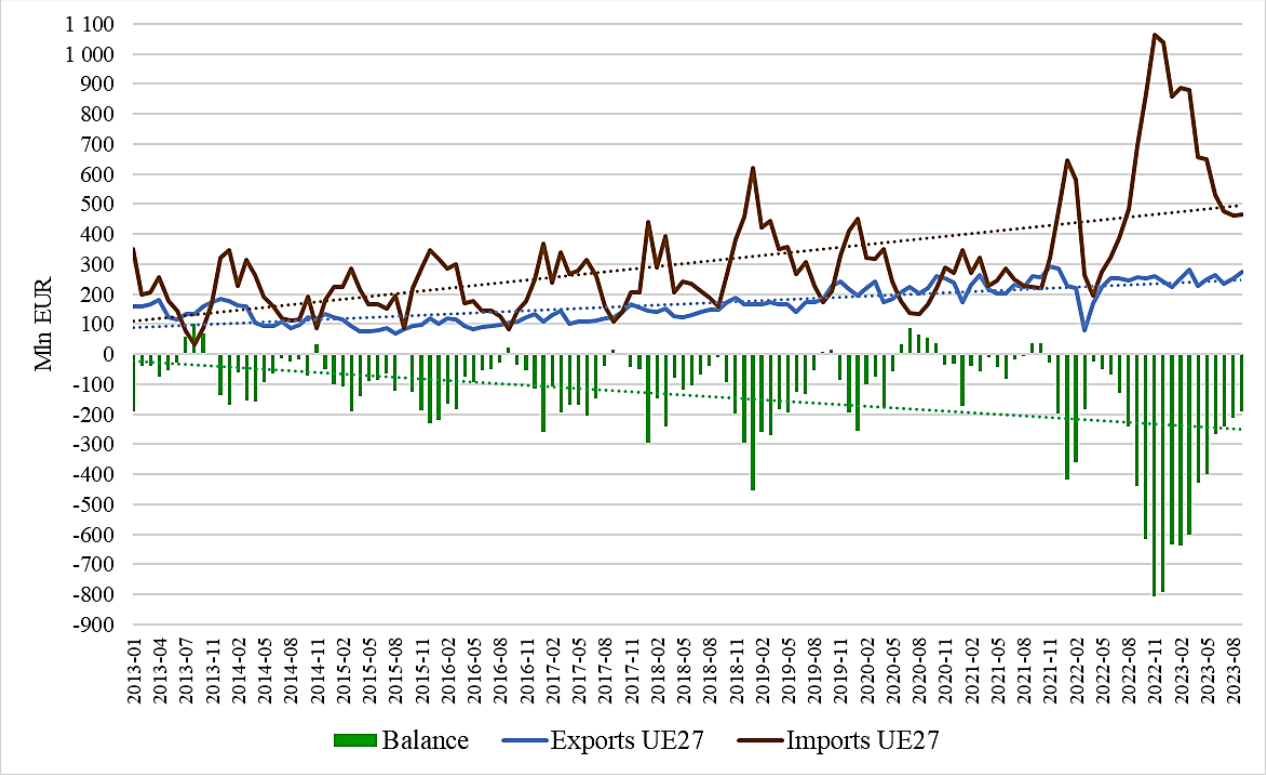
In March 2024, the European Parliament adopted changes to the regulation for extending trade liberalisation measures with Ukraine, supporting EU farmers' demands (Mambro, 2024). On 20 March 2024, the European Council and the European Parliament provisionally agreed to renew the suspension of import duties and quotas on Ukrainian exports to the EU for another year (until 5 June 2025), reaffirming "the EU's unwavering political and economic support for Ukraine, after two years of Russia's military aggression". The EU also decided to strengthen the protection of vulnerable agricultural products by enhancing the existing safeguards on temporary trade liberalisation measures. These measures should consider any negative impact on the markets of one or more member states, not just the EU market. A new automatic safeguard mechanism will require the Commission to reintroduce tariff-rate quotas if imports of poultry, eggs, sugar, oats, maize, groats, and honey exceed the average quantities imported in 2022 and 2023 (Council of the European Union, 2024). Unfortunately, the temporary agreement did not limit Ukrainian exports of wheat and barley. The proposed restrictions were less severe than those advocated by some countries, such as Poland. In addition, the years before the invasion, when Ukrainian exports to the EU were much lower, were not taken into account as the reference period for the import ceilings.

Following the Russian invasion, Ukraine had to divert almost half of its supplies from blockaded Black Sea ports to neighbouring countries such as Poland, Hungary and Romania. The European Commission and EU countries supported Ukraine by setting up alternative export routes, called "Solidarity Lanes", to ensure that Ukrainian agricultural products could reach global markets. In July 2022, Ukraine, Russia, Turkey and the United Nations established the Black Sea Grain Initiative with the objective of ensuring a stable supply of grain, addressing global food security concerns and mitigating the impact of rising food prices. Russia left this initiative in July 2023, despite its success. The EU condemned this move. The transportation of grains, oilseeds, and other commodities from Ukraine's western border through land and river solidarity lanes to neighbouring countries for export to the rest of the world was necessary. However, instead of leaving the EU's eastern member states, a significant portion of the produce has flooded local markets.

2. Trade between Ukraine and the EU

Since the start of the war, Ukraine's economy has become increasingly dependent on agricultural and food exports, which account for more than half of the country's export revenues (53% in 2022, compared to 40% in 2021). Despite the significance of these exports, a decline of USD 4.3 billion was observed in 2022, representing a 15.5% decrease (Taran, 2023).

Looking at the more extended period, following the implementation of the DCFTA, trade between Ukraine and the EU has grown steadily in both directions, recovering from the effects of the Maidan revolution (the turn of 2013 and 2014). There was also a growing trend in mutual trade in the "food and beverages" group, with a rising negative trade balance of the EU with Ukraine (Figure 1).

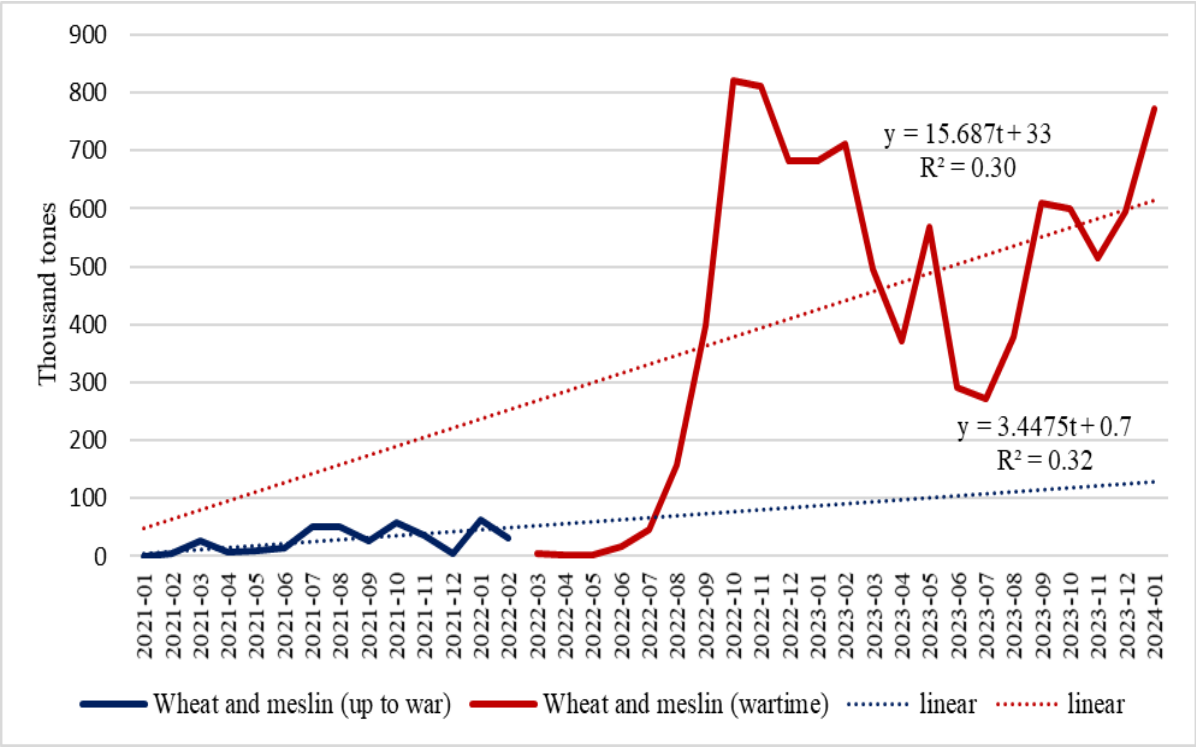


Source: author's compilation based on Eurostat; Data set: EU27 (from 2020) trade by SITC product group

Fig. 1. **EU trade with Ukraine by "food and beverages" group, January 2013 - September 2023**

The surge in the value of Ukraine's agri-food exports to the EU was due to the increase in their volume, which was caused by the suspension of duties and tariff quotas on their import from June 2022. Although the value of EU imports from Ukraine fell sharply at the start of the Russian invasion, it has risen again, peaking at over EUR 1 billion in November and December 2022. The EU's temporary preventive measures applied to Poland, Hungary, Slovakia, Romania, and Bulgaria between May and September 2023 led to a reduction in Ukrainian exports to the EU.

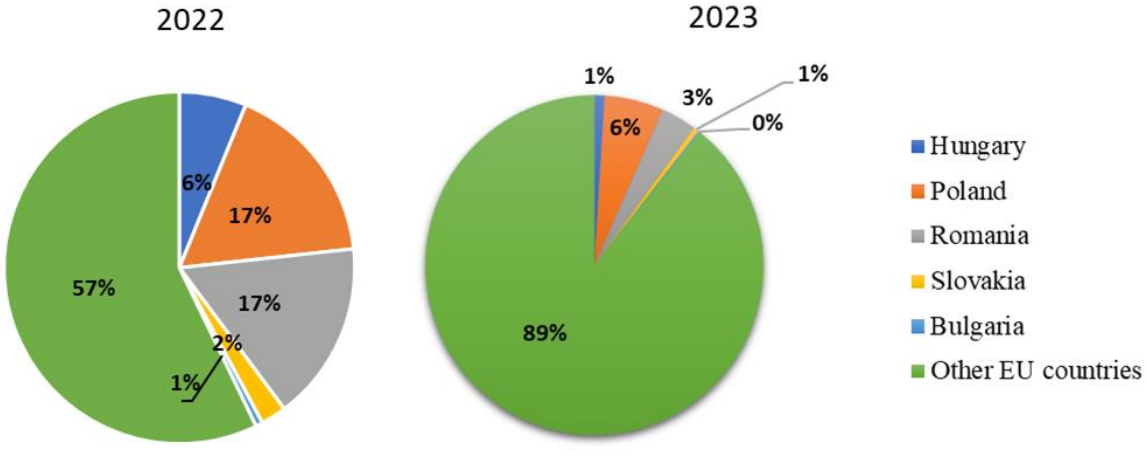
A critical question is how the EU trade policy rules following the outbreak of the war in Ukraine have affected the volume of disputed agricultural products imported into the from that country. Increased importation, mainly of wheat and meslin (Figure 2), was evident after the autonomous trade measures were introduced in June 2022. The exceptional and temporary preventive measures applied by the EU to Poland, Hungary, Slovakia, Romania and Bulgaria in May 2023 hampered grain imports, but the trend reversed after their removal in September 2023.



Source: author's compilation based on Eurostat data (Eurostat, 2024)

Fig. 2. **Volumes of wheat and meslin imports from Ukraine to the EU27, 2021-2024**

The volume of imports of wheat and meslin from Ukraine increased significantly in 2022 and 2023, being 11 and 22 times higher respectively on an annual basis than in 2021. The burden of importing cereals placed on Poland and the other four countries is reflected in their shares of the EU's wheat and meslin supplies from Ukraine (Fig. 3), which were many times higher in 2022 and 2023 than in previous years. According to available Eurostat data, allowing for comparison, Poland, Hungary, and Romania's combined share skyrocketed from 0.5% in 2018 to 40% in 2022. It remained relatively high (10%) in 2023 despite trade disputes between these countries and Ukraine.



Source: author's calculations based on Eurostat data (Eurostat, 2024)

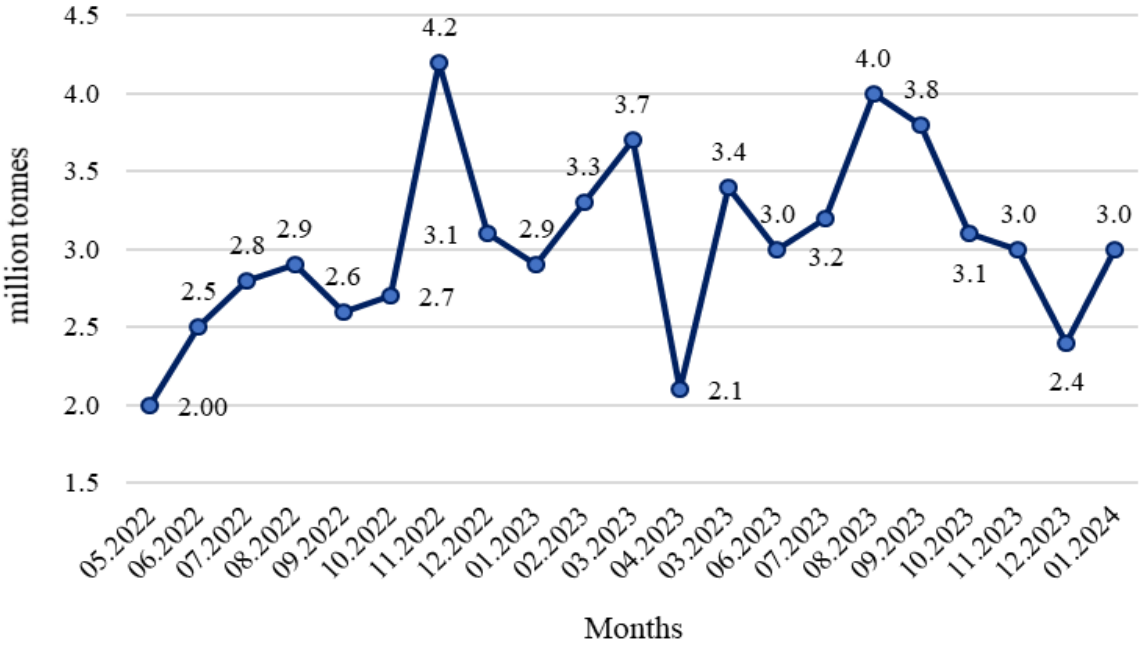
Fig. 3. **Distribution of wheat and meslin imports from Ukraine into the EU27 by member state**

3. The role of solidarity lanes in trade between Ukraine and the EU

In addition to a series of measures designed to support Ukrainian agricultural exports as a gesture of solidarity, a new export corridor was established in May 2022, following the disruption of transit through

the Black Sea caused by Russia. This initiative was continued. For example, on 11 January 2024, the EC approved, under the EU state aid rules, a EUR 126 million Romanian scheme to support investments in ports facing increased trade flows following war, which EU cohesion funds will partly finance. By facilitating trade flows to and from Ukraine, the project will contribute to the functioning of the EU-Ukraine Solidarity Lanes (EU NEIGHBOURS east, 2024).

What are the effects of the EU-UA Solidarity Lanes? Between May 2022 and January 2024, Ukraine shipped approximately 63.7 million tonnes of grain, oilseeds, and related products via new transport routes, including rail, road, and inland waterways (Fig. 4). Approximately 58% of Ukraine's total grain production has been exported since the onset of the conflict. Black Sea ports have facilitated about 42% of Ukraine's grain exports.



Source: author's compilation based on European Commission, 2024

Fig. 4. **Export of grains, oilseeds and other related products from Ukraine via the Solidarity Lanes**

It is crucial to acknowledge that there are concerns regarding alternative export routes from Ukraine through Europe. Ukrainian food exports are accumulating in Eastern Europe and failing to reach their intended destinations, threatening developing countries' food security. Simultaneously, Ukrainian exports via those routes harm farmers and consumers in certain EU countries.

4. Reactions of EU farmers to the liberalisation of agricultural trade with Ukraine

The literature on international political economy highlights how political and diplomatic relations play a crucial role in determining trade flows between countries. Some trade policy models consider the influence of pressure groups, which are individuals or organizations that come together to achieve desired policy outcomes in government and society. According to researchers, special interest groups are the main drivers of order and disorder in global economic relations, including by influencing trade policy choices (Grossman & Helpman, 1994; Osgood, 2021; Swinnen, 2010). Public choice theory states that policy outcomes are determined by interactions between elected officials, who provide specific public policies, and organized interest groups that express demand for policies that increase the economic rents derived by interest groups (Krueger, 1974; Zawojska, 2011). Political opposition from individuals or groups at risk of

harm to their well-being due to specific political actions may cause resistance to trade policy. Domestic interest groups seek to protect or liberalize the market because the desired policies enable them to maintain or improve their welfare.

Farmers in countries on Ukraine's periphery, such as Poland, Hungary, Slovakia, Romania and Bulgaria, have suffered severe losses as a result of the surge in tariff-free, low-cost grain from Ukraine, which, unlike grain produced in the EU, is not subject to strict regulations on production and food standards. These imports saturated local markets, leading to decreased prices and losses to local farmers (Cervera, 2023; Talach, 2024; Vos & Glauber, 2023). The arisen grain conflict can be analysed through different theoretical frameworks, one of which is the Exit, Voice, and Loyalty framework. Drawing on Albert Hirschman's (Hirschman, 1970) metaphors of "exit" and "voice", it can be argued that farmers who lack the option to disengage from agricultural activity, due to their assets specificity, resort to collective action to have a stronger political voice (the public expression of protest), and pursue their economic interests through the political system. Farmers' protest movements are meant to mobilize public opinion and put pressure on decision-makers.

Farmers' large-scale protests and demonstrations against national and European agricultural policies have recently occurred in around half of EU countries, including Germany, France, Poland, Romania, and Belgium (Farm Europe, 2024; Rose, 2024). The reasons for these protests vary. In Germany, for instance, farmers were concerned about planned cuts in diesel subsidies. Farmers in Poland and other Central and Eastern European countries were obstructing roadways and border crossings to impede the importation of cheap grains and other products from Ukraine (Riegert, 2024).

Polish farmers have taken action to protest against what they perceive to be unfair trading practices by blocking the Ukraine-Poland border. This was in response to the unsatisfactory European Commission's proposed safeguard mechanisms to protect agricultural producers from the effects of its liberalised trade policy with Ukraine (Dodd & Welsh, 2024). Representatives of Polish agricultural organizations forced an agreement with Poland's Minister of Agriculture in March 2024 regarding maintaining the embargo on agricultural products from Ukraine and regulating trade relations with this country. The parties declared that access to the Polish market must be controlled for cereals, rapeseed, corn, sugar, poultry, eggs, soft fruits, and apples. After signing this agreement, some protests were suspended but the blockade at the border crossings continued.

Following the protests of farmers across the EU who are dissatisfied with the EU's agricultural and trade policy, there is a noticeable increase in tensions between Ukraine and EU member states, particularly those neighbouring Ukraine. On the other hand, these protests have garnered widespread public support in some EU countries, such as Poland and France. It is challenging to find a satisfactory solution for both sides, as the dilemma between solidarity with Ukraine and the prosperity of EU farmers needs to be solved in politics.

Conclusions and recommendations

1) The impact of international agricultural trade goes beyond economic considerations, as it can also have significant socio-political implications. This trade can help build and strengthen diplomatic relationships, providing valuable opportunities for nations to work together. However, trade imbalances, unfair trade, regulatory standards, sanitary requirements, and tariffs can disrupt agricultural trade patterns and strain diplomatic relations. This sector plays a vital role in the political domain, as demonstrated by Ukraine's trade cooperation with the EU and its member states. The development of economic and political relations between the EU and Ukraine, presented in the paper, highlights the complexity of international trade issues and can provide for controversy. Despite this, the authors of

this paper are optimistic about the benefits of agricultural trade, recognizing its potential to foster positive relations between nations and promote economic prosperity.

2) Researchers, farmers, politicians, and other stakeholders will be able to assess all mutual gains and losses from liberalized agri-food trade between the EU countries and Ukraine after the end of the war, which started in 2022. But even before the war is over, the EU institutions should take action under the Common Agricultural Policy and trade policy to balance the interests of all member states and their agri-food sectors with EU solidarity towards Ukraine. As this article shows, the implementation of the Autonomous Trade Measures liberalising trade with Ukraine has harmed farmers in some EU countries, and their continuation may increase this harm. The EU and national government's commitment to protecting the interests of local farmers can include, among others, ensuring that the quality of imported agricultural products meets the highest EU standards.

3) Politicians at the national and EU levels need to consider the interests of local farmers. Ignoring their demands could lead to further unrest, such as street protests and road or border blockades. This type of reaction by farmers, who are worried about the increase in agricultural products, especially cereals, entering the EU from Ukraine, which has been visible so far, could develop into more severe actions threatening the country's stability.

4) The resilience of the EU agri-food market and the prosperity of local farmers, the entire agri-food sector, and consumers depend significantly on the EU's internal policies and its future diplomatic and economic relations with Ukraine, both during and after the ongoing war. These factors are crucial and need to be considered by academics and practitioners.

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RURAL DEVELOPMENT AND ENTREPRENEURSHIP

Proceedings of the 2024 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" No 58
Jelgava, LBTU ESAF, 16-17 May 2024, pp. 372-380
DOI: 10.22616/ESRD.2024.58.036

ENVIRONMENTAL AND ECONOMIC LOSSES OF THE AGRICULTURAL SECTOR OF UKRAINE AS A RESULT OF RUSSIAN AGGRESSION

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Abstract. The article presents the results of a study of economic and environmental losses of Ukraine's agricultural sector as the result of Russian aggression. It is noted that a significant part of environmental issues in Ukraine are the result of global processes (warming, biodiversity loss, pollution, overpopulation and urbanization, harmful effects of heavy industry), also, of the Soviet era energy and resource-intensive economy, consequences of the Chornobyl accident (radioactive contamination), degradation of agricultural land, military infrastructure, etc. After gaining independence these problems not only did not diminish, but also deepened. However, efforts to ensure environmental protection were interrupted by the military attack of the Russian Federation. The authors collected and summarized information on the amount of environmental and economic losses of the agricultural sector of Ukraine. Their interrelation is emphasized. The sources are analysed. It is noted that in wartime accurate accounting of losses and damages is impossible, so the main attention is paid to the analysis of their causes, structure, and consequences. It is shown that the economic and environmental damage caused by the war was inflicted not only on Ukraine, but also to neighbouring countries and poses a potential danger to the World. The problems associated with increased competition in the European agricultural market due to the impact of the war and the inaccessibility of traditional sales markets are highlighted. Based on the Ukraine's recovery plans and regional programs, the authors identify key areas of work for the future. The significant support from the United States, the European Union and other countries and its importance in the future to overcome the consequences of the war are emphasized. The authors have summarized the common economic and environmental problems that need to be addressed.

Key words: Ukraine, public administration, ecology, agricultural sector, impact of war.
JEL code: H56

Introduction

Many of the environmental issues in Ukraine are the result of global processes (warming, loss of biodiversity, pollution, overpopulation and urbanization, harmful impact of heavy industry etc.) or the legacy of the Soviet era energy and resource-intensive economy, consequences of the Chernobyl accident (radioactive contamination), degradation of agricultural land, military infrastructure etc. After gaining independence, these problems have not only not diminished, but have deepened the destruction of forests and green spaces and soil depletion due to their barbaric use. Waste disposal problems also became more and more frequent. Environmental and economic problems of the agricultural sector are an important part of the overall problems, the solution of which were realized in attempts to create an ecological network of Ukraine (Zakon Ukrainy…, 2024).

The materials of the study "**Environmental Trends**: **Citizens' Views"** conducted in November-December 2020 by the Gorshenin Institute in cooperation with the Friedrich Ebert Foundation in Ukraine, (Ekolohichni trendy…, 2021) showed that many Ukrainians were concerned about the state of the environment, noting pollution and water shortages, global warming, increasing waste, the danger of nuclear power etc. At the same time the war in Ukraine, socioeconomic difficulties, and the impact of the pandemic are worrying factors.

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The research conducted for the 30th anniversary of independence revealed significant environmental problems and allowed us to identify priorities for the coming years. It was noted that there was an accumulation of environmental problems primarily in the temporarily occupied territories of Donbas and Crimea, as well as deforestation and illegal amber mining, as well as environmental damage from accumulation of waste. At the same time, the formation of a powerful environmental movement, increased use of renewable energy sources, creation of the of the State Energy Efficiency Fund, implementation of environmental programs etc. For example, the share of electricity produced from renewable sources (solar, wind and bioenergy plants in Ukraine) increased from 1% in 2014 to more than 7% in 2020, and the number of owners of home solar stations over the same period increased from a few dozen to 30 thousand. Energy substitution and saving programs have also intensified significantly. The data summarized in Table 1 convincingly demonstrate the breadth of the tasks set (Ekolohichni priorytety…, 2021).

Table 1

Environmental priorities of Ukraine as of 2021

Tasks	**Components of implementation**
Climatically neutral economy	Decarbonization of the energy, transport and industry sectors
Energy independence	Refusal to import fossil fuels
Renewable energy	Development of renewable energy sources.
Abandonment of nuclear power energy	Decommissioning of nuclear power plant units/blocks, transition to renewable energy
Clean water	Implementation of modern the European Union environmental standards and strengthening of environmental supervision of the agricultural sector, as well as investments into the infrastructure
Clean air	Abandonment of outdated, old technologies, strict control of enterprises
Sustainable agricultural and good practices in agricultural sector	Development of small and medium-sized farms, ecological production
Refusal from coal	Revitalization, replacement with modern energy sources, creation of new jobs
Development modern system of public transportation	Reducing the number and level of use of private means of transportation mainly cars, creation of modern urban infrastructure
Adaptation to climate change	Making environmentally friendly decisions
Energy efficiency	Abandonment of energy-intensive sectors of the economy,
A well-established system of handling with waste	Separate waste collection, in-depth recycling, reuse of reuse of goods and packaging.

Source: author's calculations based on Ekolohichni priorytety…, 2021

However, since 2014, environmental and economic problems have emerged, and with the intensification of Russian aggression in 2022 environmental and economic problems related to the hostilities have become more acute. At the same time, experts note that since the beginning of the full-scale war, access to environmental data has been significantly complicated or closed by the authorities, who citing security concerns or lack of funding. There is no single tool for free access to state monitoring data, and all subjects of state monitoring collect, process and use data independently, mostly without publication of primary data (Vplyv voiennykh dii …, 2023).

Materials and methods

Environmental issues in Ukraine are constantly in the centre of attention of the public and authorities; and with the beginning of the Russian aggression, they are increasingly worrying the world community. It is advisable to distinguish two periods of studying this issue: pre-war and the time of Russian military

aggression. In the pre-war period, the most important sources of environmental information were official reports and materials of public discussions were important sources of environmental information. During the war, the main sources were materials of periodicals and publications of research carried out jointly by Ukrainian and foreign scientists within the framework of grant programs. An important methodological document is the Law of Ukraine "On Environmental Impact Assessment" (2017), which is aimed at preventing environmental damage, ensuring environmental safety, environmental protection, rational use and reproduction of natural resources, in the process of making decisions on economic activities that may have a significant impact on the environment, taking into account state, public and private interests (Pro otsinku vplyvu …, 2017).

The regulations governing the activities of government authorities, businesses and the public under martial law. The specifics of the activities of the Ukrainian authorities under martial law has already been analysed (Lakhyzha M., Kachan Y., 2022).

The main comprehensive source is the National Environmental Reports of Ukraine, which have been prepared since 1992 and submitted to the Verkhovna Rada of Ukraine by the Ministry of Environmental Protection and Natural Resources of Ukraine. The latest available report is for 2021 (Natsionalna dopovid …, 2021).

Annual reports on the state of the environment in the regions of Ukraine are prepared by regional state administrations and posted on their websites (Dopovid pro stan …,2022).

An important source is the results of the implementation of international documents signed by Ukraine. For example, the National Reports of Ukraine to the Convention on Biological Convention. Research is periodically conducted jointly with international organizations. For example, in 2016 the World Bank published "*The Environmental Analysis of Ukraine".* After 2015, attention was paid to the implementation of the Sustainable Development Goals and relevant information. Annual regional reports on the state of the environment are also important documents. However, during the war, some businesses took advantage of their right to limit reporting, including on the state of the environment. Some environmental researches were done by Ukrainian scientists within the framework of international projects. For example, in 2017, the results of an environmental damage assessment in eastern part of Ukraine were published (Otsinka, 2017; Yehorycheva S., Hudz T., Lakhyzha M. 2020; Garafonova O., Zhosan A., Khudolei V., Tyukhtenko N., Tymkiv I., Riabets N., 2023; Garafonova, O., Zhosan, H., Marhasova, V., Tkalenko, N., & Trukhachova, K. 2022); Teixeirada Silva, Jaime A., Kobilianska I., Kucher A., 2023).

We have also traced criticism of official materials, which mainly concerns insufficient involvement of stakeholders in their preparation and low level of influence on policymaking. This criticism is usually made by representatives of human rights and environmental organizations. As example is the publication of the executive director of the "Green World", the head of the NGO "Helsinki Initiative - XXI" O. Stepanenko dedicated to protect environmental rights of Ukrainians (Stepanenko, O., 2024).

The question naturally arises of the methodology for calculating environmental and economic losses. The methodological basis for determining losses is based on internationally recognized standards. At the state level, such work is carried out by state and local authorities with the involvement of civil society and business self-government bodies. For example, recommendations for farmers and resources for recording losses were developed by experts from the USAID Agricultural and Rural Development Program, and the All-Ukrainian Agrarian Council. For documenting losses, farmers are encouraged to contact the police or the Security Service of Ukraine; military administration or local authorities; other authorities in certain cases to the State Environmental Inspectorate, State Service of Ukraine for Food Safety and Consumer Protection, State Service of Ukraine for Geodesy, Cartography and Cadastre, State Water Agency for proper

calculation of the amount of damage. It is also proposed to leave information about losses on the Internet portals created by the initiative of the Office of the President of Ukraine and the Office of the Prosecutor General of Ukraine on the following the Internet portals (https://dokaz.gov.ua/ and https://warcrimes.gov.ua/). The following are recorded evidence of damage to facilities and property, direct losses, and lost profits. Ukraine's recovery projects contain specific proposals and help to better orientate the areas of work. An example is the for Ukraine (Draft Ukraine Recovery Plan…, 2022).

The authors of the article used the following research methods: system analysis - to define and characterize the object and subject of the research; abstract-logical method - for scientific substantiation of conclusions regarding the formation of a strategy for the development of the agricultural sector in Ukraine).

Public goods – theoretical background. Results of the support

The analysis of environmental issues in Ukraine during the period 2022-2023 primarily concentrated on war-related issues. At the same time, more and more attention is being paid to the growing environmental and economic problems. Environmental and economic processes taking place in Ukraine, which is in the geographical centre of Europe, have a major impact not only on neighbouring countries but also on the whole of Europe. For example, the harmful impact of emissions from Ukrainian coal-fired power plants is felt in neighbouring countries, especially in Poland and Romania. Awareness of the negative impact of the war on the environment in the first days of its intensification became noticeable not only in Ukraine but also in neighbouring countries. For example, in March 2022 the Polish newspaper "Rzeczpospolita" wrote: "Although the greatest tragedy of the war in Ukraine is undoubtedly the suffering of its inhabitants, experts warn that Russian aggression also poses serious environmental risks" (Wojna w Ukrainie, 2022).

The analysis of the Polish press in 2022-2023 shows a constant appearance of materials in it, related to the Russian-Ukrainian war and its negative impact on the environment and economy. The threat is pointed out not only to Ukraine and Europe, but also to the World. For example, J. Behr emphasized that the trench warfare turned hundreds of square kilometres of fields into scorched wastelands with contaminated soil and groundwater. Unique steppe and wetland ecosystems of southern and eastern Ukraine, habitats of endangered species of plants and animals. The Russians' blowing up of the dam in Nova Kakhovka caused the largest environmental disaster in Europe in many years: a major flood in the Lower Dnipro Valley and pollution of the waters of the river and the Black Sea. However, the war could be a catalyst for positive change in the long run. Rebuilding Ukraine could change the post-Soviet model of utilizing the natural resources of its South and East, based on heavy industry and large-scale agriculture. In particular, the natural reconstruction of the former floodplains (Velykyi Luh) offers a chance to restore biodiversity in this most transformed by anthropogenic activity in the country (Berh, J., 2023).

In June 2022, the Minister of Environmental Protection and Natural Resources of Ukraine Strelets, R. called the environmental situation in Ukraine caused by the war a ticking time bomb, naming 257 known cases of ecocide at that time, including the explosions of fuel and lubricants, oil product storage facilities; air strikes on enterprises that use hazardous chemicals in production; destruction of sewage treatment facilities; damage to soil cover, burning of forests etc. (Strilets, R., 2022).

Experts of the NGO "Green World - Friends of the Earth" within the framework of the international program "Clean Air for Ukraine" with the financial support of the Ministry of Foreign Affairs of the Czech analysed the damage caused by Russian aggression to the environment in Ukraine, identifying three main areas: 1) massive release of toxic substances into the environment of a military nature; 2) physical impact (fires, explosions, soil damage etc.); 3) destruction of the environment due to man-made disasters caused

by military actions (Anhurets, O., Khazan, P., Kolesnykova, K., Kushch, M., Chernokhova, M., Havranek, M., 2022).

The unprecedented consequences of the Russian aggressors' explosion of the Kakhovka hydroelectric power station on 6 June 2023, has led to the draining of the reservoir and unexpected flooding of the areas below the dam. An expert, the head of the Ukrvodokanalekologiya Association Novytskyi identifies four categories of consequences of the Kakhovka hydropower plant explosion: 1) humanitarian (loss of centralized water supply and sanitation in many settlements of three regions - approximately 880 thousand people); 2) economic (stoppage of industrial production at many large enterprises, the threat to the nuclear power plant); 3) social (growth of unemployment, decline in living standards, domestic problems); 4) environmental (disaster that covers 5 thousand square kilometres - the estimated amount of damage is more than 55 billion UAH, the impact on the Black Sea ecosystem as a result of a decrease in water salinity (Novytskyi, D., 2023).

According to the Ministry of Economy of Ukraine daily environmental damage in Ukraine is growing by about 102 million Euros every day. The Ukrainian authorities and experts emphasize the need to start reconstruction now. Stage zero is the demining of more than 170 thousand square kilometres of the country's territory. Almost 6 million Ukrainians are at risk, 800 of whom have already fallen victim to mines.

Problems of the agricultural sector: the relationship between economic and environmental losses

The interconnectedness of economic and environmental problems in the agricultural sector was pointed out by Ukrainian scientists even before the full-scale war. The Ukrainian scientists have repeatedly pointed out the interconnection of economic and environmental problems in the agricultural sector. They emphasized the following deterioration of the ecological quality of the environment due to a significant increase in anthropogenic and anthropogenic and technogenic load on it (Mishenin, Ye., Yarova, I., Dutchenko, 2017; Hranovska L. 2007; Zinovchuk N.2007; Furdychko O., 2014).

The economic and environmental problems of the agricultural sector in 2000-2021 were actively considered through the prism of the principles of sustainable development: partnership, integration ecosystem and environmental management, justice for all generations, civilized competitiveness. However, despite discussions about changing the emphasis of economic policy more effectively confront the aggressor, Ukraine's economy remained bureaucratized, corrupt, and inefficient. Ukraine's export potential was determined primarily by monopolies concentrated in metallurgy and agriculture. The war has caused the breakdown of logistics chains, the blocking of markets, and environmental disasters at large livestock complexes, which makes functioning of of large-scale agro-holding companies particularly complicated. Therefore, in the first months of the war, it was necessary to urgently reduce the tax burden on business and stimulate the activities of small and medium-sized businesses, including the agricultural sector. Thanks to the measures taken in the context of a full-scale war, Ukraine's agricultural sector has shown considerable resilience. The main task of providing the population with food is crucially important as Ukraine remains one of the guarantors of food security in the world. However, the agricultural sector faced additional risks: loss of production and resource potential (reduction in the number of employees; temporarily occupied territories, the territories of military operations, the liberated territories disabled; loss of equipment); exit of individual producers from business; loss of part of the infrastructure (destruction of warehouses by the enemy, warehouses, granaries, logistics structure; blocking of sea and river ports; losses from power outages etc.) (Ahrarnyi sektor ekonomiky…, 2023).

According to the Ministry of Agrarian Policy and Food of Ukraine, due to military invasion, the sown area in Ukraine decreased by 25% in 2022. The sown area of all categories of farms in the government-controlled territory of Ukraine for the 2023 harvest was to be 21.8 million hectares, which is 6.8 million hectares less than in 2021 (21.8 million hectares versus 28.6 million hectares). The problems were particularly severe in those areas that were under temporary occupation and in the war zone. Thus, according to the of the central newspaper "Uriadovyi Kurier", in 2022 farmers in Kharkiv region sowed 68.4% less winter crops less winter crops than in 2021. According to the information of the district state administrations of the Kharkiv region, as of February 2023, 483.5 thousand hectares of agricultural land needed to be surveyed for its possible contamination caused by mines and explosive remnants of war, and another 72.3 thousand hectares of land of agricultural land where military operations took place needed to be surveyed after the end of hostilities. The war damaged industrial infrastructure: elevators, warehouses, large agricultural enterprises and small farms; more than 70 agricultural enterprises. Almost half of the agricultural machinery and equipment was damaged or stolen by the occupiers (Breslavets, B., 2023).

At the beginning of 2023, the International Marketing Group with the support of the organization "Help-Hilfe zur Selbsthilfe Ukraine" together with the Ukrainian Business Council conducted a representative survey of 400 small farms from all regions of Ukraine to assess the impact of the war on them and collect information about the needs of farmers. The biggest losses farmers suffered due to the destruction of production facilities; the suspension of investment projects; the destruction of transportation infrastructure; pressure on inflation and the exchange rate due to the narrowing of the range of domestic goods, energy shortages etc. In farmers' opinion, the most topical problems are: lack of skilled workers; raiding, shortcomings in settlements with retail chains networks; risks due to power outages; unpredictable actions of the state (Vplyv viiny…, 2023).

In February 2023, the Law of Ukraine "On compensation for damage and destruction of certain categories of real estate objects as a result of hostilities, acts of terrorism, sabotage caused by the military aggression of the Russian Federation and the State Register of Property Damaged and destroyed as a result of hostilities, terrorist acts, sabotage caused by the armed aggression of the Russian Federation against Ukraine" entered into force. The state has adopted the following programs to support small and medium-sized businesses:

- grants for the creation of greenhouses and support for horticulture, berry growing and viticulture;
- budget subsidies per unit of cultivated agricultural land for agricultural activities to provide support to farms and other agricultural producers;
- a special budget subsidy for the maintenance of cows of all productivity areas to provide support to farms and other agricultural producers.

As of 24 February 2023, the losses, and damages of the agricultural sector in Ukraine were estimated at 40.2 billion US dollars. Agricultural land has suffered damage, farmland was particularly damaged because of pollution and contamination during the hostilities. The facts of pollution and soil contamination, as well as their extent, are established by authorized persons - representatives of the State Environmental Inspectorate of Ukraine, by inspecting the land plots, data from remote sensing of the land, research of soil samples obtained, processing of conclusions of any expert examinations, explanations, certificates, documents, materials, information, obtained, in particular, from any sources, operational reports of individuals and legal entities etc. The amount of damage caused to the owners of agricultural land plots is determined in accordance with the Procedure for Determining and Compensating Damages to landowners and land users, approved by the Resolution of the Cabinet of Ministers of Ukraine of 19 April 1993, No. 284.

The issue of competition

Realizing the huge potential of the agricultural sector of Ukraine and taking care of its growth, it is worth paying attention to the problems that arise in connection with competition on the European market. This problem has been greatly exacerbated by difficulties in exporting grain and other goods to traditional markets in Africa and Asia. For example, in Poland already at the beginning of 2023 they wrote about "Polish troubles due to Ukrainian agricultural competition" (Bielecki T., 2023). The importance of this problem was also confirmed by the protests of Polish farmers.

Ukraine is already implementing several tasks related to the recovery from the hostilities. The first task is to minimize possible consequences, the second is to overcome losses and is to overcome losses and damage. According to the website of the Ministry of Economy of Ukraine, there are two Ukrainian armies in the country: the armies of defense and recovery. As of 20 November 2023, more than 70 thousand unemployed people were involved in public works under the "Army of Recovery" project, and they earned 462 million UAH for performing such work. The types of such work depend on the needs of the of the region (Armija vidnovlennia…, 2023).

Ensuring the development and submission of proposals to the President of Ukraine on Ukraine's recovery is one of the functions of the National Council for the consequences of the war, which was established on 22-04-2022. The Restoration Fund of Ukraine and other charitable organizations that offer or help Ukrainian citizens to use funds, who have suffered from the hostilities. The Draft Recovery Plan for Ukraine prepared by the National Council in mid-2022, as of 13 June 2022, estimated direct documented damage to infrastructure at almost 100 billion US dollars. The total indirect loss to the economy is 126.8 billion US dollars. Over the next period of the war, these costs increased significantly, which was especially evident after the occupiers blew up the Kakhovka hydroelectric power station.

Conclusions

1) Government documents and academic literature have repeatedly emphasized that it is impossible to make accurate estimates of damage and losses in wartime, especially in the field of ecology. Therefore, special attention is paid to documenting losses and damage according to international methodologies and standards. Some losses of natural ecosystems and unique natural sites are already irreplaceable, while the restoration of other losses (soil, forests, and the natural richness of flora and fauna in some areas) will take decades to restore.
2) Environmentalists are identifying the areas of loss and are concentrating their efforts for restoration: 1) damage to the nature reserve fund and other protected areas; 2) damage to forests areas; 3) damage to water resources; 4) damage as a result of attacks on infrastructure and industrial facilities; 5) military waste (destroyed equipment, destroyed and used ammunition); 6) emissions of hazardous substances into the atmosphere; 7) damage to land resources.
3) It is important to realize that the development of the Ukrainian agricultural sector creates competition for many countries producing agricultural products and may lead to structural changes in the economy of the European Union. First of all, we are talking about the agrarians of Poland and France. Therefore, a comprehensive approach is needed in this case as well. In our opinion, ecological production, which has been developing in Ukraine for a long time, has good prospects, as revealed by the example of Private Enterprise "Agroecology" and other enterprises of the Poltava region.
4) In the agricultural sector, the interconnection of economic and environmental losses is particularly noticeable and must be addressed comprehensively. While estimating the economic and environmental

damage caused by the military, it should be noted that not only Ukraine, but most countries in the world have suffered.

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Proceedings of the 2024 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" No 58
Jelgava, LBTU ESAF, 16-17 May 2024, pp. 381-390
DOI: 10.22616/ESRD.2024.58.037

TRENDS IN AGRICULTURAL LAND PRICES IN POLAND AND IN THE EUROPEAN UNION

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Abstract. The article aims to identify the agricultural land price trends in Poland and the European Union (EU) from 2013 to 2022. The study encompasses EU member countries for which data on arable land prices and permanent grassland prices for 2013-2022 are available. The analysis showed that prices of arable land and permanent grassland increased noticeably during the ten years in most countries. In Poland, they doubled. The countries that recorded a decline belonged to old EU members. Arable land prices were higher than grassland prices. In several countries, the differences were significant. Over the ten years, the price advantage for arable land on permanent grassland increased in most countries surveyed. The annual growth rates fluctuated noticeably. The spectacular high changes occurred mainly in post-socialistic countries due to changes in law. Price growth in the old Member States was generally lower than in post-socialist countries. The spread of agricultural land prices between countries has declined. These phenomena prove the slow process of convergence of agricultural land prices. The COVID-19 pandemic has affected agricultural land prices. It shifted the prices up.

Key words: arable land price, permanent grassland price, trends in agriculture land prices, COVID-19 pandemic.
JEL code: Q15, R14, R24

Introduction

The role of the agricultural land in agriculture production is crucial. However, the demand for agricultural land stems not only from the role of land in agricultural production. Land price formation is, therefore, essential for agriculture and other areas of economic activity for which the spatial aspect is important.

The market price of agricultural land is a result of several factors. These can be divided into four groups: one related to land supply and three determining land demand.

The first group comprises factors arising from the physical characteristics of the land resource. These can be categorized as supply-side factors. The land resource is strictly limited and non-producible. The land occupies a finite area, and nobody can produce an additional area. Where wasteland exists due to various factors, attempts can be made to give it the characteristic of usefulness. As examples of such efforts, we can indicate the Chinese government's program of land recuperation (Zhang et al., 2021), post-mining disturbed land reclaiming (Ignatyeva et al., 2020; Pietrzykowski & Krzaklewski, 2018; Kirilov & Banov, 2016) and adaptation of abandoned agricultural land (Smaliychuk, 2016). The highly controversial activity for an increase of agricultural land area is a large-scale rainforest conversion, which is taking place in Brazil and Indonesia (Berkelmann et al., 2018; Ramos et al., 2022; Kusuma et al., 2018).

The second group includes factors resulting from the role of land as an agricultural production factor. In agricultural production, the role of land is crucial. The demand for land is derived from the demand for farm products in the market. Growing world populations, rising per capita incomes allowing for increased levels of consumption, and changing consumption patterns towards consuming more livestock products are increasing the demand for agricultural products and, thus, the demand for agricultural land (Tweeten & Thompson, 2009).

The third group contains factors following alternative uses of agricultural land. Remeikiene et al. (2019) point out that the demand for land is of a derivate nature. It is derived from different land uses. Land as an area is necessary for housing, infrastructure, recreation, and other productive activities such as photovoltaics. As Wu et al. (2022) noted, economic growth and urban expansion in China since 1978 have led to the loss of significant amounts of farmland. According to Kocur-Bera & Pszenny (2020), converting

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agricultural land into built-up areas is inevitable with population growth. Boere (2015) indicates that in the Netherlands agricultural land located near cities faces pressure from housing and infrastructure which entail larger land prices. Goldberg (2023) analysed the consequences of solar energy development on agricultural land from different perspectives, including a 'trade-off' perspective. Farja & Maciejczak (2021) conclude that replacing marginally productive agricultural land with solar fields benefits landowners and society.

The fourth group includes factors stemming from the perception of land as an investment good bought and held for speculative purposes like many other physical or financial assets. It's crucial to note that the great financial crisis in 2008-2009 had a profound impact on the land market, with a significant increase in pressure from financial institutions. This led to what many refer to as "land hunting." Various financial institutions have since shown interest in land as an asset of 'growing scarcity' or of 'safe' assets (Anseeuw et al., 2012; Oliveira et al., 2021; Knuth, 2015). Franc-Dabrowska (2022) points to the process of financialization of agriculture through the purchase of farming land and the subsequent impact on the increase in land prices. Various aspects of agricultural land speculation are studied by Roche & McQuinn (2000), Kan & Chen (2021), Oyedeji (2022), and Gemeda et al. (2019), among others.

The factors above are the source of demand for land at a given place and time. It's important to understand that demand is not a static concept but depends on the type of these factors and their concurrent occurrence (accumulation). When there is a reasonably limited land supply, these demand pressures can significantly affect the level and rate of price change in the land market.

The article aims to identify the agricultural land price trends in Poland and the European Union from 2013 to 2022. Moreover, the author has given particular attention to the reaction of farmland prices to the unprecedented COVID-19 pandemic in 2020 and 2022, which has significantly impacted various sectors of economy, including agriculture.

Material and methods

The study encompasses European Union (EU) member countries for which data on arable land prices and permanent grassland prices for 2013-2022 are available (10 years). Moreover, the study also encompasses Croatia and Italy, for which data are available for eight consecutive years: for Croatia, the years are 2015-2022, and for Italy, 2013-2020. Due to the size of the country and the resulting specificity of property price development, we decided to exclude Luxembourg from the analysis. Finally, arable land prices were analysed in 20 countries, while permanent grassland prices were in 19 (due to the lack of data for Finland). It should be noted that the EU countries vary considerably in terms of total area and agricultural area. The level of development, the agricultural model, and the area structure of agriculture are also different. The place of agriculture in each country's economy and external environment is also different.

The analysis used the comparative method in terms of time and countries. Moreover, the descriptive statistical method was applied. We used the gap (the difference between a characteristic's maximum and minimum value) to assess the land price variation between countries. We also applied the arithmetic mean and the rate of growth.

Research results and discussion

Variation in land prices

Data analysis shows several characteristic phenomena in the price formation of this essential agricultural production factor: land (Tables 1 and 2).

A phenomenon worth highlighting is the considerable variation in arable land prices between the countries in the EU. The Netherlands, Italy, and Ireland had the highest prices per ha of arable land. The very high prices stem partly from high land productivity. Notably, the countries' order was constant in all years under study. At the opposite pole in 2013 were the three countries: Romania, Estonia, and Lithuania. Nine years later, these three countries were outside this group. In 2022, it was formed by Croatia (lowest prices), Latvia, and Slovakia.

Remarkably, the group of ten countries with the lowest prices included mainly post-socialist countries. In 2013, 9 post-socialist countries and France were in it, and in 2022, 8 such countries plus France and Finland. According to Lovrincevic & Vizek (2009), the reason for lower agricultural land prices in post-socialist countries than in other countries (old EU members) is the lower level of economic development of these countries and the higher share of agriculture in the economy of these countries. In 2013, Poland was in 10th place among the surveyed countries in terms of arable land prices, while in 2022, it moved to 13th place.

Table 1

Arable land prices by countries in 2013-2022 (Euro per hectare)

Country	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Bulgaria	3 175	3 620	3 891	4 131	4 622	5 011	5 382	5 281	6 001	7 303
Czechia	3 662	4 282	4 775	5 463	6 448	7 600	8 561	9 477	10 593	12 885
Denmark	15 708	17 209	18 752	17 584	17 328	17 724	17 580	17 491	18 213	19 841
Estonia	1 865	2 426	2 567	2 735	2 890	3 174	3 461	3 772	4 383	5 730
Ireland	26 366	23 449	23 594	18 141	19 903	27 457	28 068	25 724	37 584	38 013
Greece	13 907	13 276	12 633	12 272	12 264	12 387	12 604	12 599	13 048	13 571
Spain	11 910	12 192	12 574	12 522	12 827	13 023	12 926	12 901	12 938	10 263
France	5 770	5 940	6 000	6 070	6 030	6 020	6 000	6 080	5 940	6 130
Croatia	x	x	2 726	2 835	3 005	3 282	3 395	3 440	3 661	3 700
Italy	32 532	39 247	40 153	33 193	31 731	30 569	36 307	35 447	x	x
Latvia	4 980	2 552	2 654	2 917	2 975	3 856	3 922	4 182	4 331	4 420
Lithuania	2 009	2 330	3 089	3 516	3 571	3 890	3 959	4 127	4 667	5 012
Hungary	2 709	3 042	3 356	4 182	4 368	4 662	4 862	4 893	5 215	5 240
Netherlands	53 888	56 583	61 227	63 605	66 614	71 803	71 792	72 702	77 583	85 431
Poland	6 275	7 723	9 220	9 083	9 699	10 414	10 991	10 711	10 937	12 673
Romania	1 653	2 423	2 039	1 958	2 085	4 914	5 339	7 163	7 601	8 051
Slovenia	15 545	16 009	16 071	17 136	16 876	18 460	18 752	21 451	22 312	23 282
Slovakia	5 575	11 442	24 175	28 217	3 009	3 432	3 789	3 984	3 977	4 790
Finland	8 461	8 090	8 138	8 326	8 718	8 380	8 686	8 524	9 009	9 099
Sweden	6 797	7 408	7 751	7 921	8 708	8 842	9 056	10 100	12 004	12 277

Source: Eurostat (2024)

The spreads between the maximum and minimum price each year were huge. In 2013, the highest price spread occurred between Romania and the Netherlands, and it was as high as 1 to 32. By 2019, the price spread was gradually narrowing; in 2019, it was as high as 1 to 21 (Romania and the Netherlands remained the outermost countries). In the following two years, the maximum spread remained at the same level, while in 2022, it increased and was as high as 1 to 23 (the Netherlands and Croatia). Such a large spread within the European Union shows that levelling out the price differences of such a specific good as

agricultural land is a slow process. The results of this study for agricultural land align with the results of Twardowska (2019) conducted for the period 2006-2016.

Prices for permanent grassland were lower than for arable land (Table 2). The differences were significant. In 2013 in Bulgaria, arable land prices were almost four times higher than permanent grassland prices, and this relationship was maintained throughout the period under study. A similar phenomenon occurred in Sweden, Greece, and Spain, where the relationship was as high as 3:1. In the other countries, the differences were lower - reaching several tens of percent. Over the ten years, the prevalence of agricultural land prices increased in most countries studied; only in five countries did it decrease, and in two countries prices remained at the same level. In Poland, arable land prices in 2013 were higher than permanent grassland prices by 47 percent, and the difference increased to 60 percent during the period studied. Such trends indicate slow changes in the agricultural production structure and production technology.

Throughout the period under study, the lowest prices for permanent grassland were recorded in Bulgaria and the highest in the Netherlands. The spreads between the countries between with the maximum and minimum price each year were huge and higher than the spread of arable land prices. In 2013, permanent grassland prices in the Netherlands were 46 times higher than in Bulgaria; in 2018, the difference between the two increased to level 51 times, but in the following years, it decreased, and in 2022, it was 36 times. The changes in relations indicate a slow process of equalizing grassland prices between EU members as well. However, it is difficult to forecast when this process will lead to a closing of the gap.

Table 2

The permanent grassland prices by countries in 2013-2022 (Euro per hectare)

Country	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Bulgaria	1 012	1 258	1 161	1 401	1 253	1 115	1 536	1 351	1 643	1 887
Czechia	2 395	3 498	3 495	4 636	4 112	6 333	7 081	7 771	9 631	11 452
Denmark	7 931	8 689	9 468	8 878	8 749	8 949	8 876	8 890	8 911	10 018
Estonia	1 616	2 006	2 013	2 181	2 179	2 398	2 856	3 087	3 358	4 259
Ireland	15 697	15 221	13 992	14 103	14 661	13 823	15 558	15 703	18 084	19 215
Greece	5 073	4 666	4 674	4 612	4 395	4 341	4 333	4 323	4 332	4 538
Spain	4 644	4 516	4 684	4 469	4 456	4 439	4 546	4 432	4 524	4 416
France	5 770	5 940	6 000	6 070	6 030	6 020	6 000	6 080	5 940	6 130
Croatia	:	:	1 637	1 510	1 651	1 751	1 848	2 160	2 422	2 786
Italy	21 626	23 351	24 785	18 313	15 567	14 986	17 134	15 896	:	:
Latvia	2 140	1 371	1 526	1 635	1 663	2 117	2 163	2 255	2 752	3 007
Lithuania	1 182	1 373	2 151	2 456	2 170	2 352	2 533	2 840	3 497	3 585
Hungary	1 227	1 426	1 572	1 693	1 871	2 111	2 304	2 384	2 681	2 850
Netherlands	46 626	48 406	50 860	53 574	55 630	57 140	56 636	59 147	62 818	67 857
Poland	4 252	5 280	5 878	5 794	6 032	6 508	6 730	6 871	7 051	7 918
Romania	1 263	1 744	1 897	1 836	1 983	3 424	3 301	5 154	5 354	5 671
Slovenia	14 971	14 332	15 486	15 427	17 012	16 946	18 015	19 500	18 992	20 354
Slovakia	3 967	6 383	16 525	13 808	2 206	2 190	2 107	2 501	2 425	3 369
Sweden	2 381	2 814	2 897	2 957	3 342	3 441	3 230	3 825	4 465	4 469

Source: Eurostat (2024)

As for arable land prices, permanent grassland prices were the lowest in post-socialist countries. In 2013, the top 10 countries with the lowest prices included nine post-socialist countries and one old

EU member - Sweden. In the following years, the number of post-socialist countries decreased in this group, and Greece and Spain replaced Czechia and Poland.

Price dynamics

A critical issue is the dynamics of arable land and permanent grassland prices in individual countries. An analysis of the data in Table 3 shows that an increase in prices was more common than a decrease in prices. In as many as seven countries: Czechia, Estonia, Croatia, Lithuania, Hungary, the Netherlands, and Sweden, arable land prices increased in all the years of the analysed period. In several countries with well-developed agriculture, price decreases were recorded in 4 out of 9 years studied. These were Denmark, France, Italy, and Spain. However, only in Spain, where the phenomenon of abandonment of rural agricultural areas occurred for decades (Degado-Artes et al., 2022), the arable land prices in 2022 were lower than in 2013.

Table 3

The rate of arable land price growth (year to year) (%)

Country	2014	2015	2016	2017	2018	2019	2020	2021	2022
Bulgaria	14.0	7.5	6.2	11.9	8.4	7.4	-1.9	13.6	21.7
Czechia	16.9	11.5	14.4	18.0	17.9	12.6	10.7	11.8	21.6
Denmark	9.6	9.0	-6.2	-1.5	2.3	-0.8	-0.5	4.1	8.9
Estonia	30.1	5.8	6.5	5.7	9.8	9.0	9.0	16.2	30.7
Ireland	-11.1	0.6	-23.1	9.7	38.0	2.2	-8.4	46.1	1.1
Greece	-4.5	-4.8	-2.9	-0.1	1.0	1.8	0.0	3.6	4.0
Spain	2.4	3.1	-0.4	2.4	1.5	-0.7	-0.2	0.3	-20.7
France	2.9	1.0	1.2	-0.7	-0.2	-0.3	1.3	-2.3	3.2
Croatia	-	-	4.0	6.0	9.2	3.4	1.3	6.4	1.1
Italy	20.6	2.3	-17.3	-4.4	-3.7	18.8	-2.4	-	-
Latvia	-48.8	4.0	9.9	2.0	29.6	1.7	6.6	3.6	2.1
Lithuania	16.0	32.6	13.8	1.6	8.9	1.8	4.2	13.1	7.4
Hungary	12.3	10.3	24.6	4.4	6.7	4.3	0.6	6.6	0.5
Netherlands	5.0	8.2	3.9	4.7	7.8	0.0	1.3	6.7	10.1
Poland	23.1	19.4	-1.5	6.8	7.4	5.5	-2.5	2.1	15.9
Romania	46.6	-15.8	-4.0	6.5	135.7	8.6	34.2	6.1	5.9
Slovenia	3.0	0.4	6.6	-1.5	9.4	1.6	14.4	4.0	4.3
Slovakia	105.2	111.3	16.7	-89.3	14.1	10.4	5.1	-0.2	20.4
Finland	-4.4	0.6	2.3	4.7	-3.9	3.7	-1.9	5.7	1.0
Sweden	9.0	4.6	2.2	9.9	1.5	2.4	11.5	18.9	2.3

Source: Eurostat (2024)

The most considerable fluctuations in arable land prices occurred in Romania, Slovakia, and Ireland. The year-on-year price growth rate in Romania ranged from -16% in 2015 to 135% in 2018. The phenomenon stems from complex reasons. Stioca & Dumitru (2021) see the reasons for the increase in land prices in Romania as the rise in the attractiveness of agricultural activity thanks to the support of agriculture by the European Union and the related process of concentrating land in larger farms. Moreover, housing demand for land near major urban centres and the demand from foreign investors are land price drivers. In Slovakia, a sudden and substantial increase in the price of agricultural land occurred in 2014

and 2015 due to the end of the ten-year moratorium on land purchases by foreigners (Drabik & Rajcaniova, 2014).

In addition to differences in growth rates from year to year, growth rates varied between countries from year to year. For example, in 2014, arable land prices in Latvia dropped by 48%, while in Slovakia they increased by 105%. As a result of these various processes, arable land prices in 2022 were higher than in 2013 in 17 of the 20 countries surveyed. Only in Greece, Latvia, and Slovakia did prices drop. In the last two countries, the decline was significant. In Poland, arable land prices increased at a double-digit rate in 2013, 2014 and 2022. In the remaining years, the increase was single-digit, and prices in 2015 decreased slightly. Finally, during the analysed period, the agricultural land prices in Poland doubled.

Table 4.

The rate of permanent grassland price growth (year to year) (%)

Country	2014	2015	2016	2017	2018	2019	2020	2021	2022
Bulgaria	24.3	-7.7	20.7	-10.6	-11.0	37.8	-12.0	21.6	14.9
Czechia	46.1	-0.1	32.6	-11.3	54.0	11.8	9.7	23.9	18.9
Denmark	9.6	9.0	-6.2	-1.5	2.3	-0.8	0.2	0.2	12.4
Estonia	24.1	0.3	8.3	-0.1	10.1	19.1	8.1	8.8	26.8
Ireland	-3.0	-8.1	0.8	4.0	-5.7	12.6	0.9	15.2	6.3
Greece	-8.0	0.2	-1.3	-4.7	-1.2	-0.2	-0.2	0.2	4.8
Spain	-2.8	3.7	-4.6	-0.3	-0.4	2.4	-2.5	2.1	-2.4
France	2.9	1.0	1.2	-0.7	-0.2	-0.3	1.3	-2.3	3.2
Croatia	-	-	-7.8	9.3	6.1	5.5	16.9	12.1	15.0
Italy	8.0	6.1	-26.1	-15.0	-3.7	14.3	-7.2	-	-
Latvia	-35.9	11.3	7.1	1.7	27.3	2.2	4.3	22.0	9.3
Lithuania	16.2	56.7	14.2	-11.6	8.4	7.7	12.1	23.1	2.5
Hungary	16.2	10.2	7.7	10.5	12.8	9.1	3.5	12.5	6.3
Netherlands	3.8	5.1	5.3	3.8	2.7	-0.9	4.4	6.2	8.0
Poland	24.2	11.3	-1.4	4.1	7.9	3.4	2.1	2.6	12.3
Romania	38.1	8.8	-3.2	8.0	72.7	-3.6	56.1	3.9	5.9
Slovenia	-4.3	8.1	-0.4	10.3	-0.4	6.3	8.2	-2.6	7.2
Slovakia	60.9	158.9	-16.4	-84.0	-0.7	-3.8	18.7	-3.0	38.9
Sweden	18.2	2.9	2.1	13.0	3.0	-6.1	18.4	16.7	0.1

Source: Eurostat (2024)

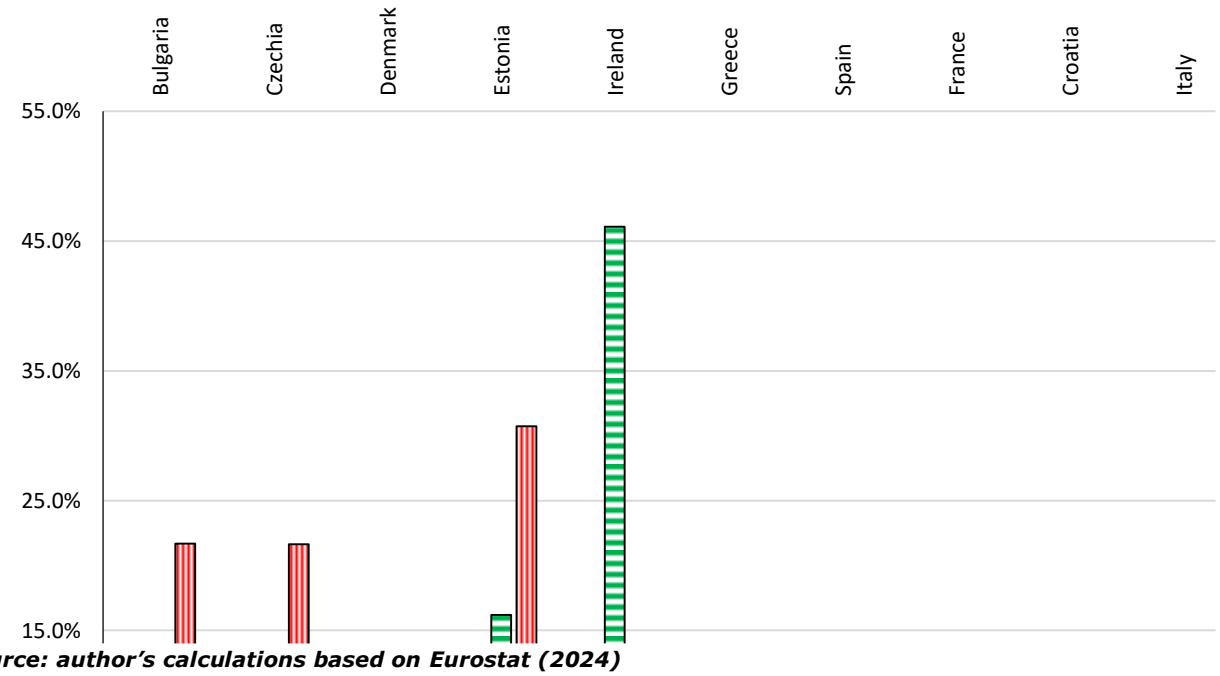
Prices of permanent grassland changed in various directions. The dynamics of changes varied between years and countries. The highest increase occurred in 2015 in Slovakia, and the most profound decline in 2014 in Latvia. In all the years examined except 2017, the number of countries where prices increased was higher than those where prices decreased. In Spain, France, Italy, and Denmark, like arable land prices, grassland prices fell in 4 out of 9 years examined. As a result of this multi-directional and different pace of changes, in 2022, the prices of permanent grassland were higher than in 2013 in the 15 countries surveyed. The changes in Czechia, Romania, and Lithuania were substantial: 4.8, 4.5, and 3.0 times, respectively. Of the four countries that experienced a price decline during the period under review, the most significant decrease of 27% was in Italy.

A characteristic phenomenon was a slower growth rate of prices of permanent grassland than of arable land. However, for each country, it is possible to indicate years when the opposite was true (the prices of grassland increased faster than those of arable land). In Poland, prices of both types of agricultural land

changed at a similar pace. Only in 2015 was the growth rate of grassland prices higher than that of arable land prices by eight percentage points.

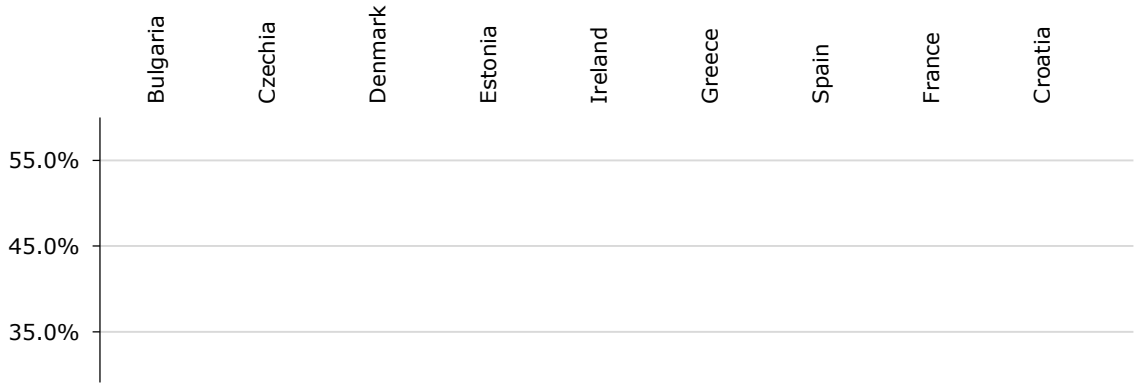
The impact of the COVID-19 pandemic on land prices

The analysis of price dynamics data for three years of the pandemic shows that in the first year of pandemic, the land market reacted ambiguously. There was a decline in arable land prices in eight countries, but only in Ireland was it quite significant (Figure 1). In seven of the remaining 12 countries surveyed, prices increased by more than 5%. Permanent grassland prices fell in only four countries: Bulgaria, Greece, Spain and Italy (Figure 2). These were countries where arable land prices also dropped. In other countries, the prices of permanent grassland increased, and in eight of them, the increases were significant. A clear upward trend in arable land prices and permanent grassland became visible in the second year of the pandemic. Only in two countries, France and Slovakia, did the prices of arable land decrease, and only in three, France, Slovakia, and Slovenia, did the prices of grassland decrease however, relatively slightly. The average price increase for arable land was 10.2%, and for grassland 11.4%. In the last year of the pandemic, the prices of both types of agricultural land decreased only in Spain, while they increased in other countries. The price increases for both arable land and grassland were significant, as in 2021. The average price increase for arable land was 9.5%, and for grassland - 11.3%. In Poland, these increases were higher than average: 15.9% for agricultural land and 12.3% for permanent grassland.



Source: author's calculations based on Eurostat (2024)

Fig. 1. **The rate of arable land price growth during pandemic COVID-19 (year to year)**



Source: author's calculations based on Eurostat (2024)

Fig. 2. **The rate of permanent grassland price growth during pandemic COVID-19 (year to year)**

There are several channels for the impact of the pandemic on land prices. The Society of Chartered Surveyors Ireland cites restrictions due to COVID-19 as the reason for the decline in the number of transactions in Ireland and, therefore, prices in 2020; while the increase in prices in the following years is attributed to the rise in the profitability of agricultural production (SCSI, 2023). In France, the number of land purchases by non-farmers increased rapidly in 2021, and the trend continued in 2022 (Charlotte, 2023). Ramachandran & Vidya (2021), Whitaker (2021), and DeWaard (2021) indicate the pressure of demand for land in rural areas caused by urban-rural migration during the pandemic. Lee et al. (2022) believe that macroeconomic conditions related to COVID-19 influenced land prices and, additionally, the state's increased financial support for farmers. Masniak and Danilowska (2022) point to one of such macroeconomic factors, namely inflation. Which of these factors and to what extent contributed to changes in agricultural land prices in the individual countries studied requires further research.

Conclusions

1) The analysis showed that agricultural land prices (both arable land and permanent grassland) increased noticeably during the ten examined years in most countries. The group of countries that recorded a decline in arable land prices included countries belonging to the old EU members. These were Italy, Greece, and Spain. There was also an absolute decline in grassland prices in Spain and Greece. France was a country where agricultural land prices increased by only a few percent over ten years. Among the post-socialist countries, the prices of both types of agricultural land decreased only in Slovakia. In other post-socialist countries, significant price increases were recorded. The spread of agricultural land (arable and permanent grassland) prices between countries has declined. These phenomena prove the slow process of convergence of agricultural land prices.

2) Arable land prices were higher than grassland prices. The differences were significant - in several countries, they were several times higher, and in these countries, they remained throughout the period under study. Over the ten years, the price advantage for arable land increased in most of the countries surveyed. Poland is one of these countries.

3) The price annual growth rates fluctuated noticeably. The spectacular high changes occurred mainly in post-socialistic countries due to changes in law. Price growth in the EU old member states was generally lower than in post-socialist countries.

4) The effect of the Covid-19 pandemic on agricultural land prices in the EU is ambiguous. However, the analysis showed that compared to the pre-pandemic period, there has been a sharp decline in the number of countries where land prices have fallen. It can be a sign of the economic repercussions of the pandemic. In Poland, the increase in arable land and permanent grassland prices, which was relatively low in 2021 and significant in 2022, may be related to the pandemic.

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Proceedings of the 2024 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" No 58
Jelgava, LBTU ESAF, 16-17 May 2024, pp. 391-401
DOI: 10.22616/ESRD.2024.58.038

ANALYSIS OF FACTORS IN THE COMPETITIVENESS OF RURAL SCHOOLS IN LATGALE REGION: THE RESULTS OF AN EXPERT SURVEY

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Abstract. At the stage of fast progress in modern technologies and science, it is essential to respond in time to prospects emerging for the future. Global economic trends show a fast reorientation towards the creation of higher value-added products. Therefore, one of the most important factors in the ability to respond to changes in the economic environment in Latvia in a timely manner is the capacity to provide quality education to youth who will be able to compete in the world market, cope with challenges and achieve the goals set. In recent years in Latvia, the national education system has been one of the most urgent areas of national domestic policy, in which reforms have been implemented to increase the competitiveness thereof. The research aims to identify and analyse factors in the competitiveness of rural schools in Latgale region to determine measures to be taken to increase the competitiveness thereof by employing the expert interview method. The results of the expert survey revealed that the competitiveness of rural schools in Latgale region was most significantly affected by the quality of administrative and teaching personnel, as well as their ability to plan and evaluate their school development. The highest priority rating was given to raising the qualifications of teaching personnel and improving the curriculum, which indicates their significant impact on the competitiveness of rural schools in Latgale region. The research novelty involves examining in depth the known and identifying new factors in the competitiveness of rural schools in Latgale region. Research methods used: monographic and descriptive, analysis, syntheses, statistical analysis, a sociological research method – an expert survey. The research was based on the results of an expert survey, research papers and other sources of information.

Key words: Latgale region, rural schools, factors in competitiveness.
JEL code: R00; O18; I25

Introduction

Research studies by Shikalepo show that providing high-quality and accessible education in rural communities is a global challenge (Shikalepo, 2020). Over the last twenty years in Latvia, a significant problem has arisen in the field of education because of a decrease in the number of rural residents and education system reforms. Currently, the reforms are focused on the optimization of the school network, which envisages closing many schools not meeting the criteria, mostly in rural areas, in the nearest future (LETA, 2023).

Arsen et al. (2021) have found that policies aimed at improving schools often exacerbate the problems faced by rural schools. Rural school principals actively seek ways to adapt the policy context to the needs of their schools and communities, despite significant challenges in this process (Arsen et al., 2021). Therefore, it is essential that the educational reforms implemented at the national level do not create unequal preconditions for competition between regional schools and national urban educational institutions, given the fact that each educational institution faces specific challenges. The problem with the number of educatees is particularly important in rural schools in the context of reforms.

Auers et al. (2019) have found that although the optimization of the school network could potentially reduce administrative costs and contribute to an increase in teacher salaries, the most important aspect is an analysis of the results of the educational process after such a reorganization. The restructuring of the education system should not only lead to a more financially efficient use of resources but also improve or at least retain the level of learning achievements of educatees (Auers et al., 2019).

Rural depopulation and communities with declining populations represent a challenge to many European regions (Skola laukos, 2016). A study by the Ministry of Education and Science has concluded

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that over a longer period, the number of educational institutions tended to gradually decrease and adapt to demographic trends; however, considering demographic forecasts, the number of educational institutions is also going to be reduced in the future (Ministry of Education and Science, 2023). Therefore, competition between the educational institutions is going to increase. All the challenges also affect the competitiveness of rural schools in Latgale region.

Svagzdiene (2017) has emphasized that a community that successfully provides services can attract and retain residents while meeting the needs of community members and promoting stability there. Accordingly, high-quality education services are critically important for increasing the competitiveness of rural areas (Svagzdiene & Perkumiene, 2017).

The recent global financial crisis has aroused discussions on how to measure school effectiveness and the quality of the results, balancing economic performance with humanistic pedagogy and the right to access education. In the rural areas of Latvia, schools with a relatively small number of educatees are traditionally widespread; however, in terms of economic performance, the schools have been apparently "expensive". Moreover, given recent changes in the public funding model, increased migration, demographic disparities and the impact of the financial crisis with a severe reduction in educational expenditure, the situation in small schools is extremely critical, and it is increasingly difficult for municipalities to maintain schools. After a wave of school closures in the period 2008-2009, according to public data, in the school year 2013/14 about a third of all schools in Latvia had fewer than 100 educatees, most of whom (255) lived in small settlements in rural areas (Tuna, 2014).

Supule (2019) has established that research studies on rural schools and local communities in many European countries (Norway, Sweden, Finland and the United Kingdom) and other countries such as the USA, Canada or Australia revealed various aspects of interaction between schools and local communities (Supule, 2019).

Despite the fact that schools in Latvia have historically been a centre of local significance for communities, this experience was lost and had to be re-gained. Traditionally, there is a perception in society that schools represent formal education; in many cases, parents are quite reluctant to visit schools because it might lead to unpleasant conversations for them. Other community members see no reason to visit schools. However, rules and practices in schools are based on an assumption that schools are for teachers, and educatees have limited access to facilities and infrastructure during the teaching-learning process that is fully controlled by school administrations and teachers. As a result, this means that the local community has little information about the school, resources are not used effectively, and in a situation of insufficient funding, the maintenance of the school seems very expensive (Tuna, 2014).

Supporters of maintaining rural schools usually draw attention to the positive role of schools in rural communities. A rural school is perceived as the centre of a civic society, 'the shining beacon' of a community and the last public service available in a village (Supule, 2019). Taking care of education for their residents is one of the autonomous functions of local governments. The role of local governments is particularly important at the stage of preschool and primary education, which is delivered as close as possible to the places of residence of the educatees. If viewing the educational process as the build-up of internationally competitive human capital, local governments should be actively involved at all stages of education. For example, the capability of local governments to cooperate with potential investors or local entrepreneurs, thereby helping to find and prepare the necessary specialists for the labour market, can be crucial for creating and maintaining a dynamic local economy. However, an effective national system is needed at this level, giving municipalities the legitimate and financial capacity to be active players while keeping in mind that the municipalities represent only one of the actors whose role mainly relates to effective cooperation.

Nevertheless, municipalities are the main providers of public services and are responsible for their quality at the initial stage of education (Auers et al., 2019).

Research hypothesis: the effective administration of rural schools, the qualifications of teaching personnel and the compliance of curricula with the needs of the rural community are the main factors contributing to the competitiveness of rural schools in Latgale region.

The research aims to identify and analyse factors in the competitiveness of rural schools in Latgale region to determine measures to be taken to increase the competitiveness thereof by employing the expert interview method.

Specific research tasks: 1) to review the theoretical literature on rural schools and the concept of competitiveness thereof; 2) to conduct a survey of education experts to obtain data on factors in the competitiveness of rural schools in Latgale region; 3) to draw conclusions and, based on the expert survey data, identify the main measures to be taken to increase the competitiveness of rural schools in Latgale region. **Research methods used:** monographic and descriptive, analysis, syntheses, statistical analysis, a sociological research method – an expert survey.

The research was based on the results of the expert survey and a review of research papers and other sources of information. The sources gave an insight into problems with school competitiveness and education quality in various countries, with special emphasis on the specifics of rural schools.

Research results and discussion

An important aspect of the present research is the location of a school. It is essential to have an explanation and understanding of the concept of a rural school in the relevant context and set proper criteria for competitiveness. A methodology (classifications and typologies) developed by Eurostat was used to objectively compare populated areas in Latvia to analyse the school network and identify how schools are classified by location. A Eurostat classification – DEGURBA – describes the labour market, education, living conditions, welfare and tourism in various populated areas. Based on the population size and the population density thresholds, it classifies local administrative units into seven types of areas. However, the present research needs a classification adapted to the situation in Latvia, which is based on DEGURBA and combines the seven types into three broader types considering the population size as well as migration and infrastructure, i.e. areas where education can be delivered: cities, dense towns and small towns (DEGURBA 1-3); suburban or peri-urban areas and villages (DEGURBA 4-5), dispersed rural areas and mostly uninhabited areas (DEGURBA 6-7) (Ministry of Education and Science, 2023).

Elsewhere in the world, the theoretical literature refers to "rural" schools as schools in a rural community, small town or town of less than 50000 inhabitants that is not a suburb of a city. This indicates significant differences between urban and rural areas, as well as the challenges faced by the education system. It is considered that other priorities are relevant to the development planning of rural schools compared with large urban schools. This was also found by a research study by Boix, Champollion and Duarte stating that, in addition to this general characteristic, rural contexts are also characterized by diversity, as rural communities are unique in terms of their values and opportunities (Boix et al., 2015). This means that rural schools have a kind of uniqueness, and young people have opportunities to shape their social-civic attitudes and participate in the further development of rural areas. A rural school is the foundation where a sense of belongingness and patriotism is formed. In this context and culture, as stated in the mentioned research study, a rural school is an active member of the institutional territorial system – a member that participates in the symbiosis of various members and provides efficiency and equality to

the social group in which it is integrated (Boix et al., 2015). However, the opportunities given by rural schools vary, depending on several factors that affect the functioning of the schools.

Regardless of whether rurality is defined entirely in demographic terms, the field of rural education has been engaged in coming to grips with the difference rural location and identification make to education. Therefore, the challenge is to conduct research that examines the complex meaning and impact of rurality in education rather than simply inserting it as a variable into generic research (Corbett, d'Entremont, 2024).

An analysis of the number of educational institutions and educatees in the academic year 2022/2023 by level of urbanization in Latvia revealed that the largest disparities were specific to rural areas and mostly uninhabited areas. Of the total, 36.8% educatees went to school in rural areas and mostly uninhabited areas, yet it is the rural and mostly uninhabited areas where the largest number of general primary and secondary educational institutions are located, accounting for 61.5% of the total educational institutions. A study by the Ministry of Education and Culture states that special attention should be paid to primary schools, as 10.8% of the total educatees were in education in rural and mostly uninhabited areas, while primary education was delivered by 34.5% educational institutions (Ministry of Education and Science, 2023).

Table 1

Comparison of indicators of the education system between rural and urban primary and secondary schools in Latvia in the academic year 2022/2023

Indicator	Primary schools	Secondary schools
Proportion of educational institutions		
Rural areas	34.50%	55.00%
Urban areas	65.50%	45.00%
Disparity	-31.00%	10.00%
Proportion of educatees		
Rural areas	10.80%	33.00%
Urban areas	89.20%	67.00%
Disparity	-78.40%	-34.00%
Average number of educatees per institution		
Rural areas	120	416
Urban areas	411	874
Disparity	-291	-458
Average class size		
Rural areas	14	16
Urban areas	24	27
Disparity	-10	-11

Source: authors' calculations based on Ministry of Education and Science data, 2023.

The disparity is particularly significant at the primary school level, as 10.8% of the total educatees went to school in rural areas, while primary education was delivered by 34.5% educational institutions (Table 1) (Ministry of Education and Science, 2023).

This indicates an irrational distribution of financial resources within the education system. In many schools, the total number of educatees is small, whereas the cost of maintaining the schools is high. Concerning the prospects, it could be concluded that the number of schools in rural areas is going to continue decreasing because population natural change is negative, and the population in rural areas tend to decrease. Auers et al. (2019) found that the performance of rural schools in Latvia, especially in Latgale

region, consistently lagged behind the national average, with significant disparities in both the results of national examinations and the international evaluation programme, thereby emphasising the dependence of access to high-quality education on the place of residence and the kind of school and indicating the need for systemic reforms in the education sector to increase regional competitiveness and reduce the disparity.

The competitiveness of a rural school depends on many factors that affect the quality of education. They could be both internal and external. Researchers have acknowledged that increasing the level of school competition has been proposed as a way to improve school performance (Harrison & Rouse, 2014).

To analyse criteria for the competitiveness of rural schools, first of all, it is important to understand what shapes the quality of schools. One of the main factors is the quality of education. The quality of education involves the educational process, curricula, the learning environment and administration, which provide everyone with an inclusive education and the opportunity to achieve high-quality results in accordance with the goals set by society and the State (Education Law, 1998). The mentioned characteristic of the quality of education closely relates to the criteria of competitiveness. The quality of education is an essential factor in competitiveness.

Some research studies have found that rural schools and their curricula are affected by many factors. A large component is the disadvantage faced by rural schools and their educatees. Rural schools receive relatively less funding, which affects the level of technology and technological sophistication available to educatees in the rural areas. Secondary school completion and participation in higher education also tend to be lower in rural areas than in urban and suburban areas. In addition, large-scale series of assessments of the performance of students such as PISA and TIMSS as well as national and regional assessments usually indicate lower levels of measured academic skills and achievements in rural areas. However, some research studies have found that most of these differences in skills and achievement disappear when controls for socioeconomic status are included (Corbett, d'Entremont, 2024).

Educational theory refers to several factors in school competitiveness, as evidenced by the number of schools. The availability of more schools increases the possibility of school choice and consequently generates competitive pressure from the market, which leads schools to seek better results. International literature on school choice indicates that it depends on factors such as: income, school quality, safety, parental education and distance from the student's home to the educational institution (Lazaretti & Franca, 2020). Lazaretti & Franca (2020) have summarized the theoretical literature showing that school quality is an important factor in students' choices. Schools seek better results to keep their students, otherwise the most productive schools overlap with lower productivity schools. However, school competitiveness can lead to positive or negative outcomes in schools, the direction of impact depends on the design of public policies that raise competition (Lazaretti & Franca, 2020).

A research study used an economic model of school performance as an assessment of school competitiveness to estimate the relative efficiency of sampled schools. The model uses school resources and student characteristics, related to students' motivation and ability to learn, as the inputs to the education production process and student academic achievement as the output. Studies have used a variety of measures for both inputs and outputs. School resource variables have been measured using teacher quantity and/or quality measures, e.g., the number of teachers, teacher experience or qualifications, and teacher/student ratios. In addition, measures of other school resources have been included to capture inputs such as books, equipment, and administrative support. A wide variety of measures related to student characteristics, reflecting family and peer background influences, have been used with most studies using multiple measures, often employing census data. These contextual variables have included household crowding, average family income, students from deprived backgrounds, students from single-parent

families, ethnicity and the educational level of parents. Output variables are almost exclusively measured using examination data, on the basis that success in examinations is valued by key stakeholders such as educators, parents and policy-makers (Harrison & Rouse, 2014).

The present research considered and rated the criterion of education quality, which captures six areas, as a primary criterion (Ozols, 2021). One of the areas is compliance with goals, which consists of several sub-criteria: competencies and learning achievements, continuation of education and employment, equality and inclusion. The next area concerns the learning environment, i.e. education quality: teaching and learning, educator professional capacity and implementation of educational programmes. The area of inclusive environment involves school accessibility for various groups, safety and psychological well-being, as well as appropriate infrastructure and resources. Good administration of the areas is also important, which involves administrative efficiency, professionalism, support and cooperation.

The size and location of a school affect many areas of education, including school characteristics, curricula and post-school outcomes. Research studies show that students in rural schools face many personal and educational challenges, from living in poverty to having less opportunity and sophistication in technology. Rural schools also have fewer course offerings. Although rural schools are unique, urban and rural schools may be more similar than expected, especially as compared to more affluent suburban areas. Rural and urban schools have higher levels of poverty and more dire financial situations, which affect the educational offerings, experiences and learning outcomes of their students (Bouck, 2004). The mentioned factors are characteristic of external competitiveness criteria related to funding and resources for rural schools. Rural schools often lack adequate funding and resources needed to deliver high-quality education. This includes both physical resources, e.g. buildings and teaching aids, and human resources, e.g. qualified teachers. Rural schools have difficulty in hiring and retaining qualified teachers, mainly because of lower salaries, limitations in professional development and more difficult living conditions in rural areas. Nowadays, the use of technologies in education has become an essential factor, yet rural schools often lack the necessary infrastructure and technological resources to effectively integrate the technologies into the learning process. In addition to the competitiveness of rural schools, wider socio-economic factors, e.g. the economic status of student families, can affect the students' ability to participate in the learning process and access additional educational resources.

As part of the research, an online survey was conducted in February 2024, which involved rural school principals and education experts (Table 2). The purpose of the survey was to identify expert opinions on factors affecting the competitiveness of rural schools in Latgale region. The total sample size was 16 respondents.

Table 2

Professional experience of the experts involved in the survey (n=16)

Position	Number of respondents	Length of service in education	Experience with rural schools
School principal	9	At least 20 years	Yes
Deputy school principal	4	At least 20 years	Yes
Teacher	1	At least 20 years	Yes
Specialist in education	1	At least 20 years	Yes
University teacher	1	At least 20 years	Yes

Source: authors' calculations based on the results of the expert survey

All the experts had at least 20 years of work experience in education, indicating a wide range of practical and theoretical knowledge. The average length of their service in education was 32.5 years. Most of the

experts had direct experience in working with the rural school system, which indicated their competence in assessing the educational competitiveness of rural areas. The present research, which focuses on the competitiveness of rural schools in terms of quality, performed a detailed analysis of the expert opinions based on systematized ratings of criteria. The analysis of the results of the survey made it possible to identify which aspects most effectively contributed to the quality of school performance and how they affected the capability of schools to compete in the field of education. The experts were asked to rate the criteria according to their relative importance, on a scale from 1 to 10 where 1 represented the highest priority and 10 the lowest one. High priority criteria (ranks 1-4) included: leadership and administration, personnel management, self-assessment and development planning, cooperation with parents, school as an educational organisation, safety and psychological well-being, the human-centred and people-oriented approach, teacher professional capacity, continuation of education and employment, competences and learning achievements as well as the hiring and retaining of qualified teachers. The criteria are considered essential for increasing the efficiency and adaptability of schools in the changing environment of the education sector. Medium priority criteria (ranks 5-7) emphasized financial and resource management, availability and effective use of material and technical resources, as well as support for educatees and compliance with the principles of equality and inclusion. These factors provide a solid foundation for high-quality education and support for educatees in the learning process. Low-priority criteria (ranks 8-10) included administrator and founder cooperation, location and external socioeconomic factors. Although the mentioned aspects might be important to the day-to-day operations of the school and its relationship with the local community, they were not considered crucial in the context of the educational quality of the school. The results of the research revealed that the competitiveness of rural schools in terms of quality was based on the competencies of school principals and teachers, as well as institutional and social systems that contributed to the development and performance of educatees. However, it should be emphasized that the research represented the opinions of a limited group of experts, which means that the results might vary, depending on the specific educational and socioeconomic situation. Therefore, it is important to continue this research.

Each expert rated the four main measures, assigning them a rank from 1 to 5, where 1 meant the most important measure and 5 meant the least important measure. The measures proposed to increase the competitiveness of rural schools were as follows: improvements in curricula, teacher qualifications and experience, the school microclimate and social environment as well as material and technical resources. The survey data revealed that the experts attached the greatest importance to the development of curricula and teacher competencies. This leads to an assumption that high-quality education and capable teachers are the main factors that contribute to the competitiveness of the school and its capability to attract and retain educatees. However, improvements in the physical environment and material and technical support, although important, were considered to be less important than improvements in the quality of curricula and teaching. Arithmetic averages and coefficients of variation for each measure are presented in Table 3, giving an understanding of the coherence of expert opinions and how important they consider each measure to be for increasing the competitiveness of rural schools.

Table 3

Arithmetic averages for and the coherence of expert opinions on rural school competitiveness measures (n=16)

Competitiveness improvement measures	Arithmetic average	Coherence coefficient (%)
Curricula	1.75	47.38
Teacher professional development	1.56	55.28
School microclimate	1.94	59.04
Material and technical resources	1.94	42.67

Source: authors' calculations based on the results of the expert survey

The arithmetic average shows an average rank assigned by the experts to each measure. The survey results confirmed again that all four measures were considered important, with the lowest average rank being assigned to improvements in curricula and teacher professional development, which indicated their highest priority. The coefficient of coherence (coefficient of variation) shows the extent to which expert opinions vary on each measure (Stefenhagena, 2011). A lower coefficient indicates greater agreement between expert opinions. The lowest coefficient of coherence was found for improvements in material and technical resources (42.67%), which means that the expert opinions on this problem were relatively the same. The largest variation of opinions was found for improvements in the school microclimate and social environment (59.04%), which revealed significant differences in expert ratings. The analysis revealed that although all the measures were considered important for increasing the competitiveness of rural schools, the experts had the highest agreement about improvements in material and technical resources.

The experts identified several important additional factors that affected the competitiveness of rural schools and the quality of education in Latgale region, which are as follows. 1. Incorporating community traditions into the educational process: the close ties of rural schools with the surrounding community serve as a basis for strengthening local identity and cultural heritage. Learning the local traditions contributes to the sense of belongingness to the community and cultural value preservation. 2. Personalized lessons: smaller classes in rural schools provide an individual approach to each educatee, allowing the teacher to adapt the learning process to the needs and ability level of each schoolchild. Such an approach contributes to a higher quality of learning and emotional well-being. 3. Creating a positive microclimate: a supportive learning environment is crucial for increasing the motivation and working capacity of both educatees and teachers. A positive microclimate creates an atmosphere full of trust and cooperation, as well as strengthens the sense of belongingness of educatees. 4. Demographic trends: birth rates, changes in the number of educatees and children, as well as migration directly affect the capacity of schools and the demand for educational services. Understanding the demographic processes in the region allows for more effective planning of the learning process and sustainable development of schools. 5. The availability of resources: sufficient support personnel, modern material and technical resources and funding are critical for delivering high-quality education. The availability of resources affects the learning process, the quality of teacher work and learning opportunities for educatees. 6. The role of political will and support: national and local government support for the rural school system, which involves allocating the necessary resources and contributing to sustainable development, is a decisive factor in increasing the competitiveness of schools. Political will and a single rural policy contribute to prospects for rural schools. 7. Designing a special curriculum: programmes and activities, e.g. regional education or an art school branch, allow rural schools to stand out against other schools and attract children with specific interests. The special curriculum helps to increase the visibility and competitiveness of the school. The results of the expert survey revealed that in order to increase the quality and competitiveness of education in Latgale region, it is necessary to focus

on the incorporation of local values into the educational process, a personalized learning approach, the creation of a positive microclimate, as well as sufficient resources and political support. Such an approach would contribute to both improvements in the quality of education and the capability of rural schools to adapt to changing socioeconomic conditions.

The analysis and proposals made by the experts for increasing the competitiveness of schools, with special emphasis on rural schools, indicate the need to implement measures both at the school level and at the national level. The competitiveness of rural schools is significantly affected by external factors, e.g. a decrease in the intellectual potential of the population and a decrease in the quality of life, which cannot be solved only using the internal resources of the school.

1. **Individual support for educatees:**

- developing and implementing a differentiated approach strategy based on the individual abilities, interests and needs of each educatee;
- access to qualified teachers capable of giving support in both the academic and the social fields;
- expanding and promoting educational programmes of interest to contribute to personality development and the discovery of talents.

2. **Rural environment development:**

- stimulating the migration of new families to rural areas, the creation of jobs and improvements in the quality of life;
- improving the rural infrastructure and environment, thereby making the rural areas more attractive for living there.
- supporting businesses and private initiatives in rural areas.

3. **Creation of a positive image:**

- emphasizing the quality of education at rural schools and learning achievements at school contests and intellectual competitions, as well as interest education;
- informing the public about the opportunities and advantages of rural schools;
- contributing to a positive perception of rural schools as an important factor in social development.

4. **National level initiatives:**

- creating and implementing policies that contribute to improvements in the demographic situation in rural areas;
- developing the social sphere by improving living conditions for rural residents;
- providing adequate financial support to rural schools, guaranteeing access to high-quality education.

Improving the quality and competitiveness of rural schools requires an integrated approach that combines both specific internal school measures and broader national-level strategies. Such an approach not only contributes to increasing the quality of education but also positively affects the image of rural schools and fosters the overall development of rural areas.

Conclusions

1) The locations of schools and specifically the context of rural schools in Latvia are important factors that affect the composition and performance of the education system, including learning achievements and access to education. The methodology developed by Eurostat, which classifies populated areas according to various criteria, allows for an objective comparison of the areas, thereby helping to

understand the location impacts of rural schools on the quality and availability of education. This aspect is important for designing policies aimed at increasing the quality of education and equal access to education in all territories.

2) The competitiveness and quality of rural schools depend on many factors relating to not only the location and available resources of a school but also socioeconomic preconditions, the integration of technologies into the learning process and the qualifications of teaching personnel. Rural schools play a unique role in the development of the local community, thereby shaping the social and civic attitudes of young people, which are essential in the context of sustainable regional development. Therefore, it is important to carry out systemic reforms and provide adequate support to rural schools to improve their performance and deliver high-quality education for all educatees, regardless of where they live.

3) The results of the expert survey revealed that the competitiveness of rural schools in Latgale region was most significantly affected by the quality of administration and teaching personnel, as well as the capability to plan and assess school development. This emphasizes the role of competent leadership and teacher capacity in educatee development and the capability of the school to hire and retain qualified personnel.

4) The expert survey, in which each of the measures proposed to increase competitiveness was assigned a rank from 1 to 5, revealed that the highest priority rating was given to increasing the qualifications of teachers (arithmetic average = 1.56) and improving the curriculum (arithmetic average = 1.75), which indicated their significant impact on the competitiveness of rural schools.

5) The coefficient of coherence revealed relatively high agreement among the experts on the needed improvements in material and technical resources (42.67%), while the largest expert disagreement related to improvements in the school microclimate and social environment (59.04%).

6) According to the experts, very important aspects of rural school competitiveness involved incorporating community traditions into the educational process, providing personalized learning and access to resources, which indicated an important need for a localized approach to education.

7) Although the important role of increasing the qualifications of teachers is recognized, the expert opinions revealed that external factors, e.g. demographic trends and political will that generally promote or constrain the development of schools in rural areas, should also be considered for increasing the competitiveness of rural schools. Therefore, the research findings indicate the need for integrated strategies that combine school internal initiatives and support from the national and local governments to increase the quality of education and the competitiveness of rural schools.

8) Although the experts indicated that the main factors in the competitiveness of rural schools were the effective administration of rural schools, the qualifications of teaching personnel and the compliance of curricula with the needs of the rural community, the external factors related to preconditions, e.g. political will. Accordingly, the hypothesis partially proved to be true.

Acknowledgement

The paper was produced within the project IDEUM: Identity Landscapes: the History, Culture and Environment (No. VPP-LETONIKA-2021/1-0008).

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Proceedings of the 2024 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" No 58
Jelgava, LBTU ESAF, 16-17 May 2024, pp. 402-410
DOI: 10.22616/ESRD.2024.58.039

BALTIC CORPORATE BOND MARKET AFTER COVID-2019 AND CAPITAL MARKETS UNION ACTIONS

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Abstract. The implementation of the Capital Markets Union (CMU) initiative has boosted the activity within the corporate bond markets, a momentum further augmented by the consequences of the COVID-2019 pandemic. Although Baltic countries initially ranked low in the development of individual capital markets during 2007-2014, (before the CMU plan), the situation improved in the period 2015-2018 (after the CMU actions). The further expansion of the Baltic corporate bond market in the period from 2019 to 2023 traditionally associated with COVID-2019 and further CMU activities; witnessed an average annual growth rate of 125%.

This paper aims to investigate the impact of COVID-2019 and CMU-related factors on companies' decisions to issue corporate bonds in the Baltic region. This article undertakes a primary data analysis collected through surveys and in-depth interviews conducted between December 2022 and January 2023, involving Baltic corporate bond issuers and issue organisers. The results indicated that while bank borrowing remained popular, issuing corporate bonds was gaining favour among the Baltic issuers. The cost of funding was named as the main motivating factor for the bond issuance, followed by the strategic ambition to be present in the public market, and lack of funding alternative. The European Union's support for bond issuance costs was treated as beneficial, reinforcing the impact of the CMU. The identification of liquidity and investor demand as primary obstacles in Baltic corporate bond issuance further supported the ongoing CMU efforts. Methodologically, this study employs scientific publication analysis, document analysis, expert surveys, and in-depth interviews.

Key words: corporate bonds, corporate bond issuance, Baltic countries, COVID-2019, Capital Markets Union.

JEL code: G23, G12

Introduction

The existing academic research is increasingly addressing the evolution of corporate bond funding in Europe and the Baltics in particular. The implementation of the Capital Markets Union (CMU) initiative has boosted the activity within the segment, a momentum further augmented by the consequences of the COVID-2019 pandemic on capital markets. While the position of Latvia, Lithuania, and Estonia was ranked 25th (out of 25 as the maximum for the 28 member states) or the worst among other European Union countries, 18th and 11- for each country respectively when measuring the development of the capital market of a single country in the period 2007-2014 (before the CMU plan), the situation has improved in the period 2015-2018 (after the CMU plan) (Gucciardi, 2022). The active development has further expanded in the period from 2019 to 2023 traditionally associated with the COVID-2019 and Capital Markets Union activities; and witnessed an average annual growth rate of 125%.

While highly recognised by the academic and professional community for its scope and aim, the activities of the Capital Markets Union plan proved to be insufficient (the European Commission had performed reviews of the action plan) and influencing the capital markets to a dissimilar extent. Moreover, upon analysing the Baltic region, the authors identify its unique position shaped by factors such as a consolidated capital markets infrastructure provided by Nasdaq Baltic, a unified investor base, legislative integration, market scale considerations, and a disadvantaged starting position, prompting a reconsideration of the emphasis placed on COVID-2019 and Capital Markets Union related factors in shaping the development of the Baltic corporate bond market and underscoring the necessity for regional analysis.

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This paper aims to investigate the impact of COVID-2019 and Capital Market Union-related factors on companies' decisions to issue corporate bonds in the Baltic region. It contributes to extant research on corporate bond issuance in two fundamental ways. Firstly, the authors conduct a distinctive analysis of the Baltic region as a corporate bond issuer, scrutinising factors influencing companies' decisions to engage in corporate bond issuance in the Baltic, with a specific focus on COVID-2019 and Capital Market Union-related dynamics. Secondly, the authors undertake primary data collection and analysis to reveal the main factors affecting Baltic companies to enter the corporate bond market. In the first part of the paper, the authors review the academic contribution to the study of the influence of COVID-2019 and Capital Markets Union- related activities on the corporate bond market development; and the Baltic corporate bond market. The literature review sets the context of the research and supports the chosen methodology. In the second part, the authors present the data and research methodology. In the third part, as the result of the literature review, analysis of the primary data obtained through survey and in-depth interviews, the authors show the COVID-2019 and Capital Market Union- related factors that influence Baltic companies to issue corporate bonds and draw conclusions. Methodologically, this study employs scientific publication analysis, document analysis, expert surveys, and in-depth interviews. The primary data was collected between December 2022- January 2023.

Literature review

Despite the increasing integration of the Baltic countries and the formation of the Baltic capital market, the analysis of the Baltic corporate bond market as a single market is scarce by academics. The study of Vainovskis et al. (2023) was a unique analysis of the region and explored the determinants guiding the choice of Baltic corporate bond issuers between the local and international markets. The authors found that the main determinants stimulating international Baltic issues were bond placement size, company size, equity ratio, a satisfactory credit rating, and appropriate yields in the context of higher competition for international investor attention; on the country-level, gross domestic product per capita, country's export share, interest rate spread, regulatory quality, and political stability. Hvozdenska (2018) scrutinised Baltic bond markets on a per-country level for the government bond segment. More active academic interest can be observed on the per-country level for Latvia and Lithuania. Tocelovska et al. (2018) identified gross domestic product per capita, amount of domestic savings, real gross domestic product growth, amount of government bonds as the share of gross domestic product and regulatory quality on the amount of the corporate bonds outstanding as the determinants of the corporate bond market development in Latvia. Tocelovska et al. (2019) found that the reputation a company got as the result of the bond issue, strategic ambition to be present in the public market, cost of funding in the long-term (more than 3 years) motivated financial sector companies to come to the debt market.

Buzinske & Stankeviciene (2023a) and Buzinske & Stankeviciene (2023b) focused on the green bond segment of Lithuania. The studies pointed out the greenwashing, the questionable role of the green bond market in environmental protection, and insufficient financial and economic benefits of issuance as the challenges of green bond issuance in Lithuania as well as developed a 12-step process for the issuance of green bonds in Lithuania. Gaspareniene et al. (2019) analysed the choice for corporate financing for Lithuanian companies. While the authors based their research on the fact that corporate bonds were profitable only to large companies with a high credit rating, while small and medium companies—as well as large companies with lower credit ratings-found bank loans to be a more attractive method of external financing, the results revealed the general economics, bank sector, money market and specific characteristics of a company to influence the choice for a corporate capital structure. The main determinants

of business capital structure choice included: 1) general economic determinants, linked to the economic development of a country, the level of a stock market development, the size of the banking sector and the level of a finance market development; 2) bank sector determinants, primarily the procedures of bank loan issuance, legal regulation of the banking sector, the rate of deposit insurance premiums, (in)dependency of a business company from bank financing and a company's credit rating; 3) money market determinants, interest rates fixed by central banks, deposit interest rates, interest rates for non-deposit funds, surplus of free funds in households and business accounts, the rate of bond yields; 4) specific characteristics of a company such as business nature, a company's financial and marketing objectives, financial capacity, availability of different sources of financing and the need to diversify sources of financing.

The influence of COVID-2019 on the corporate bond market development is widely covered by academic research while missing a common stance. The study of Zaghini (2023) emphasised the weakness of the euro-area bond market during pandemic crisis periods where as a result of the credit rating agencies downgrading the euro-area companies, many euro-area corporations were unable to issue debt on the market. On the contrary, Agoraki et al. (2024) pointed the capital inflow into the bond markets during a pandemic, and Falato et al. (2021) to the positive spillover of the Fed funds to primary bond markets over the post-crisis period. The study by Taghizadeh-Hesary et al. (2021) noticed a reduction in green projects during the COVID-19 pandemic and the global recession, thus, indicating the urge for green bond issuance. The research by Sisodia et al. (2022) examined the rationale behind the increased global presence of corporate green bonds. The authors found that investors value green firms more as compared to brown firms (less climate-friendly), while the resilience of both green and brown firms was not found to differ. Della Posta & Morroni (2022) pointed out the need for additional public debt to create the basis for the recovery focused on the green transition, digital technology, and labour-intensive activities.

Bletzinger et al. (2022) examined the EU_Bonds, which acted as the European Union's (EU) COVID-19-related policy responses. The development of the EU-Bonds and the issuance under SURE programme in December 2022 (European Commission, 2024b) follows the previous findings of Tocelovska & Cakure (2021) on the gradual formation of the supranational framework for the European bond issuance, Corsetti et al. (2019) exploration on the non-defaultable Eurobond issued by a "euro area fund". Moreover, Bletzinger et al. (2022) acknowledged the risk of EU bonds limited further development due to the fact that both SURE and NGEU programs were foreseen to be one-off, EU-Bonds not being included in the sovereign bond indexes, and an absence of a direct derivative hedge instrument similar to the German, French, and Italian government bonds in the form of Eurex bond futures contracts.

The importance of the Capital Markets Union as a boost to European capital markets has been recognised by academics since its introduction in 2015. The development of the Capital Markets Union could be divided into several stages: in 2015 the first CMU action plan was developed with the first review in 2017; after the High Level Forum in 2020, the new Action Plan was developed, where in 2023 list of indicators to monitor progress towards the CMU objectives was published (European Commission, 2024a). In its first action plan, the European Commission underlined the need to review the functioning of European Union corporate bond markets, focusing on how market liquidity can be improved, the potential impact of regulatory reforms, market developments and voluntary standardisation of offer documentation (European Commission, 2015). While the academic and professional society has demonstrated solid scepticism about the short timeline (the first major deadline was set for 2019), gradually the change in the CMU calendar and content was adjusted. The study of Tocelovska & Purmalis (2017) emphasised the CMU's focus on securitization, infrastructure finance, and on providing financing alternatives to small and medium-sized enterprises (SMEs), where the growth of the Latvian corporate bond market was shaped by the

financial companies, not the SMEs originally targeted by the CMU. The study had expected further growth of the financial sector corporate bond as stimulated by securitisation. The banks as the representative of the financial sector companies got special attention for their funding needs in the form of covered bonds. In 2019, the European Commission reached an agreement on the harmonised rules, based on national high standards and best practices, to contribute to developing covered bonds as a stable and cost-effective source of funding for EU banks. By doing so, they planned to expand the capacity of banks to provide financing to the real economy and also to give investors a wider range of safer investment opportunities (European Commission, 2019). The study of Bajakic (2019) on the covered bond aspect of the CMU, predicted a reduction in regulatory fragmentation and more cross-border transactions, better investor protection, and more integrated European capital markets.

Allen & Pastor (2019) further challenged limited ambition in the supervision and enforcement of securities regulations, financial transactions tax, the low-interest-rate environment, cultural reasons, and potential political opposition. The primary results of the CMU as communicated in 2019 pointed to the increasing corporate bond issuance by non-financial companies, while still not utilising the full potential of the instrument. Further action to improve the functionality of the corporate bond market based on the expert group's recommendation was adopting a legislative proposal on promoting SME listing to reduce the administrative burden for issuers of corporate bonds (European Commission, 2019). Langenbucher (2021) has summarised the four areas of the High Level Forum in 2020 as: 1) promoting financing of a business; 2) creating a uniform market infrastructure; 3) fostering individual investor's engagement and 4) tackling obstacles to cross-border investment. The study of Werner et al. (2020) pointed out that the capital markets as stimulated by the CMU activities will not substitute but complement the bank SME financing.

Methodology

The primary data analysed in this paper has been obtained via in-depth interviews and surveys of the Baltic corporate bond issuers and issue organisers in the period of December 2022 to January 2023. The limitation for the issuer sample was made in the form of setting the issuance period of the corporate bonds by the company: 2017-2022. The questionnaire comprised three parts (covering the choice for funding, corporate bond issue process, and expert details) and was sent to 158 out of 168 issuers, generating 38 original responses and reaching a 24% response rate. The authors have further analysed the questionnaires and the questionnaires where more than 60% of responses were missing or where the same number appeared in 100% of responses, were not included in the sample thus reducing the number of valid questionnaires to 30. The survey experts were approached 2-5 times via email, phone, or LinkedIn account. The expert interviews took place in the period of December 2022 to January 2023 with the four organisers of the Baltic corporate bond issues. The authors have identified in total seven issue organisers each arranging more than seven corporate bond issues in the period 2017-2022: Siauliu bankas, Luminor Bank, Orion Securities, Signet Bank, BlueOrange Bank, LHV, and SEB. The response rate for the in-depth interviews reached 57%. The in-depth interview process took place in English or Latvian depending on the preferences of the interviewee.

Research results and discussion

The results of the survey "Corporate Bonds in the Baltics: Factors that Affect Corporate Bond Issuers" conducted in December 2022- January 2023 indicated that while borrowing outside the group company (bank borrowing) was still recognised as the most preferred way of financing (the other options being borrowing outside the group company (bank borrowing), equity funding, and organising initial public

offering (IPO)), issuing corporate bonds was favoured by the issuers in a similar manner. The results support the findings of Agoraki et al. (2024) rejecting the findings of Zaghini (2023) about the accessibility of the capital markets in the COVID-2019 and post-COVID-2019 years. During the interviews, when commenting on the choice for companies to issue corporate bonds instead of applying for bank financing the expert pointed to several reasons: the company reached the maximum available bank financing or outgrown the capacity of local banks (like quasi sovereign and financial institutions); the lack of pledge as required by the banks while most of the corporate bonds issued were unsecured; diversification and flexibility in the debt structure (looser financing structure, payment of the debt amount at the end of the period instead of amortising the loan); and pricing during the low-interest-rate environment during the past three years. The additional factors, mentioned by a few experts were company recognition and transparency (media presence, NASDAQ listing, increasing trust of investors and employees) and lack of knowledge about the capital markets from the older generation entrepreneurs. Additionally, the experts have commented on the contrasting situation in Estonia as compared to the Baltic region. The more aggressive practice of the banking sector (as perceived by the experts when compared to Latvia and Lithuania) resulted in Estonian issuers lagging their coming to the corporate bond market. The IPO option while still rated low by the survey experts (mean 2.21 out of 10 maximum) was commented during interviews to gain popularity in the future as an increasing number of potential issuers were evaluating the option.

Table 1

Main statistical indicators of expert evaluations on obstacles to issue corporate bonds

Obstacles	Mean	Std. Error of Mean	Median	Mode	Std. Deviation	Variance	Range	Minimum	Maximum
cost of issue (documentation, issue organiser etc.)	5.04	0.98	5.50	2.00	2.78	7.72	8.00	1.00	9.00
cost of market entrance (registration fees, listing fees etc.)	4.77	0.93	5.00	2.00	2.64	6.98	8.00	1.00	9.00
cost when compared to the borrowing from the group company	5.27	0.99	7.00	7.00	3.14	9.88	10.00	-	10.00
cost when compared to the borrowing outside the group company (bank borrowing)	6.76	0.87	8.00	8.00	2.62	6.86	9.00	1.00	10.00
cost when compared to the equity funding	4.75	0.90	5.00	3.00	2.69	7.24	9.00	-	9.00
level of competence in bond issue process by the reasonable people in my company	5.59	0.86	6.00	5.00	2.58	6.64	9.00	1.00	10.00
level of corporate bond understanding among investors	5.07	0.97	5.00	8.00	2.73	7.46	8.00	1.00	9.00
level of demand from investors	6.89	0.91	7.00	9.00	2.58	6.64	8.00	2.00	10.00
liquidity of the corporate bond market	7.59	0.75	8.00	9.00	2.14	4.56	8.00	2.00	10.00
regulatory policies	5.40	0.90	5.00	2.00	2.69	7.25	9.00	1.00	10.00
restrictive covenants of the corporate bonds	5.48	1.00	5.00	5.00	3.00	9.01	9.00	1.00	10.00

Evaluation scale 1 – 10, where 1- strongly disagree; 10 – strongly agree

Source: Authors' construction based on conducted survey "Corporate Bonds in the Baltics: Factors that Affect Corporate Bond Issuers" conducted in December 2022- January 2023

Tables 1 and 2 represent the summary of the descriptive statistics of questions: "In my country the main obstacles to issue bonds are: cost of issue (documentation, issue organiser, etc.); cost of market entrance (registration fees, listing fees etc.); cost when compared to the borrowing from the group company; cost when compared to the borrowing outside the group company (bank borrowing); cost when compared to the equity funding; level of competence in bond issue process by the reasonable people in my company; level of corporate bond understanding among investors; level of demand from investors; liquidity of the corporate bond market; regulatory policies; and restrictive covenants of the corporate bonds" and question: "My company, when issuing bonds is targeting: retail clients (excluding high net worth individuals); high net worth individuals; institutional clients (banks' own books); institutional clients (banks' assets under management departments); institutional clients (insurance); and institutional clients (pension plans)" of the survey "Corporate Bonds in the Baltics: Factors that Affect Corporate Bond Issuers" conducted in December 2022- January 2023. While the participants of both the survey and expert interviews have pointed to the cost of funding as the main motivating factor to issue bonds for a company, followed by the strategic ambition to be present in the public market, and lack of funding alternative, the analysis of the main obstacles to issuing corporate bonds reveals the high cost of funding if compared to the borrowing outside the group company (bank borrowing) (Table 1). The difference in the perception of the cost of funding when compared to the results of the survey and the expert interviews could be due to the distinct perception as present by the issuers (survey experts) and issue organisers (interview experts). Moreover, the financial support of the EU for covering the cost of the corporate bond issues was recognised as a significant relief thus supporting the CMU impact.

Table 2

Main statistical indicators of expert evaluations on the target clients when issuing corporate bonds

Client groups	Mean	Std. Error of Mean	Median	Mode	Std. Deviation	Variance	Range	Minimum	Maximum
retail clients (excluding high net worth individuals)	5.17	1.09	5.00	2.00	3.26	10.62	9.00	1.00	10.00
high net worth individuals	7.30	0.98	8.00	10.00	2.95	8.68	9.00	1.00	10.00
institutional clients (banks' own books)	8.10	0.91	9.00	10.00	2.86	8.19	10.00	-	10.00
institutional clients (banks' assets under management departments)	7.96	1.08	10.00	10.00	3.43	11.77	10.00	-	10.00
institutional clients (insurance)	8.05	0.91	9.00	10.00	2.73	7.45	9.00	1.00	10.00
institutional clients (pension plans)	8.10	1.09	10.00	10.00	3.26	10.62	9.00	1.00	10.00

Evaluation scale 1 – 10, where 1- strongly disagree; 10 – strongly agree
Source: Authors' construction based on conducted survey "Corporate Bonds in the Baltics: Factors that Affect Corporate Bond Issuers" conducted in December 2022- January 2023

The analysis of the main obstacles to issuing corporate bonds indicated that the liquidity of the corporate bond market had the highest rank, followed by the level of demand from investors. Baltic corporate bond issuers' views on the liquidity of the corporate bond market as an obstacle to issuing corporate bonds were not homogeneous – the lowest evaluation was 2 and the highest evaluation was 10 with mode 9 (the most often chosen evaluation by the experts) and median 8 (around half of the experts gave evaluation 8 or

less, and half of the experts gave evaluation 8 and 9), the arithmetic mean of the expert evaluations was 7.59 with standard deviation 0.75). The concern about the liquidity issue supports the desire of the European Commission to review the functioning of European Union corporate bond markets, focusing on how market liquidity can be improved (European Commission, 2015). The liquidity concern while mentioned during the expert interviews, was not among the key highlights of the experts. The experts commented that the liquidity problems were typical for small bonds (even for international issues) and not a major issue for institutional investors, where private investors hold bonds to maturity. The average Baltic corporate bond issue size viewed by different interview experts varied from EUR 5-10 million to EUR 20-30 million not exceeding EUR 50 million.

Baltic corporate bond issuers' views on the level of demand from investors as an obstacle to issuing corporate bonds were not homogeneous – the lowest evaluation was 2 and the highest evaluation was 10 with mode 9 (the most often chosen evaluation by the experts) and median 7, the arithmetic mean of the expert evaluations was 6.89 with standard deviation 0.91. Further analysis of the Baltic corporate bond issue evaluation of the target clients for the bonds revealed institutional investors: pension plans, banks' own books, insurance companies and bank's assets under management were viewed as the main target clients followed by the high-net-worth individuals (Table 2). During the interviews, the demand from investors was highlighted as a significant factor for the whole pan-Baltic region. While referring to the strong urge for the local pension fund assets to be invested in the corporate bonds of the region, the experts realised the EU regulation requirements and understood the investment limits. The experts commented on the limited presence of institutional investors in the Baltics except for the pension funds while the banks' own investments (proprietary books) only recently started their activity, same applied to the family offices. The need for more green bonds for green fund investments was recognised thus supporting the findings of Taghizadeh-Hesary et al. (2021). The retail clients got significantly lower evaluations by the Baltic corporate bond issuers as the target clients with the arithmetic mean of the expert evaluations of 5.17 and a standard deviation of 1.09. The interview experts recognised modest retail interest in the less retail oriented (by their core activity) issuers, whereas the opposite was observed in the well-recognised issuers like Maxima Grupe, UAB. The experts mentioned that high minimum investments, low financial literacy and lack of information, high fees, as well as limited (or no positive) experience in financial markets were among the factors affecting retail limited interest in corporate bond investing.

Conclusions, proposals, recommendations

1) Academic research on the Baltic corporate bond market is limited, with a focus on individual countries rather than the region as a whole. Recent studies have highlighted factors influencing the choice between local and international bond markets for Baltic issuers, the determinants of the corporate bond market development in Latvia, the green bond segment in Lithuania as well as the choice of corporate financing in Lithuania.

2) The impact of the COVID-19 pandemic on corporate bond markets exhibits divergent perspectives. Some academic papers highlighted weaknesses in the euro-area bond market due to downgrades by credit rating agencies, while others pointed to increased capital inflows during the pandemic, positive spillovers from Fed funds to primary bond markets post-crisis, and a reduction in green projects prompting a call for green bond issuance.

3) Academic recognition of the Capital Markets Union's (CMU) significance in boosting European capital markets has been consistent since its inception in 2015. The CMU's developmental trajectory, marked by key milestones such as action plans and reviews reflected a strategic evolution

aimed at enhancing market liquidity, regulatory reforms, and financing alternatives, despite initial scepticism. The European Commission underlined the need to review the functioning of European Union corporate bond markets, among other issues, focusing on the market liquidity. Despite increased corporate bond issuance by non-financial companies, the CMU's potential remains underutilised, prompting further action such as legislative proposals to facilitate SME listings. The four areas of the High Level Forum include promoting business financing, market infrastructure, investor engagement, and addressing cross-border investment barriers.

4) The analysis of the Baltic corporate bond issuers reveals that while bank borrowing remains the preferred financing method, issuing corporate bonds is gaining similar favour among issuers. Reasons for choosing corporate bonds over bank financing include reaching maximum bank borrowing capacity, preference for unsecured debt, flexibility in debt structure, and favourable pricing in low-interest-rate environments. The additional factors being company recognition, transparency, and generational differences in knowledge about capital markets.

5) While cost remained the main motivating factor to issue bonds for a company, followed by the strategic ambition to be present in the public market, and lack of funding alternative, the analysis of the main obstacles to issuing corporate bonds revealed the high cost of funding if compared to the borrowing outside the group. The financial support of the EU for covering the cost of the corporate bond issue was recognised as a significant relief thus supporting the CMU impact.

6) The further analysis identified liquidity and investor demand as primary obstacles to issuing corporate bonds in the Baltic region. These findings supported the European Commission's initiative to review the functioning of the EU corporate bond markets, focusing on how market liquidity could be improved. While liquidity concerns were acknowledged in expert interviews, they weren't emphasized as key highlights, particularly as they primarily affect smaller bond issues rather than institutional investors. The Baltic corporate bond issue sizes were found to range from EUR 5-10 million to EUR 20-30 million, with few exceeding EUR 50 million.

7) The analysis revealed institutional investors such as pension plans, banks' own books, and insurance companies as the main target clients for Baltic corporate bond issues. Retail clients received lower recognition due to factors such as high minimum investments, low financial literacy and lack of information, and high fees, although recognising that retail-oriented (by their core activity) issuers attracted more interest.

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Proceedings of the 2024 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" No 58
Jelgava, LBTU ESAF, 16-17 May 2024, pp. 411-420
DOI: 10.22616/ESRD.2024.58.040

STRATEGIC POSITIONING AND THE IMPORTANCE OF COMMUNICATION FOR STARTUPS IN LATVIA

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Abstract. The research aims to perform a complex analysis of startups to identify external and internal factors in the development of startups in Latvia, the strategic positions of startups and future action strategies thereof. The research employed various methods, including monographic and descriptive; graphic; expert interviewing and pairwise analysis for identifying the main factors included in a startup survey questionnaire; surveying that gives insight into self-assessments of the situation by startups and the Strategic Position and Action Evaluation Matrix (SPACE) that helps to identify the strategic position and identify future action strategies for startups. The research analysed in detail only two fields of economic activity of startups: fintech and healthtech. The research revealed that the main problems for startups involved insufficient market research, a lack of financial resources and improper strategic planning. The strategies proposed by the research are aimed at diversifying product and service development by startups, optimizing costs and increasing competitiveness, focusing on digital transformation and innovation. An effective communication strategy is one of the most essential prerequisites for successful business for startups. The research contributes to an assessment of external and internal factors in the performance of startups in Latvia and to the identification of strategic positions, thereby suggesting strategies for national startups to improve their strategic positions and actions in the market. The research results are important for both current startups and those individuals who plan to start their businesses.

Key words: startup, strategic position, SPACE, entrepreneurship, communication.
JEL code: M13, D83, L26

Introduction

In recent years, Europe has experienced the emergence of a new generation of companies in the global market. This trend relates to a more mature European venture capital industry and the growing interest of non-European investors. European startups are increasingly considered to be engines of economic growth, which have the potential to solve current problems in the field of digitalization, sustainability and industry competitiveness by using innovative and advanced technologies. For this reason, various government policy schemes are implemented both at the national and the European Union (EU) levels to contribute to the startup ecosystem. In 2023, 728 startups have been identified in the startup ecosystem of Latvia (EUIPO, 2023). Award-winning companies are a vivid example of the fact that we do not lack ambitions to change in Latvia. Startup ideas change the way industries operate and develop innovations. Latvia needs economic changes, and startups have to be a part of the changes (Startin.lv, 2023). Europe still lags behind other regions, including the USA, when it comes to financing innovative startups. Actions to deal with this challenge are multifaceted; however, making the intellectual property system more accessible to startups leads to innovative companies being part of the solution. The EU trademarks and patents play an important role in the development of startups. The EU unitary patents expand market opportunities for deep technology companies, thereby allowing them to enter a wider market (EUIPO, 2023). The failure rate of startups is significant at over 90%. Research studies show that more than nine in ten startups eventually fail, and about 20% of them fail in their first year. The innovative nature of startups makes them particularly vulnerable to risk, yet this applies to all kinds of businesses. According to the US Bureau of Labour Statistics, the long-term failure rate of all businesses is 70%. This rate increases to 50% by the

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fifth year and 70% by the tenth year. There are many reasons why startups fail, including difficulty in finding a position in the market, competing with established competitors and making profits (Zhou, 2024).

Research hypothesis: in Latvia, the strategic positions of startups depend on their capability to identify internal and external factors in their performance.

The research aim is to perform a complex analysis of startups to identify external and internal factors in the development of startups in Latvia, the strategic positions of startups and future action strategies thereof. **Specific research tasks:** 1) to perform a theoretical analysis of the importance of strategic management and communication in business, placing a special emphasis on a strategic analysis tool – the SPACE matrix; 2) to perform an assessment of the strategic positions and actions of startups in Latvia; 3) to identify strategies for the long-term operation of the most significant industries for startups in Latvia.

The research employed general **scientific research methods**: monographic, descriptive and graphic, pairwise analysis, expert interviewing and startup surveying as well as the Strategic Position and Action Evaluation Matrix (SPACE).

The **theoretical framework** for the research is based on various scientific and other sources of information covering the fields of strategic management, communication and startups.

Research limitations

- As part of the research, a survey questionnaire was distributed to 221 startups in January 2024, and 34 responses were received with valid answers, i.e. a response rate was 15.4%. The low response rate could be explained by several factors, including a lack of time, complexity of the questionnaire and a lack of motivation. Despite the low response rate, the answers could be considered to be representative enough to draw conclusions about startups in Latvia. There were several reasons for this: the diversity of the respondents: 1) the survey respondents represented various industries and company size groups; 2) the quality of the data: the answers to the survey questions were well thought out and provided valuable information about factors in the performance of startups and the strategic positions thereof. Therefore, the research findings could serve as a basis for further research on startups in Latvia and other countries.
- The research analysed in detail only two industries: fintech and healthtech. The strategic positions of startups in other industries might differ.
- The SPACE matrix uses two internal dimensions (financial strength and competitive advantages) and two external dimensions (industry resilience and environmental stability).

Research results and discussion

A strategy is a tool for achieving long-term goals (David et al., 2017; Silaban & Syah, 2018). A strategy serves as a business plan for a company, showing its understanding of the following aspects: how, when and where to compete, with whom to compete and for what purpose the company competes (Silaban & Syah, 2018). The concept of a strategy has existed since the dawn of mankind (Henderson, 1989), while the term strategic planning entered the world of management in 1950 (Tafti et al., 2012). Since then, various tools have been introduced for each stage of strategic planning, including formulation, implementation and evaluation steps. Globalization and the complexity of companies have challenged the strategies developed by an organization (Daniel, 2006). Therefore, strategic planning has experienced periods of decline and growth (Mintzberg, 1994). For most organizations, formulating their strategies for success is the most important thing in an environment of complex changes. Strategic planning provides organizations with some tools to follow the formulation of a strategy in various organizational

aspects and manage the performance of strategic aspects (Miller & Cardinal, 1994). Today strategic management is widely used at various levels of entrepreneurship. Strategic management is considered to be a set of decisions and actions that managers apply at all levels of the organization. This is a set of decisions that can lead to long-term activities of the organization (Mintzberg, 1991). In other words, the general concept of strategic management is that managers need to know what factors are employed to improve prerequisites for the successful performance of the organization in the future (Stacy, 2002). Lovlyn emphasizes that a strategy is a relevant problem also in the context of organizational communication. An effective communication strategy is one of the essential prerequisites for successful entrepreneurship. The impacts of it are apparent at various levels of company management, thereby contributing to risk prevention, effective decision-making and a smooth flow of information at all levels of the structure. The importance of a communication strategy is stressed by the concept of communication as an indispensable tool of organizational development. It serves as an essential tool and a means of social interaction through which various relationships and interactions in the organization are established and maintained (Lovlyn, 2017). Thus, it could be said that a strategy is the basis of strategic communication. A strategy is used as an inclusive indicator of an organization's communication practices. In this regard, the concept of strategic communication has also been introduced, which examines how organizations use communication to purposefully accomplish their missions (Frandsen & Johansen, 2017). Seiffert-Brockmann and Wiggins & Nothhaft note that in the context of strategic management, strategic communication is defined as a set of tools aimed at achieving organizational goals. In a narrower sense, it serves the achievement of an organization's self-proclaimed goals, whereas in a broader sense, it provides it with sustainable growth and superiority over competitors. A characteristic feature of strategic communication is its role in the survival and long-term success of an organization. It allows organizations not only to function successfully but also to develop, thereby engaging in strategically important conversations and actively creating their images. Communication serves as a tool to help reduce both internal and external pressures that an organization faces. It acts as an interface where collective consciousness, desires and forms of cooperation are aligned with the changing environment. Thus, strategic communication ensures an organization's capability to adapt and operate effectively under dynamic market conditions (Seiffert-Brockmann, Wiggins & Nothhaft, 2023).

Research studies by Chaudhri et al. show that entrepreneurs can evaluate and prioritize strategic communication processes that are most suitable for them. The same is true of how startups strategically manage their brands – a process that does not have to follow after the concept or product is fully developed nor does this have to entail communication efforts that are wide-ranging across all media. Depending on business peculiarities, focused and direct efforts at communication with key audiences may be more strategic and cost-effective for some, while a wider scope of visibility may be beneficial for others (Chaudhri et al., 2022).

A review of various scientific literature sources allows us to conclude that strategic management and communication are two interrelated disciplines that are critical to the success of any organization. A strategy determines the direction, while communication ensures that everyone in an organization moves towards the same goal. Effective strategic management and communication can help organizations to achieve their goals, increase their efficiency and grow in a sustainable way.

Shtal et al. have concluded that today analyses of the external business environment are very important for the development of any organization. This is because today's external business environment is characterized by an extremely high degree of dynamism, complexity and uncertainty. Besides, one of the main prerequisites in business, as well as in other areas of life, is the organization's capability to adapt to

external changes in the macro-environment. It could be added that any organization exists and functions depending on many factors. The factors have different effects on the organization and have very significant impacts on the organization's capabilities, prospects and strategy. A combination of interacting factors is considered to be an organizational environment in management (Shtal et al., 2018).

The Strategic Position and Action Evaluation Matrix (SPACE) was proposed and developed in 1994 by Alan Rowe, Richard Mason, Karl Dickel, Richard Mann and Robert Mockler (Rowe et al., 1994). Rowe et al. tried to overcome some of the limitations/shortcomings of the methods/tools mentioned above. Based on the explanation by Rowe et al. (1994), the SPACE matrix is an analytical tool to map the position of a company in a quadrant matrix with the aim of enabling the company to visualize its position to be able to identify a suitable strategic position for future expansion. Based on the strategy vector in the SPACE matrix, it can show the strategy that the company should implement. Basically, the SPACE matrix can be considered a short overview of the Profit Impact of Market Strategy approach, as each dimension is a combination of several separately assessed factors. By incorporating multiple factors, companies can examine multiple alternative strategies from different perspectives to choose the right strategy (Rowe et al., 1994).

Competition is key to the success or failure of an organization and determines the appropriateness of its activities. In designing a strategy, managers need to examine marketing opportunities in each industry and product market, as well as the organization's distinctive competencies or strengths relative to its competitors. The SPACE matrix is a valuable method for analysing the competitiveness of an organization. It uses two internal dimensions (financial strength and competitive advantages) and two external dimensions (industry resilience and environmental stability) to identify an organization's strategic position in the industry. The strategic positions of a company are classified as aggressive, competitive, conservative or defensive (Radder & Louw, 1998). Dimitrova states that by using SPACE analysis, marketing managers can include and integrate several various elements of the environment to test or examine specific strategic alternatives from different perspectives. In other words, the type and number of sub-factors are not predetermined but depend on specific analytical objectives (Dimitrova, 2017). The SPACE matrix is a strategic planning tool that serves to analyse an organization and define a suitable strategy for it. The matrix is based on four dimensions – two internal and two external ones – that allow an assessment of the state and potential of an organization. The internal dimensions: financial strength (FS) specifies the financial stability and profitability of an organization. The main factors in FS are return on investment, liquidity, capital structure, business risks etc. factors. Competitive advantages (CA) reflect an organization's capability to outperform its competitors. The main factors in CA are market share, product quality, the product life cycle, brand awareness etc. The external dimensions: industry resilience (IR) indicates the attractiveness and growth potential of the industry. The main factors in IR are growth and profit potential, financial stability, technological know-how etc. factors. Environmental stability (ES) reflects the variability and uncertainty of the external environment. The main factors in ES are technological changes, inflation, demand variability etc. factors.

The factors could be included in or changed within each dimension, depending on the specifics of a particular organization. The method functions as follows: the main factors of each dimension are rated by the decision maker(s) of an organization and a score from a scale of 0 to 6 is assigned to each of them belonging to FS and IR (CA and ES, respectively). The arithmetic mean of each dimension is then calculated. According to the basic principles of the method, CA and IR values are plotted on the X-axis and FS and ES on the Y-axis. The sum of CA and IS values (FS and ES, respectively) indicates the kind of strategy suggested by the final x (resp. y) value for the organization. Once the above steps are completed, a proper strategy could be selected according to one of the following four strategic positions: aggressive,

competitive, defensive and conservative (Gurbuz, 2013; Radder & Louw, 1998; Rumanti & Syauta, 2013). This position is then defined as a general competitive strategy that will help the company to develop proper strategies for its sustainability, namely: total cost management, differentiation and defence (Rowe et al., 1994). The review of various scientific sources allowed us to conclude that the identification of a strategy by using the SPACE matrix could be based on a logic seeking to maximize the company's strengths and take advantage of opportunities in the external environment while minimizing its weaknesses and neutralizing its threats.

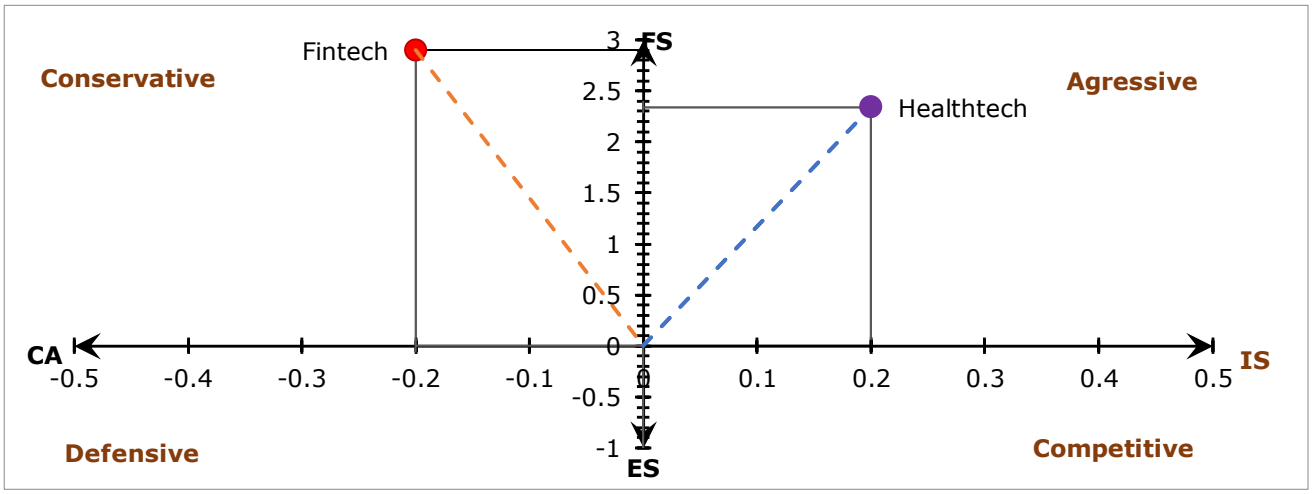
The factors affecting startups were selected and adapted using the SPACE matrix. A startup segment expert was involved in assessing the most important factors. *The expert selection criteria were as follows: 1) knowledge and practical/research experience: in-depth knowledge of the startup ecosystem; 2) analytical skills: the ability to critically analyse information and make informed decisions.* Pairwise analysis was used for the expert interview. By comparing all factors in pairs, the expert selected the most important factor in each pair. After ranking the factors, the top 5 most significant factors were selected in each dimension for the SPACE matrix for a survey of new entrepreneurs.

Pairwise analysis is one of the scaling methods that is employed based on the rating; in 1972, the method was proposed as a statistical model (Turgut & Baykul, 1992). This method is advantageous because of its simplicity and the inclusion of all comparative judgments (Acar-Guvendir & Ozer-Ozkan, 2013).

Based on the results of the expert interview, a questionnaire for startups was drawn up using the Likert scale for the following factor groups: *environmental stability*: technological changes, inflation, demand variability, competitive pressure and the price elasticity of demand; *industry resilience*: growth potential, profit potential, financial stability, technological know-how and capital size; *competitive advantages*: product/service quality, customer loyalty, technological know-how, effective internal and external communication. A research study by Mueller et al. has found that both early-stage and growth-stage entrepreneurs spend a significant part of their working time on communication. Although communication is considered to be "the basic elements of entrepreneurial behaviour", it is often limited to a tactical approach that focuses on formats, channels and/or directions (internal or external). Thus, activities such as networking, relationship building and information sharing remain indirectly affected (Mueller et al., 2012); *financial strength*: income from investment, cash flow, risks associated with business, inventory turnover and financial independence. The factors were rated as low/high following the methodology of the SPACE matrix so that the results obtained could be quantified and integrated into the SPACE matrix. For the survey, 447 startups registered in the national startup database were selected, of which 221 had accessible contact information. As part of the research, a survey questionnaire was distributed to 221 startups, and 34 responses were received with valid answers, i.e. a response rate was 15.4%. Despite the low response rate, the answers could be considered to be representative enough to draw conclusions about startups in Latvia. Therefore, the survey findings could serve as a basis for further research on startups in Latvia and other countries. The answers were received from representatives/startups of the AI, fintech, healthtech, biotech, advanced manufacturing, computer vision, agrotech, foodtech, contech/proptech and mobility industries. However, for data processing, the fintech and healthtech industries were selected because they were identified as the most significant ones, according to the results of the survey of startup experts and the 2023 report of the startup association Startin.lv.

As shown in Figure 1, the identification and calculation of the strategic position of the healthtech industry were made in the following order: on the X-axis, the average rating of industry resilience (IR) (4.73) and the average rating of competitive advantages (CA) (-4.53) made up the total score or a point on the X-axis: (0.2). On the Y-axis, the average rating of financial stability (FS) (4.8) and the average rating of

environmental stability (ES) (-2.46) made up the total score or a point on the Y-axis (2.34) (see Fig. 1 for the results of the calculations and a visual representation in the SPACE matrix). The healthtech industry was placed in an aggressive strategic position. Based on the results of the survey of entrepreneurs and following the methodology of the SPACE matrix, the authors concluded that the startups of the healthtech industry were in an aggressive quadrant, which indicated strong market growth. This industry experienced fast growth owing to technological advances and the growing demand for industry services, the strong competitiveness of startups, many new companies offering innovative solutions and creating an intense competition environment as well as a favourable external environment, i.e. national policies and regulation supported the growth of startups. Dimitrova (2017) states that an aggressive strategic position, i.e. such a situation, is characteristic of attractive industries with low uncertainty in the external environment. The organization has competitive advantages that it can maintain and consolidate through its financial strength. Since the threats are insignificant, the organization can focus on guaranteeing the interests of its stakeholders. Some of the strategic alternatives to a similarly strong position involve: maintaining the level of innovation and further developing the competitive advantages possessed to date; rejecting any opportunity to develop competitive advantages of differentiation, i.e. those that would provide them with higher value for attractive market segments; vertical integration; diversification; "keeping up with the competition" by developing a unique high technology owing to a market "pioneer" (Dimitrova, 2017). Based on the action strategies already suggested by the SPACE matrix (Dimitrova, 2017; Krisnanto & Febriana, 2018; The Steps Required to Develop a SPACE Matrix, 2012; The Strategic Position and Action Evaluation (SPACE) Matrix, 2021; Kazibudzki, 2012), the authors recommend that startups in the industry should focus on: continuous development and innovation of products/services so that they meet the current market requirements; diversification of products/services to reduce risks and enter new markets; effective communication with customers, partners and other stakeholders to inform them about new products/services and improve the company's reputation; constant monitoring of competitor performance trends to maintain their competitiveness. Startups need to be able to create new products and services that meet the needs of customers and differ from what their competitors supply. Startups need to be able to communicate effectively with customers, partners and other stakeholders to inform them about their strategies, products and services.



Source: authors' construction

Fig. 1. **Identification of the strategic positions of startups in the healthtech and fintech industries in Latvia, January 2024**

As shown in Figure 1, the identification and calculation of the strategic position of the fintech industry were made in the following order: *on the X-axis, the average rating of industry resilience (IR) (4.6) and the average rating of competitive advantages (CA) (-4.8) made up the total score or a point on the X-axis: (-0.2). On the Y-axis, the average rating of financial stability (FS) (4.8) and the average rating of environmental stability (ES) (-1.9) made up the total score or a point on the Y-axis (2.9)* (see Fig. 1 for the results of the calculations and a visual representation in the SPACE matrix). Based on the results of the survey of entrepreneurs and following the methodology of the SPACE matrix, the authors conclude that startups in the fintech industry were in a conservative quadrant, indicating a low market growth rate – the growth of this industry was relatively slow because it was saturated with traditional financial service providers. There was a moderate level of competition for startups, as they had to compete with well-established companies and had significant resources and experience; there was a neutral external environment: national policies and the relevant legal framework had a neutral effect on the growth of startups in this industry. Dimitrova (2017) points out that a conservative strategic position means that the companies located in this quadrant of the SPACE matrix are in a stable, but slowly growing market. Product competitiveness is usually the key factor. In this case, costs should be reduced, product lines shortened and additional measures should be taken to protect competitive products, develop new products and propose and implement market penetration projects. The strategic alternatives suggested are as follows: promoting new product benefits and uses to win new market segments; downsizing, i.e. rearranging output to reduce costs; "harvesting" aimed at quickly recovering costs, market development through selling current products to new, more promising (demographic and geographic) markets (Dimitrova, 2017). Based on the action strategies already suggested by the SPACE matrix (Dimitrova, 2017; Krisnanto & Febriana, 2018; The Steps Required to Develop a SPACE Matrix, 2012; The Strategic Position and Action Evaluation (SPACE) Matrix, 2021; Kazibudzki, 2012), the authors recommend industry representatives to focus on cost reduction while developing new products and maximally diversifying the supply of products/services as well as paying attention to digital transformation and introducing innovations to enter new markets. Such a strategy, which combines cost optimization with product diversification, helps to mitigate various potential risks and ensures the sustainable development of a company.

Conclusions, proposals, recommendations

1) Strategic management and effective communication are critical to the success of any organization. A strategy determines the direction, while communication ensures that everyone in an organization moves towards the same goal. The SPACE matrix is a useful tool for assessing the strategic position of an organization. The matrix is based on four dimensions – two internal and two external ones – that allow an assessment of the state and potential of an organization.

2) Startups are recognized as drivers of economic growth, which have strong potential to solve the most pressing problems in the national economy. By employing expert interviewing and pairwise analysis, the authors of the paper designed a questionnaire for a survey of startups to identify external and internal factors for a SPACE matrix: *environmental stability factors*: technological changes, inflation, demand variability, competitive pressure and the price elasticity of demand; *industry resilience factors*: growth potential, profit potential, financial stability, technological know-how and capital size; *competitive advantage factors*: product/service quality, customer loyalty, technological know-how, effective internal and external communication; *financial strength factors*: income from investment, cash flow, risks associated with business, inventory turnover and financial independence.

3) For a survey, 447 startups registered in the national startup database were selected, of which 221 had accessible contact information. As part of the research, a survey questionnaire was distributed to 221 startups, and 34 responses were received with valid answers, i.e. a response rate was 15.4%. Despite the low response rate, the answers could be considered to be representative enough to draw conclusions about startups in Latvia. The answers were received from representatives/startups of the AI, fintech, healthtech, biotech, advanced manufacturing, computer vision, agrotech, foodtech, contech/proptech and mobility industries. However, for data processing, the fintech and healthtech industries were selected because they were identified as the most significant ones, according to the results of the survey of startup experts and the 2023 report of the startup association Startin.lv. The strategic positions of startups in two industries in Latvia – fintech and healthtech – were assessed using the SPACE matrix.

4) Based on the results of the survey of entrepreneurs and following the methodology of the SPACE matrix, the authors conclude that the startups of the healthtech industry were in an aggressive quadrant, which indicated strong market growth. This industry experienced fast growth owing to technological advances and the growing demand for industry services, the strong competitiveness of startups, many new companies offering innovative solutions and creating an intense competition environment as well as a favourable external environment, i.e. national policies and regulation supported the growth of startups. As regards the fintech industry, the startups of this industry were in a conservative quadrant, indicating a low market growth rate – the growth of this industry was relatively slow because it was saturated with traditional financial service providers. There was a moderate level of competition for startups, as they had to compete with well-established companies and had significant resources and experience; there was a neutral external environment: national policies and the relevant legal framework had a neutral effect on the growth of startups in this industry.

5) The authors recommend that startups in the healthtech industry should focus on: continuous development and innovation of products/services so that they meet the current market requirements; diversification of products/services to reduce risks and enter new markets; effective communication with customers, partners and other stakeholders to inform them about new products/services and improve the company's reputation; constant monitoring of competitor performance trends to maintain their competitiveness. Startups need to be able to create new products and services that meet the needs of customers and differ from what their competitors supply. Startups need to be able to communicate effectively with customers, partners and other stakeholders to inform them about their strategies, products and services.

6) The authors recommend fintech industry representatives to focus on cost reduction while developing new products and maximally diversifying the supply of products/services as well as paying attention to digital transformation and introducing innovations to enter new markets. Such a strategy, which combines cost optimization with product diversification, helps to mitigate various potential risks and ensures the sustainable development of a company. Startups need to perform regular strategic analyses to identify changes in the external and internal environments and adjust their strategies in a timely manner. Accordingly, the hypothesis put forward proved to be true.

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