Latvia University of Life Sciences and Technologies

ESAF Ekonomikas un sabiedrības attīstības fakultāte

NJF Nordic Association of Agricultural Science

INTERFRAME-LV

Latvia University of Life Sciences and Technologies

Faculty of Economics and Social Development

20th International Scientific Conference

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9-10 May 2019, Jelgava, Latvia

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Time schedule of the conference

Preparation of the proceedings and organization: January 2019 – May 2019

Conference: 9-10 May 2019

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

Agricultural University in Cracow	Poland
Baranovichi State University	Belarus
Batumi Navigation Teaching University	Georgia
Batumi Shota Rustaveli State University	Georgia
"BBS-Dizain" Ltd	Latvia
Central Statistical Bureau of Latvia	Latvia
Corvinus University of Budapest	Hungary
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National Research Institute of Animal Production	Poland
National University of Life and Environmental Sciences of Ukraine	Ukraine
Pedagogical University of Cracow	Poland
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Polytechnic University of Timisoara	Romania
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Poznan College of Communications and Management (WSKiZ)	Poland
Poznan University of Economics and Business	Poland
Poznan University of Life Sciences	Poland
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Tashkent State Pedagogical University Named After Nizami	Uzbekistan
Ternopil National Economic University	Ukraine
The State University of Applied Sciences in Plock	Poland
The University of Economics and Culture	Latvia
Transilvania University of Brasov	Romania
"Turiba University" Ltd, Latvia	Latvia
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The authors are responsible for the content and language of their papers.

Reviewers

Every article included into the Proceedings was subjected to a scientific, including international review. All reviewers were anonymous for the authors of the articles. The following reviewers from scientific and academic institutions of 13 countries (Belarus, Georgia, Germany, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, Sweden, Ukraine, USA and Uzbekistan).

Publication Ethics and Malpractice Statement for the International Scientific Conference "Economic Science for Rural Development"

The Editorial Board is responsible for, among other, preventing publication malpractice. Unethical behaviour is unacceptable and the authors who submit articles to the Conference Proceedings affirm that the content of a manuscript is original. Furthermore, the authors' submission also implies that the material of the article was not published in any other publication; it is not and will not be presented for publication to any other publication; it does not contain statements which do not correspond to reality, or material which may infringe upon the intellectual property rights of another person or legal entity, and upon the conditions and requirements of sponsors or providers of financial support; all references used in the article are indicated and, to the extent the article incorporates text passages, figures, data or other material from the works of others, the undersigned has obtained any necessary permits as well as the authors undertake to indemnify and hold harmless the publisher of the proceedings and third parties from any damage or expense that may arise in the event of a breach of any of the guarantees.

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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Every submitted manuscript has been reviewed by one reviewer from the author's native country or university, while the other reviewer came from another country or university. The third reviewer was chosen in the case of conflicting reviews. All reviewers were anonymous for 9 the authors of the articles, and the reviewers presented blind reviews. Every author received the reviewers' objections or recommendations. After receiving the improved (final) version of the manuscript and the author's comments, the Editorial Board of the conference evaluated each article.

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Authorship should be limited to those who have made a significant contribution to the conception, design, execution, or interpretation of the reported study. All those who have made significant contributions should be listed as co-authors. Where there are others who have participated in certain substantive aspects of the research project, they should be acknowledged or listed as contributors.

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Editorial Board

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 Agriculture.

The proceedings of the conference are published since 2000.

The scientific papers presented in the conference held on 9—10 May 2019 are published in 3 thematic volumes:

No 50 Rural Development and Entrepreneurship
Production and Co—operation in Agriculture

No 51 Integrated and Sustainable Regional Development
Marketing and Sustainable Consumption

No 52 New Dimensions in the Development of Society
Home Economics
Finance and Taxes
Bioeconomy

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
Associate professor of Faculty of Economics and Social Development
Latvia University of Life Sciences and Technologies

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INTEGRATED AND SUSTAINABLE REGIONAL DEVELOPMENT

Proceedings of the 2019 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" No 51
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LINKS BETWEEN THE LEVEL OF LOCAL AND REGIONAL DEVELOPMENT – PROBLEMS OF MEASURING

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Abstract. While conducting an assessment of development in territorial systems, two significant issues have been detected of theoretical and practical nature. These include the issue of measuring the level of this development and the distinction, or rather a connection between a regional and local development. Regional development does not constitute the sum resulting from the level of development of local systems, whilst the results of research on development in local systems have some direct connections with the level of regional development. One may assume that especially the development of larger cities in the region and the spatial systems linked to them ought to be similar to the development of the entire region. Within the article, the authors have analysed the links between the development of Lublin voivodeship and the level of the three cities with poviat rights from the area of the voivodeship including the three country districts forming the surroundings of these cities.

Keywords: local development, regional development, district cities, development measures.
JEL code: C80, P48, R58.

Introduction

Practical dimensions of the level of regional development bearing in mind the concept of sustainable development is a seemingly easy task. The analysis of works of other researchers, dealing with practical aspects of measurement of the regional development or the local one (Churski 2005, Wojcik 2014; Wozniak 2005; Brol & Raszkowski 2011), clearly reveal in practice lack of a uniform diagnostic tool. Theories on regional development or economic aspects of relations within the local economy of the regions create a common platform for all research works in this scope. Due to this reason, on the one hand, one may observe that the occurring differences in approach of individual researchers to the practical measurement still fit into the same theoretical frameworks. On the other hand, also the tendency to reach for a methodology assumed i.e. in the programmes of regional development of individual voivodeships or the strategies of local development is visible. The evaluation of these programmes occurs normally by means of many different meters. However, also in this particular scope one may encounter elaborations devoted to a large degree to verification of usefulness of these meters (Krok-Czyz Tomaszewski, Wysocka & Zembaty, 2009). These elaborations clearly reveal that the assumed by Marshal Offices, city councils and communal councils as well as poviat councils meters related to specific actions and targets are not of universal nature. Many of them turn out to be useless or too costly to be gathered and analysed. This triggers a number of methods of measurement of regional and local development and the models. The accepted manner of measurement ought to serve reaching the assumed research objectives. The purpose of the article is to define and assess the links between the development of local systems and the development of the entire region. Research was carried out on the example of three cities with poviat rights and three country districts surrounding these cities, which form the basis of the three subregions of the Lublin voivodeship.

Research materials and methods

While testing regional development, it is assumed that it concerns the entire Lublin voivodeship. Whilst, when we analyse the local development, in accordance with the practice of functioning of the

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policy of local self-government units, we speak of cities, communes and poviats (potentially cities on poviat rights). This stems from the binding in Poland three-tier territorial-administrative division (Szewczuk, Kogut-Jaworska & Ziolo, 2001). The analysis of data of the voivodeship office concerning the regional development - data of the Lublin voivodeship, as well as the local development -data of the poviats and poviat cities will run similarly: Biala Podlaska, Chelm and Zamosc representing municipalities.

Striving to obtain such a precise mapping of the real development of tested units, whilst at the same time maintaining transparency of the measurement itself and the result involve the necessity to accept certain compromises. These compromises cover above all the necessity to limit the numbers of analysed variables (thus, factors which stimulate and dissimulate local and regional development). Second of all, it is necessary to use aggregate meters. Thirdly, the number of variables presenting the state of regional and local development in a given area, personalized in the form of an aggregate meter, must be rational. Fourthly, while attempting to compare between one another the level of regional development and the local one it is necessary to apply the same method of calculating the aggregate meter for all territorial units.

Within the analysis, data disclosed by the Central Statistical Office, which gathers and processes the most significant data characteristic for multiple fields and areas of social-economic life both for the county and the internal territorial units, were used. It is assumed that CSO data ensure sufficient credibility and completeness of data and the necessary information. One must however note that data at disposal of CSO are not complete. This concerns more the data used for the purpose of local rather than regional level. The period assumed for the analysis covers years 2004-2013, thus the period of 10 years, whilst it is a period directly after the accession of Poland into the European Union. Practical consequences stemming from this fact are visible in the form of striving for harmonisation of methodology of CSO and Eurostat statistics. On the one hand this reflects the discrepancies in data delivered by Eurostat and CSO, on the other hand, explains why in case of some data in the analysed period of 10 years methodology of their storage and processing changed. Provided that the above issues are to be the subject of entirely different and wider consideration, then it is significant that data provided by CSO in some cases will not cover all the years or levels covered by the analyses (that is city, poviat, voivodeship). This leads to the necessity of accepting subsequent compromises consisting of, among others, accepting the values of some meters for the city and poviat on the same level. One must underline though that upon applying data from CSO, measurement of development at the local level (city and poviat) in some areas is not fully precise. Removal of this flaw would require supplementing data provided by CSO with own field research and the analysis of primary sources. Within the accepted concept of the article, such actions cannot be justified.

The key issue of the authors' own research methodology are the structures of aggregates. The general concept of research accepts an assumption that regional development or the local one may be measured by performing measurements in the following dimensions by means of the following diagnostic variables:

1) Labour market - situation on the labour market reflected by 6 indicators (2 of stimuli nature and 4 being the destimulants);
2) Society - reflects the total population on a given area including its economic situation (10 stimulants and 3 destimulants);
3) Economic situation of the households - reflects the resources of households and their members (6 stimulants and 1 destimulant);

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4) Education - reflects the situation in the region or poviat concerning a widely understood educational activity and perspectives in that region (10 stimulants);
5) Enterprises - reflects a real image of the situation of entrepreneurs on the local or regional market (7 stimulants and 2 destimulants);
6) Research and development and innovation - indicators reflecting general level of innovation and condition of the sector related to the research and development works (11 stimulants);
7) Infrastructure and environment - general grasping of basic resources of infrastructural nature, available or used by entities and society on a given area and the state of natural environment (8 stimulants).

The above presented diagnostic variables are the selected variables for individual measurements subjected to research. These are not of course all the variables available or possible for measuring, characterizing a given area. Part of the above indicated data is available in CSO bases solely at the level of voivodeships. Their choice was made post an initial analysis of availability of data and their information value. In several cases, despite unavailability of data for the entire period covered by the analysis, data have not been excluded from a given area - it stemmed from the lack of availability of alternative data. However, resigning from considering the level of GDP was not purposeful, since "GDP itself does not carry a direct information on improvement of environment of the functioning of entities in the region". One must also note that due to the incompleteness of data bases of CSO in the areas selected for research, in case in some analysed variables, a certain inconsistency of data occurs. The example may be the income at disposal of a household with consideration of their sources. In this case data were not available in a division considering the level of detail envisaged by the carried out own elaboration (that is on the poviat and city level). Therefore, identical values indicated by CSO for the Lublin voivodeship were accepted for all the analysed levels of territorial division. Moreover, in case of lack of some data for the entire period covered by the research, their estimated approximation was made or values of aggregate for a given year were omitted in calculations.

The above stated variables were subjected to dynamics analysis, first however subjecting them to the process of standardization. This stems directly from the accepted concept of aggregate meter (Kompa 2009). The postulated construction of aggregate meter fulfils all the assumptions standing before this type of meter: universal nature, availability, economy and interpretability. Moreover, construction of the meter has been known in Poland since 1968, when it was presented within *Przeglad Statystyczny* (Hellwig 1968). It was thus assumed that the synthetic measure of development in individual dimensions will take the form (for each of the dimensions):

$$SMR_{it} = 1 - \frac{q_{it}}{\overline{q_t} + 2 * S_{qt}}$$

where:

S_{qt} – standard deviation calculated according to the following pattern:

$$S_{qt} = \sqrt{\frac{1}{n}\sum_{i=1}^{n}(q_{it} - \overline{q_t})^2}$$

$\overline{q_t}$ - average value

q_{it} – distance of the i-th object from the accepted pattern, appointed by means of Euclidean metric on the basis of standardized variables:

$$q_{it} = \sqrt{\frac{1}{k}\sum_{j=1}^{k}\left(z_{jt}^{i} - z_{jt}^{0}\right)^{2}}$$

z_{jt}^{0}, z_{jt}^{i} - values of variables adequately describing the pattern and the i-th object

Research post standardization, carried out according to the following pattern:

$$z_{jt}^{i} = \frac{z_{jt}^{i} - \bar{x}_{jt}}{S_{jt}^{x}}$$

Such assumed synthetic meter assumes values within the range [0; 1] – the closer to unity its value in a given area, the larger probability of accepting the pattern characterized by the assessed area.

The above actions and analyses have been conducted by means of STATISTICA software by StatSoft.

Amongst all the available data in public data statistics, diagnostic data have been selected which have been identified and classified within 7 areas, in one of the two groups: stimulants (s) - factors with positive impact on a broadly-understood development and destimulants (d) - factors significantly hindering the development of a given region:

- Education - factor of primary school enrolment rate net (S), factor of lower secondary school enrolment rate net (S), factor of vocational school enrolment rate net (S), factor of high school enrolment rate net. Net (S), number of primary schools (S), number of lower secondary schools (S), number of high schools (S), number of universities (S), number of students (S), number of university graduates (S).
- Labour market - total unemployment in the region (D), unemployed above 1 year total (D), unemployed with higher education (D), unemployed with high school and second degree education (D), created work places (voivodeship) [thousand] (S), liquidated work places (voivodeship) [thousand] (S).
- Economic situation of households - income at disposal per 1 person in a household (S), income at disposal in a household per 1 person from contract work (S), income at disposal in a household per 1 person in a household (S), income at disposal in a household per 1 person from self-employment (S), income at disposal in a household per 1 person from social benefits (D), expenditure for education per 1 person in a household per month [PLN] (S), average monthly gross remuneration (S).
- Research, development and innovation - employment in R&D sector in total (voivodeship) (S), employment in R&D sector in total per 1 thousand of professionally active (voivodeship) (S), internal expenditure for R&D [PLN million] (S), internal expenditure for R&D per 1 inhabitant [PLN] (S), internal expenditure for R&D per 1 employed [PLN] (S), internal expenditure for R&D in the sector of higher education [PLN] (S), internal expenditure for R&D [PLN] (S),external expenditure, -Funds from PAN [PLN thousand], average share of innovative enterprises in total number of enterprises (voivodeship) [%] (S), expenditure for innovative activity per 1 person professionally active [PLN] (S), share of revenue from sale of innovative products in total revenue from sale [%] (S).
- Infrastructure and environment - use of electricity in total [GWh] (S), use of electricity industry (voivodeship) [GWh] (S), use of electricity household (voivodeship) [GWh] (S), surfaced roads per 10 thousand persons [km] (S), contaminations sustained in relation to the emitted ones -

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particulate [%] (S), number of sewage treatment plant of all types - industrial (S), number of sewage treatment plants - communal (S), exploited railway routes [km] (S).

- Enterprises - entities entered into the register of REGON per 10 thousand persons (S), newly registered entities in the region REGON per 10 thousand persons (S), entities removed from the register REGON per 10 thousand persons (D), share of entities removed in the general number of entities in the region REGON [%] (D), entities newly registered per 1 thousand persons at the working age (S), average monthly remuneration in sections A+B (S), average monthly remuneration in sections C+D+E (S), average monthly remuneration in section K (S), average monthly remuneration in section M (S).
- Community - M total (S), K total (S), m at pre-working age (S), K at pre-working ate (S), M at working age (S), K at working age (S), M at post-working age (D), K at post-working age (D), number of households (S), number of flats (S), registrations in total (S), registration notices (D), total net migration rate (S).

Assessment of the level of regional and local development

When applying the previously described model of assessment of local and regional development, based on the aggregate meter, an assessment of development of individual spatial entities covered by the research was performed. By analogy, as in case of the analysis of dynamics of changes in factors of local development, an assessment of local and regional development in year 2004 and 2013 was carried out (beginning and end of the research period). Data referring to the Masovia voivodeship and the city of Warsaw with poviat rights were assumed as a pattern. The choice of pattern is not coincidental. The Masovian voivodeship and, in particular, the city of Warsaw and the fastest and most dynamically developing city in the region and within the geographic area. Therefore, one may treat data describing this voivodeship and poviat as a pattern, which other regions of the country should follow. The graph below presents the results of such comparison. One must however bear in mind that both the city of Warsaw as well as the entire Masovia voivodeship are on a privileged position in many different terms. The applied methodology is not based on the direct comparison of the researched objects with the pattern, but only after data standardization. Thanks to the standardization, differences in the level of size disappear and changes in these levels and relations between the analysed data are clearly visible. Application of the above described aggregate meter allows to compare the situation in given areas (or comprehensively as it will be shown below) between the tested objects and the pattern. This is not a direct comparison of absolute volumes, but rather a comparison which allows for specifying the relative position with reference to the pattern (or rather standardized variable values describing the pattern). This must be remembered at all times while performing the analysis of results of the assessment of development of the Lublin voivodeship and the poviats and cities covered by the analysis.

As one may notice on the graph below, the Lublin voivodeship, upon the use of the described aggregate meter in 2004 obtained mark 0.8260. In other words, its level of development with regards to its size and setup of internal factors (thus, in the context of size of diagnostic data describing it) was assessed at the level of 83 % of the status which was reached by the pattern with regards to its size and setup of internal factors (pattern). The Lublin voivodeship, having at its disposal the resources and attributes of the Masovia voivodeship, would reach approx. 83 % of its level. One ought to underline yet again that this is a relation-based measurement which reflects in a certain sense the potential (of a given voivodeship) and the degree of its use in relation to the use of its potential by the accepted pattern.

An analogue assessment of the state of development of the Lublin voivodeship in 2013 reveals that the voivodeship reached the value of aggregate meter equal to 0.8180. One should interpret this as a drop of a degree of development of the voivodeship in the context in which it has been assessed (in comparison to the pattern). This means that the value of aggregate meter, lower than in 2004, may be caused by: the pattern was characterized by a larger efficiency and growth dynamics in the years between the assessed periods and/or the pattern developed more effectively than the tested voivodeship; and/or the tested voivodeship experienced a slowdown of development. All three above causes seem to be probable. One must also indicate that a weak plane of the Lublin voivodeship both in 2004 and in 2013 was noted in the area of enterprises.

Precise values of SMR meter towards individual dimensions have been presented in table 1 and in table 2. Lack of data in the area of research and development/ innovation at the local level has been noticed. These data were available only for the regional level. Also lack of total meter for the Bialski poviat in 2004 was detected.

Table 1

Value of SMR meter in individual dimensions and value of total meter in 2004

Area	**Territorial unit**						
	Lublin voivodeship	Bialski poviat	Chelmski poviat	Zamojski poviat	City of Biala Podlaska	City of Chelm	City of Zamosc
Labour market	0.84	0.99	0.83	0.83	0.58	0.84	0.83
Community	0.61	0.82	0.76	0.80	0.71	0.50	0.79
Economic situation of households	0.74	-	-1.43	0.79	0.68	-0.13	0.72
Education	0.85	-	0.72	0.76	0.55	0.70	0.55
Enterprises	0.01	-	0.72	0.65	0.69	0.71	0.69
Research and development/ innovation	0.79	-	-	-	-	-	-
Infrastructure and environment	0.79	-	0.79	0.74	0.66	0.86	0.46
Total meter	0.83	-	0.80	0.83	0.67	0.83	0.80

Source: authors' elaboration

Table 2

Value of SMR meter in individual dimensions and value of total meter in 2013

Area	**Territorial unit**						
	Lublin voivodeship	Bialski poviat	Chelmski poviat	Zamojski poviat	City of Biala Podlaska	City of Chelm	City of Zamosc
Labour market	0.84	-	0.79	0.78	0.59	0.80	0.81
Community	0.63	0.78	0.49	-0.06	0.66	0.62	0.52
Economic situation of households	0.79	0.53	0.66	0.77	0.61	0.78	0.44
Education	0.84	-	0.83	0.83	0.58	0.58	0.54
Enterprises	-0.17	0.65	0.64	0.23	0.59	0.30	-0.26
Research and development/ innovation	0.63	-	-	-	-	-	-
Infrastructure and environment	0.66	0.96	-0.12	0.71	0.28	0.63	0.24
Total meter	0.82	0.89	0.82	0.85	0.62	0.85	0.85

Source: authors' elaboration

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Essentially, in case of the majority of tested territorial systems the aggregate meter in 2013 assumed higher values than the one in 2004. The relations between the level of development in the local systems and the level of the entire region were formed in a diverse manner. In 2004, the total indicators of local development were equal or below the level of indicators of the voivodeship growth. Whilst, in 2013 the growth indicators of the majority of poviats and cities started to be higher than the level of the regional development. In that particular year weak parameters of growth within the Chelmski poviat and the city of Biala Podlaska were reported. It is worth to carry out an analysis thus, applying the same methodology, calculating the aggregate meter for individual, distinguished dimension of regional and local development. However, an obstacle arises here, stemming from the fact of applying standardization of further stems, assumed by the accepted methodology. Hence, in case of the Bialski poviat in 2004 (both at the level of the meter of total assessment as well las the partial meters in several dimensions) one cannot carry out a designation of values of aggregate meter. Value q_{it} would require establishing square root (thus an even one) from a negative number, which is impossible from mathematical point of view. Therefore, in case of the Bialski poviat in 2004 the values were not considered in the table and it will not be subjected to any detailed analysis. This issue did not occur in the case of the remaining poviats and cities and in case of the assessment of the Bialski poviat in year 2013. One must thus consider that the accepted methodology is not perfect, which however does not compromise the possibility of applying and obtaining correct results for the systems for which it was possible to carry out the calculations. The results of these calculations have been indicated on the graphs. The obtained results of the analysis allow to specify, next to the dynamics of changes, also the relations between the level of local development and the regional one.

The City of Biala Podlaska was in 2004 characterized by a relatively small but balanced degree of development (use of potential) in all six of the detailed areas. Whilst, in 2013 this development was not so balanced. A delay in development in the area of infrastructure and environment was clearly visible, as well as most likely, even though to a lesser degree, in the area of community and economic situation of the households. Only in the scope of education, the city reached a higher value than that in 2004 in terms of aggregate meter. In light of weak development of the cities in 2013, a high degree of development of the surrounding Bialski poviat is transparent. Detailed data concerning this poviat have been presented in Table 1 and in Table 2.

On the one hand, in case of the Chelmski poviat a clear disproportion may be noticed. In 2004, economic situation of the households was very badly assessed, whilst in 2013 it significantly improved. On the other hand, in the area of infrastructure and environment, as well as in the social area, the assessment in 2013 was subject to a radical deterioration. In the remaining dimensions of assessment, the results were very similar or they were subject to a minor drop. In case of the city of Chelm the situation was similar. In this area the situation of households significantly improved. The city of Chelm also improved its assessment in the area of community, however, in the remaining areas the value of aggregate meter often reached lower levels than in 2004. Substantial worsening occurred in the area of enterprises which means that Chelm did not develop dynamically and in a balanced way.

The general indicator of development of the city of Zamosc and the Zamojski poviat was subject to a slight improvement. But these territorial units are an exceptional case of large imbalance in development. In 2004 the Zamojski poviat may be considered as rather sustainable in its development and use of potential in all six dimensions. Whilst, in 2013 certain growth disproportions appeared. The value of aggregate meter was at a similar level. Whilst it is clear that the weaker development in the area when it comes to the enterprises was accompanied by almost no development in the area of community.

The city of Zamosc is also characterized by developmental disproportions. In fairness, the total meter decreased but negative decrease tendencies are noticeable in the area of enterprises and community.

Conclusions

1) The Lublin voivodeship was in 2013 characterized by a rather low level of development, which may stem from the fact of failure to use the chances and potential. The carried out analysis revealed that the Lublin voivodeship does not keep up in the right degree with the development of the pattern voivodeship - the Masovia voivodeship. As a consequence, a relative assessment of the level of development of the Lublin voivodeship in 2004 was slightly better than one in 2013. These results are however no surprise, since Lublin voivodeship was in 2012 at the 11th place among the poorest regions in the entire EU and in the first 3 poorest regions in Poland. In the context of this information, the relatively weak results of the Lublin voivodeship is no surprise. What is more, a detailed analysis combined with an assessment (upon applying the same meter structure) of the selected for testing poviats and cities revealed large disproportions among these areas and the dimensions subjected to the assessment. The majority of territorial systems, apart from the city of Biala Podlaska, obtained generally slightly higher grades than they did in 2004. Furthermore, the analysis revealed the occurrence of large disproportions and even delays suggesting the possible collapse in some development areas. This means that the processes related to regional and local development take place on the tested area, however, they are of diverse nature (from the perspective of dimensions subjected to the assessment) and they seem to be non-coordinated. This is confirmed, above all, by a delay in infrastructure growth, which substantially hinders the development in the remaining areas, weakening through this the impact of actions undertaken by local authorities and the target programmes. Differences between the situation of the assessed cities are also visible which means that each of them has used their potential in a different way and attempts to find itself in the overall economic situation of the entire voivodeship. Essentially, one must note that the present situation has some substantial negative effects in the area of local community (especially when it comes to migration and community structure). Whilst, a slight effect of city polarization among the cities which obtained better assessments than the entire poviat in some areas is visible.
2) The measurement of regional and local development, considering the targets and ideas of sustainable development is a difficult task and one that involves multiple issues. Of course, the necessity to carry out certain choices as to the meters of individual areas and layers of development seems obvious. One cannot also avoid certain simplifications and omissions of less important factors. Nevertheless, it is still possible to agree the level of regional development and compare these results with other regions. A similar situation takes place in case of the local level, but one must bear in mind the necessity of maintaining consistency in applying the selected meters and methods of measurement.

Bibliography

1. Brol R., Raszkowski A. (2011), *Problemy rozwoju regionalnego.* [Problems of Regional Development], Wroclaw University of Economics, Wroclaw.
2. Churski p. (2005), *Nowe mechanizmy programowania rozwoju regionalnego w Polsce na przykladzie wojewodztwa kujawsko-pomorskiego.* [New Mechanisms for Programming Regional Development in Poland

DOI: 10.22616/ESRD.2019.052

on the Example of the Kujawsko-Pomorskie Voivodeship], European Teaching, Yearbook, Smolensk University of Humanities, Wloclawek – Smolensk.

3. Hellwig Z. (1968), *Zastosowanie metody taksonomicznej do typologicznego podzialu krajow ze wzgledu na poziom ich rozwoju oraz zasoby i strukture kwalifikowanych kadr.* [Application of the Taxonomic Method to the Typological Division of Countries Based on the Level of Their Development and the Resources and Structure of Qualified Personel], Statistical Review, no. 4, Torun.
4. Kompa K. (2009), *Budowa miernikow agregatowych do oceny poziomu rozwoju spoleczno-gospodarczego.* [Construction of Aggregate Measures for the Assessment of the Level of Socio-Economic Development], Scientific Journal of Warsaw University of Life Sciences, Economics and Organization of Agri-Food Sector, no. 74, Warsaw.
5. Krok – Czyz K., Tomaszewski P., Wysocka M., Zembaty M. (2009), *Analiza listy wskaznikow bazowych w ramach Regionalnego Programu Operacyjnego Wojewodztwa Lubelskiego na lata 2007-2013.* [Analysis of the List of Baseline Indicators within the Framework of the Regional Operational Program of the Lubelskie Voivodeship for the Years 2007-2013], Warsaw-Wroclaw.
6. Wojcik M. (2014), *Strategia rozwoju wojewodztwa jako instrument rozwoju regionalnego na przykladzie wojewodztwa swietokrzyskiego.* [Voivodship Development Strategy as an Instrument of Regional Development on the Example of the Swietokrzyskie Voivodeship], Studies and Materials, Miscellanea Oeconomicae, no. 3, Kielce.
7. Szewczuk A., Kogut-Jaworska M., Ziolo M. (2001), *Rozwoj lokalny i regionalny. Teoria i praktyka* [Local and Regional Development. Theory and Practice], Published by C.H. Beck, Warsaw.
8. Wozniak D. (2005), *Modele polityki rozwoju regionalnego a konkurencyjnosc wojewodztwa na przykladzie wojewodztwa malopolskiego.* [Models of Regional Development Policy and Competitiveness of a Voivodeship on the Example of the Małopolska Voivodeship], Cracow University of Economics, Cracow (doctoral dissertation).

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EXPECTED STRUCTURAL CHANGES IN SELECTED INDUSTRIES AND SECTORS OF THE NATIONAL ECONOMY OF LATVIA IN THE CONTEXT OF THEIR LONG-TERM DEVELOPMENT

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Abstract. Economically, Latvia considerably lags behind advanced economies. Achieving the economic development and income level of advanced countries is difficult but not impossible. In order for it to occur, substantial changes has to take place in the national economy of Latvia, mostly in the tradable sector. The research aim is to identify the potential structural changes in the national economy of Latvia if, hypothetically, the economic development levels of advanced economies and Latvia converge. In this situation, labour productivity has to considerably increase in agriculture and other primary industries, which means that most of the workforce working in the mentioned industries have to move to other industries and, possibly, change their places of residence – from rural to urban areas. Labour productivity is expected to significantly increase in low value-added manufacturing and in part of (tradable) service industries. In order that it can occur, high value-added manufacturing and (tradable) service industries have to be developing, which consequently will raise the overall income (earnings) level and which, in its turn, will affect also the value-added tradable subsector where labour productivity is going to increase and higher wages could be paid. A significantly smaller increase in labour productivity is expected in the no tradable sector, yet labour costs (earnings) are expected to rise considerably, which will result in an increase in the costs and prices of mostly no tradable services and therefore the overall price level.

Key words: economic development, long-term structural change, tradable and nontradable sectors, Latvia.
JEL code: F43

Introduction

Almost three decades have passed since the collapse of communism in Eastern Europe, yet the economic performance of East European countries, including Latvia, is considerably lower than that of West European countries. It particularly relates to labour productivity, which, in its turn, determines the income level and the standard of living in the entire economy. Joining the European Union fostered economic growth, exports and structural economic change in a number of East European countries, yet nominal incomes in the countries are considerably lower than those in West European countries, reaching even 10 times if comparing such countries as Luxembourg and Bulgaria. Nominal incomes in Latvia are five times lower than those in Luxembourg and four times lower than those in Germany (Eurostat). Hypothetically, incomes and the standard of living in East European countries have to reach those in West European countries in a long-term, meaning that significant changes are expected in their economies. The changes have to be a focus in the society, thereby guiding social and other processes into the right direction.

For this reason, the research aim is to identify the expected structural changes in the national economy of Latvia if, hypothetically, the economic development levels of advanced economies and Latvia converge in a long-term.

Specific research tasks: 1) to describe and explain an empirical causal association between labour productivity and the overall earnings level in an economy and the role of the high value-added tradable subsector in an economy; 2) to identify long-term structural changes in selected primary industries; 3) to identify long-term structural changes in the low value-added tradable subsector and the nontradable sector.

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The present research is based on previous research investigations by the author into the tradable sector and labour productivity disparities across European countries, employing analysis and synthesis, statistical analysis, single factor analysis of variance (ANOVA) and abstract and logical analysis.

Research results and discussion

The present research is based on a finding of the author that labour productivity is considerably affected by the overall labour cost (earnings) level – at a low labour productivity level, the labour cost level is also low, and vice versa. The availability of cheap labour, which is an advantage and typical of East European countries and Latvia too, does not contribute to higher labour productivity, first of all, in the tradable sector, which, consequently, is a large disadvantage for economic growth and development (Ancans, 2018). Labour productivity in export industries or the tradable sector (theoretically divided by the present research into two subsectors: the low value-added tradable subsector and the high value-added tradable subsector), which nowadays is the basis and core of any open economy, adjusts to the overall earnings level. It is not a desirable economic phenomenon (causal association) in East European countries (with low labour productivity), as it does not contribute to increases in labour productivity in the industries where it could be relatively easier to achieve, i.e. the low value-added tradable subsector which the East European countries have for a long period and which should be relatively more developed, unlike the high value-added tradable subsector which is considerably less developed in the East European countries than in advanced economies (Ancans, 2018).

As high value-added industries (tradable subsector) develop (owing to both the production of goods and services of increasingly higher value–added and increases in the proportion of the industries in GDP, i.t. both qualitatively and quantitatively), increases in the overall earnings level could be expected – initially in the mentioned industries, but subsequently in low value-added industries as well as in the nontradable sector (in mostly nontradable services industries).

The research intends to make a more detailed explanation of the mentioned causal association between labour productivity in the tradable sector and the overall earnings level in the economy and analyse the following groups of industries: primary industries; low value-added tradable industries; high value-added tradable industries; the nontradable sector.

1. Causal association between labour productivity and the overall earnings level and the role of the high value-added tradable subsector in an economy

As the author has established in his previous research investigations (Ancans, 2018), the following empirical causal association could be observed across nations – labour productivity strongly correlates with, i.e. adjusts to, the overall earnings level in the economy, which, in its turn, determines the wage level in the tradable sector as well as in the nontradable sector, i.e. in the entire economy. The overall earnings level and labour productivity represent reciprocal cause and effect – they interact and are interrelated, representing the so called vicious circle phenomenon – the availability of cheap labour in the economy determines low labour productivity, while the low labour productivity determines low earnings (cheap labour). Cheap labour and low labour productivity are both the cause and the effect. Breaking the vicious circle requires a driver – the development and expansion of high value-added economic activity, i.e. the transition from the efficiency-driven stage to the innovation-driven stage. Otherwise, it is also impossible to avoid the so-called middle-income trap. In order for labour productivity to increase in the low value-added tradable subsector, which is

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an important and significant in any less developed economy, the high value-added tradable subsector has to develop and expand. If this subsector as the growth driver develops and expands, the overall earnings level gradually rises to a higher level, thereby making labour productivity increase also in the low value-added tradable subsector and, at a smaller extent, in the nontradable sector as well.

With the high value-added tradable subsector as the driver of income growth developing, the overall earnings level in the economy gradually shifts to a higher level, which causes labour productivity to increase in the tradable sector – both, first of all, in the high value-added tradable subsector and in the low value-added tradable subsector. The higher labour productivity in the tradable sector allows paying higher wages in the tradable sector itself and, subsequently, higher wages and salaries in the nontradable sector where higher labour productivity is more difficult or impossible to achieve but where raising nontradable service prices and paying higher wages and salaries are going to be a logical outcome.

In less developed economies, entrepreneurs and businesspersons can afford to hire relatively more employees for doing a certain amount of work because the labour is cheaper there. Conversely, in advanced economies where labour is relatively more expensive, they cannot afford to hire a large number of employees and have to seek solutions how to get the same amount of work done by fewer employees, i.e. how to make the production process more efficient – by replacing the labour by machinery and equipment or by finding other technological solutions, which allows raising labour productivity and paying higher wages. Higher wages and salaries encourage, stimulate and force businesspersons and entrepreneurs to increase labour productivity at their enterprises. This is an important causal association to be known and taken into consideration by entrepreneurs, policy makers as well as the general public.

2. Long-term structural changes in primary industries

Agriculture is the most ancient industry whose role in the national economy or gross domestic product is insignificant nowadays. The proportion of agriculture in GDP is only 1.4-2.2 % (Nipers et al., 2018), yet it is very important from other perspectives – territorial management, ecological, social etc. For this reason, agriculture is the most government-supported industry that receives EU and national financial assistance. In Latvia, labour productivity in agriculture, which is measured as agricultural factor income per annual work unit, rose from more than EUR 3 thou. in 2005 to approximately EUR 5.5 thou. in 2016. The research identified an association between labour productivity in the agricultural industry and the overall earnings level in the national economy of Latvia in the period 2005-2016 (Figure 1).

The correlation coefficient was 0.77, and a single-factor analysis of variance showed that the data were reliable (p-value was less than the significance level of 0.01).

As shown in Figure 1, an increase in the overall earnings level in the national economy led to an increase in labour productivity in agriculture. The largest deviation from a steady increase in both earnings and productivity was observed in the year 2008, which was due to a high earnings increase and a decrease in global food prices and, consequently, in labour productivity (value added) in agriculture.

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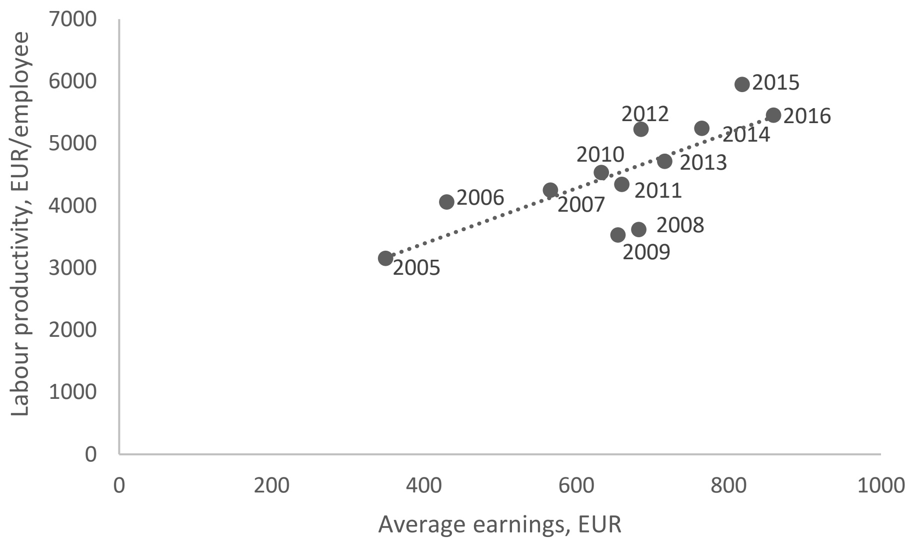
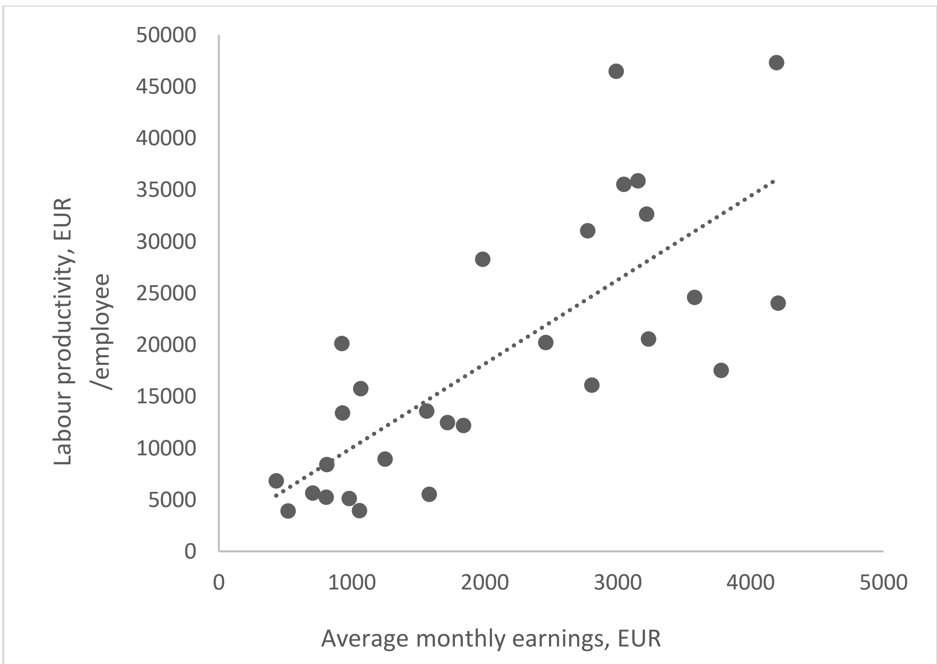


Source: author's construction based on Eurostat and the Central Statistical Bureau (CSB) of Latvia

Fig. 1. **Causal association between labour productivity in the agricultural industry and the overall monthly earnings level in the national economy of Latvia in the period 2005-2016**

In Latvia, labour productivity in agriculture still considerably lagged behind that in advanced EU Member States, which ranged from about EUR 9 thou. in Portugal to EUR 47 thou. Denmark, averaging around EUR 25 thou. (author's calculations based on Eurostat) (Figure 2).



Source: author's construction based on Eurostat

Fig. 2. **Causal association between labour productivity in the agricultural industry and the overall monthly earnings level across EU Member States**

Even though agriculture receives considerable and also different support or operational subsidies in EU Member States (from less than 200 EUR/ha in Romania to more than 1000 EUR/ha in Malta) (European Commission, 2018), which distorts the market, an analysis showed that there was a strong positive correlation between labour productivity in agriculture and the average earnings level (NACE Rev.2, B-S, excluding O) across the EU Member States – the correlation coefficient r=0.77. However, a single-factor analysis of variance proved that the data were reliable, i.e. labour productivity in the

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agricultural industry (which produces tradable agricultural goods) adjusts to the overall earnings level in the economy.

Hypothetically, if reaching the economic development level of advanced economies, labour productivity in agriculture in Latvia has to increase approximately fivefold, according to the current data, in a long-term. Since the land area is limited and crop and livestock productivity cannot be significantly increased, the main solution in agriculture with regard to increasing labour productivity is a decrease in the number of the employed in this industry. In 2018 in Latvia, agriculture employed approximately 7 % of total employment, while in advanced economies this relative Figure was considerably lower, e.g. in Germany, France and the United Kingdom it was 1.3, 2.4 and 1.1 %, respectively, i.e. 3-6 times lower (OECD). In 2016 in Latvia, according to the CSB, the number of the regular labour force in agriculture totalled 162.7 thou., while the agricultural employment expressed in annual work units was equal to 75.7 thou., i.e. more than twofold lower, which indicates a too high number of agricultural employees in this industry at the current labour productivity level that is approximately four-fold lower than that in advanced economies. This means that the majority of those employed in agriculture in Latvia (approximately 50 thou.), in a long-term, will have to seek employment in other industries (in urban areas) and, possibly, move to the urban areas because, at present, living in rural areas and working in the urban areas is not possible due to the low income level if distance from the place of residence to the workplace is too long. In view of the fact that the proportion of young agricultural employees is low, whereas that of old ones is high in Latvia (European Commission, 2017), this problem will be partly solved owing to generation change. Achieving the income level of advanced economies and improving the quality of roads, which require not a single decade, the population could afford to live in rural areas and work in urban areas.

Forestry is the second most important industry in Latvia, and the situation in it is similar to that in agriculture. The proportion of forestry and logging in GDP was 1.7 % in 2015, even though in the period 2010-2011 it was approximately 2 % (CSB, 2018). Labour productivity in this industry was low, which was shown by such key apparent labour productivity indicators as roundwood production per employee, thou. m^3, and gross value added, EUR per employee. In 2015, 0.7 (0.9 in 2005) thou. m^3 of roundwood per employee were produced in Latvia. For comparison, the Figures in other forest-rich EU Member States were as follows: Sweden – 3.4 (3.9 in 2005), Finland – 2.8 (2.3) and Estonia – 1.0 (0.8) (Eurostat, 2018b). In 2015, larger disparities in labour productivity were observed in terms of money: EUR 21.1 thou. in Latvia, EUR 32.4 thou. in Estonia, EUR 172.7 thou. in Sweden and EUR 161.7 thou. in Finland (Eurostat, 2018b). In 2015 in Latvia, the number of the employed in forestry was approximately 2 % or 19 thou. For comparison, it was 22 thou. in Sweden and 21 thou. in Finland (Eurostat, 2018b), i.e. almost as many as in Latvia, even though roundwood production in both Scandinavian countries was 4-5 times higher. It indicates that in a long-term, labour productivity in forestry, just like in agriculture, in Latvia has to increase multi-fold.

The factor of production – land – that is exploited in agriculture and forestry is constrained and constant in terms of area. Forest yields (increments in growing stock) could not be considerably increased. Any increase in the agricultural area could be done at the expense of the forest area, and vice versa. However, since labour productivity in agriculture and forestry is considerably lower in Latvia, the number of employees in both industries has to decrease multi-fold if reaching the labour productivity and income levels of advanced economies. Based on the current situation, employment in agriculture in Latvia has to decline by approximately 50 thou., while that in forestry by about 15 thou., giving a total of 65 thou. (author’s calculations based on OECD and Eurostat). This is in

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contradiction with what the Latvian Bioeconomy Strategy 2030 states that employment in the bioeconomy sector has to be retained at the current level.

In other primary (low value-added) industries in Latvia, e.g. quarrying and fisheries, the situation is similar, which could be concluded based on the strong causal association between labour productivity and the overall earnings level. However, the proportions of the mentioned industries in GDP are insignificant (fishing and aquaculture – 0.1 %; mining and quarrying – 0.5 %) (CSB, 2018) and, consequently, their roles in the economy of Latvia are inconsiderable, that is why the author does not analyse the industries in detail.

3. Long—term structural changes in the low value-added tradable subsector and the nontradable sector

Unlike the primary (low value-added, mainly tradable) industries, in which increases in labour productivity result in decreases in employment in a long-term, the development of low value-added tradable industries (mainly the secondary sector – manufacturing industries) is expected to be different. Increases in labour productivity in this tradable subsector are expected to mainly lead to increases in output because, unlike the primary sector where the output is determined by the constrained supply of land (underground natural resources as well as waters) as a factor of production, the secondary sector does not have such a constraint. Accordingly, this process does not have to cause a decrease in employment, and it is the most preferable direction of economic development for this sector. Larger volumes of output due to an increase in labour productivity will make it possible to pay higher wages for the same number of employees. The growing output of the secondary sector, of course, is mainly exported. Unlike employees of the primary industries, those of the secondary sector will not have to move to other industries and probably not to change their places of residence.

Significant changes in the nontradable sector (mainly the tertiary or services sector) are not expected, as this sector is labour intensive – providing services requires relatively more labour than producing goods, and the cost of labour is often the main cost factor in this sector.

Overall, one can conclude that if achieving the labour productivity and therefore nominal income levels of advanced economies, structural changes in the economy of Latvia are going to be different – the largest changes are expected to occur in primary industries, as well as in the secondary sector –, whereas the changes in the tertiary sector (mainly the nontradable sector) are expected to be the smallest – mostly labour costs are going to rise.

The key findings regarding the structural changes in the economy mentioned in all the sections of the paper could be summarised in a table.

Table 1

Expected long-term structural changes in the national economy of Latvia

Industry/sector	Employment	Labour productivity
Primary industries (primary sector)	Considerable decrease (~4-fold)	Considerable increase (~4-fold)
Low value-added tradable subsector (secondary sector)	Mainly No change	Considerable increase (~4-fold)
High value-added tradable subsector (secondary sector)	Considerable increase	Considerable increase (~4-fold)
Nontradable sector (tertiary sector)	Mainly No change	Relatively inconsiderable increase

Source: author's construction

The key factor that allows achieving the nominal income level of advanced economies is the growth and development of the high value-added tradable subsector – the number of the employed and labour productivity in the subsector have to increase. This is going to cause the movement of labour among the sectors. The effect of this process is a significant increase in labour productivity in the low value-added tradable subsector with No considerable change in the number of the employed in it, yet its employment is likely to slightly decrease at the expense of growth in the high value—added tradable subsector. The number of the employed in primary industries is expected to significantly decrease – the labour is going to move to mainly the low value—added tradable subsector and, to the extent possible, to the high value—added tradable subsector, while part of them might move to the nontradable sector as well. In the nontradable sector, however, No significant increase in labour productivity is expected, and employment is expected to be the same.

Conclusions, proposals, recommendations

1) The overall earnings level and labour productivity are reciprocal cause and effect – they interact and are interrelated, representing the so—called vicious circle phenomenon – the availability of cheap labour in the economy determines low labour productivity, while the low labour productivity determines low earnings (and cheap labour).
2) To reach the income level of advanced countries, Latvia has to develop the high value—added tradable subsector, which is the key factor and driver for a considerable increase in income.
3) With the high value—added tradable subsector developing in Latvia in a long—term, structural changes are going to occur in the entire economy – in all the sectors (primary, secondary and tertiary).
4) The most essential structural changes are going to primary sector industries – a multi—fold increase in labour productivity and a multi—fold decrease in employment (approximately four—fold). The number of the employed in agriculture will decline owing to generation change.
5) Significant increases in the volumes of output (labour productivity) have to occur in the value—added tradable subsector, with the number of the employed in the subsector changing insignificantly.
6) The smallest structural changes are expected to occur in tertiary (services) sector industries (mainly the nontradable sector) – the cost of labour is going to significantly increase, which, in its turn, leads to higher prices of the services and an increase in overall inflation (overall price level), with labour productivity rising insignificantly.

Bibliography

1. Ancans, S. (2018). Effect of an Underdeveloped High Value—added Sector on the Low Value—added Sector in Less Developed Countries. Proceedings of the 19th international scientific conference „Economic Science for Rural Development", No. 49, pp. 85—92. Retrieved: http://www.esaf.llu.lv/sites/esaf/files/files/lapas/Krajums_Nr_49_01.05.2018.pdf. Access: 27.08.2018.
2. Central statistical Bureau (CSB) of Latvia (2018). IKG10_060. Total Gross Value Added by Kind of Activity (NACE Rev.2) (at current prices). Retrieved: http://data1.csb.gov.lv/pxweb/en/ekfin/ekfin__ikp__IKP__ikgad/IKG10_060.px/table/tableViewLayout1/?rxid=d8284c56-0641-451c-8b70-b6297b58f464. Access: 27.08.2018.
3. European Commission (2017). Young Farmers in the EU – Structural and Economic Characteristics. Retrieved: https://ec.europa.eu/agriculture/sites/agriculture/files/rural-area-economics/briefs/pdf/015_en.pdf. Access: 27.08.2018.
4. European Commission (2018). Operating Subsidies. Retrieved: https://ec.europa.eu/agriculture/sites/agriculture/files/statistics/facts-figures/cap-operating-subsidies.pdf. Access: 27.07.2018.
5. Eurostat (2018a). Agricultural Factor Income per Annual Work Unit (AWU). Retrieved: http://ec.europa.eu/eurostat/web/products-datasets/-/sdg_02_20. Access: 20.07.2018.
6. Eurostat (2018b). Agriculture, Forestry and Fishery Statistics. 2017 edition. Retrieved: http://ec.europa.eu/eurostat/en/web/products-statistical-books/-/KS-FK-17-001. Access: 07.07.2018.

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7. Eurostat (2018c). Mean Monthly Earnings by Sex, Age and Occupation - NACE Rev. 2, B-S excluding O. Retrieved: http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=earn_ses14_21&lang=en Access: 20.07.2018.
8. Latvijas Republikas Zemkopibas Ministrija (2017). Informativais zinojums "Latvijas Bioekonomikas strategija 2030" (Ministry of Agriculture of the Republic of Latvia. Informative report on the Latvian Bioeconomy Strategy 2030). Retrieved: http://tap.mk.gov.lv/lv/mk/tap/?pid=40433525&mode=mk&date=2017-12-19. Access: 27.11.2018.
9. Nipers, A., Krievina, A., Pilvere, I. (2018). Projecting Productivity in Agriculture in Latvia. Annual 24th international scientific conference „Research for Rural Development 2018", Jelgava, Latvia.
10. OECD (2018). Statistics. Retrieved: https://stats.oecd.org/Index.aspx?DatasetCode=STLABOUR. Access: 07.07.2018.

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A NEW APPROACH TO THE STUDY OF SIMILARITY STRUCTURE IN THE AREA OF GREEN GROWTH IN OECD COUNTRIES

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Abstract. The aim of the study is an assessment of current level of development in the green growth area of the OECD countries. For this purpose, the seven main indicators characterized the green growth in 2004 and 2015 were utilized. To identify the relations between them, the multi—dimensional correspondence analysis with the complex matrix of markers was used. The main advantage of this method is possibility to implement division into groups of OECD countries taking into account the level of each of analysed indicators, not only a mean level of development in this area. In the paper, the OECD countries were separated into four groups with different level of development in the green growth area. The results of the study confirmed visible changes in the area of the green growth in 2004 and 2015 for the majority of countries. There are also visible changes between these years.

Key words: green growth, OECD countries, correspondence analysis.
JEL code: C38, P11, P36.

Introduction

In the literature the term of sustainable development has been defined in many ways, but the most known definition is from the Brundtland Report „Our Common Future" (WCED, 1987): „sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs". According to many definitions presented in the literature (i.e. Dovers and Handmer, 2009; Borys, 2011), sustainable development concerns three main areas: economic growth, social protection and protection of the environmental quality. Each of them reinforces the others and the development consistent with this idea has to include regulations related to every of them. According to the strong rule of the durability of development, which is the one of the most important rules of sustainable development, replacing the loss of one resource with the other can only take place within individual areas. It is true, but in this way each of these areas should be considered separately. Meanwhile, in many cases it is difficult to determine the boundaries especially between economic and environmental dimension. Some process can describe both of them. The emission of CO_2 may be treated as an impact of economy on the environment and also as an indicator describing changes in the environment. Hence in the last research related to the sustainable development the new connections between this concept and others was proposed. One of them, relatively new is defined as green growth or green economy. According to OECD (The Organisation for Economic Co—operation and Development) green growth means „fostering economic growth and development while ensuring that natural assets continue to provide the resources and environmental services on which our well—being relies" (Green growth…, 2016). While the green economy is defined by UNEP (United National Environment Programme) as: „an economy that aims at reducing environmental risks and ecological scarcities, and that aims for sustainable development without degrading the environment„ (Lynn and Eda, 2014). It is worth to indicate, the green growth or the green economy is not a replacement for sustainable development. The main purpose of them is to provide more precise approach to achieve progress across economic and environmental areas of sustainable development. A development in the area of the green growth

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is particularly evident in the case of more developed economies, more interested in changes which do not degrade the environment.

In this context the aim of the study is an assessment of current level of development in the green growth area of the OECD countries. The article attempts to answer the question: what was the state of the green economy in OECD countries in relation to the average level of selected variables characterizing this economy in 2004 and 2015. The paper is divided into 5 sections. The first presents the aim of the research. Next, the statistical data is presented. The third one is dedicated to a presentation of the mathematical research method. The fourth section presents the research results and discussion, and the last one contains conclusions. The added value of the paper is a division into groups of OECD countries according their level of development in the green growth area based on the proposed method. The method applied for this purpose let separate the OECD countries taking into account a level of each analysed indicators, not only a mean level of development in this area.

Statistical materials

The analyses presented in the paper utilize information on the main indicators applied to assessing the level of development of the green growth. The OECD countries are the objects of the study. In the OECD (2018) database seven following indicators are utilized for this purpose:

X_1 – production—based CO_2 intensity, energy—related CO_2 *per capita*, tonnes,

X_2 – demand—based CO_2 intensity, energy—related CO_2 *per capita*, tonnes,

X_3 – non—energy material productivity, GDP per unit of DMC, US dollars per kilogram,

X_4 – environmentally adjusted multifactor productivity growth, %,

X_5 – loss of natural and semi—natural vegetated land, %,

X_6 – gain of natural and semi—natural vegetated land, %,

X_7 – mean population exposure to PM2.5, micrograms per cubic metre.

In the paper the changes of these indicators in two years: 2004 (before economic crisis) and 2015 (last available data) were compared. The objective of the comparison of the results was to show which countries are in a positive and negative contrast to the average level of selected indicators and what are the links between countries from the point of view of these diagnostic features. Every indicator was characterized by a very large diversification (even over 100 %, X_4 in 2015) and strong asymmetry (the highest in the case of X_3 in 2004 and X_4 in 2015), (Table 1).

Table 1

Descriptive statistics characterizing the distribution of the indicators

Var.	**2004**				**2015**			
	Mean	Median	Vs (%)	Asymmetry	Mean	Median	Vs (%)	Asymmetry
X_1	9.096	8.118	50.905	1.496	7.463	6.560	47.583	1.221
X_2	10.549	10.952	39.104	0.641	9.583	9.114	39.086	0.991
X_3	2.812	2.009	94.953	4.135	3.133	2.649	52.689	1.049
X_4	2.489	2.549	58.742	0.371	-0.010	0.165	over 100	-3.839
X_5	2.990	2.769	70.267	1.532	3.916	3.033	77.265	2.113
X_6	2.250	1.432	94.394	1.256	3.112	2.177	87.174	1.120
X_7	12.812	13.559	37.093	0.063	13.700	12.998	47.199	0.556

Source: author's calculations based on the OECD data, where Var. is variable, Vs is coefficient of variation

In the set of diagnostic features there are indicators, the higher values of which reflect the better of the green growth (stimulants) and those, the level of which is desired to be lower (destimulants)

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(Nowak, 1990). The majority of indicators adopted for the study are destimulants. Only three were regarded as stimulants (X_3, X_4, X_6).

Description of the research methods

In the article the multi—dimensional correspondence analysis with the complex matrix of markers[1] was used. Problems related to the correspondence analysis of variables in the Burt's matrix are discussed in detail, inter alia, in Greenacre's (1984, 1993), Andersen's (1991), Lebart's et al. (1984), Clausen's (1998) papers. The procedure was carried out in the following stages (Stanimir, 2005):

1) preparing the complex matrix of markers,
2) determining the dimension of the real coexistence space based on the formula:

$$K = \sum_{q=1}^{Q}(J_q - 1) \quad (1)$$

where: J_q – the number of categories of the variable q (q = 1, 2, …, Q), Q – the number of variables.

3) checking to which extent eigenvalues (main inertias) of the lower dimension space explain total inertia (λ); for this purpose the Greenacre's criterion was used, according to which main inertias larger than the inverse of the number of analysed variables are regarded as important for the study (1/Q). Total inertia is the K total of eigenvalues where K is the dimension of genuine coexistence space.
4) improving the quality of representation through the modification of eigenvalues according to Greenacre's proposal (Greenecre, 1984):

$$\tilde{\lambda}_k = \left(\frac{Q}{Q-1}\right)^2 \cdot \left(\sqrt{\lambda_{B,k}} - \frac{1}{Q}\right)^2 \quad (2)$$

where: Q – the number of analysed variables, λ – k eigenvalue (k = 1, 2, …, k),

5) graphic presentation of results with the use of classification methods.

If the space with the dimension larger than three is the best form of the presentation of variables' coexistence, another method of analysing the results should be selected. For this purpose, one can use classification methods in the space of both low and high dimension. The categories of all analysed features should be determined as objects, while values of coordinates of projecting each category constitute variables. The number of variables depends on the dimension of the selected projection space. When the projection space is five—dimensional in the analysis five variables are used, i.e. coordinates of five axes creating that space (Bak, 2013). For this purpose, the new values of coordinates have to be determined by means of the formula:

$$\tilde{F} = F^* \cdot \Gamma^{-1} \cdot \tilde{\Lambda} \quad (3)$$

where: $\tilde{F}$ – matrix of modified values of coordinates for the category of examined variables with the $K \times k$ dimension, F^* – matrix of original values of coordinates for the category of examined variables with the $K \times k$ dimension, Γ^{-1} – diagonal inverse matrix of specific values (γ_k) with the $k \times k$ dimension, γ_k – k specific value which is the square root of the k eigenvalue (λ_k), $\tilde{\Lambda}$ – diagonal

[1] Numerical amounts allocated to variants (categories) of diagnostic features may be written as: the complex matrix of markers, the Burt's matrix, a multi-dimensional contingency table and a combined contingency table.

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matrix of modified eigenvalues with the *k*×*k* dimension, *K* – dimension of the genuine coexistence space.

Research results and discussion

The correspondence analysis was carried out by stages described in the previous chapter. The set of diagnostic features, apart from seven zero—one variables, included the names of 36 OECD countries. Due to this fact the dimension of the genuine coexistence space amounted to 42 (formula 1). Next, the extent to which eigenvalues with a lower dimension explain total inertia (λ_{2004} = 5.2501; λ_{2015} = 5.2506) was checked. In accordance with the Greenacre's criterion, main inertias larger than $\frac{1}{Q} = \frac{1}{Q_{2004}} = \frac{1}{Q_{2015}} = \frac{1}{8} = 0{,}125$ were regarded as important for the study. It results from Tables 2—3 that in two of examined years are inertias for K taking values to and including 9[1].

Table 2

The results of correspondence analysis in 2004

k	Eigen-values γ_k	Singular-values λ_k	λ_k / λ	τ_k	$\tilde{\lambda}_k$	$\tilde{\lambda}_k / \tilde{\lambda}$	$\tilde{\tau}_k$
1	0,6031	0.3638	6.9291	6.9291	0.2986	0.2083	0.2083
2	0.5794	0.3358	6.3951	13.3242	0.2697	0.1881	0.3964
3	0.5082	0.2583	4.9199	18.2442	0.1918	0.1338	0.5302
4	0.4820	0.2323	4.4245	22.6687	0.1664	0.1161	0.6463
5	0.4676	0.2186	4.1640	26.8327	0.1533	0.1069	0.7532
6	0.4372	0.1911	3.6399	30.4726	0.1273	0.0888	0.8420
7	0.3875	0.1501	2.8599	33.3325	0.0900	0.0628	0.9048
8	0.3537	0.1251	2.3826	35.7150	0.0683	0.0476	0.9524
9	0.3536	0.1250	2.3811	38.0961	0.0682	0.0476	1.0000
					$\tilde{\lambda}_k = 1{,}4013$ $\tilde{\lambda} = 1{,}4337$		

Source: author's calculations with usage of STATISTICA 12.0

Table 3

The results of correspondence analysis in 2015

k	Eigen-values γ_k	Singular-values λ_k	λ_k / λ	τ_k	$\tilde{\lambda}_k$	$\tilde{\lambda}_k / \tilde{\lambda}$	$\tilde{\tau}_k$
1	0.6031	0.3638	6.9284	6.9284	0.2986	0.2082	0.2082
2	0.5794	0.3358	6.3946	13.3230	0.2697	0.1881	0.3963
3	0.5082	0.2583	4.9195	18.2425	0.1918	0.1338	0.5301
4	0.4820	0.2323	4.4241	22.6666	0.1664	0.1161	0.6461
5	0.4676	0.2186	4.1636	26.8302	0.1533	0.1069	0.7530
6	0.4372	0.1911	3.6396	30.4698	0.1273	0.0887	0.8417
7	0.3875	0.1501	2.8596	33.3294	0.0900	0.0628	0.9045
8	0.3544	0.1256	2.3924	35.7218	0.0687	0.0479	0.9524
9	0.3536	0.1250	2.3807	38.1025	0.0682	0.0476	1.0000
					$\tilde{\lambda} = 1{,}4337$		

Source: author's calculations with usage of STATISTICA 12.0

For these dimensions values of the measure τ_k[2] were analysed and it turned out that the level of explanation of inertias in three—dimensional space, both in 2004 and 2015, amounts to 18.24 % In order to improve the quality of representation in the three—dimensional space the modification of eigenvalues according to formula (2) was carried out. As a result of conducted modification the level

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[1] In Tables 2-3 results for $K \geq 9$ were ignored because for these dimensions main inertias did not exceed 0.125.
[2] This measure determines the inertia share of a selected dimension (λ_k) in the total inertia (λ).

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of total inertia explanation significantly increased. The first three eigenvalues constitute 53.02 % of the modified total inertia in 2004 and in 50.31 % in 2015.

Due to a large number of analysed variables and their variants, the interpretation of results obtained in the three—dimensional space is very hard. In order to achieve clearer interpretation of results the Ward's method was applied which enabled identification of connections between variants of variables. Ward's method is one of agglomeration methods of grouping. It is used in empirical studies both in reference to classification of objects and variables. In this method the distance between groups is defined as the difference module between totals of squares of points' distances to centres of groups to which these points belong (Pociecha et al. 1988; Gatnar and Walesiak, 2004; Malina, 2004; Balicki, 2009). New values of coefficients in the three—dimensional space for categories of variables were determined with the use of formula (3). Results of segmentation of OECD countries were presented in Table 4 and 5.

Table 4

Characteristics of the green growth in OECD countries in 2004

Group	Countries	Characteristics
I	Australia, Canada, Estonia, Finland, Iceland, Ireland, Latvia, Norway, Sweden, the United States	In these countries, the loss of natural and semi—natural vegetation areas and the level of PM2.5 concentration to which a resident of the country is exposed throughout the year are smaller (positive assessment). The profit from natural and semi—natural areas covered with vegetation was assessed negatively.
II	Chile, France, Hungary, Lithuania, Mexico, New Zealand, Poland, Portugal, Slovak Republic, Slovenia, Spain	Countries in this group were rated positively due to the level of CO2 emissions from the coal burning, oil, natural gas and other fuels, as well as CO2 emissions from energy emitted at various stages of production of goods and services consumed in the domestic final demand. The relation of GDP to the domestic consumption of materials was negatively assessed, which means a faster increase in the consumption of raw materials than GDP.
III	Austria, Israel, Italy, Korea, the Netherlands, Switzerland, Turkey	Countries in this group deserve a negative rating because of: efficiency at the macroeconomic level (national) including, e.g., technological changes, institutional and organizational improvements, as well as loss of natural and semi—natural vegetation areas and the level of PM2.5 concentration to which a resident of the country is exposed throughout the all year. Only profit from natural and semi—natural areas covered with vegetation was positively assessed.
IV	Belgium, the Czech Republic, Denmark, Germany, Japan, Luxembourg, the United Kingdom	These countries were assessed positively due to the relation of GDP to the domestic consumption of materials, which means a slower increase in the consumption of raw materials than GDP, and due to productivity at the macroeconomic level including, technological changes, institutional and organizational improvements. The negative assessment was given to the level of CO2 emissions from the coal burning, crude oil, natural gas and other fuels, as well as CO2 emissions from energy emitted at various stages of production of goods and services consumed in the domestic final demand.

Source: author's calculations

The results of the research confirmed an existence of significant differences of development in the area of green growth in the OECD countries. This is related to their general socio—economic development, the level of industrialization, the development of agriculture, the degree of urbanization, etc. This diversification is also visible in other area related to the sustainable development in this group of countries. The problem of inequality of socio—economic development in OECD countries was also noticed in the report "Regional development policies in OECD countries" published in 2010 (OECD, 2010). The authors of this report indicated that in most countries, socio—economic disparities persist, though there are differences in intensity and in how these problems are perceived. In some countries as: Austria, Denmark, Luxembourg and the Netherlands, disparities are considered to be relatively limited. In others: Germany, Italy, Finland, Japan, the Czech Republic and Hungary, severe inter—regional disparities remain or are even increasing. T. Van de Rheede (2014) indicated that inequality has negative implications for the environment and social and

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economic implications. According to this author inequality implies biodiversity losses. Inequalities are also observed in the case of sustainable development of European Union countries. Problem of inequality in every dimension of sustainable development was indicated in many papers (i.e. Brown et al., 1987; Hopwood et al., 2005; Bak and Cheba, 2018).

Table 5

Characteristics of the green growth in OECD countries in 2015

Group	Countries	Characteristics
I	Chile, France, Hungary, Latvia, Lithuania, Mexico, New Zealand, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden	Countries in this group were rated positively due to the level of CO2 emissions from the coal burning, oil, natural gas and other fuels, as well as CO2 emissions from energy emitted at various stages of production of goods and services consumed in the domestic final demand. The relation of GDP to the domestic consumption of materials was negatively assessed, which means a faster increase in the consumption of raw materials than GDP.
II	Austria, Belgium, the Czech Republic, Denmark, Germany, Greece, Israel, Italy, Japan, Korea, Luxembourg, the Netherlands, Switzerland, Turkey	Countries in this group deserve a negative rating because of: efficiency at the macroeconomic level (national) including, e.g., technological changes, institutional and organizational improvements, as well as loss of natural and semi—natural vegetation areas and the level of PM2.5 concentration to which a resident of the country is exposed throughout the all year. Only profit from natural and semi—natural areas covered with vegetation was positively assessed.
III	Australia, Canada, Estonia, Finland, Iceland, Ireland, Norway, the United States, the United Kingdom,	Countries in this group were assessed positively due to the four indicators: a) the relation of GDP to the domestic consumption of materials, which means a slower increase in the consumption of raw materials than GDP, b) efficiency at the macroeconomic level (national) including, e.g., technological changes, institutional and organizational improvements, as well as c) loss of natural and semi—natural vegetation areas and d) the level of PM2.5 concentration to which a resident of the country is exposed throughout the all year. Negative rating applies to such indicators as: the level of CO2 emissions from the coal burning, oil, natural gas and other fuels, as well as CO2 emissions from energy emitted at various stages of production of goods and services consumed in the domestic final demand and profit from natural and semi—natural areas overgrown with vegetation.

Source: author's calculations

Because the green growth is closely linked to the sustainable development the same changes can be observed in both of them. Therefore, it is critical that environmental, economic and social policies are aligned towards integrated the green growth. It is worth indicating that despite the existing differences, it was not possible to point countries significantly different (*in plus* or *in minus*) from the mean values of all examined indicators in OECD countries. It means that the division into groups of better and worse OECD countries is not so simple. In 2004 countries assigned to the second and third groups are characterized by the same results as countries in the first and second group in 2015. The difference concerns only the number of OECD countries in the above—mentioned groups - in 2015 there were more of them.

The main purpose of the analyses related to the green growth is concretization of the sustainable development. Because of this, it is suiTable that the development in this area will correspond with the changes in sustainable development. The changes in these areas require support from legal and fiscal solutions dedicated to them. The green growth is also important area of the relatively new analyses related to the sustainable competitiveness, defined as: „the status and the directions of changes in the country's ability to compete in a sustainable way in the struggle for shares in broadly understood international trade conducted with the care for the environment and society" (Cheba, 2019). The basis for its description and definition is the current, still developing scientific acquis and practical achievements in the field of sustainable development and research focusing on competitiveness considered in relation to the national economy. In the second one the development in the area of the green growth is especially important.

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Conclusions

1) The results of the study confirmed visible changes in the area of the green growth in 2004 and 2015 for the majority of countries. The explanation of the reasons for these changes would require more detailed information, as: the level of commitment of countries to environmental protection and the analysis of their socio—economic situation.
2) Due to the importance of the problem related to the green growth and its impact on the improvement of human well—being, social justice as well as significant reduction of environmental degradation, it is necessary to conduct further research in this area. This means the need to collect and analyse statistical data on the green economy.
3) Reliable, properly selected and current data in this field is an important element of: environmental protection policies, the use of economic instruments or activities supporting ecological innovation and investments in green technologies and monitoring the effectiveness of these activities. These data can be used by public and private sector entities in decision making and presented in a broader context. They can enable monitoring of changes taking place in the environment, economy and society (US, 2017).
4) The changes in the area of the green growth require support from legal and fiscal solutions. In the literature, this area is defined as sustainable finance (Ziolo et al., 2016). Research into the relationship between green growth, sustainable development and sustainable finance is an important direction of further economic research and analysis.

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Bibliography

1. Andersen, E. B. (1991). *The Statistical Analysis of Categorial Data*. Springer-Verlang, Berlin.
2. Balicki, A. (2009). *Statystyczna analiza wielowymiarowa i jej zastosowania spoleczno-ekonomiczne*. Wydaw. Uniwersytetu Gdanskiego, Gdansk.
3. Bak, I. (2013). *Statystyczna analiza aktywnosci turystycznej seniorow w Polsce*. Wydawnictwo Uczelniane Zachodniopomorskiego Uniwersytetu Technologicznego w Szczecinie, Szczecin.
4. Bak, I., Cheba, K. (2018). *The Application of the Dynamic Classifications in Order to Evaluate the Changes of the European Union's Sustainable Development*. Proceedings of the 2018 International Conference „ECONOMIC SCIENCE FOR RURAL DEVELOPMENT", Jelgava.
5. Borys, T. (2011). *Zrownowazony rozwoj – jak rozpoznac lad zintegrowany*, (*Sustainable development - how to recognize integrated order),* Problemy Ekorozwoju: studia filozoficzno-socjologiczne, No. 6(2), pp. 75-81.
6. Brown, B., J., Hanson, M., E., Liverman, D., M., Merideth, R., W., Jr. (1987). *Global Sustainability: Toward Definition,* Environmental Management, No. 11(6), pp. 713–719.
7. Cheba, K. (2019). Zrownowazona konkurencyjnosc krajow Unii Europejskiej. Studia literaturowo-empiryczne. CeDeWu, in press.
8. Dovers, S., R., Handmer, J., W. (2009). *Contradictions in Sustainability*. Environmental Conservation, 20(3), pp. 217-222.
9. Clausen, S. E. (1998). *Applied Correspondence Analysis: An Introduction*, Sage Publications, Thousand Oaks.
10. Green Growth Knowledge Platform (GGKP) (2016). *Measuring Inclusive Green Growth at the Country Level*. Seoul, Paris, Nairobi and Washington DC: Global Green Growth Institute, Organisation for Economic Cooperation and Development, United Nations Environment Programme and World Bank.
11. Greenacre, M. (1984). *Theory and Applications of Correspondence Analysis*. Academic Press, London.
12. Greenacre, M. (1993). *Correspondence Analysis in Practice.* Academic Press, London.
13. Hopwood, B., Mellor, M., O'Brien, G. (2005). *Sustainable Development: Mapping Different Approaches*, Sustainable Development, No. 13(1), pp. 38–52.
14. Lebart, L., Morineau, A., Warwick, K. M. (1984). *Multivariate Descriptive Statistical Analysis. Correspondence Analysis and Related Techniques for Large Matrices.* John Wiley & Sons. Inc., New York.
15. Lynn R. Kahle, Eda Gurel-Atay, Eds (2014). *Communicating Sustainability for the Green Economy*. M.E. Sharpe. New York.

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16. Malina, A. (2004). *Wielowymiarowa analiza przestrzennego zroznicowania struktury gospodarki Polski wedlug wojewodztw*. Wydawnictwo AE w Krakowie, Krakow.
17. Gatnar, E., Walesiak, M. (eds.) (2004). *Metody statystycznej analizy wielowymiarowej w badaniach marketingowych*, Wydaw. AE we Wroclawiu, Wroclaw.
18. Nowak, E. (1990). *Metody taksonomiczne w klasyfikacji obiektów społeczno-gospodarczych*. Warszawa: PWE.
19. OECD (2010). Regional Development Policies in OECD Countries, OECD Publishing.
20. OECD (2018). *Green Growth Indicators* 2017, OECD Publishing, www.oe.cd/ggi.
21. Pociecha, J., Podolec B., Sokolowski A., & Zając, K. (1988). *Metody taksonomiczne w badaniach spoleczno-ekonomicznych*. PWN, Warszawa.
22. Stanimir, A. (2005). *Analiza korespondencji jako narzedzie do badania zjawisk ekonomicznych.* Wydaw. AE we Wroclawiu, Wroclaw.
23. WCED, World Commission on Environment and Development. (1987). *Raport Brundtland. Our common future*, Oxford, Oxford University Press, New York.
24. US, Urzad Statystyczny w Bialymstoku. (2017).*Wskazniki zielonej gospodarki w Polsce w 2017*. Bialystok.
25. Van de Rheede T. (2014). *Report on the OECD Green Growth and Sustainable Development Forum 2014*, OECD, Paris, France.
26. Ziolo, M., Fidanoski, F., Simeonovski, K., Filipovski, V. Jovanovska, K. (2016). Sustainable Finance. Role in Creating Conditions for Sustainable Economic Growth and Development. Springer International Publishing.

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NITROGEN MANAGEMENT INTENSITY CHANGES IN FADN REGIONS OF POLAND IN 2002—2016

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Abstract. The paper presents trends of nitrogen management intensity changes. The comparative analysis of nitrogen management in the period 2002—2016 was performed at FADN regions of Poland level. It included comparisons of balances and efficiency of nitrogen utilization as well as rate and direction of nitrogen input and output in the agricultural production cycle. The structural and quantitative analysis of both sides of gross nitrogen balance provides information about the agricultural production as well as the direction and rate of changes . Although there was a visible, moderate intensification (A= type) of agricultural production in Poland, a significant differences between four regions of Poland were found. FADN region 785 (Pomorze i Mazury) had positive rating of agro—environmental aspects and nitrogen management. On the other hand, FADN region 790 (Wielkopolska i Slask) was characterized by ineffective intensification of plant production (increased nitrogen inputs with low effect in nitrogen output).

Key words: regional development, gross nitrogen balance, intensification, extensification, nitrogen use efficiency.
JEL codes: Q15, Q51, Q56, R11, R15.

Introduction

Modern European agriculture draws more and more attention to the socially useful functions of the agriculture (reflecting the relationships between the value of the environment as a public good and the value of agricultural production conducted in this environment) (Fotyma M. et al., 2009; Prandecki K., Zegar J., 2014). In order to maintain the balance of ecosystems, it is necessary to optimize the use of nutrients in the agricultural production system, which means the recognition and control of nutrients inputs and outputs (Hatfield J.L., Douglas L.K., 1994; Kopinski J., 2017a). Rational management of fertilizer components, including nitrogen, is part of the basic function of the agricultural objective – getting an income. It is achieved by maximizing the utility of agricultural activity by maximizing revenues and minimizing costs of involved means of production (Rembisz W, 2010). In terms of value, it has an impact on profitability, productivity, efficiency (economic and organizational) and competitiveness (Galecka A., 2017; Szymanska E., 2010; Zietara W., Zielinski M., 2012). In quantitative terms, it also has an impact on productivity assessment (technical efficiency) and intensity of agricultural production (Klepacki B., 1997), while also having an impact on environment (Jadczyszyn T., Kopinski J., 2013; Kopinski J., 2002, Pastuszak M. et al. 2014). Mineral fertilizer consumption, due to close correlation between the use of fertilizers (mainly nitrogen fertilizers) and the yields, is one of the most important measures of the intensity of agricultural production (Fotyma M. et al., 2009; Fotyma M. et al., 2012). Another evaluation measure of the intensity of production is the level of total nitrogen input in relation to the nitrogen output in the harvested yields and by—products, which takes into account all sources of nitrogen in the agricultural production system (Kopinski J., 2017b). Tendency and rate of changes in the level of nitrogen inputs allows to determine the nature of agricultural production (intensification, extensification) in terms of nitrogen management strategy. Determination of the tendency and rate of changes in the level of inputs (in terms of quantity) of nitrogen allows to determine the nature of agricultural production (intensification, extensification), in terms of managing this component (Kopinski J., 2018).

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The basic source of information was the results of IUNG—PIB's (Institute of Soil Science and Plant Cultivation, State Research Institute in Pulawy) own research (Kopinski J., 2017a; 2017b) based on statistical data from the Central Statistical Office (GUS) (2002—2013; 2002—2015; 2003—2016; 2015—2016), Chief Inspectorate of Environmental Protection (CIEP) (2014) and KOBiZE (The National Centre for Emissions Management) (2016). The comparative analysis was carried out at the level of 4 FADN/RICA regions of Poland (785—Pomorze i Mazury; 790—Wielkopolska I Slask; 795—Mazowsze i Pomorze; 800—Malopolska i Pogorze)(Goraj L., 2000)(Figure 1). Averages for Poland were used as reference point. The analysis covered changes in balances (GNB) and efficiency of nitrogen utilization (EuN) in 2002—2016, based on the gross nitrogen balance in accordance with the standard proposed by the OECD and Eurostat (Kremer A.M., 2013; Kopinski J., 2017a). The determination of the character (type) of nitrogen management in regions was made on the basis of the difference in slope of trend lines (a, b) and gross nitrogen input (TN_{in}) and output (TN_{out}), in accordance to equation formulas and criteria:

$$GNB = TN_{in} - TN_{out};\ EuN = TN_{out} / TN_{in} \times 100;$$

$$y\ (TN_{in}) = ax + m;\ y\ (TN_{out}) = bx + k$$

$a > 0$ and $b-a > 0$ effective intensification (rational), type A

$a < 0$ and $b-a > 0$ efficient extensification (rational), type B

$a > 0$ and $b-a < 0$ ineffective intensifying (irrational), type C

$a < 0$ and $b-a < 0$ inefficient extensification (irrational), type D

where:

GNB - surplus balance (deficit) of gross nitrogen balance;

TN_{in} - total nitrogen inputs;

TN_{out} - total nitrogen outputs;

EuN - efficiency of nitrogen use (utilization).

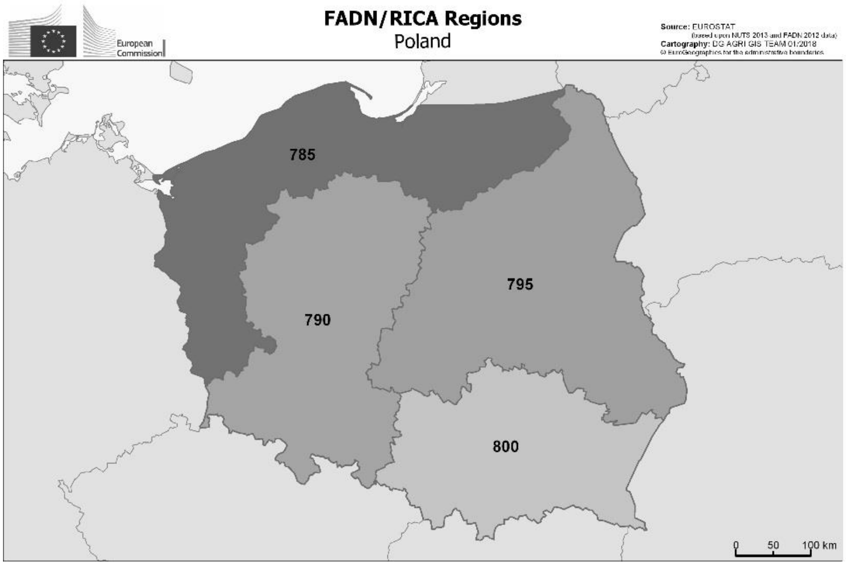
To assess the strength of observed tendencies, an analysis of the distribution of the value of the feature (differences in the slope of the trend line (b—a)) was used, where:

$-0.35 > (b—a) > 1.1$ strong tendency (+);

$-0.35 \leq (b—a) \leq 1{,}1$ weak tendency (=).

More detailed methodology of the research was presented in previous author’s publication about trends of change in agricultural nitrogen management (Kopinski J., 2018).

The major objective of the study was to assess trends of agricultural intensity changes in Poland over time. Tendencies and rate of changes of agricultural nitrogen management intensity in 4 FADN/RICA regions of Poland were assessed on a basis of the results of the gross nitrogen balance in the period of 2002—2016.

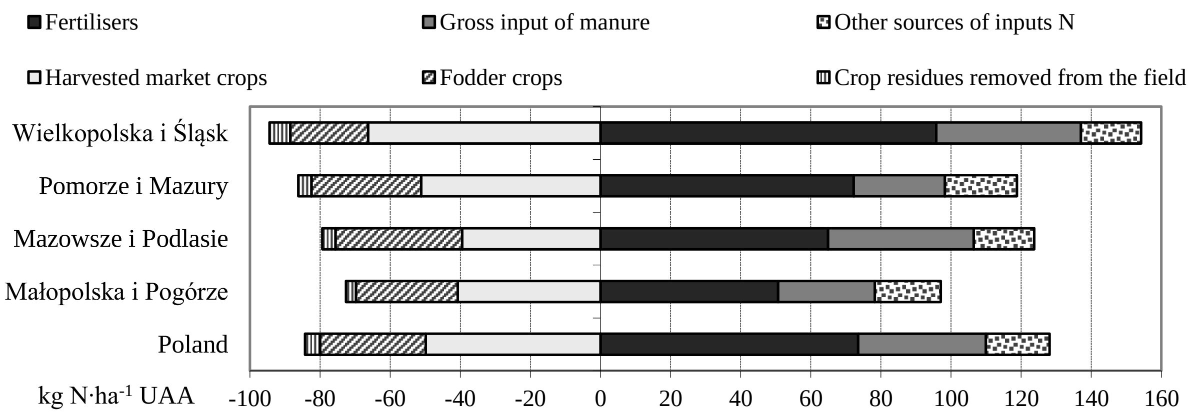


Source: EUROSTAT

Fig. 1. **FADN/RICA regions of Poland**

Research results and discussion

The diversified (quantitative) structure of nitrogen inputs and outputs from agricultural land is a confirmation of the existing large regional differentiation of Polish agriculture (Figure 2). This quantitative and structural diversification of gross nitrogen balances results from very large differences in natural conditions, production intensity and productivity of agricultural land, as well as of the differences in the organizational and production potential of individual regions of Poland (Fotyma M. et al., 2009; Kopinski J., 2017a). The analysis shows that the highest management intensity (nitrogen turnover) was observed in the region of "Wielkopolska and Slask" (almost 250 kg N • ha^{-1} AL). "Malopolska and Pogorze" region, had the lowest management intensity (volume of turnover 170 kg N • ha^{-1} AL). In recent years (2014—2016) mineral fertilizers has been the dominating position on the nitrogen revenue side in all regions of Poland (57.4 % on average). However, in the structure of the balance, the collection of nitrogen with plants yields dominates in all regions (Figure 2). Nitrogen outputs structure depends not only on the land use structure (UAA), but also on its productivity. It also reflects the production orientation (degree of specialization) of individual regions.



Source: author's study based on basic CSO, CIEP and NCEM data

Fig. 2. **The quantitative structure of various inputs and outputs sources of gross nitrogen budget in Polish FADN regions in 2014—2016 years (kg N ha^{-1} UAA)**

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Quantitative and structural changes of sources of nitrogen inputs and outputs leads to the changes in current gross nitrogen balances and the efficiency of using this component (Table 1). „Wielkopolska and Silesia" region had highest gross nitrogen balance surplus (60 kg · ha^{-1} UAA), when compared to averages for Poland. This is expected to have a negative impact on the environment (Kopinski J., 2017a). In the years of 2014—2016, there was a significant quantitative reduction in the balance surplus of gross nitrogen balance (by approx. 20 kg · ha^{-1} UAA) in the region of "Pomerania and Masuria" when compared to 2002—2004. Also there was a visible improvement of efficiency of nitrogen utilization in all regions, although of a different degree (Table 1). The largest increases of nitrogen utilization efficiency were recorded in the region of "Pomerania and Masuria"(20.6 %). The diversification of the efficiency of nitrogen utilization in different regions results in different environmental impact of agriculture in tested regions. This is both due to organizational and production changes, including intensifying processes of specialization and concentration of agricultural production, as well as natural conditions of specific regions (Pastuszak M. et al., 2014].

The analysis of the directions and rate of changes in the nitrogen inputs in the cycle of agricultural production in 2002—2016 (Table 1) shows that in all FADN/RICA regions of Poland intensification of agricultural production (mainly type A, but also type C) took place. The increasing use of nitrogen mineral fertilizers was the main factor behind the intensification. "Malopolska and Pogorze" region was to the least extent of this intensification. On the other hand, „Wielkopolska and Slask" region was characterized by the most, statistically significant, ineffective intensifying of agricultural nitrogen management (Type C+). The region had significantly higher rate of nitrogen input intensification, which led to the increase in the nitrogen gross balance, with just slight improvement in efficiency. This could have serious environmental consequences, especially in regions that also had adverse environmental indicators in previous years, e.g in „Wielkopolska and Slask" region (Fotyma M. et al., 2012; Kopinski J., 2017a). This is because environmental risk of nitrogenous nutrients (nitrates) leaking to groundwater are stronger on light, sandy soils of low water capacity, which are common to Poland. This was confirmed by the results of monitoring studies carried out in the Wielkopolskie Voivodeship, in the area of which high concentrations of nitrates were found in soil water and groundwater (Jadczyszyn T., Kopinski J., 2013).

Among other FADN/RICA regions in Poland, "Mazowsze i Podlasie" had rather poor, but still significant increase of rate of rational, effective intensification of land productivity (type A=). The region in which there was a significant (strong) increase in efficiency through a significant increase in nitrogen output with little or No increase in nitrogen inputs, was "Pomorze i Mazury" region (type A+). Moreover, "Pomorze i Mazury" had a very positive agro—environmental assessment results (low balance and high efficiency of nitrogen utilization), when compared to the averages for Poland (Table 1). A process of rationalization of plant production was visible in regions that had nitrogen management of type A+ (strong, effective intensification of production), like "Pomorze i Mazury". This was due to better management strategy, mostly effective use of organizational factors (non—fertilizer means of production).

Conclusions

The structural and quantitative analysis of both sides of the gross nitrogen balance (inputs and outputs) provides information on management of agricultural production in the aspect of nitrogen fertilization. The analysis of relationship and rate of change in nitrogen inputs and its effects (nitrogen outputs) enables the assessment of the nature(intensification, extensification) and type of plant production. On a national scale, since 2002, moderate intensification (type A =) of plant production is visible. Nevertheless, there are significant differences between FADN/RICA regions of Poland, both in current state and the direction of changes. "Pomorze i Mazury" (type A +), "Malopolska and Pogorze" (type A =) and "Mazowsze and Podlasie" (type A =) regions were characterized by, to a certain degree, rational intensification of plant production, while "Wielkopolska and Silesia" (type C +), was the region where the intensification of plant production was not justified by the increased effects (nitrogen outputs – mostly crop yields). In terms of agri—environmental assessment and nitrogen management practices, „Pomorze i Mazury" region was characterized by low—intensity, but highly effective plant (agricultural) production.

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Table 1.

Characteristics of the resulting elements of the gross nitrogen balance as well as trends and types of nitrogen management in the Polish FADN regions in 2002—2016

FADN regions	Surplus of gross nitrogen balance GNB kg·ha^{-1} UAA		Efficiency of N use UeN (%, p.p.)		Equation of trend R2 Period of 2002-2016 years		Difference in trend inclination between outputs and inputs $b-a$	Type of nitrogen management
	2014 - 2016 years	Change *	2014 - 2016 years	Change *	total nitrogen inputs $y(TNin) = ax+m$	total nitrogen outputs $y(TNout) = bx+k$		
Pomorze i Mazury	31,8	-19,6	73,0	20,6	$y = 1,1x + 112,7$ 0,22	$y = 2,5x + 51,5$ 0,84*	1,48	A +
Wielkopolska i Slask	59,9	6,3	61,2	2,4	$y = 2,1x + 133,2$ 0,55*	$y = 1,6x + 72,1$ 0,56*	-0,51	C +
Mazowsze i Podlasie	44,4	-2,9	64,1	7,7	$y = 1,2x + 111,5$ 0,40*	$y = 1,6x + 58,3$ 0,66*	0,42	A =
Malopolska i Pogorze	24,5	-8,0	74,8	10,3	$y = 0,3x + 94,4$ 0,10	$y = 1,1x + 5745$ 0,61*	0,81	A =
POLAND	**43,9**	**-3,8**	**65,8**	**8,5**	$\boldsymbol{y = 1,4x + 114,5}$ 0,49*	$\boldsymbol{y = 1,8x + 60,3}$ 0,73*	**0,36**	**A =**

* - $R^2 > R^2_{0,05} = 0,2641$

** difference absolute values between of 2014—2016 and 2002—2004 years

Source: authors; calculations based on CSO, CIEP and NCEM data

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Bibliography

1. Hatfield Jerry L., Douglas L. Karlen. 1994. Sustainable Agriculture Systems. Florida: Lewis Publishers.
2. Fotyma Mariusz, Janusz Igras, Jerzy Kopinski. 2012. Nitrogen Utilization and Diffuse Losses in Agricultural Crop Production [In] Contribution of Polish agriculture to emission of nitrogen and phosphorus compounds to the Baltic Sea, ed. Janusz Igras, Marianna Pastuszak, 109-159. Gdynia-Pulawy: NMFRI, ISSPC-SRI, FRI.
3. Fotyma Mariusz, Janusz Igras, Jerzy Kopinski. 2009. Produkcyjne i srodowiskowe uwarunkowania gospodarki nawozowej w Polsce (Production and environmental conditions of fertilizer management in Poland). Studia i Raporty IUNG-PIB 14: 187-206.
4. Galecka Agnieszka. 2017. Efektywnosc gospodarstw rolnych w Polsce w latach 2012-2015 w zaleznosci od ich wielkosci ekonomicznej (Efficiency of agricultural farms in Poland in 2012-2015 depending on their economic size). Roczniki Naukowe SERiA 19(5): 65-71, doi: 10.5604/01.3001.0010.6207.
5. GIOS. 2014. Stan srodowiska w Polsce. Raport 2014 (The state of the environment in Poland. Report 2014). Warszawa: GIOS Biblioteka Monitoringu Srodowiska.
6. Goraj Lech. 2000. Siec danych rachunkowosci gospodarstw rolnych w Unii Europejskiej. Ed. Foundation of Assistance Programmes for Agriculture. Warszawa, pp. 69.
7. GUS. 2003-2017. Produkcja upraw rolnych i ogrodniczych w 2002…2016 roku (Production of agricultural and horticultural crops in 2002 ... 2016). Warszawa: GUS.
8. GUS. 2002-2016. Srodki produkcji w rolnictwie w roku gospodarczym 2001…2015/2016 (Means of production in agriculture in the 2001 ... 2015/2016 farming year). Warszawa: GUS.
9. GUS. 2002-2013. Uzytkowanie gruntow, powierzchnia zasiewow i poglowie zwierzat gospodarskich w 2002 … 2013 roku (Land use, sown area and livestock stocks in 2002 ... 2013). Warszawa: GUS.
10. GUS. 2015-2017. Zwierzeta gospodarskie w 2014 … 2016 roku (Livestock in 2014 ... 2016). Warszawa: GUS.
11. Jadczyszyn Tamara, Jerzy Kopinski. 2013. Nawozenie azotem w Polsce – aspekt produkcyjny i srodowiskowy (Nitrogen fertilization in Poland - production economy and environmental aspect). Studia i Raporty IUNG-PIB 34(8): 125-143.
12. Klepacki Bogdan. 1997. Wybrane pojecia z zakresu organizacji gospodarstw, produkcji i pracy w rolnictwie (Selected concepts from the organization of farms, production and work in agriculture). Warszawa: Wydawnictwo SGGW.
13. KOBiZE. 2016. Poland's National Inventory Reports 2016. Warszawa: IOS-PIB.
14. Kopinski Jerzy. 2017a. Bilans azotu brutto - agrosrodowiskowy wskaznik oddzialywania rolnictwa na srodowisko. Opis metodyki, omowienie wynikow bilansu na poziomie NUTS-0, NUTS-2 (Gross nitrogen balances (budget) - agrienvironmental indicators of changes of agricultural production. Methodology and the results of balances on the level NUTS-0 (Poland), NUTS-2 (voivodeships)). Pulawy: Wydawnictwo IUNG-PIB Monografie i rozprawy naukowe, 55, ss. 111.
15. Kopinski Jerzy. 2017b. Ocena zmian efektywnosci wykorzystania azotu w produkcji rolniczej Polski (Evaluation of changes in the efficiency of nitrogen utilization in agricultural production of Poland). Roczniki Naukowe SERiA 19(1): 85-91, doi: 10.5604/01.3001.0009.8344.
16. Kopinski Jerzy. 2018. Tendencje zmian intensywnosci gospodarowania azotem w regionach Polski (Tendencies of changing intensity of nitrogen management in the Polish regions). Roczniki Naukowe SERiA 20(1): 81-87, doi: 10.5604/01.3001.0011.7232.
17. Kopinski Jerzy. 2002. Porownanie wskaznikow rozwoju zrownowazonego gospodarstw o roznej intensywnosci produkcji rolnej (Comparison of the parameters of sustainable development of farms with different intensity of agricultural production). Roczniki Nauk Rolniczych. Seria G, 89(2): 66-72.
18. Kremer Anne Miek. 2013. Nutrient Budgets EU-27, Norway, Switzerland. Methodology and Handbook. ver. 1.02. Luxembourg: Eurostat/OECD. EC Eurostat. http://ec.europa.eu/eurostat/cache/metadata/Annexes/aei_pr_gnb_esms_an1.pdf, dostep: 17/05/2013.
19. Pastuszak Marianna, Tomasz Kowalkowski, Jerzy Kopinski, Jaroslaw Stalenga, Damian Panasiuk. 2014. Impact of forecasted changes in Polish economy (2015 and 2020) on nutrient emission into the river basins. Science of the Total Environment, 493: 32-43, doi: 10.1016/j.scitotenv.2014.05.124.
20. Prandecki Konrad. 2015. Zagrozenia srodowiskowe pochodzenia rolniczego jako skutek efektow zewnetrznych. [W] Efekty zewnetrzne i dobra wspolne w rolnictwie - identyfikacja problemu (Environmental threats of agricultural origin as a result of external effects [In] External effects and common values in agriculture - problem identification), red. Konrad Prandecki, 68-89, Warszawa: Monografie PW IERiGZ-PIB.
21. Rembisz Wlodzimierz. 2010. Kwestie efektywnosci, cen i dochodow producentow rolnych. [W] Agroekonomia w warunkach rynkowych. Problemy i wyzwania (Productivity, prices and farm producers' incomes issues [In] Agroeconomy in market conditions. Problems and challenges), red. Aleksander Grzelak, Agnieszka Sapa, 289-302, Poznan: Zeszyty Naukowe UE, 150.
22. Szymanska Elzbieta. 2010. Efektywnosc przedsiebiorstw – definiowanie i pomiar (Enterprise effectiveness – defining and measurement). Roczniki Nauk Rolniczych. Seria G 97(2): 152-164.
23. Zegar Jozef. 2014. Konkurencyjnosc rolnictwa zrownowazonego. Synteza. (Competitiveness of sustainable agriculture. Synthesis). Warszawa: Monografie PW IERiGZ-PIB, 142.1.

Zietara Wojciech, Marek Zielinski. 2012. Efektywnosc i konkurencyjnosc polskich gospodarstw rolniczych nastawionych na produkcje roslinna (The effectiveness and competitiveness of polish crop-oriented farms). Zagadnienia Ekonomiki Rolnej 1: 40-61.

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MUNICIPAL ENVIRONMENTAL COMMUNICATION DEVELOPMENT: COLLABORATION COMMUNICATION MODEL, NETWORKING NODES AND INSTRUMENTS

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Abstract. In order to foster sustainable development in Valmiera, the city municipality is in the process of developing an environmental communication strategy. It is being developed with the Research & Development methodology to make it a practical communication guidance documents for all its target groups. The research is going to prove that using this method of developing the target groups of the strategy will become the stakeholders of the strategy within the process of its development. Both the case of Valmiera developing its environmental communication strategy and the collaboration experiences of Latvian Eco—Schools show that collaboration communication is a practical necessity in order to make a functioning environmental governance that leads to sustainable development of a given territory. This study shows examples of networking modes and instruments.

Key words: environmental communication strategy; collaboration communication; Eco—Schools collaboration.
JEL code: Q01.

Introduction

To promote sustainable development, there is the need to ensure the integration of nature governance with the development of socio—economic governance. It is necessary to promote public participation by creating a public governance that is efficient and can give a quick reaction to changes and also to foresee and direct them thus creating important and in future necessary services for the society. Nevertheless, the development of environmental governance usually runs problematically.

In order to foster sustainable development in Valmiera, the city municipality is in the process of developing an environmental communication strategy. It is being developed with the Research & Development methodology to make it a practical communication guidance documents for all its target groups. The research is going to prove that using this method of developing the target groups of the strategy will become the stakeholders of the strategy within the process of its development. Collaboration communication is the key principle promoting the transformation of the target groups into the stakeholders of this strategy and thus solving the gap of performing sound and efficient environmental governance among all the stakeholders in all environmental sectors. The examples of Ecoschools collaboration with their target groups proves already the success of collaboration in transforming target groups into active stakeholders. The paper shows also the status quo of the development of the Valmiera Environmental communication strategy outlining the instruments and networking modes as being the next steps in the meanwhile in order to foster collaboration as a practice of it implementation to promote sustainable development in Valmiera.

Research results and discussion

Participation and cooperation of the stakeholders are one of the preconditions for sustainable development both locally and globally. These are main principles that are defined in the national and global action plans and strategies. A well—known example is Agenda 21 that emphasises the importance of public participation and cooperation of different groups to solve social, economic and environmental problems. (Agenda 21, 1993) Similarly the local level Sustainable Development Strategy of Latvia until 2030(Latvija 2030) highlights the seriousness of these principles as a

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precondition that may help raise the sustainable development potentiality of Latvia. For instance, it enables to combine resources, improve decision making and problem—solving process, increase environmental awareness of the local community (Latvija 2030, 2010). Non—governmental organisations, educational establishments and municipalities are one of the groups that may help to implement these principles.

Thus it is important to organise a pre—planned public information and education on the planning and implementation of environmental protection measures and to promote the integration and updating of environmental issues within the policies of other sectors. The planning of environmental communication strategy would serve as an environmental and development governance instrument for the implementation of the sustainability principles within the actions of municipal target groups and lifestyles. Since 2015 Valmiera city municipality has started to work on the development of the Strategy for environmental communication.

The strategy of environmental communication is a planning instrument with the help of which municipality could ensure systemic and systematic environmental management covering its three dimensions - target groups, environmental sectors and governance instruments. The strategy of environmental communication shall cover the reciprocal interaction of five target groups (state governance, municipal governance, corporative sector, households, mediators) in order to promote sustainable development by ensuring the governance of eight environmental sectors (biodiversity, natural resources, water resources, air, energy sector and climate, waste management sector, urban/ rural and risk territories sector, environmental health) by mutually complementary using seven blocks of instruments of environmental governance (political and legal, planning, economic and financial, administrative and institutional, infrastructural, communication and cooperation instruments).

The development of Valmiera environmental communication strategy in Valmiera city municipality was started using the Research & Development methodology, which started on 29th of January 2015 when the Council of Valmiera city municipality adopted an act of good will to develop the city in a sustainable and environmentally friendly manner – the Valmiera Environmental Declaration (Valmiera Environmental Declaration, 2015). The further development of Valmiera environmental communication strategy consists of 6 stages including the promotion of different networking modes and use of different communication instruments (Table 1).

Table 1

The research-and-development stages of environmental communication strategy in Valmiera

No	Time	Developing stage of environmental communication strategy
1.	2016	Document studies of Valmiera municipality planning documents Structured household interviews and sociological survey of the households on environmentally friendly actions Structured all stakeholder groups' interviews
2.	2017	Field research on municipal environmental collaboration communication (information, education, participation, pro-environmental actions, communication integration)
3.	2017 – 2018	Focus groups/seminars with the internal and external target groups of Valmiera municipality
4.	2019	Seminars of promoting cooperation Development of Environmental Governance Review

Structured household interviews and sociological survey of the households. In June 2016, there were 10 structured household interviews made in the frame of the project SUSTINNO.

In September and October 2016, there was also a regional survey on environmentally friendly actions in Valmiera performed. 373 fully filled questionnaires were received. The aim of the research stage was to evaluate the friendliness towards the environment within the households. The results were based on the comparison with the results of the same sociological survey on national and on regional (Liepaja and Valmiera) results. The results of this research allows to conclude that the greatest part of the respondents considers themselves as environmentally friendly but the high environmental consciousness not always results with environmentally friendly actions. The reasons for these values—actions discrepancies are related to psychological, social and physical barriers that limit the developments and popularity of environmentally friendly actions within the society. Thus in order to promote environmentally friendly actions, formal spreading of environmental information is not sufficient. Events need to be planned by considering the socio—psychological factors of decision—making and by foreseeing the demonstration of good practice examples, encouragement and stimulating mechanisms and eradication of harmful actions.

Document studies. In order to evaluate the planned actions of four blocks of environmental communication that are included within the action policy documents of Valmiera city municipality, the following policy documents were analysed: Environmental Declaration of Valmiera (2015); Valmiera Development programme for 2015—2020; the aims and tasks of Branding management and public relations department within the sector of environmental communication. In Table 2, the formulations of each of the five environmental communication sectors are summed up that are included within the Valmiera Development programme.

The results of Table 2 allow to indicate that all sectors of environmental communication are covered within Valmiera Development programme. In Table 3, the formulations of each of the five environmental communication sectors are summed up that are included within the aims and tasks of Branding management and public relations department for the sector of environmental communication (Regulation of Valmiera city municipality Branding management and public relations department, 2015).

Table 3 allows to conclude that that tasks of all five sectors of environmental communication are included among the duties of the Branding management and public relations department of Valmiera City municipality. Therefore, Valmiera municipality is the only municipality in Latvia having an environmental communication specialist as a position. The tasks of environmental communication are assigned to the environmental communication specialist.

The case study research – four sectors of environmental communication in Valmiera

On 17th and 18th of March 2017 in Valmiera using the case study method of research an environmental communication audit was made by the 1st year Environmental science masters' students of the Faculty of Geography and Earth Sciences in Latvian University. They were analysing environmental information, education, public participation and environmentally friendly actions in Valmiera. The main target groups that were covered were Valmiera municipality and its institutions, private sectors (companies) and inhabitants. Also media and non—governmental sector were analysed. The methods of research for exploring the case were the analysis of data bases, analysis of documents, analysis of target groups, observation, partly structured expert interviews, using questionnaires in environment and online.

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Table 2

Tasks for environmental communication within Valmiera statutory municipal Development Programme (2015—2020)

Sectors of collaboration communication	Action directions for environmental communication in Action policy planning of Valmiera city: Development Programme as medium term planning document and action plan
1. Environmental communication framework	To develop a medium term strategy of environmental communication, annual action plan and to implement them; Public information, education and awareness building on environmental issues and environmentally friendly lifestyle; To coordinate, make popular and promote the creation of new environmental communication events within the territory of the municipality; According to the competency to involve within the initiatives and projects related to environmental communication.
2.Environmental information	Available, clear and topical information on the formation of environmental consciousness available; research of natural areas and promotion of bio-diversity; research on environmental consciousness and regular monitoring; introduction, geographic information systems, development, maintenance and updating of city database; introduction of the spatial development planning information system TAPIS; informative, educational events on energy efficiency.
3. Environmental education and training	To promote environmental education and the popularity of environmental education of interests and availability of education within educational institutions of all levels; implementation of educational system on waste management; education on use of water resources; the raising of municipal competency in environmental governance and development of environmental policy; to develop a technical creativity, environmental education and interest education programmes for creative industries.
4. Environmental (public) involvement and participation	Public networking, creation of inter—institutional and interdisciplinary cooperation; marketing measures to raise the farmers and handcrafters markets; the promotion of environmental interest groups that act towards the society; organisation of diverse environmental events; provision of public and public non—governmental sector in environmental governance and the solving of environmental issues; ensuring public participation for the identification and conservation of cultural and natural heritage; involvement of the inhabitants at the decision making process and performance of different activities; promotion of environmentally friendly entrepreneurship.
5. Pro—environmental actions	Creation of multifunctional environmental science centre and development of its infrastructure; development of the conception and the technical project of a multifunctional environment and science centre; development of interactive and innovative content for a multifunctional environment and science centre; creation of cooperation network with other environmental centres in the world; creation of research within the environmental sector; restoration and creation of freely available active recreation and sports infrastructure, use of the potential of the natural areas for the promotion of active recreation; to promote the usage of energy efficient and environmentally friendly transportation vehicles.

Analysing environmental information, environmental education, public participation and environmentally friendly actions in Valmiera by the method of observation Valmiera city was checked and there was also the analysis of international, state and municipal legal acts and policy planning documents made. The results of annual Valmiera city inhabitants survey were analysed. The employees and officials of Valmiera city municipality were interviewed. In order to find out the opinion of inhabitants surveys in Valmiera and online surveys were performed. Five companies were interviewed (Valmiera Glass Jsc., ZAAO Ltd., Valmiera Water Ltd.) The educators from Valmiera 2. Highschool and from Vidzeme University of Applied Sciences were interviewed.

The field visit case study research proves that activities are taking place within all sectors of environmental communication in Valmiera. But in order to improve the sustainable development of

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Valmiera with the environmental communication actions a coordinated governance of all sectors of environmental communication is necessary.

Table 3

Action directions of environmental communication in work description of environmental communication specialist of Valmiera municipality

Sectors of collaboration communication	Action directions of environmental communication
1. Environmental communication framework	To summarize and systemize information on environmental communication events taken place in the territory of Valmiera city.
2.Environmental information	To ensure the flow of information on nature and environmental protection issues between municipality and Valmiera society. To prepare and publish educative information materials on environmental education.
3. Environmental education and training	To coordinate environmental education activities for a particular target group. To plan and to implement activities of environmental education initiated by municipality for particular target groups. To take part at public education and information activities that are implemented by different institution/ organisation/ company; in the frame of its competency to represent municipality.
4. Environmental (public) involvement and participation	To promote the implementation of environmentally friendly events in municipal institutions and units.
5. Pro—environmental actions	To promote the implementation of environmentally friendly events in municipal institutions and units.

Seminars for Valmiera inner and outer target groups

In order to develop and to implement Valmiera environmental communication strategy, in 2017 and 2018 three types of seminars took place in Valmiera municipality: **1)** workshops on the development of environmental action plans: 28th of June 2017 for the municipal outer target groups. 16 participants were taking part. They represented the educators (Vidzemes University of Applied Sciences, Valmiera primary school, GREEN SCHOOL, Valmiera 2. highschool, Latvian University), the municipal corporations (ZAAO Ltd., Valmiera Water Ltd.), inhabitants, non—governmental organisations (Valmiera Development Agency), companies (Valmiera Glass ltd.). On 17th of October 2017 a preparatory discussion and on 15th of November 2017 a discussion with municipal internal target groups were taking place. Municipal specialists and representatives from municipal corporations took part. 10 participants all together joined this seminar; **2)** On 28th June 2017 a workshop with Valmiera city municipality leadership and managers of the departments was held where an agreement on the interest of the municipality in developing the Valmiera Environmental review as an environmental communication instrument for environmental information was reached; **3)** on 15th of November 2017 a meeting with the representatives from Valmiera Ecoschools was held. The participants of this meeting agreed to create an informal Valmiera Eco—board for further cooperation in organising events of environmental education. The current activities of environmental communication governance have promoted that the development of environmental communication management in environmental information (municipal environmental communication specialist as a coordinator; agreement on the development of environmental governance review) and in environmental education (board of Eco—coordinators). In 2019, there is a plan on realisation of environmental communication strategy fifth and sixths stage. The fifth stage defines the need to organise seminars in order to strengthen environmental communication cooperation and to create collaboration network for the environmental public participation. This is planned with the involvement

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of non—governmental organisations. The sixths stage sets the tasks for promoting and developing environmental participation. Here for the crucial role are the municipal corporations seen.

In 2019, it is planned also to complete the development of Environmental communication governance commons system.

Cooperation examples: Eco schools as education networking node

As an example of the study where collaboration is crucial in reaching the goals of cooperation is chosen the Eco—Schools programme that is led by a non—governmental organization and is implemented through cooperation between schools and municipalities. It is necessary here to clarify more what is the Eco—Schools programme and the aim of it. The Eco—Schools programme internationally is coordinated by the world's largest environmental education organisation the Foundation for Environmental Education (FEE) whose aim is to promote sustainable development in schools and local communities. The programme is an official partner in the United Nations Environment Programme (UNEP). The main goal is the promotion of environmental management and Education for Sustainable Development (FEE – UNEP, 2003). A central idea of the programme is the formation of an environmental management system in schools that help reach sustainable development goals, promote pro—environmental behaviour and empower youth to act by informing and involving not only school but also the local community, thus developing environmental awareness generally (FEE Latvia, 2019).

Previous studies that reviewed environmental education programmes in the schools such as Eco—Schools programme highlights cooperation as key aspect for successful implementation of Education for Sustainable Development. Moreover, participation and cooperation are important not only among the school representatives but also in the community between school and different target groups such as a municipality (Tilbury and Henderson, 2004). In addition, participation and cooperation among school and the local community may help to develop action competence and pro—environmental behaviour of the pupils (Mogensen and Mayer, 2005). However, Mercedes et al. (2016) point out that apart from a few studies, there is a general lack of information related to cooperation between schools and the local community in the aim of development.

This study aims to evaluate the Eco—Schools programme experience in Latvia regarding participation and cooperation of different target groups and identify possible preconditions and limitations.

The chapter analyses the results of the focus group discussion undertaken during Eco—Schools Winter forum in February 2017. Out of 103 participants seven were invited to focus group discussion. Before focus group discussion, all participants filled out the preliminary survey where they asked to describe target groups that schools as a participant of the Eco—Schools programme cooperate with and characterize the best practice of cooperation with local target groups that aims to develop and implement environmental education initiatives and promote pro—environmental behaviour in the local community. Focus group respondents were selected based on their experience in the Eco—School programme and especially school cooperation practice. All of them are practising teachers and at the same time the Eco—Schools programme coordinators that are responsible for the implementation of the programme in school. Two out of seven respondents also represented the school administration. Respondents were arranged in two groups – experts that have 3 to 10 years' experience as a coordinator and beginners that have 1 to 2 years' experience. In focus group discussion, four experts and three beginners participated. Based on answers in the preliminary

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research and the view gained from the literature analysis, a focus group discussion survey which comprised five main questions was developed. Answers provided information about the role of the school and interaction with the local community, municipality; schools expectations from municipality and possible contribution from the school itself related to environmental education and environmental protection; best practice examples with local target groups and the main preconditions and limitations regarding participation and cooperation with the aim to address topical environmental issues. In order to find the best practices, also other qualitative research methods were used. The schools submitted documents and municipality meeting minutes were analysed with a focus on Eco—Schools and the local community cooperation.

The results of this study show a large variety of the target groups that schools as a participant of the Eco—Schools programme cooperate with – municipalities, neighbourhood and other region schools, pre—schools, educational centres, non—governmental organizations, companies, local media, residents and families, households as a specific group. When the respondents were asked about the role and interaction with the municipality and the local community, the majority commented that first of all schools are directly dependent of the municipality and now when schools are being reorganised municipality decide on the need for school. Therefore, the Eco—Schools programme adds the additional value for the school and also give an opportunity to develop cooperation with the municipality and improve the situation in the local community by improving understanding of local and global environmental problems, increasing participation level and pro—environmental behaviour. For instance, in the Ogre municipality local Eco—School cooperate with a project manager, work on the shared vision of the school, plan and implement common projects such as waste sorting infrastructure in the school and cycling lines in the local area that are useful also for others. In turn, as a central role of the school was mentioned educational function not only in school but also in society. Especially in rural areas there are No other educational organizations. So, Eco—Schools may become an environmental educational centre also for residents, but for this to happen an involvement and support from the municipality also is needed.

Collaboration case between Valmiera Eco—Schools and Valmiera City municipality certifies the above statement also by organising the meetings of the informal Board of the Eco—coordinators and Valmiera City municipality. Since the establishment of the informal board 4 meetings of the board have been taking place that resulted in organising common public events in Valmiera city target groups of which were Valmiera general public and the students of Valmiera Eco—schools in the meantime. The Eco—coordinators of Valmiera Eco—schools are reporting back the usefulness of having the board and collaboration in organising common activities.

Latest success in organising common activities was the event *Valmiera Environmental Forum „Living green!"* that was organised on 1st of November 2018. The target group of the forum was the general public of Valmiera city and the students of Eco—Schools. The forum was organised by collaborating Valmiera Eco—Schools, Valmiera municipality and the experts from University of Latvia. The programme of this event provided practical workshops managed by the Eco—schools, information on the status quo of environmentally friendly life—style in Valmiera households and a discussion with the participants on the further actions needed.

Conclusions, proposals, recommendations

1) Creation of a collaboration network among the stakeholders and stressing on particular **networking nodes** in every of four collaboration communication model components

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(instruments) is a practical necessity to create a functioning municipal **environmental communication governance system** for environmental governance backgrounding and enhancement, complementary with socio—economic dimensions of sustainable development.
2) Information networking node — municipality can act as the main coordinator of the targeted flow of environmental information within its territory. For this the development of the Environmental governance review might be a useful inner information environmental communication instrument.
3) Education networking node - Eco—Schools, being established at almost all education levels, may become an environmental educational networking node also for other schools and both formal and non—formal education systems/organizations, also for residents, but for this to happen an involvement and support from the municipality also is needed.
4) Participation networking node - To foster the successful collaboration of the stakeholders of environmental communication in Valmiera city seminars, educational activities and cooperation basis between municipality and the non—governmental sector shall be established. The public participation might be promoted through this collaboration.
5) Pro—environmental behaviour networking node - To foster environmentally friendly actions, the collaboration between municipality and its corporations shall be fostered by organising common promotion actions of environmentally friendly practices, solutions and habits.

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Bibliography

1. Agenda 21: Programme of Action for Sustainable Development; Rio Declaration On Environment and Development; Statement of Forest Principles: The Final Text of Agreements Negotiated by Governments at the United Nations Conference On Environment and Development (UNCED), 3-14 June 1992, Rio De Janeiro, Brazil. New York, NY: United Nations Dept. of Public Information, 1993.
2. Cincera, J. and Krajhanzl, J., (2013). Eco-Schools: What Factors Influence Pupils' Action Competence for Pro-environmental Behaviour? J. Clean. Prod., vol. 61, pp. 117–121.
3. Environmental Declaration of Valmiera (2015), Valmiera City Municipality homepage. Retrieved: https://www.valmiera.lv/en/city/facts_and_figures/environment/ Access: 01.02.2019.
4. FEE – UNEP Memorandum of Understanding, (2003). FEE – UNEP Memorandum of Understanding of March 3, London
5. FEE Latvia, (2019). FEE Latvia webpage. Retrieved: http://www.videsfonds.lv/ Accessed: 14.02.2019
6. Mogensen, F., Mayer, M., (2005). Eco-Schools: Trends and Divergences. A Comparative Study on ECO-school Development Processes in 13 Countries. Austrian Federal Ministry of Education, Vienna.
7. Mercedes Varela-Losada, Pedro Vega-Marcote, Uxío Pérez-Rodríguez & María Álvarez-Lires (2016) Going to Action? A Literature Review on Educational Proposals in Formal Environmental Education, Environmental Education Research, 22:3, pp. 390-421.
8. Regulation of Valmiera City Municipality Branding Management and Public Relations Department, 2015. Retrieved: https://www.valmiera.lv/images/userfiles/another/lem_421_konsolid.pdf. Accessed: 14.02.2019.
9. Ropazi Municipality (2015), Meeting Minutes Nr. 7 May 27, 2015
10. Ropazi Secondary School (2015), Meeting Minutes January 29, 2015 Retrieved: http://www.ropazuvsk.lv/eko-skola/ropazu-novada-ekopadomes-parstavju/ Accessed: 14.02.2019.
11. Truksans, D., Ernsteins, R. (2017), Pro-Environmental Behaviour Developments Locally: Eco-Schools Complementary Communication Instruments for Greening Community, International Multidisciplinary Scientific GeoConference Surveying Geology and Mining Ecology Management, SGEM 17(53), pp. 655-666.
12. Tilbury D. and Henderson K., (2004) Whole-School Approaches to Sustainability: An International Review of Whole-School Sustainability Programs. Australian Research Institute in Education for Sustainability (ARIES) for the Australian Government Department of the Environment and Water Resources 2004.
13. The Strategy for Sustainable Development of Latvia until 2030 approved in a plenary session of the Saeima of the RoL on June 2010.

Valmiera Development Programme for 2015-2020. Valmiera City municipality. Retrieved: https://www.valmiera.lv/lv/attistiba/valmieras_pilsetas_attistibas_plans/attistibas_programma/ Accessed: 14.02.2019.

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DIAGNOSIS OF SOCIO—ECONOMIC DEVELOPMENT OF THE EUROPEAN UNION COUNTRIES

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Abstract. The main purpose of the paper is an assessment of current level of socio—economic development of EU countries. In situation of many difficult changes, which could complicate the further EU's situation, the analyses provided in these areas are important. Due to large differences in the social and economic development of EU countries, the multi—criteria taxonomy was used to compare the situation in both of these areas. The authors decided that the basis for the analyses will be the indicators transformed according to the relative taxonomy method. The results confirmed the relatively large differences between EU countries especially in the area of economic development.

Key words: socio—economic development, EU countries, multi—criteria taxonomy, relative taxonomy.
JEL code: C38, P11, P36.

Introduction

In the literature, more and more opinions appear that the socio—economic level of development of EU countries becomes similar (Rodriguez—Pose, 1999; Ray, 2000). At the same time, the existence of differences in the development of countries belonging to this political and economic partnership—type is increasingly emphasized by many other authors (Bilbao—Osorio and Rodriguez—Pose, 2004). These differences are mainly observed when the countries located in Southern and Eastern Europe are compared to countries from North and West. According to Podkaminer (2013), the relative backwardness of the countries of Central and Eastern Europe have deep historical roots. Whereas the crisis from 2007—2008 had the greatest impact on the difficult current situation of the countries of Southern Europe. The most differences are visible between their levels of development in economic area, while in the social ones they seem to be smaller (Bak and Cheba, 2018a). Now in a situation of many difficult changes which could complicate the EU's ability to deal with multiple internal and external challenges such as: the pending departure of the United Kingdom (UK) from the EU (Brexit), migration and related societal integration concerns, and a heightened terrorism threat, some authors (CRS Report, 2018) are questioning the future shape and character of the EU. In this context, the analyses of the current level of development of EU countries are relevant. Their aim is to indicate the most visible differences between more and less developed countries. These differences have also a strong impact on the other areas of EU development. The literature (Hopwood et al., 2005; Szopik—Depczynska et al., 2018; Bak and Cheba, 2018b) emphasizes that the most economically developed countries also have the biggest influence on negative changes in the natural environment, but this connection isn't observed in the case of Scandinavian countries. Their economic development is related to the positive impact on the natural environment and quality of human life.

The aim of the study is an assessment of current level of socio—economic development of EU countries, both in each group of this development, separately and together. The article attempts to find the main reasons of the differences between the analysed countries in the discussed areas. The paper is divided into 5 sections. The first presents the aim of the research. Next, the mathematical research method is presented. The third one is dedicated to a presentation of the statistical data. The fourth section presents the research results and discussion, and the last one contains

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conclusions. The added value of the paper is a division into groups of EU countries according their socio—economic level of development, but each of these areas is analysed separately. It means that comparable will be these countries which level of development will be both similar in socio— and economic areas.

Description of the research methods

In the paper to study the disparities between the European Union countries in the field of socio—economic development the multi—criteria taxonomy was used. The basis of the results analyses was the indicators transformed according to the relative taxonomy method. In the relative taxonomy, it is assumed that all indicators should have a positive interpretation when assessing the position of a given country against the background of others (Wydymus, 2013, p. 634). It means that all destimulatns have to be transformed into stimulants as follows: The work assumes that if the X'_k is a destimulant, then the X_k will be a stimulant after the transformation: $X_{ik} = 1/X'_{ik}$. Data analysis based on this method takes place in several stages. In the first one the relativization the values of diagnostic features is made as follows:

$$d_{(l/i)jt} = x_{ljt}/ x_{ijt} \quad (1)$$

where: d – relativized values of the indicators, i, l = 1, …, k – objects' numbers, $i \neq l$, j = 1, …, m – numbers of sub—indicators, t = 1, …, n – numbers of years.

The relative taxonomic measure of development is estimated as follows:

$$\mu_{it} = [\Sigma 1/w_{ijt}]/m \quad (2)$$

The description of every stage of this method and their application in the economic analyses were presented in the following papers: Wydymus (2013), Lira (2015), Cheba (2019). It should be noted that this measure is close to 1 and can be interpreted as the relative position of the object relative to all other analyzed objects (in this case: countries). For objects with a similar level of development, the values generally hover around unity. The lower the value of the measure, the better the situation of the object (country) against the background is. Objects can also be divided into typological classes with similar levels of development. The first class contains the best countries, while the fourth the worst ones. To the second class countries with value of taxonomic measure of development above mean value for all groups were assigned. To the third class these ones with the values of this measure below mean value. The results of the relative transformation of indicators were used in the next stage to compare the EU countries according their socio— and economic development. For this purpose, the multi—criteria taxonomy was applied. In this method the following procedure is required (Nowak, 1990; Malina, 2004):

1) In the first step D^K distance matrices (based on Euclidean distance) are defined for each of the distinguished classification criteria of $K_l\,(l = 1,\dots,r)$.
2) A threshold value is defined for distance d^*. The value is usually defined in accordance with the following formula:

$$d^* = \min_i \max_j \{d_{ij}\} \quad (3)$$

3) For each classification criterion, **C^K** affinity matrix of $(n \times n)$ dimension is defined, whose elements $c_{ij}^K\,(i, j = 1,\dots,n)$ are equal to:

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$c_{ij}^{K} = 1 \text{ for } d_{ij} \le d^{*}$ **(4)**		$c_{ij}^{K} = 0 \text{ for } d_{ij} > d^{*}$ **(5)**

If inequality $d_{ij} \le d^{*}$ is satisfied, the objects designated as *i* and *j* are deemed as similar in terms of the examined criterion, if, however, an opposite condition is satisfied, the relevant objects are treated as dissimilar for value d^{*}, thus the affinity measure of c_{ij} will equal zero.

4) A final $\mathbf{C}_{(n \times n)}$ affinity matrix is determined among the analysed units. c_{ij} elements of **C** matrix are equal to the product of relevant elements of $\mathbf{C}^{\mathbf{K}}$ matrix for all the analysed criteria, i.e.:

$$c_{ij} = \prod_{K=1}^{r} c_{ij}^{K} \quad (6)$$

It means that $c_{ij} = 1 (i, j = 1,...,n)$, if each of c_{ij}^{K} elements corresponding to it in $\mathbf{C}^{\mathbf{K}}$ matrices is equal to one, and $c_{ij} = 0$, if at least one of the c_{ij}^{K} elements corresponding to it is equal to zero. According to the above, two objects are considered to be similar to one another simultaneously on account of all the criteria, if they are similar to one another separately on account of those individual criteria. The adoption of a given algorithm may lead to determining a large number of small sized groups (one— and two—elements groups), (Malina, 2004).

Statistical materials

To assess the socio—economic development of EU countries, statistical data from 2016 presented by Eurostat were collected. Because analyses presented in the paper are a part of larger research including data from 2008 to 2016, Croatia which became EU member in 2010, wasn’t included in this research. To eliminate the diagnostic features with the similar potential of information, the method of the inverted matrix of correlation coefficients in each group of indicators was applied. Finally, to the set of diagnostic features in the economic area 14 indicators divided into following groups: economic development (5 indicators), employment and conditions of work (5 indicators), innovations (2 indicators), and sustainable production patterns (2 indicators) were selected. The second group was described by 17 indicators, which can be assigned to the following fields: poverty and social exclusion (7 indicators), lifestyle and public health (3 indicators), education and development (3 indicators), level and quality of life (2 indicators), public safety (2 indicators).

Research results and discussion

At first the results of the relative taxonomy method were presented (Table 1). As a result of the use of this method a ranking of 27 EU countries in which the impact on the assessment of the country has an effect not only on its own situation but also the situation of the other states was obtained. In many of the analysed cases, visible changes in the position taken by individual EU countries in the ranking between the socio— and economic areas were observed. Significant changes in the ranking (significant changes were recognized by at least 5 items) can be seen for: Belgium (7 position in economic development and 15 in social development), Germany (3 and 13), Greece (18 and 27), Italy (13 and 22), Lithuania (15 and 23). Whereas opposite changes (lower position in economic development and higher in social area) in the case of following countries can be observed: Cyprus (22 and 14), Finland (8 and 2), Ireland (14 and 7), Luxembourg (26 and 5), Malta (27 and 11), Poland (24 and 18). The first places in both rankings were occupied by the Scandinavian countries:

Sweden, Denmark and Finland. The similar level in both socio— and economic development can be observed in the case of: Portugal (20 position in both classifications) and Spain (17). The lowest positions of countries located in the Southern and Eastern Europe are worth drawing attention to. The reverse situation was recorded in the countries of Northern and Western Europe.

Table 1

Classification of EU countries – the relative taxonomy method

Countries	Economic development			Social development		
	Value of measure	Position	Typological group	Value of measure	Position	Typological group
Austria	0.7012	5	II	0.7291	3	II
Belgium	0.7369	7	II	0.9307	15	II
Bulgaria	1.3388	23	III	1.6246	25	IV
Cyprus	1.2606	22	III	0.9299	14	II
Czech Republic	0.7997	10	II	0.7836	9	II
Denmark	0.5323	1	I	0.7304	4	II
Estonia	1.0812	19	III	1.2039	21	III
Finland	0.7538	8	II	0.7025	2	II
France	0.7819	9	II	0.7868	10	II
Germany	0.5816	3	II	0.8515	13	II
Greece	1.0638	18	III	1.8670	27	IV
Hungary	0.9982	16	II	1.0809	19	III
Ireland	0.9830	14	II	0.7571	7	II
Italy	0.9589	13	II	1.2117	22	III
Latvia	1.2006	21	III	1.4657	24	IV
Lithuania	0.9977	15	II	1.3325	23	III
Luxembourg	1.8043	26	IV	0.7470	5	II
Malta	2.9163	27	IV	0.7956	11	II
Netherlands	0.6049	4	II	0.7565	6	II
Poland	1.3443	24	III	1.0443	18	III
Portugal	1.1382	20	III	1.1465	20	III
Romania	1.6911	25	IV	1.7105	26	IV
Slovakia	0.9367	12	II	1.0022	16	II
Slovenia	0.8891	11	II	0.8248	12	II
Spain	1.0301	17	II	1.0077	17	II
Sweden	0.5696	2	I	0.7013	1	II
United Kingdom	0.7317	6	II	0.7709	8	II

Source: author's calculations

In the next step the EU countries were divided into groups taking into account their results both in socio— and economic development. For this purpose, the multi—criteria taxonomy method was used. As a result of application of this method 6 following groups were created: a) **group I**: Austria, Belgium, the Cyprus, the Czech Republic, Denmark, Finland, France, Germany, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, the Netherlands, Poland, Portugal, Slovakia, Slovenia, Sweden, the United Kingdom, b) **group II**: Bulgaria, Romania, c) **group III:** Estonia, d) **group IV:** Greece, e) **group V**: Spain, f) **group VI**: Malta. The first group including 21 countries was the largest. To the second group only 2 countries located in Southern Europe were jointed. These countries became a part of EU in 2007. Whereas the next four groups formed one—element clusters. It is worth noticing that sometimes, even one indicator was decisive for belonging to a particular group. Due to this, it

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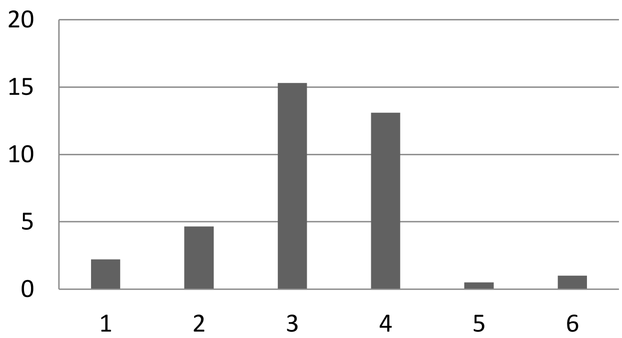
was decided to determine the measure that can be interpreted as the weights defining the relative importance of individual indicator (Nowak, 1990):

$$\omega_j = V_j / \sum V_j \cdot 100\ \%\ (7)$$

where: V_j - classic coefficient of variation calculated for the *j*-th diagnostic feature.

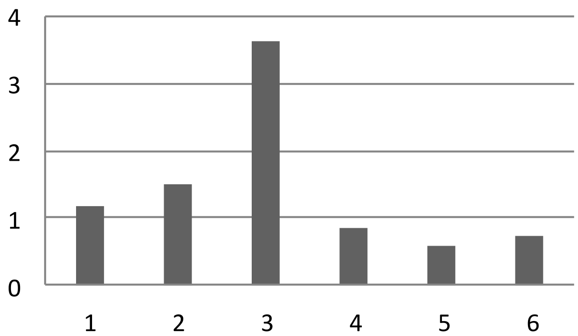
It turned out that the most important are the following indicators: from the group of poverty and social exclusion: a) self—reported unmet need for medical care by detailed reason (too expensive or too far to travel or waiting list), % of population aged 16 and over – with the value of the relative importance on the level 7.29 %, b) population unable to keep home adequately warm by poverty status, % of population – 5.97 %, c) overcrowding rate by poverty status, % of population - 5.04 % next from the group of lifestyle and public health: d) death rate due to homicide, number par 100 000 persons – 5.71 %, and from economic development; e) government support to agricultural research and development, euro per inhabitant – 5.20 %. Three of these indicators (their mean values in the indicated groups) were presented on the Fig. 1—3.

Detailed analysis of the mean level of indicators in individual groups may explain the reasons for including such many EU countries to the first typological group. Their membership in the same group was caused by the value of indicators close to the mean value for a whole group. The results obtained are also confirmed by the conclusions formulated by other authors (Eagle et al., 2010). Such a large first group shows that in the area of socio—economic development, the majority of EU countries obtain similar results. On the other hand, among the 27 analysed countries, there are also those whose results differ significantly from mean value in group both *in plus* and *in minus*.



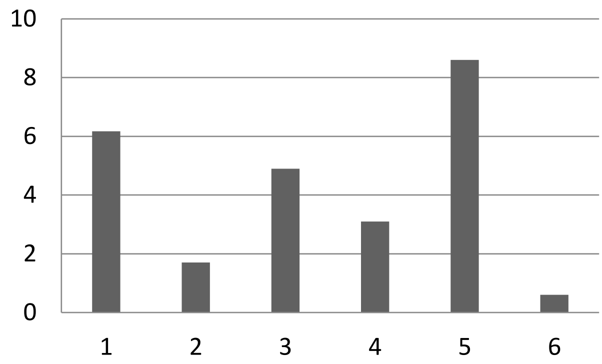
Source: author's calculations based on Eurostat data

Fig. 1. **The mean value in groups of indicator describing the size of population unable to keep home adequately warm by poverty status (% of population)**



Source: author's calculations based on Eurostat data

Fig. 2**. The mean value in groups of indicator describing the level death rate due to homicide (number par 100 000 persons)**



Source: author's calculations based on Eurostat data

Fig. 3. **The mean value in groups of indicator describing government support to agricultural research and development (euro per inhabitant)**

The main reason of belonging of EU countries to the second group was a quite lower level of such indicators as: a) agricultural factor income per annual work unit (AWU) (source: EC services), chain linked volumes, b) real GDP per capita, chain linked volumes (2010), euro per capita, c) employment in high— and medium—high technology manufacturing sectors and knowledge—intensive service sectors, % of total employment, d) tertiary educational attainment, % of population aged 30 to 43, e) adult participation in learning by sex, % of population aged 25 to 73. They are very important indicators which describe the area of economic development. In the literature (Bilsen and Konings, 1998; Cheba, 2019) Bulgaria and Romania are indicated as the least developed countries in EU. It is not surprising that they belong to a separate group. Separation of Estonia as a one—element group was caused by a very high level of such indicators as: a) area under organic farming, % of utilised agricultural area (UAA), b) people killed in accidents at work, number per 100 000 employees, c) suicide rate by sex, number per 100 000 persons, d) self—reported unmet need for medical care by detailed reason (too expensive or too far to travel or waiting list), % of population aged 16 and over, e) death rate due to homicide, number par 100 000 persons. In addition, this country was characterized by the lowest values of the following indicators: a) volume of freight transport relative to GDP, index (2005 = 100), b) general government gross debt, percentage of gross domestic product (GDP), c) people living in households with very low work intensity, percentage of total population aged less than 78, d) population unable to keep home adequately warm by poverty status, % of population, e) population reporting occurrence of crime, violence or vandalism in their area by poverty status, % of population.

In the case of Greece, compared to the EU average, this country can be positively assessed due to: a) inactive population due to caring responsibilities by sex, % of inactive population aged 20 to 73, b) people killed in accidents at work, number per 100 000 employees, c) suicide rate by sex, number per 100 000 persons. While such indicators as: a) young people neither in employment nor in education and training by sex, % of population aged 15 to 38, b) general government gross debt, percentage of gross domestic product (GDP), c) population unable to keep home adequately warm by poverty status, % of population, d) long—term unemployment rate by sex, % of active population, indicate not so good situation in this country. In many papers (Hadjimichalis, 2011), Greece and other countries located in the south of Europe are indicated as a region in which the negative impact of the crisis from 2007—2008 can be observed. This impact seems to be noticed also in the research results presented in this work. According to authors it is also one of the most important factors influencing the current level of development of these countries.

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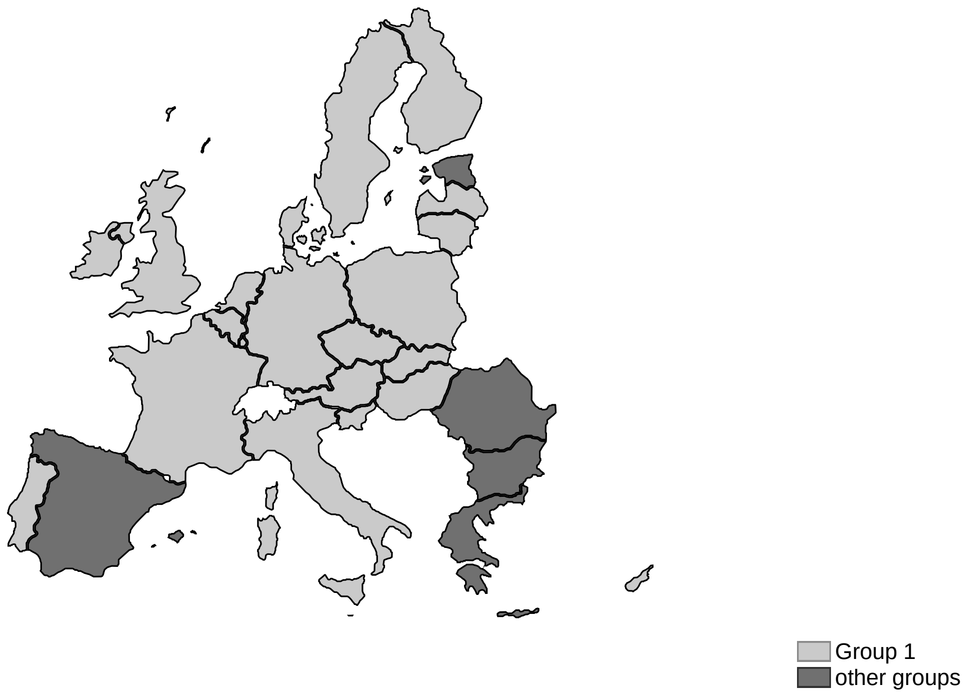
About separation of Spain as one—element cluster decided a quite good situation described by the following indicators: a) death rate due to homicide, number par 100 000 persons, b) people killed in road accidents (source: EC services), rate, c) self—reported unmet need for medical care by detailed reason, (too expensive or too far to travel or waiting list), % of population aged 16 and over.

In the case of Malta, it is worth paying attention to a quite good social situation related to the lowest values of such indicators as: a) overcrowding rate by poverty status, % of population, b) relative median at—risk—of—poverty gap, % distance to poverty threshold, c) long—term unemployment rate by sex, % of active population, d) population living in a dwelling with a leaking roof, damp walls, floors or foundation or rot in window frames of floor by poverty status, % of population. In comparison with the average in EU the values of these indicators for Malta are the best. Malta also stands out positively due to the level of employment in high— and medium—high technology manufacturing sectors and knowledge—intensive service sectors (% of total employment).

The results of classification of EU countries (countries in first group and others) are also presented on the map (Fig. 4).



Source: author's calculations based on Eurostat data

Fig. 4. **The division into group of EU countries according their level of socio— and economic development**

Conclusions

1) Diagnosis of the socio—economic situation of EU countries was formulated on the basis of rankings and the characteristics of the separated typological groups. Studies confirmed the differences between these countries both in social and economic area. Monitoring this diversification is very important as too large disproportions in the level of development of individual countries have a negative impact on the development of the EU in larger context.

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2) In effect of application of the multi—criteria taxonomy, it was possible to distinguish typological groups of countries similar to each other in terms of both aspects (social and economic). To the same largest group (first group) were assigned countries which seem to have a different socio—economic situation. However, the obtained results were justified by detailed analysis of both the value of the relative taxonomic measure of development and the importance of diagnostic features and their mean level in individual groups. The research shows that for most countries their socio—economic situation does not differ significantly from the mean of EU level.
3) A great difficulty in conducting statistical multidimensional analyses is the collection of reliable and comparable statistical data. It turns out that the databases of statistical offices of EU countries do not always provide full and up—to-date information.

Bibliography

1. Bak, I., Cheba, K. (2018a). Study of Spatial Uniformity of Sustainable Development of the European Union Before, During and After the Economic Crisis. Przeglad Statystyczny 2, pp. 222-246.
2. Bak, I., Cheba, K. (2018b). *The Application of the Dynamic Classifications in Order to Evaluate the Changes of the European Union's Sustainable Development*. Proceedings of the 2018 International Conference „ECONOMIC SCIENCE FOR RURAL DEVELOPMENT", Jelgava.
3. Bilbao-Osorio, B., Rodríguez-Pose, A. (2004). From R&D to Innovation and Economic Growth in the EU. *A Journal of Urban and Regional Policy* 35(4), pp. 434-455.
4. Bilsen, V., Konings, J. (1998). Job Creation, Job Destruction, and Growth of Newly Established, Privatized, and State-Owned Enterprises in Transition Economies: Survey Evidence from Bulgaria, Hungary, and Romania. *Journal of Comparative Economics* 26(3), pp. 429-445.
5. Cheba, K. (2019). Zrownowazona Konkurencyjnosc Krajow Unii Europejskiej. Studia Literaturowo-Empiryczne. CeDeWu, in press.
6. CRS Report. (2018). *The European Union: Ongoing Challenges and Future Prospects.* Congressional Research Service R44249. www.crs.gov.
7. Eagle N., Macy, M., Claxton, R. (2010). Network Diversity and Economic Development, *Science* 21, pp. 1029-1031.
8. Hadjimichalis, C. (2011). Uneven Geographical Development and Socio-Spatial Justice and Solidarity: European Regions After the 2009 Financial Crisis. *European Urban and Regional Studies* 18(3), pp. 254-274.
9. Hopwood, B., Mellor, M., O'Brien, G. (2005). *Sustainable Development: Mapping Different Approaches*, Sustainable Development, No. 13(1), pp. 38–52.
10. Lira, J. (2015). A Comparison of the Methods of Relative Taxonomy for the Assessment of Infrastructural Development of Counties in Wielkopolskie Voivodeship. *Quantitative Methods in Economics* XVI(2), *pp.* 53-62.
11. Malina, A. (2004). *Wielowymiarowa Analiza Przestrzennego Zroznicowania Struktury Gospodarki Polski Wedlug Wojewodztw*. Wydawnictwo AE w Krakowie, Krakow.
12. Nowak, E. (1990). *Metody Taksonomiczne w Klasyfikacji Obiektów Społeczno-Gospodarczych*. Warszawa: PWE.
13. Podkaminer, L. (2013). *Development Patterns of Central and East European Countries (in the Course of Transition and Following EU Accession).* Research Reports 388, The Vienna Institute for International Economic Studies.
14. Ray, C. (2000). Endogenous Socio-Economic Development in the European Union — Issues of Evaluation. *Journal of Rural Studies* 16(4), pp. 447-458.
15. Rodríguez-Pose, A. (1999). Convergence or Divergence? Types of Regional Responses to Socio-Economic Change in Western Europe. *Journal of Economic and Social Geography* 90(4), pp. 365-378.
16. Szopik-Depczynska, K., Cheba, K., Bak, I., Stajniak, M., Simbolid, A., Ioppolo, G. (2018). The Study of Relationship in a Hierarchical Structure of EU Sustainable Development Indicators. *Ecological Indicators,* 90, pp. 120-131.
17. Wydymus, S., (2013). Economic Development and Income Level in UE Countries – Taxonomic Analysis, *Zeszyty Naukowe Uniwersytetu Szczecinskiego* 756, *Finanse, Rynki Finansowe, Ubezpieczenia* 57, pp. 632-645.

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THE ROLE OF FLEXICURITY MODEL FOR DECENT WORK AND ECONOMIC GROWTH: LITHUANIAN CASE

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Abstract. The aim of this paper is to show the importance of the labour market and employment in the conditions of globalization in the context of sustainable development. This paper evaluates the formation of sustainable development, its main features and sustainable development goals. This theme aims to examine the evolution of sustainable development goals and its fundamental values and to show the importance of labour market and one of its policies — flexicurity. The objectives of this article are: to characterize the sustainable development goals on the global, the European Union Member States (EU—28) and Lithuanian levels; to characterize the flexicurity of labour market policy and to make a comparative analysis of employment forms in Lithuania, Latvia, Denmark and the EU—28 in the period of 2005—2017. Data from Eurostat databases for the year 2005—2017 are used for the analysis. The method of base indicators (labour market employment rate, activity rate, unemployment rate and others indicators) comparison is used, whereas the first year (e.g. year 2005) of the analysed period is chosen as base year.

The analysis shows that economic modernization in the context of globalization in Lithuania is based on the main sustainable development goals and the EU—28 economic development targets. The comparison of main labour market employment forms in Lithuania, Latvia, Denmark and the EU—28 shows differences, which requires further research. The investigation reveals that in Lithuania and Latvia the flexicurity model is weak, unlike in Denmark and the EU—28.

Key words: economic development, sustainable development, labour economics policies, unemployment.
JEL code: O13, Q01, J08, J6.

Introduction

The ongoing changes in the economic environment at a global level are driven by the globalization processes. Thus leading to increasing global integration among individual markets such as goods, services, capital, labour and so on (Aktan C., 2005). With the integration of countries around the world, obstacles of the mobility of goods, capital and people among countries are constantly diminishing. This has a positive impact on global economic growth and is expanding and deepening relations among economically developed and less developed countries. Economic growth and the reduction of inequality are one of the most important economic development goals at global level.

The country's economic growth is directly related to one of the most important macroeconomic indicators of the country – the growth of real gross domestic product and the indicator of the quality of life change. The results of the country's economic development are always linked to the labour market and employment. On the other hand, economic growth is linked to quantitative and qualitative changes (in economic sectors, economic activities, etc.) that are constantly evident in various fields. In scientific literature (Galiniene B. et al., 2007; Sakalas A., Savaneviciene A., Girdauskiene L., 2016), this is described as a targeted tendency of modern economy to dynamism, which manifests itself in the economy as a system. Dynamic changes in economic processes are related to the modernization of economic activities from various perspectives to the increasingly broadly based idea of sustainable development (Mikalauskiene A., 2014). In response to changes in the labour market security, the European Commission has put forward a new labour relations policy, i. flexicurity, the direction that determines flexibility and security in the labour market. This model is based on the Danish labour market experience, which summarizes high employment rates, high

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employee mobility and high costs for active labour market policy measures (Ionete A., 2012; Kuodis R., 2015).

The essence of sustainable development as a long—term process is widely debated and analysed at national, regional and global levels and covers economic, social and ecological aspects. At the global level, the UN played a key role in the development and development of modernization processes, which can be summarized in six stages:

1. in 1972 for the first time, the UN Stockholm Conference has linked economic and ecological issues together and formulated the idea of sustainable development (Report of the United Nations, 1972);
2. in 1986, the UN Conference on Environment and Development in Ottawa discussed the World Security Strategy and described social justice as a factor determining "harmonious and equiTable development" (Ciegis R., Ciegis R., Jasinskas E., 2005);
3. in 1987, the UN World Commission on Environment and Development (WCED), headed by the Norwegian Prime Minister, Gro Harlem Brundtland, published a report entitled "Our Common Future" (1987), which highlights two important objectives: 1) the development objective of ensuring a good standard of living for all; 2) the goal of sustainability is to live with respect to the environment. It emphasizes the importance of such development, which would lead to the well—being of people not only in the present time, but also in the future;
4. in 1992, the UN Conference on Environment and Development in Rio de Janeiro adopted a long—term 21 action agenda to ensure a sTable environment and sustainable development across the globe; responsibly assess the role of consumption and responsible use of natural resources;
5. in 2000, the UN Millennium Summit was held in New York, where major changes were identified in eight directions, signed by the leaders of 189 countries around the world, characterized by the Millennium Declaration (2000);
6. in 2002 at the UN Summit in Johannesburg (Earth Summit on Sustainable Development), all member states were invited to set up long—term (2012—2022) programs to promote sustainable consumption and production. The meeting emphasized the importance of ways of production and consumption, their changes, mutual coordination in solving issues of sustainable development (Mikalauskiene A., 2014, p.13);
7. the development goals set by the Millennium Declaration (2000) face various challenges for their implementation. For this reason, the UN has announced a revised development agenda called the "Sustainable Development Agenda 2030" (Transforming Our World: the 2030 Agenda for Sustainable Development 2015), which formulates seventeen sustainable development goals that are closely related to the human factor, the labour market, employment and life level. This document was signed by 192 heads of state, and includes 17 goals:

1. eliminate all forms of poverty;
2. eliminate hunger, ensure food security and nutrition, and promote sustainable agriculture;
3. ensure healthy life and promote the well—being of all age groups;
4. ensure comprehensive and equiTable quality education and promote lifelong learning;
5. achieve gender equality and empower women and girls;
6. ensure access to water, sustainable management and sanitation for all;
7. ensuring everyone has access to affordable, reliable, sustainable and up—to—date energy;
8. to promote sustainable, inclusive and sustainable economic growth, productive employment and decent work;

9. develop a resilient infrastructure, promote inclusive and sustainable industrialization and promote innovation;

10. reduce inequalities between states and between states;

11. make cities and people living in areas safe, resilient and sustainable;

12. ensure sustainable consumption and production patterns;

13. to take urgent action to combat climate change and its consequences;

14. conservation and sustainable use of oceans and marine resources;

15. to protect, restore, promote the sustainable use of terrestrial ecosystems, sustainable management of forests, combat desertification, stop land degradation, stop biodiversity loss;

16. promote peaceful societies for sustainable development, ensure access to justice for all and create effective, accounTable institutions at all levels;

17. strengthen implementation measures for the development agenda and revitalize the global partnership for sustainable development.

These ambitious goals have been raised to ensure that all three aspects of sustainable development (economic, social and environmental), including the level of employment that determines the standard of living in the region, are realized. Changes in the economic system (both internal and external) are always related to the economic activity, employment and income of the country's population in any sector or economic activity (Sakalas A. et al., 2016; Aktan C., 2005). Changesrelate to the direction of system development, the involvement of participants in the activities of organizations, and their performance. In the scientific literature (Stark O., 2004; Schiller B.R., Hill S., Wall S., 2013), it is noted that human capital determines that some countries are more socially and economically advanced than others, and social development of countries with better use and appreciation of human capital is more sustainable and the level of life quality is higher (Mannheim, 1980; Atkociuniene Z., 2008). The development of science and knowledge is one of the conditions for the development of society. The link between the higher education system and the labour market is ensured through knowledge, skills, competences, skills acquired in the study process in various fields. The level of education determines the qualifications of the employees and better conditions of employment. People, especially young people, are ready for the labour market to become economically empowered and create preconditions for sustainable development and increase employment rates in the country.

Research results and discussion

The analysis of the objectives of Transforming Our World: The 2030 Agenda for Sustainable Development (2015) shows that they are closely related to the human factor, employment and living standards. By combining the goals of the organization and the individual's activities, the growth of performance (qualitative, quantitative) is likely. In this respect, the eighth objective: „Promoting sustainable, inclusive and sustainable economic growth and productive employment and decent work" is particularly important. Sustainable Development Goals can be analysed as a way to modernize the economic development process.

It is important to note that the EU Treaty of Amsterdam (1997) sets out four horizontal priority objectives: 1) sustainable development; 2) gender equality and non—discrimination; 3) the information society and 4) regional development. For the first two goals, the EU member states have to comply with the requirements of structural support, and the third and fourth are to comply with the country's needs.

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In 2015, Lithuania has approved and signed the UN Resolution Transforming Our World: the 2030 Agenda for Sustainable Development (2015), which identifies 17 development goals. In addition, Lithuania identifies four priority areas for sustainable development: 1) reducing social exclusion and poverty; 2) healthy lifestyle, 3) energy efficiency and 4) climate change and sustainable consumption and production (Vazgauskaite J., 2016). Lithuania's priorities are in line with the concept of sustainable development, but the problem of emigration is particularly relevant in Lithuania, which often arises from low pay, ineligibility and low appreciation of employees. For this reason, the third priority of the EU Strategy — Europe 2020 — inclusive growth, based on the promotion of employment, ensuring social and territorial cohesion, is particularly relevant in Lithuania. In this respect, one of the most important EU objectives is, as shown in Table 1, increasing the employment rate to 75 % in the age group 20—64 of population; increasing the level of investment to R&D to 3 %. The aim is to reduce the number of early school leavers to 10 %, with at least 40 % of young people having higher education in the age of 30—34. These targets are adjusted for each EU member state, depending on its level of economic development.

Table 1

EU—28 Europe 2020 targets

No	Member States targets	Employment rate of population aged 20—64 in %	R&D Expenditure in % of GDP	Early school leaving decrease in %	Tertiary education of youth aged 30—34 in %
1.	EU—28	75	3	10	40
2.	Denmark	77	3	<10	42
3.	Latvia	73	1.5	13.4	34—36
4	Lithuania	72.8	1.9	<9	40

Source: Strategy Europe 2020 targets

The change in the employment rate of the age group 20—64 according to qualification / education is analysed in the year 2005—2017, as shown in Table 2 below. The employment rate of Lithuanian workers according to qualification levels is comparable with the results of Latvian, Danish and the EU—28 in average. Three levels of qualification are compared: low level of qualification (equivalent to education at ISCED 0—2), average level of qualification (equivalent to ISCED 3—4) and high level of qualification (equivalent to ISCED 5—8). The employment rate in the EU—28 in the age group 20—64 of the low—qualified population decreased by 1.08 % over the whole analysed period. The growth of employment rate in this qualification group started and continued only in the year 2016—2017. The employment rate in Lithuania of the low—skilled population in the age group 20—64 decreased by 5.36 %. The decline in employment in this staff qualification group took place throughout all of the analysed period. Employment rate of low—skilled population in 2005 in the EU—28 was in 3.4 % higher than in Lithuania, while in 2017 it was higher than in Lithuania and this difference increased to 10.8 %.

Employment rate of average skilled workers in 2005 in the EU—28 was insignificantly (0.3 %) higher than in Lithuania, and in 2017 it was slightly higher and this difference increased to 2.9 %. In the EU—28 this indicator rose to 4.61 % over the entire analysed period. In Lithuania the average level of employment of employees with medium qualification in the year 2005—2016 decreased by —0.87, but in 2017 it increased by 1.75 %, so the trend over the whole period has been positive, although during the year 2005—2017 it increased slightly, e.g. 0.87 %.

Employment rate of highly qualified workers in the year 2005 in the EU—28 was 3.7 % lower than in Lithuania, while in the year 2017 it increased to 6.1 %. The employment rate of highly qualified

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employees in Lithuania during the analysed period increased from 86.3 % to 90.1 %, e.g. increase rate was 4.4 %. The employment rate of highly qualified workers in Lithuania exceeded the EU—28 average, which was 82.7 % and 83.4 % respectively.

As science and technology progresses, it is anticipated that the number of low—skilled employees will decrease by about 40 %, the average qualification will increase by about 20 %, and the increase of highly qualified workers will be by about 40 %.

Table 2

20—64 years old population employment rate by education, %

Indicator/Year	2005	2010	2015	2016	2017	Increase rate
ISCED 0—2						
EU—28	55.5	53.3	52.6	53.6	54.9	-1.08
Denmark	62.5	62,6	59,2	61.8	60.2	-3.68
Latvia	50.5	45.1	53.2	54.8	56.7	12.28
Lithuania	46.6	29.6	42.7	42.3	44.1	-5.36
ISCED 3—4						
EU—28	69.4	69.8	70.7	71.6	72.6	4.61
Denmark	78.9	77.8	78.4	79.1	78.9	0
Latvia	69.5	61.8	69.4	69.1	71.1	2.30
Lithuania	69.1	58.8	67.2	68.5	69.7	0.87
ISCED 5—8						
EU—28	82.6	82.4	82.7	83.4	84.0	1.70
Denmark	86.2	85.4	85.6	85.6.	85.4	-0.93
Latvia	83.6	80.1	85.1	86.5	86.9	3.95
Lithuania	86.3	85.7	88.7	90.4	90.1	4.40

Source: author's calculations based on Eurostat data

Analysing the overall employment rate, we can see a positive change in the labour markets of the countries. The data in Table 3 show that the EU—28 EU strategy has not yet achieved its objective, although in 2005—2017 it has not yet reached its target level. The employment rate increased by 6.33 % over the period. In Denmark after 2007—2008 the employment rate of the financial crisis declined and reached its lowest level in 2010, ie.75.8 %. From this lowest employment rate in 2010, until 2017 it increased by 1.45 %. Although the employment rate has recently increased, the 77 % employment rate target has not yet been reached. Latvia reached the employment rate target in 2016 and Lithuania - in 2015.

With the exception of 2017, the highest labour market activity rate during the period analysed was in Denmark. In the year 2017 Latvia had the highest labour market activity rate, which was 82.0 %. The highest growth rate during the analysed period was in Latvia and amounted to 7.19 %.

The lowest unemployment rate, as shown in Table 3, was in Denmark. As a consequence of the global financial crisis, unemployment rate in Denmark rose up and in 2017 has not yet reached the pre—crisis levels. The unemployment rate fell most in of the EU—28 and stood at 15.56 %. Unemployment rate in Lithuania in year 2017 decreased to 7.1 %. It was marginally lower than the EU—28 average, which in 2017 was 7.6 %. The unemployment rate determines the losses of the country's gross domestic product. Throughout the period under review the unemployment rate in Denmark was the lowest in the EU—28.

The Denmark labour market uses the flexicurity model that aims to combine labour market flexibility and security with government labour market regulation. This model is recommended by the European Commission, because with a flexible regulation of labour relations, a higher

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employment rate (Implementation on ..., 2008) is achieved. The most important principles of flexicurity are: 1) flexible working relationships based on employment contracts; 2) lifelong learning opportunities enabling workers to upgrade; 3) active labour market policies that provide preconditions for retraining; and 4) a well—developed social security system based on the loss of social security benefits.

Table 3

20—64 year old population labour market indicators, %

Indicator/Year	2005	2010	2015	2016	2017	Increase rate
Employment rate (% of population aged 20—64)						
EU—28	67.9	68.6	70.1	71.1	72.2	6.33
Denmark	78.0	75.8	76.5	77.4	76.9	-1.41
Latvia	69.1	64.3	72.5	73.2	74.8	8.25
Lithuania	70.7	64.3	73.3	75.2	76.0	7.50
Activity rate (% of population aged 20—64)						
EU—28	74.3	75.5	77.1	77.5	78.0	4.98
Denmark	81.7	81.5	81.3	82.1	81.3	-0.49
Latvia	76.5	79.6	80.5	81.2	82.0	7.19
Lithuania	77.0	78.2	80.8	81.7	81.9	6.36
Unemployment rate(% of labour force)						
EU—28	9.0	9.6	9.4	8.6	7.6	-15.56
Denmark	4.8	7.5	6.2	6.2	5.7	18.75
Latvia	10.0	19.5	9.9	9.6	8.7	-13.00
Lithuania	8.3	17.8	9.1	7.9	7.1	-14.46

Source: author's calculations based on Eurostat data

Flexibility in the labour market is brought by the combination of various forms of employment as shown in Table 4. A flexible labour market would make it possible to meet the growing demand for different qualifications in the country's labour market. The data show that full—time employment in the year 2017 was the most popular in Lithuania, accounting for 74.7 % of all of the employed population in the age group 20—64. This form of employment increased the most in the analysed period in Lithuania – by 6.71 %.

The growth of the self—employment in the year 2005—2017 was the highest Latvia, with an increase of 27.58 %. This form of employment is most frequent in the EU—28, in the year 2017 it comprised 13.62 % of the population aged 20—64 of total employment. But in the period of 2005—2017 it showed a downward trend. In Lithuania, this form of employment decreased by 24.04 % during the analysed period and decreased by 5.72 % in Denmark.

The part—time employment is most widely applied in Denmark and on average in the EU—28. The most significant increase in part—time employment in the analysed period is in Denmark and amounts to 20.11 %. In the EU—28 in average it increased by 13.33 %. In Lithuania and Latvia, this form of employment has a low popularity and accounts for only about a third of Denmark's level. In the EU—28 the average temporary employment rate is the highest in comparison with other countries and stands at 13.4 %. In the year 2005—2017 in Denmark, this form of employment was the fastest growing – by 23.26 % and in the year 2017 it accounted for 10.6 % of the population aged 20—64 of the total employment. In Lithuania and Latvia this form of employment is decreasing.

Table 4

The main forms of employment, %

Indicator/Year	2005	2010	2015	2016	2017	Increase rate
Full—time employment rate (% of population aged 20—64)						
EU—28	64.5*	63.0	64.1	65.1	66.2	2.64
Denmark	73.9**	69.7	69.5	70.4	70.3	-4.87
Latvia	72.9**	62.8	71.6	72.0	73.5	0.82
Lithuania	70.0**	63.4	72.1	74.0	74.7	6.71
Self—employment rate (% of population aged 20—64 of the total employment)						
EU—28	14.52	14.54	14.01	13.88	13.62	-6.2
Denmark	7.69	8.39	7.73	7.61	7.25	-5.72
Latvia	9.21	9.74	11.5	11.83	11.75	27.58
Lithuania	14.27	8.83	10.78	11.18	10.84	-24.04
Part time employment rate(% of population aged 20—64 of the total employment)						
EU—28	16.5	17.9	19.0	18.9	18.7	13.33
Denmark	17.9	21.6	20.9	22.3	21.5	20.11
Latvia	7.3	9.2	7.1	8.3	7.5	2.74
Lithuania	6.9	7.7	7.6	7.1	7.4	7.25
Temporary employment rate (% of population aged 20—64 of the total employment)						
EU—28	12.8	12.9	13.2	13.3	13.4	4.69
Denmark	8.6	7.7	7.7	12.5	10.6	23.26
Latvia	8.1	6.9	3.6	3.6	2.9	-64.2
Lithuania	5.3	2.3	2.0	1.8	1.6	-69.81

**- data of 2007; ** - data of 2006*
Source: author's calculations based on Eurostat data

Conclusions, proposals, recommendations

1) Sustainable development goals are analysed as the way of modernization of economic development, including labour market.
2) The study shows different levels of employment for different levels of qualification: low—skilled (equivalent to education at ISCED 0—2), medium—skilled (equivalent to ISCED 3—4) and high—skilled (equivalent to ISCED 5—8). Employment opportunities for low—skilled workers tend to decline. Employment opportunities for medium and high—skilled workers are increasing.
3) Although Lithuania (2015) and Latvia (2016) reached the employment target rate for the age group 20—64 of population, it is lower than the EU—28 average.
4) Part—time employment in Lithuania and Latvia, compared to this form of employment in Denmark and the EU—28 average, accounts for only one—third of the total population of age group 20—64.
5) It has been noticed that in Lithuania and Latvia the temporary employment rate in the most active population age group of 20—64 years is decreasing. This trend is not in line with Denmark and the EU—28 temporary employment trends, which are growing.
6) The full—time employment share of the population aged 20—64 is the highest in Lithuania and Latvia, comparing with Denmark and the EU—28 in average. The analysis of the labour market situation shows that in the new EU—28 member states - in Lithuania and Latvia - employees give priority to full-time employment and avoid temporary work.
7) In further scientific research of the labour market flexicurity model aspect, it is expedient to analyse the active labour market policy measures and their impact in mitigating the consequences of unemployment and passive labour market policies - social security measures for the unemployed and their impact on the labour market.

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8) It is important that the definition of unemployment is questionable because the indicator of the unemployment rate is calculated in Lithuania by two institutions: 1) Lithuanian Employment Service under the Ministry of Social Security and Labour and 2) Department of Statistics of Lithuania. The differences are due to the fact that the Lithuanian Employment Service uses the number of registered unemployed persons in their calculations, while the Lithuanian Department of Statistics - uses a survey to find out the number of unemployed and actively seeking it. This might be the reason why miscalculations of statistical data arise, so the results of researches can be questionable. Therefore, it is important to use Eurostat data

Bibliography

1. Aktan, V. (2004). Perspectives on Economics, Politics and Ethics. Ankara: Seckin. p. 172.
2. Atkociuniene, Z.O. (2008). Ziniu vadybos poveikis darniam vystymuisi (The Impact of Knowledge Management on Sustainable Development. Information Sciences, 2008, No. 46, pp. 24-36.
3. Ciegis, R., Ciegis, R., Jasinskas, E. (2005). Concepts of Strong Comparability and Commensurability versus Concepts of Strong and Weak Sustainability. Engineering Economics. No 5 (45), pp. 31–35.
4. Eurostat data. (2018). available on-line at http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init =1& languageen&pcode=tsdec 430&plugin=1
5. Galiniene, B., Melnikas, B., Miskinis, A., Valentinavicius, S., Barzdenyte, B., Stanikunas, R., Balciunas, N., Svetikas, K., Ragauskiene, E., Neciunskas, A., Albaityte, G., Stilinis, R. (2007) Ekonomikos modernizavimas: Nauji issukiai ir ekonomines politikos prioritetai (Economic Modernization: New Challenges and Priorities of Economic Policy). Vilnius: Vilnius University. p. 512.
6. Implementation on the Common Principlesof Flexicurity within the Framework of the 2008-2010 Round of Lisbon Strategy – Report by the Flexicurity Mission. (2008). Council of the European Union. Flexicurity Pathways: Turning Hurdles into Stepping Stones. Report by the European Expert Group on Flexicurity. p.10.
7. Ionete, A. (2012). The Woorlds of Flexicurity - Labour Market Policies in Europe. Annals of the University of Oradea, Economic Science Series. Vol 21, No. 1, pp. 133-138.
8. Kuodis, R. (2015). Lietuvoje vyrauja naiviausias poziuris į darbo rinka (*Lithuania has a Naive Attitude towards the Labour Market*). Veidas, 5, pp. 5-15.
9. Mannheim, K. (1980). Structures of Thinking. London: Routledge & Kegan Paul. p. 292.
10. Mikalauskiene, A. (2014). *Darnaus vystymosi paradigma ir jos raida (Sustainable Development Paradigm and it's development)*, Monografijos sudarytoja Dalia Streimikiene: Darnus vystymasis: Teorija ir praktika (In Monography selected by Dalia Streimikiene: Sustainable Development: Theory and Practice, Vilnius: Vilnius University. p. 408.
11. Millennium Declaration United Nations 55/2. (2000) Resolution adopted by the General Assembly (2000) Fifty-fifth session. Agenda item 60 (*b*), available on-line at https://orangeprojects.lt/ uploads /structure/docs/570_e60d13295e5387 a91f93e55b91709604.pdf
12. Sakalas, A., Savaneviciene, A., Girdauskiene, L. (2016). *Pokyciu valdymas (Management Changes)*. Kaunas: Technology. p. 402.
13. Schiller, B.R., Hill, S., Wall, S. (2013). *The Macroeconomy Today*. 13-ed. New York: McGraw-Hill/Irwin. p. 912.
14. Stark, O. 2004. *Rethinking the Brain Drain*. World Development 32(1), pp. 15-22.
15. Transforming Our World: the 2030 Agenda for Sustainable Development (2015). /RES/70/1), available on-line at https://orangeprojects.lt/uploads/structure/docs/616 _f0344be4d69247a960d9f29e16311d16.pdf
16. Vazgauskaite, J. (2016) Lithuanian Sustainable Development Goals: Are We Properly Prepared? Newsletter. Subject: Sustainable Development Objectives, December, p .4-6.
17. Report of the United Nations conference on the Human Environment. (1972). United Nations. Stockholm. p.80.

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SUSTAINABLE LOCAL DEVELOPMENT THROUGH THE SEARCH FOR AND IMPLEMENTATION OF GOOD PRACTICES IN WASTE MANAGEMENT

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Abstract. Waste management is a vital issue, both in terms of the environmental protection and due to socio—economic considerations. It has attracted the interest of modern economics, as evidenced by the extensive literature addressing the issue of production and waste management from the perspective of sustainable development. Solutions in the area of waste collection and separation, minimisation of waste quantity and search for new applications for waste are plentiful. They are a determinant of social responsibility for the present and future generations, thus becoming one of the key aspects of sustainable development. The paper reviewed such solutions. The aim of the study was to indicate actions that can be taken to improve local systems of waste management. One of the most interesting was the Japanese waste collection system that enforces the reliability of segregation and bottom—up social waste minimization movements.

Key words: waste, sustainable development, local community, good practices
JEL code: Q56.

Introduction

The commitment to minimising the quantity of waste and achieving a high level of its separation and recovery is currently a challenge to every commune that takes seriously the postulate of intergenerational justice, which is a key element of the definition of sustainable development. This commitment can be delivered more effectively by searching for and implementing tried and tested good practice. Waste management can also be improved by an appropriate selection of organisational and economic instruments and using them to shape social attitudes consistent with the idea of sustainable development.

The paper presented examples of interesting solutions in municipal waste management that have been implemented in practice. The main aim of the study was to indicate specific actions that can be taken to improve waste management systems. Attention was focused, among other things, on waste collection and search for the ways to reduce its quantity. The paper addressed the issue of motivating inhabitants to separate waste and that of controlling and correcting the process of waste disposal. It presented selected solutions employed by local authorities as well as bottom—up social initiatives facilitating sustainable development.

Sustainable development and waste management

Sustainable development is at the heart of the European Union's policy. It is manifested in numerous sources of universal law within the Community, i.e. in EU regulations applicable to all the member states and directives that have to be implemented into the national law. For many years, it has also been underlying EU strategies and programmes of actions to promote the protection of the environment. At the level of EU member states, the obligation to follow the principles of sustainable development was introduced into the laws concerning the protection and management of environmental resources and into the local law (Dacko M., Dacko A., 2018). Thus, by extension, the principles of sustainable development must govern waste management. However, the

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implementation of the idea of sustainable development into the life of local communities encounters problems, as was critically assessed, among others, by W. Sztumski (2006). The author expresses a pessimistic view that sustainable development is based more on wishful than practical thinking. According to T. Zylicz (2010), the declarative and normative character of the postulates of sustainable development may result in disappointment – people do not act as their best interest require them to act. Similar issues were also emphasised by G. Hardin (1968), who noted that carefree waste management is a typical example of the tragedy of the commons, i.e. the mechanism under which maximisation of individual gains leads to problems that cannot be solved individually. Controversies around sustainable development in terms of terminology and implementation are plentiful (Dacko M., 2011a). Nevertheless, sustainable development is regarded in social sciences as best practice in modern civilisation (Poskrobko B., 2013; Kuder D., 2014; Matysiak A., StruS M., 2015; Zadroga A., 2016). It involves searching for and implementing such solutions that will allow the current needs of a society to be met without preventing the satisfaction of the needs of future generations. This idea is considered in modern economics in terms of a paradigm, which is supposed to replace the obsolete primacy of economic growth. For waste management, it means seeking such solutions that will ensure constructiveness of the economy—environment relationship, thus allowing these systems not to be mutually exclusive. It requires frugal and effective use of resources and the ability to put limits on one's own needs, while striving to find uses for the waste that could not have been avoided (Dacko M., 2011a; Dacko M., 2011b).

Good practice and solutions in the area of waste management

When reviewing interesting solutions in the area of waste management, it is worth starting with an example that should serve as a warning. It shows how serious the problems of unordered waste management and carefree waste storage can be. In the Italian region of Campania, which was affected by a waste crisis, corruption and mafia interests led to a situation where for many years waste business involved seeking cheap and convenient solutions. Mixed waste was stored on increasingly overfull landfill sites, and as they were closed, Naples experienced states of waste emergency (in 2001, 2003 and 2007, among other things) "sinking" in waste that it was unable to dispose of. The mixed waste generated odour, which lingered in streets and at illegal landfill sites. It was accompanied by an unprecedented invasion of insects and rodents. In many places in the city, piles of waste stored on streets blocked the traffic. Alarms were raised about a huge risk of infectious diseases: hepatitis, cholera, typhoid, salmonella and leptospirosis. The effects of such waste management were disastrous, not only for the natural environment, but also for the society. During a period of 20 years, Naples recorded a 40 % increase in the number of cases of cancer among females and a 47 % increase among males (Wielki…, 2013). However nothing was done to overcome the powerlessness in the face of the needs for radical systemic changes. When it turned out that the neighbouring regions did not want to accept Naples's mixed waste, it was transported to Germany, Poland, Romania and other countries (Zobaczyc…, 2007).

The waste crisis in Campania did not happen of itself or accidentally. It was a result of a moral crisis among the region's inhabitants and their elites. Italian economist Paolo Leon put it bluntly: "The man of the South directs all his intellectual work at cheating the state and taking some money for himself" (Zobaczyc…, 2010). Naples became a special case of a region whose huge tourist potential was undermined by a disastrous sanitary and epidemiological situation: the effect of persistently sticking to an outdated model of waste management.

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It is crucial to seek good practice in waste management not only at the level of general solutions applied in the different countries and their regions. Reliable solutions can and should be implemented by communes as key players in the local processes of waste management. However, it should be added at this point that at the local level the issue of waste is not only determined by the decisions of local authorities which the community has to respect. In the area of waste, we are increasingly seeing various interesting forms of social self—organisation. Both households and enterprises are actively engaged in it.

Jan Tinbergen – economist and Nobel Prize winner, expressed a view worth citing here after Schultink G. (2007): two things are unlimited – the number of generations we should feel responsible for and our ingenuity. The first represents a challenge to us. The second – our ingenuity – can generate ideas that will contribute to meeting this challenge. The present—day world provides a lot of examples confirming that human ingenuity is limitless, also with respect to the ways of waste management. In the era of the paradigm of sustainable development, local authorities should not only keep a close eye on such initiatives, but also support them (e.g. through a tax policy, public—private partnership, or the idea of green public procurement).

P. Hawken (1996) presents an example of a US carpet manufacturer who substituted the sale of goods with the sale of services. As a result, a worn—out or unnecessary carpet is returned to its manufacturer who is responsible for handling it as waste. One of the world's largest IT enterprises – US Hewlett—Packard – has for a dozen or so years been recovering plastic from ink cartridges reusing it in the processes of manufacturing new printers (Co mozna…, 2010). Recovery and reuse of raw materials are becoming the standard in modern economy. In Holland, freon is pumped out of old fridges in the first place. Then, on a special production line, fridges are disintegrated, and metal is separated from plastic using magnet. It is processed into a fine granulated product, and then used as material for 3D printers in the production of artificial limbs for humans. The company Timberland hires citizens of Honduras and Haiti to collect plastic bottles, which it then uses to prepare material from which it makes shoes (Ekonomia…, 2017). In Denmark, beer bottles are used even 40 times thanks to the implementation of an automatic washing, condition control (crack and scratch assessment) and relabelling technology. But the company Carlsberg has gone even further – in the near future, it intends to introduce a biodegradable bottle made of plant fibre (Carlsberg…, 2018). The philosophy "product without packaging" is also implemented in Poland. Its example is milk dispensers, which allow raw, unprocessed milk to be bought. When using a milk dispenser, one should bring own vessel or buy a bottle in the machine.

Analysis of waste treatment solutions adopted by local authorities shows that where such solutions are complicated waste disposal can become a serious task. In Japan, individual prefectures' instructions concerning preparing waste for collection, as developed for the inhabitants, may even number a few dozen pages (Smieci…, 2013). They usually distinguish a large number of waste categories and specify detailed principles of handling them. For instance, paper has to be tied with string, plastic bottles have to be crushed, and when toys (which usually contain electronics) are thrown away, they have to be taken pieces so as to separate plastic from metal. With so many detailed principles to follow, separation takes a lot of time, requires exceptional discipline and makes this sphere one of more serious issues in the day—to—day life of the Japanese. This provokes a reflection that solutions that require so much discipline would hardly meet with social acceptance in the Western Civilisation. However, in Japan the mechanism of waste collection also includes other interesting solutions that enforce scrupulous separation. An example is the principle that waste is collected only if it is placed in front of the door on certain dates, in transparent bags and labelled with the owner's full name and address. Thus, the inhabitants dispose of waste in a non—anonymous way and in case of any doubts about whether the waste was prepared scrupulously enough, the services leave the bags uncollected and their owners have to prepare them better for the next collection.

Similar solutions are used in Poland. In one commune, holders of waste dispose of it by sticking labels with a bar code on the bags (Gospodarka…, 2018). Each bar code is assigned to a specific property address. If a bag lacks a label, it is impossible to scan a bare code, and the waste producer cannot be identified. The bag with waste will not be collected. Each such case is photographed and described, and then sent to the Commune Office in the form of documentary evidence (System…, 2018). Many other local authorities in Poland go in a similar direction. Other solutions include marking waste bags with an individual number assigned by the commune to every household. An interesting initiative was planned to be implemented in one of Polish cities. A special application for mobile phones would enable people to report a neighbour who failed to separate their waste to the authorities (Sprawdza…, 2015). Modern technologies open up completely new possibilities in detection of waste disposal violations. For instance, there are already drones that can successfully indicate houses where waste is incinerated (Dron…, 2019).

However, in the sphere of waste, the problem is not only the lack of environmental education among inhabitants, but also gaps in communes' waste management systems, which prevent successful elimination of illegal practices. In one of Polish cities, an interesting attempt was made to solve the problem of illegal practices by making it easier for inhabitants to dispose of their problematic waste. A system of waste management was implemented that was based on dividing waste into dry and wet groups, with one of the most important element of the system being the so—called "junk room." This is a place where all hazardous and problematic waste is collected free of charge from inhabitants without any quantitative limits. In addition, efforts were taken to reduce the quantity of bulky waste by organising the so—called "corner of used things." This is where inhabitants can leave the furniture they No longer need at home, chairs, tables, toys, ceramic articles and glassware as well as household appliances and home electronics. The objects must be still in working condition and undamaged. When there is a "buyer" for any of the objects, he/she takes it for free, filling out a document of gratuitous purchase. What does not find a buyer during a period of 3 months is transferred to a waste zone (Kacik…, 2016).

Independently of local authorities' efforts in the area of waste, people are able to organise themselves in a quite interesting way. A family in California has been living for several years following the *zero waste* principle. Four people generate one jar of rubbish in a year thanks to almost complete elimination of waste from their life (Zero waste, 2019). The system involves avoiding everything that is disposable – it is based on second—hand goods, borrowing and sharing, own production and repairs, and preferring high quality and durable things. Since the family was described in the New York Times, *zero waste* has gained in popularity, and the initiator of this movement was approached by companies and institutions (including IKEA and General Electrics) that entered into cooperation with her. In Berlin and Cape Town, first wasteless shops have even been opened (Swiat…, 2018). Bea Johnson – the author of the idea of *zero waste* – successfully tries to inspire local communities during her lectures. In Europe, the zero waste movement has found a fertile soil. Also in Poland, the first Zero Waste Poland group emerged (Zero waste, 2019).

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An equally noteworthy initiative fitting into the bottom—up social movement of waste minimisation is the so—called repair cafés, which were started by Martine Postma in 2009 in Amsterdam. The idea behind this initiative is that a group of specialist service technicians from various fields get together for a coffee and cake and repair free of charge things that would have become waste. This is also an occasion to make new friends, people get to know each other, have discussions and share their experiences. In Poland, the first repair café meeting took place in 2018 in Warsaw and received very positive opinions (Pierwsza…, 2018).

A similar initiative is sewing cafés. People meet, have a coffee and learn how to sew. Also in this case, it is about relationships and a nice atmosphere. In the cafés, you can buy sewing accessories, equipment and materials. There are thematic courses and trainings organised for those interested. Such facilities operate in at least several large Polish cities. The effect is similar as in the case of repair cafés. Old things are given a new life, and by altering and mending them less waste is produced.

An interesting example of bottom—up initiatives was recorded in one of Polish communes, where a patrol and prevention unit called EKO—PATROL is operating. It is run by the voluntary fire department's youth team. Its members take actions if environmental misconduct on the part of residents is found (e.g. they prevent the littering of public spaces, control illegal landfill sites, prevent fire risks caused by the burning of grass). Any irregularities identified by EKO—PATROL are reported to relevant services so that appropriate intervention can be undertaken.

When it comes to waste minimisation, the Internet provides huge possibilities. One such example is a very popular website in Poland, OLX.pl, where local announcements can be posted free of charge. It is unique compared to Allegro or Ebay, as it has such categories as "I'll give away for free" and "I'll exchange." Thanks to these two categories, before an unneeded thing becomes waste, it can find a new owner without any additional costs involved. The Internet has also become the "engine" of a very interesting Polish start—up, i.e. a trading platform designed to help to sell food with the use—by date coming soon and thereby to reduce the waste of food.

In order to reduce waste in Western Europe, for many years there has been a custom of putting unnecessary things outside, and in some countries (e.g. Belgium) fairs are even organised in housing estates. The residents open their garages and put outside things they want to get rid of. People get together, chat, negotiate prices, and things that are not needed in one household (clothes, shoes, furniture, electronics, household appliances) find a use in the neighbourhood. Not only they do not have to be thrown away, but also, thanks to such neighbourhood trade, transport costs are minimised. Economic rationality goes here hand in hand with respect for the environment, and the ties between neighbours become stronger at the same time. In the environmentally conscious societies of Western Europe, citizens themselves show a tendency to discipline one another and make sure that waste disposal complies with the local law.

In the 1970s, American futurist Alvin Toffler (2006, 2007) noticed that the increasingly fast civilisation changes had led to emergence of a society that consumes and throws away things at a mass scale. The world embedded in the culture of throwing away and transience started to generate huge amounts of waste, sticking to the model of depositing waste in the environment. Being convenient, this model is not easy to abandon. Even the average age of dwelling—houses in the USA (which are commonly regarded as durable goods) has shortened from 100 to 40 years, as people move away from masonry technology. People even built houses meant to be used for a short period of time, as it was then easier to demolish them and erect new ones in their place.

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In his comment to a work by Bertrand (2002), Lester Brown, a known American environmental analyst and pioneer in the field of ecology, presented an interesting example from New York on the issue of waste, where at the threshold of the 21st century, every day around 600 refuse collection lorries, forming convoys 15 km long, took away 12 thousand tons of waste produced by the city – sometimes to places located over 480 km away. This happened despite the estimate that separation and recycling of paper alone would have reduced the number of New York refuse collection lorries by almost a third, and shortened the traffic—blocking convoys by 4.5 km. Also in the context of the problem of waste, already cited Toffler (2007) gave an interesting example of a clash of cultures. When in the 1950s Americans visited Sweden, they were surprised by how clean the country was. However, after a short period of time (the 1960s) convergence processes made Western Europe more similar to America – then Sweden too became more littered, as consumerism was increasing among the population of the Old Continent.

However, from the post—industrial economy of unsustainability and transience are slowly emerging phenomena that seem to confirm the patterns described by the environmental curve proposed by American economist and Noble Prize Winner Kuznets (Ekologiczna…, 2013). According to this scholar, as the economy develops, pressure on the environment increases, but over time this increase becomes slower, and even the trend becomes reversed. Japan, once one of the most littered countries in the world, within a decade became a leader of rigorous waste separation and innovativeness in searching for new applications for waste. According to Eurostat data, current attitudes of EU residents towards waste also show positive changes. In 2017, the amount of waste per one EU resident was as much as 487 kg, but only 23 % of this waste was deposited at landfill sites.[1] In 1995, an average EU resident disposed of almost two thirds of their waste in this manner. Today, communities of many Western European countries have almost entirely recovered from the syndrome of "littering one's own nest", which was condemned in the Sciences journal at the end of the 1960s by Hardin (1968) in the context of the tragedy of the commons. We should bear in mind that such commons include the environment in which we try to deposit our waste.

Conclusions

1) Summing up the discussion about good practice, it is worth citing interesting observations made by American environmentalist and entrepreneur p. Hawken (1996). Hawken looks at the problem of waste through the lens of key conditions of sustainability of socio—economic systems and refers to the laws of nature. According to Hawken, man—made sustainable systems should respect the principle of full recycling. After all, the nature owes its sustainability among other things to the fact that there is nothing such as waste in it. What is unnecessary for one species is key for survival of another species. Thus, the economy of the future is already defined as an economy that, like ecosystems, will rely on multilevel use of waste.
2) The system of functioning of waste management depends on the human factor. Local authorities create organisational and institutional frameworks, which are very important, but it is in fact residents who take actions in the area of waste management: it is up to them how much waste is produced and how it is disposed of.
3) When seeking solutions to local problems of waste management, one should think globally. Many of the interesting good practices are not implemented by the authorities, but developed as part

[1] Retrieved: http://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do Access: 28.01.2019

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of bottom—up initiatives. The good news is that in the age of information civilisation these good practices can spread much more easily.

Bibliography

1. Bertrand, Y., A. (2002). *Ziemia z nieba. Portret planety u progu XXI wieku (Earth from heaven. A portrait of the planet at the beginning of the 21st century).* Wydawnictwo Swiat Ksiazki, Warszawa, p.15.
2. Carlsberg pokazuje jak zarzadzac opakowaniami w mysl gospodarki obiegu zamknietego (Carlsberg shows how to manage packaging in the closed circuit economy). (2010). Retrieved: https://natemat.pl/196743,carlsberg-pokazuje-jak-zarzadzac-opakowaniami-w-mysl-gospodarki-obiegu-zamknietego Access: 09.10.2018
3. Co mozna odzyskac ze starych sprzetow (What can be recovered from old hardware). (2010). Retrieved: https://tech.wp.pl/co-mozna-odzyskac-ze-starych-sprzetow-6034887604036737a Access: 09.10.2018
4. Dacko, M. (2011a). Model rozwoju obszarow wiejskich objetych siecia Natura 2000 (Model of development of rural areas covered by the Natura 2000 network). *In „Uwarunkowania zrownowazonego rozwoju gmin objetych siecia Natura 2000 w swietle badan empirycznych" („Conditions for the sustainable development of communes included in the Natura 2000 network in the light of empirical research")*. Wydawnictwo Instytutu Rozwoju Wsi i Rolnictwa PAN, Warszawa, pp. 325-360.
5. Dacko, M. (2011b). Koncepcja zrownowazonego rozwoju w naukach ekonomicznych – inspiracje, ewolucja, perspektywy (The concept of sustainable development in economic sciences - inspirations, evolution, perspectives). In *„Natura 2000 jako czynnik zrownowazonego rozwoju obszarow wiejskich regionu Zielonych Pluc Polski" (Natura 2000 as a factor in the sustainable development of rural areas of the Green Lungs of Poland")*. Wydawnictwo Instytutu Rozwoju Wsi i Rolnictwa PAN, Warszawa, pp. 19-42.
6. Dacko, M., Dacko A. (2018). Studia nad rozwojem obszarow wiejskich – od paradygmatu wzrostu do rezyliencji (Studies on the Development of Rural Areas – from the Growth Paradigm to Resilience). *Wies i Rolnictwo 2* (179), pp. 49-64.
7. Dron wytypuje domy w ktorych spalane sa odpady (The drone will select houses in which the waste is incinerated). (2019). Retrieved: https://epainfo.pl/dron-wytypuje-domy-w-ktorych-spalane-sa-odpady-to-mozliwe/ Access: 22.01.2019
8. Gospodarka odpadami (Waste management). (2018). Retrieved: http://odpady.stalowawola.pl/gospodarka-odpadami/ Access: 20.09.2018
9. Hardin, G. (1968). The Tragedy of the Commons. Sciences, Volume 162.
10. Hawken, p. (1996). *Przez zielone okulary – jak prowadzic interesy nie szkodzac sobie i innym (Through green glasses - how to do business without hurting yourself and others).* Wydawnictwo Pust Oblok, Warszawa.
11. Ekologiczna krzywa Kuznetsa (Ecological curve of Kuznets). (2013). Retrieved: http://coin.wne.uw.edu.pl/tzylicz/1303AURA.pdf Access: 20.04.2018
12. Ekonomia cyrkularna – trend ktory moze zatrzymac eksploatowanie planety (Circular economy - a trend that can stop the exploitation of the planet). (2010). Retrieved: https://www.forbes.pl/przywodztwo/ekonomia-cyrkularna-trend-ktory-moze-zatrzymac-eksploatowanie-planety/y6b1lbc Access: 09.10.2018
13. Eurostat. (2017). Retrieved: http://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do. Access: 21.01.2019.
14. Kacik rzeczy uzywanych otwarty w Stalowej Woli (The Used Things Corner opened in Stalowa Wola). (2016). Retrieved: https://echodnia.eu/podkarpackie/kacik-rzeczy-uzywanych-otwarty-w-stalowej-woli-przyjmie-niepotrzebne-rzeczy/ar/10003908 Access: 20.09.2018
15. Kuder, D. (2014). Nowe modele wzrostu gospodarczego a paradygmat zrownowazonego rozwoju (New Models of Economic Growth and Paradigm of Sustainable Development). *Nierownosci Spoleczne a Wzrost Gospodarczy*, Volume 38, pp. 27-39.
16. Matysiak, A., Strus, M. (2015). Paradygmat rozwoju zrownowazonego (Sustainable development paradigm). *Studia Ekonomiczne Zeszyty Naukowe Uniwersytetu Ekonomicznego*, Volume 213, pp. 11-21.
17. Pierwsza warszawska kawiarenka naprawcza (The first Warsaw restoration cafe). (2018). Retrieved: http://zero-waste.pl/2018/04/10/pierwsza-warszawska-kawiarenka-naprawcza-naszym-okiem/ Access: 23.03.2018
18. Poskrobko, B. (2013). Paradygmat zrownowazonego rozwoju jako wiodacy kanon w badaniu nowych obszarow ekonomii (The Paradigm of Sustainable Development as the Leading Standard in the Research on New Spheres of Economics), Ekonomia i Srodowisko, 3(46), pp. 10-24.
19. Schultink, G. (2007). Sustainable Land Use and Urban Growth Management: Demand-Supply Factors and Strategic Planning Considerations. *Journal of Agricultural, Food, and Environmental Sciences*, Volume 1, Issue 1, pp. 109-123.
20. Smieci w Japonii (Garbage in Japan). (2017). Retrieved: http://www.gaijinwpodrozy.pl/smieci-w-japonii/ Access: 23.03.2018
21. Sprawdza co wyrzucasz do smieci (They'll check what you throw into the trash). (2015). Retrieved: https://wpolityce.pl/spoleczenstwo/228199-sprawdza-co-wyrzucasz-do-smieci-worki-na-odpady-z-kodami-kreskowymi-i-adresem Access: 20.09.2018

22. Swiat bez smieci? (A world without rubbish?). (2018). Retrieved: http://weekend.gazeta.pl/weekend/1,152121,18284522,Swiat_bez_smieci__Poznajcie_filozofie_zerowaste_i.html Access: 23.03.2018
23. Sztumski, W. (2006). Idea zrownowazonego rozwoju a mozliwosci jej urzeczywistnienia (The idea of sustainable development and possibility of its realization). *Problemy Ekorozwoju*, Volume 1, Issue 2, pp. 73-76.
24. System monitorowania odbioru oraz identyfikacji workow z odpadami (Adaptation monitoring system and identification of waste bags). (2018). Retrieved: http://odpady.stalowawola.pl/wp-content/uploads/2017/12/System-monitorowania-odbioru-oraz-identyfikacji-worków-z-odpadami3.pdf Access: 20.09.2018
25. Toffler, A. (2006). *Trzecia fala (The third wave)*, Wydawnictwo Kurpisz S.A., Poznan.
26. Toffler, A. (2007). *Szok przyszłosci (Future shock)*, Wydawnictwo Kurpisz S.A., Poznan.
27. Wielki protest w Neapolu (A great protest in Naples). (2013). Retrieved: http://wyborcza.pl/1,76842,14966982,Wielki_protest_w_Neapolu__Toksyczne_odpady_zmienily.html Access: 08.05.2018.
28. Zadroga, A. (2016). Sustainable development jako paradygmat rozwoju spoleczno-gospodarczego (Sustainable development as a paradigm of socio-economic development). In „*Przestrzenie badawcze mlodych naukowcow. Inspiracje-Innowacje-Wdrozenia*" („Research spaces of young scientists. Inspiration-Innovation-Implementation"). Wydawnictwo Katolickiego Uniwersytetu Lubelskiego, Lublin, pp.11-24.
29. Zero waste. (2019). Retrieved: https://zerowastehome.com/about/bea/ Access: 22.01.2019
30. Zobaczyc Neapol i przezyc (See Naples and live). (2010). Retrieved: https://www.newsweek.pl/swiat/zobaczyc-neapol-i-przezyc/5nw599j Access: 26.01.2019.
31. Zobaczyc Neapol i umrzec. Na cholere (See Naples and die. For cholera). (2007). Retrieved: https://www.tygodnikprzeglad.pl/zobaczyc-neapol-umrzec-na-cholere/ Access: 08.05.2018.
32. Zylicz, T. (2010). Czy studentow ekonomii nalezy uczyc o trwalym rozwoju? (Should economics students be taught about sustainable development?). In „*Ekonomia zrownowazonego rozwoju. Zarys problemow badawczych i dydaktyki*" (The economics of sustainable development. Outline of research problems and didactics), Wydawnictwo Wyzszej Szkoly Ekonomicznej, Bialystok, pp. 84-94.

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SUSTAINABLE DEVELOPMENT AND WASTE MANAGEMENT IN EU28 COUNTRIES

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Abstract. Sustainable development depends, among other things, on how much waste a particular society generates and how it handles it. The paper relies on Eurostat data on municipal waste management in EU—28 countries. Three diagnostic variables were selected, and then taxonomic development meters (Polish: TMD) were estimated and interpreted. The research has shown that in the European Union, which is sensitive to the issues of environmental protection and sustainable development, waste management models adopted by the different member states are in many cases far from ideal. The aim of this review and empirical research was to evaluate the situation of municipal waste management. According to the authors, the positions assigned to the different countries based on TMD meter can be considered as objective measures of social responsibility for the present and future generations — which is a key aspect of sustainable development.

Key words: waste, sustainable development, taxonomy, EU—28 countries.
JEL code: Q56.

Introduction

According to the hierarchy of waste management, waste should be prevented in the first place, and if that is impossible, it should be limited, and then recovered. The waste that could not have been prevented and recovered should be disposed of in accordance with the requirements of the environmental protection. It should be deposited only as a last resort. If that is the case, this activity should be legal and meet the standards in terms of selection of the location as well as construction and use of the relevant facility. In case of waste depositing, it is important what type of waste is deposited as well as its pre—processing, which is aimed at reducing the volume or potential harmfulness of waste. Of importance in the context of the environmental protection and sustainable development is also control over landfills after their closure.

Minimising the amount of waste while maintaining a high level of matter and energy recovery is currently a challenge to every modern economy. It is also of key importance to societies that take seriously the postulate of intergenerational justice, which is a key element of the definition of sustainable development.

The paper presents a review and empirical research. Its aim was to evaluate the situation of the different member states of the EU—28 in terms of municipal waste management. To achieve the research objectives, Eurostat data was used to select three diagnostic variables, and then taxonomic development meters (Polish: TMR) were estimated and interpreted. The results of the taxonomy were complemented by review of up—to—date literature devoted to the issue of waste.

Modern economics and problems of waste management

Global production of municipal waste has reached an enormous scale in the present—day world. In the European Union alone, 250 billion tons of waste is generated per year, which gives 487 kg per capita. In a society characterised by mass production and consumption, waste is produced very

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easily. According to the World Counts website, as many as 99 % of the things we buy become waste within half a year. The same website warns that the modern civilisation extracts such a huge amount of resources and generates so much waste that if this trend continues, we will soon need a second earth. Nevertheless, economists' views on resource—related barriers to growth are still polarised – they oscillate between clear optimism and extreme pessimism (Dacko M., 2011a). According to Nazarko J. and Dobrzyski M. (2006), economics still treats natural resources as a "gift" from nature rather than a purchased good with some environmental costs involved. Czaja S. and Fiedor B. (2010) cite an interesting reflection made by Boulding, pointing out that the traditional economy corresponds to the concept of the "cowboy" economy, where the problem of limited resources is hardly taken into consideration. Meanwhile, Kwasnicki W. (2009) holds an optimistic view, arguing that human adaptability, invention and creativity will as always help to overcome the emerging problems. Surely, with the resources shrinking, the world needs them more and more urgently. In this context, searching for ways to rationally manage own waste seems to be an activity of significant importance to every economy.

Current global trends and theoretical concepts in economics do not turn a blind eye to the issue of waste. One of them is an increasingly popular approach referred to as *circular economy* (Korhonen J. *et al.,* 2018; Mahpour A., 2018). Today, the circular economy is not only a theoretical economic model (Geissdoerfer M. *et al.,* 2017). In France, it was adopted as a strategic objective, and in China it underlay the 5—year economic plan over a decade ago (Ekonomia cyrkularna…, 2018). It originated from observing natural ecosystems, where nothing is wasted and what one species does not need is essential for survival of another. An important foundation of the circular economy is systemic approach – production processes should be so designed that they take into account their environment and resemble processes observed in sustainable natural systems. Therefore, the circular economy is referred to as a study of sustainability, which clearly makes a reference to the idea of sustainable development, which has already been established in social consciousness (Dacko M., 2011a; Dacko M., 2011b; Poskrobko B., 2013; Kuder D., 2014; Dacko M., Plonka A. 2017; Dobrota D., Dobrota G., 2018).

Sustainable development underlies the European Union's policy, which is manifested in sources of universal law, i.e. in resolutions and directives. For many decades, sustainable development has also been underlying EU strategies and programmes of actions to promote the protection of the environment. The obligation to follow its principles was introduced into laws concerning the protection and management of environmental resources and into local law (Dacko M., Dacko A., 2018). Thus, by extension, the principles of sustainable development must also govern waste management. In social sciences, sustainable development is regarded as a world view, model, best practice of modern civilisation (Poskrobko B., 2013; Kuder D., 2014; Matysiak A., Strus M., 2015; Zadroga A., 2016), according to which the satisfaction of the present needs of society cannot prevent satisfaction of the needs of future generations. This idea is considered in modern economics in terms of a paradigm, which should replace the obsolete primacy of economic growth. For waste management, it means seeking solutions that will allow the economy and the environment to not exclude each other – frugal and effective use of resources, and above all the necessity of putting limits on one's own needs (Dacko M., 2011a; Dacko M., 2011b).

Waste is also a key aspect of the bioeconomy (O'Callaghan K., 2016; Patermann C., Aguilar A., 2018). This idea, like the circular economy, also refers to sustainable development, but involves sustainable use of biological renewable resources (in particular waste) to create goods and services.

In 2012, bioeconomy was raised in the European Union to the level of a strategy and a plan of actions that have to be undertaken by 2010 to convert the existing European economy into economy based on sustainable development and new biological technologies. Bioeconomy is activity that relies on innovation and knowledge. It involves, among other things, production and processing of biomass into food, clothes, medicinal and industrial products and energy.

In the context of waste, it is also worth mentioning sharing economy (Richards T. J., Hamilton S. F., 2018). It involves increasing the effectiveness of the use of resources in distributed networks of individuals and communities, who provide services to one another, share goods, and create or produce them jointly. Frenken K. and Schor J. (2017) note that in the past people shared things as well, but the sharing was limited to close circles of known and trusted people such as the family, friends and neighbours. In the information society, sharing became possible among people who do not know one another or do not have common friends or acquaintances. It is worth stressing that it is *sharing economy* that underlies the zero waste movement (Zero waste…, 2018). New technologies have opened up to sharing economy a vast new field for development in the area of resources saving and use, and – naturally – waste reduction. This is an increasingly profiTable business, and at the same time an increasingly popular new philosophy of life and inspiration for new technologies (Swiat bez…, 2018).

Research results and discussion

In the light of Eurostat data (2018), deposition (although regarded as a last resort) continues to be a popular form of municipal waste management in many countries of the European Union. In 2016, as much as 83 % of waste in Malta was deposited. The situation was similar in Greece (82 %), Croatia (77 %) and Cyprus (75 %). The infamous ranking of EU member states also includes Romania (69 %), Bulgaria (64 %), Slovakia (65 %) and Latvia (64 %). It is easy to notice that the problem of littering affects many attractive countries in terms of tourism, despite the fact that their economies depend in particular on a good condition of the natural environment.

Despite innovative solutions and practices observed in neighbouring countries, many European Union member states show an established passivity against the need to seek ways to manage their own waste and that left by tourists. For instance, in Slovenia, which is Croatia's neighbour, only 20 % of municipal waste is currently deposited. In Austria, which is a neighbour of the Czech Republic, Slovakia and Hungary (which deposit almost half of their waste), only 3 % of waste is deposited. Poland, which still deposits a significant share of its waste, is another country that should look closer at the solutions adopted in neighbouring countries. Germany, Denmark and Sweden are European leaders in terms of managing own waste. In these countries, only around 1 % of waste is deposited today.

A more comprehensive assessment of the situation of waste management in the different countries of EU28 can be made by means of Hellwig's model taxonomy (Hellwig Z., 1968; Pietrzak M., 2014). Using Eurostat data for 2017, a set of three diagnostic characteristics was selected (kg per capita): C1 - waste generated, C2 – incineration and recovery, C3 – landfill and other (Eurostat, 2017). After standardisation (C1s, C2s, C3s), the characteristics were divided into stimulants and destimulants, and then their model values were established (for stimulants – max Ci, for destimulants – min Ci). In the next step, distance from the pattern (DIST) was calculated for each country using Euclidean metric (root of the sum of squares of the differences between a characteristic and pattern).

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On this basis, taxonomic development meter was calculated for each country (Table 1) according to the following formula: TMR=1–(DIST/ds+2sd).

Table 1

Linear ordering of waste management models in EU28 countries based on TMR

No	Country EU28	C1	C1s	C2	C2s	C3	C3s	DIST	TMR	Class.
1.	Belgium	409	-0.67	176	0.52	4	-1.06	2.55	0.55	1
2.	Bulgaria	416	-0.60	15	-0.99	249	0.65	4.32	0.24	3
3.	Czech Republic	344	-1.26	60	-0.56	167	0.08	3.57	0.37	2
4.	Denmark	781	2.72	413	2.75	7	-1.04	4.64	0.19	3
5.	Germany	633	1.37	196	0.71	6	-1.05	3.87	0.32	2
6.	Estonia	390	-0.84	165	0.42	75	-0.57	2.62	0.54	1
7.	Ireland	581a	0.90	170a	0.47	149a	-0.05	3.77	0.34	2
8.	Greece	498a	0.14	3a	-1.10	410a	1.78	5.22	0.08	4
9.	Spain	462	-0.18	60	-0.56	248	0.65	4.12	0.28	3
10.	France	513	0.28	182	0.58	111	-0.31	3.18	0.44	2
11.	Croatia	416	-0.60	0	-1.13	301	1.02	4.60	0.19	3
12.	Italy	489	0.06	93	-0.25	114	-0.29	3.68	0.35	2
13.	Cyprus	637	1.41	2	-1.11	482	2.29	6.11	-0.07	4
14.	Latvia	438	-0.40	10a	-1.03	181a	0.18	4.27	0.25	3
15.	Lithuania	455	-0.25	83	-0.35	149	-0.05	3.67	0.36	2
16.	Luxembourg	607	1.14	271	1.42	42	-0.80	3.34	0.41	2
17.	Hungary	385	-0.89	62	-0.55	187	0.22	3.69	0.35	2
18.	Malta	604	1.11	0	-1.13	520	2.55	6.12	-0.07	4
19.	Netherlands	513	0.28	227	1.00	7	-1.04	2.81	0.51	1
20.	Austria	570	0.80	221	0.95	12	-1.01	3.26	0.43	2
21.	Poland	315	-1.52	77	-0.41	132	-0.17	3.31	0.42	2
22.	Portugal	487	0.04	94b	-0.25	230	0.52	3.92	0.31	3
23.	Romania	272	-1.92	12	-1.02	192	0.25	3.99	0.30	3
24.	Slovenia	471	-0.10	54	-0.62	48	-0.76	3.84	0.33	3
25.	Slovakia	378	-0.95	36	-0.79	229	0.51	4.00	0.30	3
26.	Finland	504a	0.20	276a	1.46	16a	-0.98	2.48	0.57	1
27.	Sweden	452	-0.28	239	1.12	2	-1.08	2.32	0.59	1
28.	U.K.	483a	0.01	167a	0.44	91a	-0.45	3.07	0.46	2

[a] *data for 2016;* [b] *data for 2014; d_s — average; s_d - standard deviation*

C1 *- waste generated for 2017 (kg per capita) - destimulant; d_s = 482; s_d = 110; pattern after standardization =-1.92*

C2 *- incineration and recovery for 2017 (kg per capita) – stimulant; d_s = 120; s_d = 106; pattern after standardization =2.75*

C3 *- landfill and other for 2017 (kg per capita) - destimulant; d_s = 156; s_d = 143; pattern after standardization =-1.08*

DIST *- distance from the pattern; d_s = 3.80; s_d = 0.95; d_s+2s_d=5.70*

TMR *- taxonomic development meter; d_s = 0.33; s_d = 0.17*

Source: author's calculations based on … (as an example)

Development meters (Polish: TMR) do not only illustrate the differences in waste management across EU28 countries. They also make it possible to look at the complex problem of handling waste in terms of the distance from pattern – the ideal according to sustainable development. This pattern can be described as the following options: generation of possibly the least amount of waste per capita, recovery of possibly the biggest share of waste, or depositing possibly the least amount of waste on landfills. This philosophy is reflected in the ranking in the last column of Table 1, where development meter classes were determined by subtracting the value of standard deviation from the mean meter, i.e.

- class 1: TMR≥0.5
- class 2: 0.5>TMR≥0.33
- class 3: 0.33>TMR≥0.17
- class 4: 0.17>TMR

According to the ranking, Sweden, Finland, Belgium, Estonia and Netherland perform best in terms of waste management. These countries set standards for modern waste management, pursuing the philosophy of waste minimisation and mature waste management with a high level of energy and matter recovery. It should be noted that according to Eurostat data, in 2017 as many as 9 countries of the EU28 improved their waste management to such an extent that they deposit less than 10 % of waste on landfills, and other 7 countries deposit only 10 % to 33 % of collected waste. In the case of waste management leaders, i.e. Sweden, Denmark, Germany, Belgium and the Netherlands, deposited waste accounts for less than 1 %.

In the light of the presented taxonomy, the worst situation was in Malta, Cyprus and Greece. These countries generated large quantities of per capita waste and continued to prefer waste deposition. According to Eurostat data, a significant amount of waste is generated by inhabitants of highly developed countries of Western Europe. This aspect impacted the overall assessment of waste management in Denmark (781 kg per capita) and Germany (633 kg per capita), although waste deposition in these countries was radically minimised relative to other ways of handling it. These countries, although they were not assigned to class 1, can be regarded as European leaders in recycling, with over half of their municipal waste subjected to various forms of recycling. Germany in particular performs excellently in this area - according to EEA, in 2014 it achieved 64 % level of recycling (including material recovery and composting of biodegradable waste). It is, however, worth noting that already in 2004 it recycled as much as 56 % of its waste. Over 10 years, Germany has improved its statistics by only 8 percentage points. Thus, it seems that without breakthrough innovations recycling as a form of waste management has reached in Germany the natural performance limit. It is impossible to improve it by engaging more citizens in the process of separation. Already today, almost 100 % of German households regularly separate waste. Charging a low or even No rate for waste collection contributes to this success (Segregacja smieci…, 2018).

Waste that is collected selectively is No longer a cost or nuisance. It is not economically viable to deposit waste on landfills, as it becomes a resource with economic value (Dacko et al. 2018). For instance, thanks to the implementation of advanced incineration technologies in local heat and power plants, 4 tons of Danish waste gain the energetic value of 1 ton of oil or 1.6 tons of coal (Dacko 2011a). Its continuous stream allows Denmark to treat it in national balances as a significant source of renewable energy. Looking at recycling in the context of international rankings, situations in Poland and Lithuania look encouraging. Against 35 countries examined by EEA in the 2004—2014 period, the biggest and the most prominent improvement in recycling statistics was recorded in Lithuania (from 2 % in 2004 to 30 % in 2014) and in Poland (from 6 % in 2004 to 32 % in 2014).

There is another reason for copying waste management solutions adopted in Denmark, Germany, the Netherlands, Austria, Sweden and Belgium. Selective waste collection and an increase in the level of waste recovery and recycling were accepted as priority in the entire European Union. The European Parliament passed new regulations in April 2018 concerning the so—called waste package. The regulations aim to correct the EU's waste management and adjust it to the model of *circular* *economy* as described, among others, by Geissdoerfer M. *et al.* (2017), Korhonen J. *et al.* (2018) and Mahpour A. (2018). In accordance with the new directives of the EU, in 2025 at least 55 % of municipal waste from households and enterprises will have to be recycled. In 2030, this limit will be 60 %, whereas in 2035 – 65 % (Chiny zamykaja…, 2018).

In this context, many countries of the UE28 already should aim to enforce waste separation through a radical change of the rates of waste collection charges (Dacko M. *et al.*, 2018). Otherwise they will not be able to meet the requirements of the European Union's law in the next transitional period, i.e. in 2025. In Poland, this threat has been recognised. In accordance with the regulations being currently prepared, disposal of waste in the mixed form would be four times as expensive as its separation (Segregacja smieci…, 2018). At present, the difference in the charge is often only a dozen per cent, and cannot be a sufficient economic driver for environmentally friendly practices.

In many countries of the EU28, waste separation is still a matter of the citizen's free choice, but it may become obligatory. In Belgium, waste separation has been obligatory since 2010 and monetary penalty is imposed in the case of failure to meet this obligation. In conclusion, it is worth mentioning that outside of the EU waste is deposited on truly mass scale in Macedonia (100 %), Turkey (84 %), Serbia (79 %) and Montenegro (70 %). It should be born in mind that these countries are officially acknowledged as candidates to the European Community.

Conclusions

1) Referring to Tofler's theory of the three waves of civilisation development (Toffler A., 2006; Toffler A., 2007) it can be stated that each civilisation struggled with the side effect of its existence in the form of waste. In agricultural societies, waste (especially in cities) mainly posed an epidemiological risk to people and domesticated animals. Mass—produced waste of the industrial civilisation affected not only the human being, but also their environment. As a result, ecological crises ceased to have a local character, but instead became a problem of regions, and then the whole world.
2) In the context of the postulates of sustainable development, it can be noted that the unsolved problems of waste generated by previous generations were transferred to the subsequent generations - which today constitute the information civilisation. Residents of the European Union can No longer afford to ignore the problem of waste, although they still have to solve not only their own issues but also the effects of previous generations' neglects.
3) The cases of European leaders: Sweden, Finland, Belgium, Estonia and the Netherlands, show that waste does not have to be a cost or nuisance. Waste represents capital, and present—day European economies cannot afford to waste the material and energy potential that exists in their waste.

Bibliography

1. *Chiny zamykaja sie na smieci (China is closing on trash)* Retrieved: https://www.msn.com/pl-pl/wiadomosci/polska/chiny-zamykają-się-na-śmieci-a-bruksela-kończy-z-wysypiskami-co-zrobi-polska/ar-AAx66af?ocid=spartandhp Access: 9.10.2018.
2. Czaja, S., Fiedor, B. (2010). Ekonomia srodowiska i ekologiczna jako filary ekonomii zrownowazonego rozwoju, (Environmental and ecological economics as the pillars of the economics of sustainable development). In „Ekonomia zrownowazonego rozwoju" („Economics of sustainable development"). Wydawnictwo Wyzszej Szkoły Ekonomicznej w Bialymstoku, pp. 30-52.
3. Dacko, M. (2011a). Model rozwoju obszarow wiejskich objetych siecia Natura 2000 (Model of development of rural areas covered by the Natura 2000 network). In *„Uwarunkowania zrownowazonego rozwoju gmin objetych siecia Natura 2000 w swietle badan empirycznych" („Conditions for the sustainable development of communes included in the Natura 2000 network in the light of empirical research")*. Wydawnictwo Instytutu Rozwoju Wsi i Rolnictwa PAN, Warszawa, pp. 325-360.

4. Dacko, M. (2011b). Koncepcja zrownowazonego rozwoju w naukach ekonomicznych – inspiracje, ewolucja, perspektywy (The concept of sustainable development in economic sciences - inspirations, evolution, perspectives). In *„Natura 2000 jako czynnik zrownowazonego rozwoju obszaow wiejskich regionu Zielonych Pluc Polski" (Natura 2000 as a factor in the sustainable development of rural areas of the Green Lungs of Poland"*). Wydawnictwo Instytutu Rozwoju Wsi i Rolnictwa PAN, Warszawa, pp. 19-42.
5. Dacko, M., Dacko, A., Mazur, G. (2018). Gospodarka odpadami a zrownowazony rozwoj lokalny (Waste management versus sustainable local development). Roczniki Naukowe Stowrzyszenia Ekonomistow Rolnictwa i Agrobiznesu XX (3), pp. 34-40.
6. Dacko, M., Plonka, A. (2017). Idea rozwoju zrownowazonego w opiniach i postawach rolnikow (Idea of sustainable development in the opinions and attitudes of farmers). *Roczniki Naukowe Stowrzyszenia Ekonomistow Rolnictwa i Agrobiznesu* XIX (1), pp. 38-43.
7. Dobrotă, D., Dobrotă, G. (2018). An Innovative Method in the Regeneration of Waste Rubber and the Sustainable Development, *Journal of Cleaner Production*, Volume 172, pp. 3591-3599.
8. *Ekonomia cyrkularna – utopia czy koniecznosc (Circular economy - utopia or necessity)* Retrieved: http://zielonewiadomosci.pl/tematy/ekologia/ekonomia-cyrkularna-utopia-czy-koniecznosc/ Access: 09.10.2018.
9. Eurostat. (2017). Retrieved: http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=env_wasmun&lang=en Access: 21.01.2019.
10. Frenken, K., Schor, J. (2017). Putting the Sharing Economy Into Perspective, *Environmental Innovation and Societal Transitions*, Volume 23, pp. 3-10.
11. Geissdoerfer M., Savaget P., Bocken N., Hultink E. (2017). The Circular Economy – A New Sustainability Paradigm? *Journal of Cleaner Production*, Volume 143, pp. 757-768.
12. Hellwig, Z. (1968). Zastosowanie metody taksonomicznej do typologicznego podzialu krajow ze wzgledu na poziom ich rozwoju oraz zasoby i strukture wykwalifikowanych kadr (Application of the taxonomic method to the typological division of countries due to the level of their development and the resources and structure of qualified personnel). *Przegad Statystyczny* 15 (4), pp. 307–327.
13. Korhonen, J., Honkasalob, A., Seppäläc, J. (2018). Circular Economy: The Concept and its Limitations. *Ecological Economics*, Volume 143, pp. 37-46.
14. Kuder, D. (2014). Nowe modele wzrostu gospodarczego a paradygmat zrownowazonego rozwoju (New Models of Economic Growth and Paradigm of Sustainable Development). *Nierownosci Spoleczne a Wzrost Gospodarczy*, Volume 38, pp. 27-39.
15. Kwasnicki, W. (2009). Amalteisci i neomaltuzjanie – dwie wizje rozwoju (Amalteists and neo-Imperialism - two visions of development). *Ekonomista* 3/2009, pp. 1-26.
16. Mahpour, A. (2018). Prioritizing Barriers to Adopt Circular Economy in Construction and Demolition Waste Management. Resources, *Conservation and Recycling*, Volume 134, pp. 216-227.
17. Matysiak, A., Strus, M. (2015). Paradygmat rozwoju zrownowazonego (Sustainable development paradigm). *Studia Ekonomiczne Zeszyty Naukowe Uniwersytetu Ekonomicznego*, Volume 213, pp. 11-21.
18. Nazarko, J., Dobrzynski, M. (2006). Zrownowazony rozwoj – podejscie holistyczne (Sustainable development - a holistic approach). In *„Uwarunkowania ochrony srodowiska" (Conditions for environmental protection")*. Wydawnictwo Difin, Warszawa, p. 8-22.
19. O'Callaghan, K. (2016). Technologies for the Utilisation of Biogenic Waste in the Bioeconomy. *Food Chemistry*, Volume 198, pp. 2-11.
20. Patermann, C., Aguilar A. (2018). The Origins of the Bioeconomy in the European Union. *New Biotechnology*, Volume 40, part A, pp. 20-24.
21. Pietrzak, M. B. (2014). Taksonomiczny miernik rozwoju (TMR) z uwzględnieniem zaleznosci przestrzennych (Taxonomic measure of development (TMD) with the inclusion of spatial dependence). *Przeglad Statystyczny*, Volume LXI, Issue 2, pp. 181-201.
22. Poskrobko, B. (2013). Paradygmat zrownowazonego rozwoju jako wiodacy kanon w badaniu nowych obszarow ekonomii (The Paradigm of Sustainable Development as the Leading Standard in the Research on New Spheres of Economics), Ekonomia i Srodowisko, 3(46), pp. 10-24.
23. Richards, T. J., Hamilton, S. F. (2018). Food Waste in the Sharing Economy. *Food Policy*, Volume 75, pp. 109-123.
24. *Segregacja smieci – jak sobie z nia radza Europejczycy* (Segregation of rubbish - how Europeans deal with it) Retrieved: https://muratordom.pl/prawo/porady-prawne/segregacja-smieci-jak-sobie-z-nia-radza-europejczycy-zobacz-jak-sortuja-odpady-wlosi-belgowie-niemcy-aa-GWzv-MFHo-GN2c.html Access: 20.04.2018.
25. *Swiat bez smieci (A world without rubbish)*. Retrieved: http://weekend.gazeta.pl/weekend/1,152121,18284522,Swiat_bez_smieci__Poznajcie_filozofie_zerowaste_i.html Access: 23.03.2018.
26. Toffler, A. (2006). *Trzecia fala (The third wave)*, Wydawnictwo Kurpisz S.A., Poznan.
27. Toffler, A. (2007). *Szok przyszlosci (Future shock)*, Wydawnictwo Kurpisz S.A., Poznan.
28. Zadroga, A. (2016). Sustainable development jako paradygmat rozwoju spoleczno-gospodarczego (Sustainable development as a paradigm of socio-economic development). In *„Przestrzenie badawcze mlodych naukowcow. Inspiracje-Innowacje-Wdrożenia" („Research spaces of young scientists. Inspiration-Innovation-Implementation"*). Wydawnictwo Katolickiego Uniwersytetu Lubelskiego, Lublin, pp.11-24.

Zero Waste Home Retrieved: https://zerowastehome.com/about/bea/ Access: 23.03.2018.

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PROVISION OF ACCESS TO THE POSTAL INFRASTRUCTURE: THE EXAMPLE OF LATVIA AND POLAND IN THE CONTEXT OF THE DEVELOPMENT OF THE E—ECONOMY[1]

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Abstract. The article presents the situation on the postal services market of Latvia and Poland in the context of access to postal infrastructure and identified the selected economic policy tools that affect access to postal infrastructure, on the example of Latvia and Poland. In the article the main problem is to indicate that, despite the development of the e—economy and e—services, the role of the state is to provide access to postal infrastructure due to the problem of digital exclusion of citizens who do not have digital competences allowing for efficient functioning in the virtual space. The goals of the presented article are presentation of the situation on the postal services market of Latvia and Poland in the context of access to postal infrastructure and an indication of selected economic policy tools that affect the provision of access to postal infrastructure, on the example of Latvia and Poland. The following basic research hypothesis was adopted: In providing access to the postal infrastructure, the key issue is the identification and implementation of appropriate economic policy tools. Providing access to the postal infrastructure depends on several basic economic policy instruments that can inhibit or stimulate the development of infrastructure. The article shows that for the provision of access to postal infrastructure, they affect to a lesser or larger extent: designated operator, postal market regulator and regulations regarding access to postal infrastructure. The main proposals that will allow to solve the analyzed problem, which include: reacting in a situation when access to infrastructure is insufficient, especially in less urbanized and rural areas, as well as maintaining an appropriate quality level when access is sufficient.

Key words: postal market, postal infrastructure, e—economy.
JEL code: L87, L98.

Introduction

Postal markets in recent years have undergone major transformations. On the one hand, one can speak about the progressing phenomena of globalization (U. Beck, 2018), and on the other hand about the development of modern technologies. In addition, declining tendencies in the area of letter—post items and the decreasing importance of this form of communication for citizens are noticed throughout Europe and worldwide. This does not mean, however, that the role of designated postal operators becomes unnecessary. Along with the development of the digital economy, there are new needs related to access to e—commerce and e—government - especially in rural areas. However, the drop in letter volumes increases the unit costs of maintaining the universal service, especially in less urbanized areas. It should be pointed out that, despite the development of the e—economy and e—services, the role of the state is to provide access to postal infrastructure due to the problem of digital exclusion of citizens who do not have digital competences allowing for efficient functioning in the virtual space. Of course, this problem will decrease in the coming decade, but before it disappears, it is the duty of every EU country to provide citizens with access to postal infrastructure and universal services.

The goals of the presented article are:

1. Presentation of the situation on the postal services market of Latvia and Poland in the context of access to postal infrastructure;
2. An indication of selected economic policy tools that affect the provision of access to postal infrastructure, on the example of Latvia and Poland.

The following basic research hypothesis was adopted:

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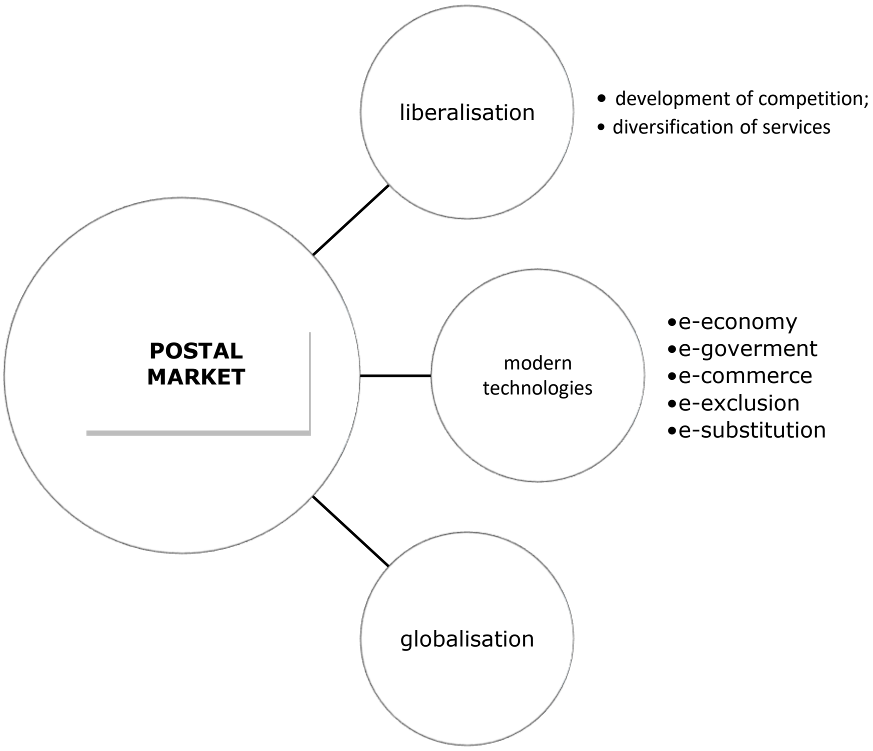
In providing access to the postal infrastructure, the key issue is the identification and implementation of appropriate economic policy tools.

In order to achieve the indicated goals, the article refers to legal regulations that are a reference point to the problem under examination. This is followed by the characteristics of the postal services markets surveyed. In addition, selected tools of economic policy are presented that directly affect the problem presented in the article.

1. The situation on the European postal market

The postal market for many years was treated as a strategic element of each state. Intensive technological changes have compelled national operators to adapt their services to the information society, to use new business opportunities and to pay attention to emerging and dynamically developing indirect and direct competition (e.g. electronic messages). Along with the diversification of postal services, the value of the entire market increased, which resulted in additional interest from the state as an important potential element of budget revenues. The ongoing liberalization processes, which resulted in a slow process of opening up to competition from private operators, had a significant impact on conducting postal activities in the European Union. These activities required the harmonization of national postal law with EU requirements, aimed at strengthening the competitiveness of the market, leading to increased flexibility as well as innovation in postal services. It should also be pointed out that the digital revolution causing the drop in letter volumes generates new areas in which the postal designated operator can play a positive role (M. Falch, A. Henten, 2018). With the growth of e—commerce (in Poland, 25 % only in the last year), there is a growing need to provide regular and affordable supplies to less urbanized and rural areas. Fig. 1 presents the factors affecting the postal market.



Source: author's study

Fig. 1. **Factors affecting the postal market**

It should be emphasized that due to the lack of traditional retail outlets, these areas have a steadily growing share in the entire eCommerce purchases. Designated postal operators based on

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their network of post offices and postmen can invest in increasing the capacity of the logistics network to provide an e—commerce parcel service for citizens, uniform in terms of quality and price. In addition, many designated operators in the European Union and in the world offer e—government services performed on behalf of administrative bodies at various levels. They are particularly important in rural areas. These include services related to confirmation of signatures, access to registers, issuing driving licenses, passports and access to computer terminals and support for using the applications made available on them. In Europe, designated operators are playing an increasingly important role in the fight against e—exclusion - there is a possibility of access to e—government services in their facilities.

2. Selected economic policy tools influencing the provision of access to postal infrastructure

Providing access to the postal infrastructure depends on several basic economic policy instruments that can inhibit or stimulate the development of infrastructure. The following are the selected tools that undoubtedly have a significant impact on the market analysed in the article. These are:

- the role of the designated operator,
- the role of the postal market regulator and
- regulations regarding access to postal infrastructure.

2.1. The role of the designated postal operator in the EU

In recent years, the liberalization of the postal market in the European Union has been completed, during which the concept of a designated operator has been defined. Usually, national operators perform this role. The designated operator function was introduced to neutralize the negative social effects of market liberalization (K. Bodo, 2016). In Latvia, the designated operator is VAD Latvijas Pasts, a company 100 % owned by the state. However, in Poland, it is Poczta Polska SA - the sole—shareholder company of the State Treasury. The task of designated operators is to provide universal services in a uniform manner in comparable conditions, and thus:

1. Providing on the territory of the whole country (in rural and urban areas) the distribution of post offices and post boxes
2. Keeping the shipping time indicators and the specific frequency of delivery
3. Provision of services at affordable prices, accepted by the postal market regulator
4. The scope of universal services in Poland and Latvia includes delivery of postal items up to 2 kg, parcels , declared value shipments and registered mail.

2.2. The role of the postal market regulator in the area with access to postal infrastructure

Regulatory authorities, by virtue of law, carry out final and binding measures, including, among others, adoption of appropriate law—making procedures and adjudication, which may affect the rights and obligations of entities (Majone G. Surdej A., 2006).

The main reason for giving independence to regulators is the possibility of delegating regulatory powers to specialized institutions. The key goal of delegating regulatory powers is to intensify the credibility of the sectoral policy pursued (F. Gilardi, 2002). The need to ensure the universality of services, especially in less urbanized and rural areas, protection of users' interests, shaping the structure of the postal sector and its competitiveness, ensuring the existence of non—discrimination conditions for all operators, monitoring the designated operator's activities, care for technical progress in the sector, ensuring basic operating conditions, the need to stimulate investments, inform about the technical, economic and legal aspects of postal activities, justifies the functioning of regulatory institutions for the postal sector in the context of extensive deregulation and liberalization measures in the postal sector. In addition, the unreliability of the market mechanism, which appears in the postal services markets in the context of less urbanized areas, should be emphasized. The need to maintain the functionality of the infrastructure, the need for universal access to services, the high costs of infrastructure investments and the existence of lost costs eliminate the possibility of introducing competition to certain areas of the post. This also leads to recognition of the legitimacy of the existence of a regulator, which is characterized by monitoring the functioning of the enterprise, collecting information necessary to conduct sectoral policy (D.E.M. Sappington, J. Stiglitz, 1987, R. Sliwa, 2009), as well as securing the interests of service recipients.

In accordance with the requirements of Article 22 of the Postal Directive (Directive 1997) , each EU country is required to establish an independent national regulatory authority for the postal sector. Both in Latvia (PUC) and in Poland , there are other sectors in the competences of national regulatory authorities. The regulator should have judicial independence from the government, especially if the government is the owner of a public postal operator. Regarding the independence of the postal market regulator, the following organizational elements should be considered as essential:

- the number of people who manage the work of the regulator institution - the multi—person board is more sTable and independent than one main regulator - in the case of Latvia, this number is 5, while in Poland - 1, which indicates less stability and independence;

- duration of the term of office - the term of office lasting several years gives the opportunity to implement a coherent long-term policy of the regulator. In both Latvia and Poland, the term of office is 5 years;

- the body appointing the management of the national regulatory authority - the body appointing the management of the national regulatory authority should be a minister other than the minister responsible for supervising the activities of the designated postal operator. Both in the case of Latvia and Poland, the appointing authority is:

- Parliament - Latvia and
- Council of Ministers - Poland.

The key issue in the context of determining the independence of the postal market regulator are the competencies assigned to the regulators. Relations between governments and postal market regulators, both in the context of management of decision—making processes and in the financial area, indicate that in the analysed countries, national regulatory authorities are independent of the control of the ministry responsible for postal services. In addition, both in Latvia and in Poland, the budget of the postal market regulator is approved by Parliament.

3. Analysis of access to postal infrastructure

Pursuant to the provisions of the 3rd Directive (Directive 2008), operators appointed in all EU countries have the obligation to provide other operators with selected elements of their own postal infrastructure: a zip code system, an address database for forwarding parcels, post—office boxes, and letterboxes. However, for the other elements of the designated operator's infrastructure, Article 11 of the 3rd Postal Directive only indicates that the Member States will adopt such harmonization measures as are necessary to ensure all users and operators providing postal services access to the postal network on terms that are transparent and non—discriminatory.

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In the report "Main Developments in the Postal Sector (2010—2013)" prepared by the German research institute WIK Consult, commissioned by the European Commission, a detailed analysis was made of the postal infrastructure provisioning by the designated operator in individual countries (Table 1).

Table 1

The scope of providing access to postal infrastructure in EU countries

The scope of providing access to postal infrastructure in EU countries		
High (7 countries)	**Medium (10 countries)**	**Low (11 countries)**
The Czech Republic, Denmark, France, **Latvia**, Luxembourg, Germany, Slovenia	Austria, Cyprus, Estonia, Greece, Malta, **Poland**, Portugal, Hungary, Great Britain, Italy	Belgium, Bulgaria, Croatia, Finland, Spain, the Netherlands, Ireland, Latvia, Romania, Slovakia, Sweden

Source: WIK Main Developments in the Postal Sector 2010—2013

None of the European countries decided to provide full access to all elements of the designated operator's network. Latvia provides access to the last stage of service provision, i.e. the delivery stage of the so—called downstream access, which means imposing on the designated operator an obligation to deliver parcels handed to him by other operators providing public services or falling within the scope of public services. Legal regulations regarding the provision of postal infrastructure elements can be divided into three main types (Postal Institute):

- full access to the postal network and infrastructure elements,
- an open directory of postal infrastructure. Belgium and Estonia are an example of applying such regulations.
- provision of specific elements of the postal infrastructure. This type of solution has been implemented, among others in Poland.

On the other hand, point 34 of the preamble to the 3rd Postal Directive emphasizes the obligation to ensure the interoperability of the postal network in the event of several universal service providers with regional postal services networks. In both Latvia and Poland, there is only one designated operator for now. The scope of providing access to postal infrastructure in the countries under examination differs significantly and depends on the organization of a given postal market, as presented in the Table below.

Table 2

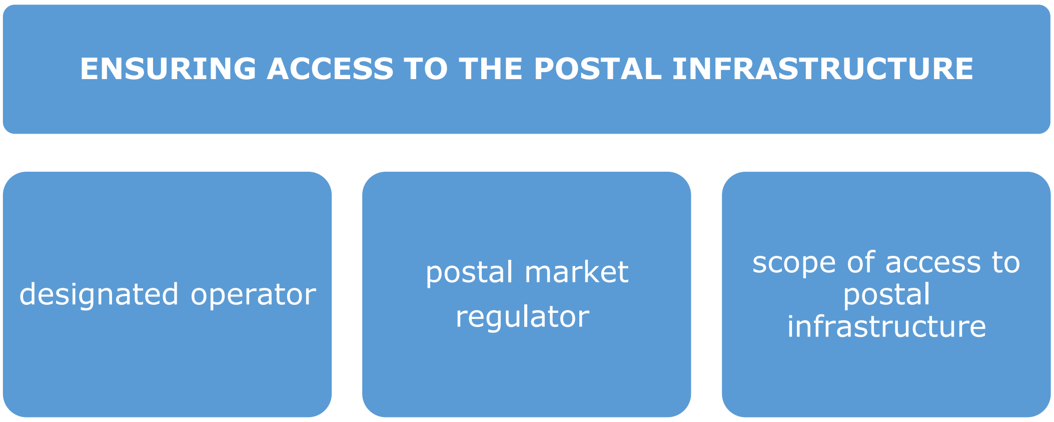
Comparison of detailed regulations regarding the provision of access to postal infrastructure in Latvia and Poland

Access to infrastructure :	Zip codes	Post—office boxes	Letterboxes	Address database	Returns
Latvia		+	+	-	-
Poland	+	+	+	+	-

Source: WIK Main Developments in the Postal Sector 2010—2013 I Copenhagen Economics (2016) Main developments in the postal sector (2013—2016)

The scope of providing access to postal infrastructure in Poland is wider than in Latvia. This gives more opportunities to alternative operators wishing to operate on the Polish postal market.

Based on the conducted analyses, it has been shown that access to the postal infrastructure is influenced by several basic economic policy tools that may inhibit or stimulate its development. Fig. 2 presents the basic tools.



Source: author's study

Fig. 2. **Elements affecting access to infrastructure**

It is clearly visible that the provision of access to the postal infrastructure is affected to a lesser or greater extent depending on the degree of influence resulting from legal regulations, by indicated tools. The role of the state is:

- responding when access is insufficient, especially in less urbanized and rural areas, and
- maintaining an appropriate quality level when access is sufficient.

That is why it is necessary to constantly monitor and analyse the problem presented in the article, thanks to which the society living in less urbanized and rural areas will not be excluded from basic postal services.

Conclusions

The full opening of the postal market brings benefits across the entire EU economy, improves the quality of services and reduces their prices. However, the analysis of the possibility of generating profits may lead to discrimination in the access to postal services of selected groups, especially people living in rural, mountainous or sparsely populated areas. An important issue is the obligations imposed on the postal designated operator, which includes the creation of a dense network of post offices and postal outboxes, also in areas with low population density. It is precisely there that postal services are of the utmost importance to provide communication for citizens, opportunities to participate in business life and to provide work, and thus greater social and territorial cohesion at the national level. In accordance with the assumed objectives, the article presents the situation on the postal services market of Latvia and Poland in the context of access to postal infrastructure and identified the selected economic policy tools that affect access to postal infrastructure, on the example of Latvia and Poland. The effect of this study was also to prove the hypothesis that in providing access to the postal infrastructure, the key issue is the identification and implementation of appropriate economic policy tools.

The article shows that for the provision of access to postal infrastructure, they affect to a lesser or larger extent: designated operator, postal market regulator and regulations regarding access to postal infrastructure. The main recommendations that will help solve the problem analyzed in the article are: 1.Responding when access to infrastructure is insufficient, especially in less urbanized and rural areas

2. Maintaining an appropriate quality level when access is sufficient.

In conclusion, it should be pointed out that this article should be treated as a signalling article, indicating the problems of the postal market, which will become the starting point for further broader analysis.

Bibliography

1. Beck, U. (2018). What is Globalization?. John Wiley & Sons.
2. Bodo, K. (2015). Bariery dla otwarcia rynku pocztowego w Polsce (*Barriers to the opening of the postal market in Poland*). Analiza FOR, 6/2015, p. 10.
3. Copenhagen Economics (2016). Main Developments in the Postal Sector (2013-2016) .
4. Dyrektywa 97/67/We Parlamentu Europejskiego i Rady z dnia 15 grudnia 1997 r. w sprawie wspolnych zasad rozwoju rynku wewnętrznego usług pocztowych Wspólnoty oraz poprawy jakości usług (Dz.U. L 15 z 21.1.1998, s. 14)
5. Dyrektywa Parlamentu Europejskiego i Rady 2008/6/WE z dnia 20 lutego 2008 r. zmieniająca dyrektywę 97/67/WE w odniesieniu do pełnego urzeczywistnienia rynku wewnętrznego usług pocztowych Wspólnoty
6. Falch, M., Henten, A., (2018). *Universal Service in a Digital World: The demise of postal services*, The 22nd Biennial Conference of the International Telecommunications Society: "Beyond the boundaries: Challenges for business, policy and society", June 24th - 27th, 2018, Seoul, Korea, International Telecommunications Society (ITS),Seoul.
7. GiIardi, F. (2002). *Policy Credibility and Delegation of Regulatory Competencies to Independent Agencies: a Comparative Empirical Consideration*. "Journal of European Public Policy" 2002, no. 9, p. 874.
8. Majone, G., Surdej, A. (2006). *Regulatory Agencies in Economic Governance. The Polish Case in a Comparative Perspective*. "KICES Working Papers" No 5.
9. Sappington, D.E.M., Stiglitz, J.(1987). *Privatization, Information and Incentives*. "Journal of Policy Analysis and Management" No 6 (4).
10. Śliwa, R. (2009). *Istota niezależności regulacji w gospodarce opartej na konkurencji. Przykład telekomunikacji (The essence of the independence of regulation in a competitive economy. An example of telecommunications.).* Zeszyty Naukowe Małopolskiej Wyższej Szkoły Ekonomicznej w Tarnowie, (2 (13) v.1).
11. WIK-Consult, *Main Developments in the Postal Sector* (2010-2013) (2013).Study for the European Commission, Directorate General for Internal Market and Services, Bad Hoonef, s. 21.

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ECONOMIC POTENTIAL OF RURAL COMMUNES IN THE SWIETOKRZYSKIE PROVINCE IN RELATION TO DEVELOPMENT SPATIAL DIFFERENTIATION PATTERN

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Abstract. It is natural for Poland's regions to differ in development. Differences result, among others, from attractiveness of location, deposits of raw materials, availability of human capital, and access to infrastructure and financial resources. Economic potential constitutes an important factor in the development process. The aim of the paper is to analyse spatial disparities in communal development against the background of economic potential. In the analysis, the TOPSIS method was used for the construction of the synthetic measure. The investigations were based on the data from Local Data Bank of Central Statistical Office for years 2012, 2014 and 2017, and also from Regional Accounting Chamber. They made it possible to create synthetic measures of economic potential and development of rural communes of the Swietokrzyskie province. Economic potential includes local labour market, level and type of entrepreneurship and infrastructure. The level and structure of economic potential are a condition of communal development. The communes of Sitkowka-Nowiny and Morawica, affected by the proximity of Kielce city, are the highest evaluated units. As their agricultural function is fading away, the industrial one is growing in importance.

Key words: economic potential, economic potential differentiation, development, commune, Swietokrzyskie province.
JEL code: L26, R1, P25, H72, R13.

Introduction

Communal local governments are most relevant for the economic development. That results from the economic and financial potential those bodies have, and also freedom in formulating development policy. The need to balance the economic, social and environmental goals in the long—term perspective calls for the local systems to be based on permanent development principles. Utilising endogenic factors (geographic environment resources, economy structure, condition of technical and social infrastructure etc.) in this process leads to increased overall welfare of the residents (Prus P., Drzazdzynska K., 2017).

The level of development of a given area reflects, among others, the quality of its competitiveness. The latter is affected by the economic potential of the entity, which includes the residents' labour market participation, the level of their income, labour market structure, level and type of entrepreneurship, and also the condition of the natural environment. The economic potential and entrepreneurship are related to the creation of new job opportunities, which positively contributes to the improvement of the living conditions of the local community.

The local development generated by communes is affected by many factors that are both dependent on and independent of the commune. They include economic, financial, infrastructural and demographic potentials. The analyses performed by Churski at al. (2013) and Stanny (2013) indicate that in addition to the socio—economic space, local finances also constitute an important contributing factor.

Data and methods

The paper aims to analyse spatial disparities in the development of communes with respect to the economic potential. In the analysis, the TOPSIS method was used for the construction of a synthetic

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measure. The analyses were conducted for 70 rural communes of the Swietokrzyskie province. The source material used for the study were data obtained from the Regional Accounting Chamber (Kielce branch) and Local Data Bank of Central Statistical Office for the years 2011, 2014 and 2017. For the assessment of the development of the rural communes in the Swietokrzyskie province, social, economic, infrastructural and financial variables were adopted as partial measures.

In order to determine the synthetic measure of development, the following procedure was applied (Dziekanski P., 2016, 2018).

1) The variables describing development, infrastructure, demography and financial condition of rural communes were identified and selected. The variables characterised by low spatial variation and high variable correlation, in accordance with the inverse matrix method (Malina A., 2004, 96—67), were eliminated from the set. Economic potential, and communal development are determined by a number of factors that are economic, demographic and infrastructural in character.

2) Selected variables were subjected to the procedure of zeroed unitarization using the following formulas:

for the stimulant $z_{ij} = \frac{x_{ij} - \min_i x_{ij}}{\max_i x_{ij} - \min_i x_{ij}}$, when $x_i \in S$ (1),

for destimulants $z_{ij} = \frac{\max_i x_{ij} - x_{ij}}{\max_i x_{ij} - \min_i x_{ij}}$, when $x_i \in D$ (2),

where: S—stimulant, D—destimulant; i=1, 2…n; j=1, 2…n, xij – denotes the value of the j—th feature for the unit of concern, max – maximum value of the j—th feature, min – minimum value of the j—th feature (Dziekanski p. 2016; Mioduchowska—Jaroszewicz E., 2013, 127–140; Wysocki F., 1996; Kukula K., 2000; Mlodak A., 2006).

3) The synthetic measures of development and economic potential were determined using the TOPSIS method. That involved the calculation of Euclidean distances from the positive—ideal solution and the negative—ideal solution for individual alternatives. Calculated measures were presented raging (0,1), which allows the comparability of results. Values of the synthetic measures for individual objects were calculated on the basis of formula (3):

$$q_i = \frac{d_i^-}{d_i^- + d_i^+}, gdzie\ 0 \leq q_i \leq 1, i = 1, 2, \ldots, n; \ (3),$$

where: d_i^- - denotes the distance from the negative—ideal solution, d_i^+ - distance from the positive—ideal solution (Glowicka—Woloszyn R., Wysocki F., 2016; Wysocki F., 2010, 156—157). Indicator (3) takes on values from [0,1] interval. A higher value of the indicator (close to unity) indicates more advantageous situation of the object, whereas a lower one (close to zero) denotes its weaker position (Zalewski W., 2012, 137–145).

4) The research area, namely the rural communes of the Swietokrzyskie province were divided into four quartile groups. The indicator magnitude in the first group is associated with a better unit, whereas in the last group it denotes the weakest unit. Based on the correlation coefficient, the congruence of the results obtained was verified. Additionally, the scatter graph with the line of fit was included (Dziekanski P., Wyszkowski A., 2018, 219—238; Wysocki F., Lira J., 2005).

Research results and discussion

The execution of statutory tasks by the commune and the policy it implements should contribute to local development. As indicated by Markowski (2008, 13), the latter is not defined in an unambiguous manner. The process of local development can be understood as e.g., a sum of qualitative transformations in the local structure that affect the living quality level of the community and the conditions of operation of the local businesses. Development is an economic process in character. It leads to the transformation of endogenic (local) factors of production into goods and services. The resultant quantitative and qualitative changes in a given area affect the living quality level of people and the conditions of operation of economy entities (Korenik S., 2011, 76).

The process of local development is shaped by the sum of endo— and exogenic factors. They include economic, social, technical, technological and ecological parameters. Those factors affect development processes and play a role in the removal of barriers to local development (Pajak K., 2011). The economic aspect of those activities involves enhancement of the welfare of the residents and improvement of their living conditions in the local territorial system (Brol R., 2008).

Economic conditions of the activities of the local government units are present both in the management of public monetary resources and the management of the commune assets. Improvement in economic potential and local entrepreneurship is translated into increased economic attractiveness. The latter can be defined as ability to provide investment incentives due to the offer of benefits, related to business location, possible to obtain while conducting a business activity. The local government working towards the provision of the optimal combination of the location factors can ensure the best conditions for the business operation (Kalinowski T., 2008).

The economic potential affects the economic development of the communes. At the same time, the economic potential stimulates economic changes resulting in increased production, employment, investments, amount of operating capital, income and consumption. Those parameters and related factors provide quantitative characteristics of the economy. They are also accompanied by qualitative changes. Therefore, economic potential can be viewed as multidimensional phenomenon determined by many factors that differ in character (Krakowiak—Bal A., 2006, 149–158).

In Poland, commune is the basic unit of the local government. It performs the tasks related to the development of its area. Commune has a number of tools at its disposal. The financial tools are of key importance as they decide the commune’s autonomy and self—reliance (Truskolaski T., 2011). The commune’s capability of attaining the assumed goals with respect to development depends on its economic condition. The latter can be evaluated using various indicators, the most important being the financial, economic potential or development indicators.

In the Swietokrzyskie province a clear—cut division into the region’s industrial north and agricultural (including horticulture and arboriculture) southern and eastern parts is observed. The province’s industries are closely related to natural resources available in the region for rock processing, production of chemicals and power generation. Metallurgy, machine industry and food processing are present as well. The province has clean natural environment and valuable landscape assets.

Synthetic measure of the development of rural communes in the Swietokrzyskie province indicates differentiation of the advancement of the units. The level is affected, among others, by the economic characteristics (industrial, agricultural) of unit, financial condition, and the economic potential. In 2012, development measure value ranged from 0.32 (Naglowice, the weakest unit, economic potential measure - group B) to 0.54 (Morawica, the strongest unit, economic potential - group A). In 2017, the measure value varied from 0.37 (Naglowice, the weakest unit, economic potential measure - group B) to 0.63 (Sitkowka—Nowiny, the best unit, economic potential - group A). Shifts between the groups can be seen over time. Information on the unit belonging to a given group is important for an investor seeking a business location, and also may prove useful to both local and central authorities (Table 1).

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The location in the proximity of Kielce, the region's capital and its greatest centre performing an economic function, enhances the activities of rural areas aimed at developing new economic initiatives. Favourable position in the territorial space contributes to changes in the commune's structure and functions that become geared towards increased multifunctionality. The dominant units like Sitkowka—Nowiny, Morawica, Strawczyn are industrial and service—oriented, whereas their agricultural function is fading away.

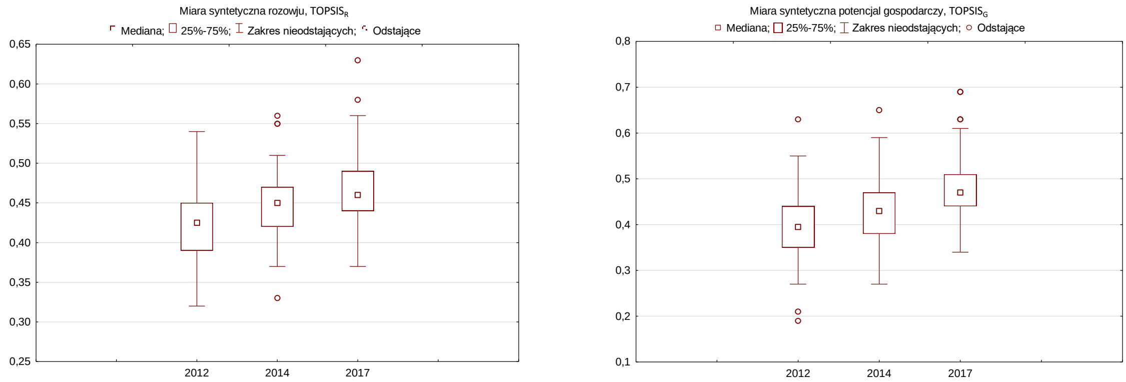
Table 1

Classification of rural communes of the Swietokrzyskie province by the development synthetic measure in the years 2012, 2014 and 2017.

	2012	2014	2017	2012	2014	2017	2012	2014	2017
		$TOPSIS_R$	$TOPSIS_G$		$TOPSIS_R$	$TOPSIS_G$		$TOPSIS_R$	$TOPSIS_G$
A	Morawica	0.54	A	Strawczyn	0.56	A	Sitkowka-Nowiny	0.63	A
	Sitkowka-Nowiny	0.53	A	Morawica	0.55	A	Morawica	0.58	A
	Samborzec	0.45	C	Rakow	0.47	B	Piekoszow	0.49	B
	Skarzysko Koscielne	0.45	C	Ruda Maleniecka	0.47	B	Wislica	0.49	C
B	Rytwiany	0.44	A	Blizyn	0.46	D	Blizyn	0.48	A
	Sobkow	0.44	C	Bodzechow	0.46	D	Falkow	0.48	D
	Tarlow	0.43	D	Sobkow	0.45	C	Wodzislaw	0.46	A
	Wojciechowice	0.43	C	Tarlow	0.45	D	Zlota	0.46	A
C	Falkow	0.42	C	Gorno	0.44	C	Baltow	0.45	A
	Imielno	0.42	C	Obrazow	0.44	A	Laczna	0.45	B
	Sadowie	0.39	B	Lagow	0.42	B	Tuczepy	0.44	A
	Mniow	0.39	D	Wojciechowice	0.42	C	Wasniow	0.44	D
D	Blizyn	0.38	D	Baltow	0.41	A	Backowice	0.43	D
	Lipnik	0.38	D	Czarnocin	0.41	B	Klimontow	0.43	D
	Naglowice	0.34	B	Sadowie	0.37	B	Moskorzew	0.38	A
	Bejsce	0.32	C	Naglowice	0.33	B	Naglowice	0.37	B

$TOPSIS_R$ development synthetic measure; $TOPSIS_G$ economic potential synthetic measure
Table columns refer to quartile group / commune / value of development synthetic measure / value of economic potential synthetic measure; the Table lists two best and two weakest units of the group in a given year
Synthetic measure of the economic potential was constructed based on the following variables: entities entered in the register per 1,000 population (entrepreneurship index), natural persons conducting business activities per 1,000 population, foundations, associations and social organisations per 1,000 population (social involvement index), total registered unemployment, employees per 1000 population
Synthetic measure of development was constructed based on the following variables: synthetic measure of economic potential, synthetic measure of financial conditions, dwellings per 1,000 population, people number per one library, total internal migration balance, post-working age population per 100 working age population, rate of natural increase per 1,000 population, population with access to piped water supply in total population, population with access to sewer system in total population
Source: author's calculations based on Local Data Bank of Central Statistical Office

The box—plot (Fig. 1) indicates a higher degree of scatter of units in 2012 (compared with 2014 and 2017) as the data are more dispersed and they take on more different values (cf. standard deviation, range, classic variation coefficient, Table 2). Regardless of the year, the outlier units included the communes of Morawica and Sitkowka—Nowiny, located in the proximity of the city of Kielce. Their agricultural function tends to disappear, whereas their industrial function is growing.



Source: author's calculations based on Local Data Bank of Central Statistical Office

Fig. 1. **Plots of development and economic potential synthetic measures for rural communes of the Swietokrzyskie province in the years 2012, 2014, and 2017**

The differentiation of the units in the Swietokrzyskie province rural communes in the analysed development area is stable, as shown by low values of standard deviation (development measure 0.04, 0.04, 0.04, economic potential measure 0.08, 0.07, 0.047). For rural communes of the Swietokrzyskie province, the value of range shows relative stability (which is indicated by quartile range measure; development measure increased from 0.22 in 2012 to 0.26 in 2017, economic potential measure dropped from 0.44 in 2012 to 0.35 in 2017). A decrease in in the variation coefficient of economic potential indicates a greater statistical similarity of the units in the years 2012, 2014, 2017 (Table 2).

Table 2

Differentiation of development and economic potential synthetic measures in rural communes of the Swietokrzyskie province in the years 2012, 2014 and 2017

	TOPSIS$_R$			**TOPSIS$_G$**		
	2012	2014	2017	2012	2014	2017
Standard deviation	0.04	0.04	0.04	0.08	0.07	0.07
Max	0.54	0.56	0.63	0.63	0.65	0.69
Min	0.32	0.33	0.37	0.19	0.27	0.34
Mean	0.42	0.45	0.47	0.40	0.43	0.48
Range	0.22	0.23	0.26	0.44	0.38	0.35
Quartile range	0.06	0.05	0.05	0.09	0.09	0.07
Variation coefficient	0.10	0.09	0.09	0.19	0.17	0.14
Asymmetry	0.37	0.25	0.81	0.11	0.39	0.90

TOPSIS$_R$ development synthetic measure; TOPSIS$_G$ economic potential synthetic measure
Source: author's calculations based on Local Data Bank of Central Statistical Office

Table 3 lists coefficients of correlation between the values of synthetic measures of development and economic potential for rural communes of the Swietokrzyskie province. Coefficients of correlation demonstrate that in the years 2012, 2014, and 2017 spatial differentiation of development was stable. In the period of concern, Pearson coefficients of correlation between development synthetic measure and economic potential measure grew from 0.328 to 0515 in successive years. That might indicate a convergence process taking place in a given area, and increasing role of economic potential in the development of communes.

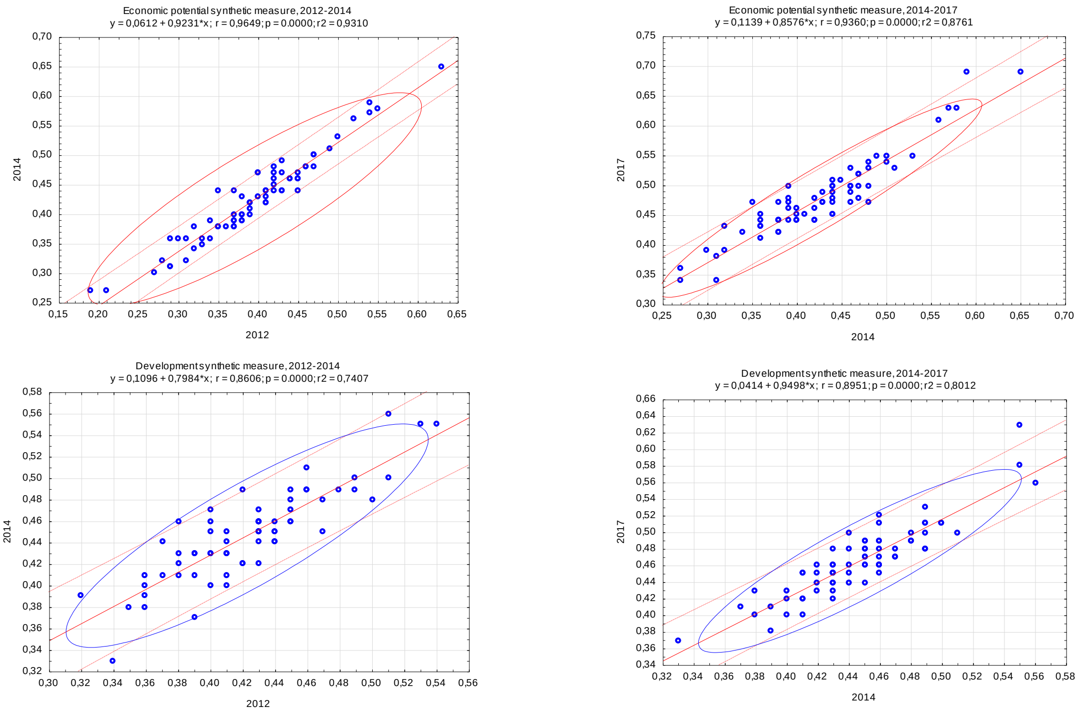
Table 3

Correlation of development and economic potential measures in rural communes of the Swietokrzyskie province in the years 2012, 2014 and 2017

	Correlation coefficient			
	gamma	Spearman	Kendall tau	Pearson
TOPSIS$_R$ 2012—2014	0.730	0.825	0.685	0.861
TOPSIS$_R$ 2014—2017	0.789	0.872	0.737	0.895
TOPSIS$_R$ TOPSIS$_G$ 2012	0.158	0.195	0.150	0.328
TOPSIS$_R$ TOPSIS$_G$ 2014	0.181	0.236	0.170	0.360
TOPSIS$_R$ TOPSIS$_G$ 2017	0.275	0.354	0.259	0.515
TOPSIS$_G$ 2012—2014	0.885	0.946	0.854	0.965
TOPSIS$_G$ 2014—2017	0.821	0.903	0.784	0.936

Correlations are significant for $p<0.050$; TOPSIS$_R$ development synthetic measure rozwoj; TOPSIS$_G$ economic potential synthetic measure
Source: author's calculations based on Local Data Bank of Central Statistical Office

Figure 2 shows correlograms that describe relations between the synthetic measures of development and economic potential in the subsequent years of the period of concern. Development measure underwent convergence (Pearson correlation coefficient for the examined time interval and level increased from 0.860 to 0.895, Fig. 2). Decrease in synthetic measure of economic potential from 0.964 to 0.936 points to a low divergence level. The positioning of the communes in the diagram in such a way they are aggregated may suggest they are statistically similar. The outlier units, namely are Morawica and Sitkowka—Nowiny, located near Kielce, have well—developed industrial function.



Source: author's calculations based on Local Data Bank of Central Statistical Office

Fig. 2. **Relation of synthetic measures from year to year with fitted regression line**

The analysis of the range diagram shows that increase in the coefficient values is accompanied by a change in the location of points which become positioned increasingly closer to the straight line. Figure 3 shows correlograms describing relations between the levels of development and economic potential measures. Compared with 2012, they underwent convergence in 2017 (Pearson correlation coefficients: 2012 – 0.328 and 2017 – 0.515; Fig. 3). Units with high value of economic level

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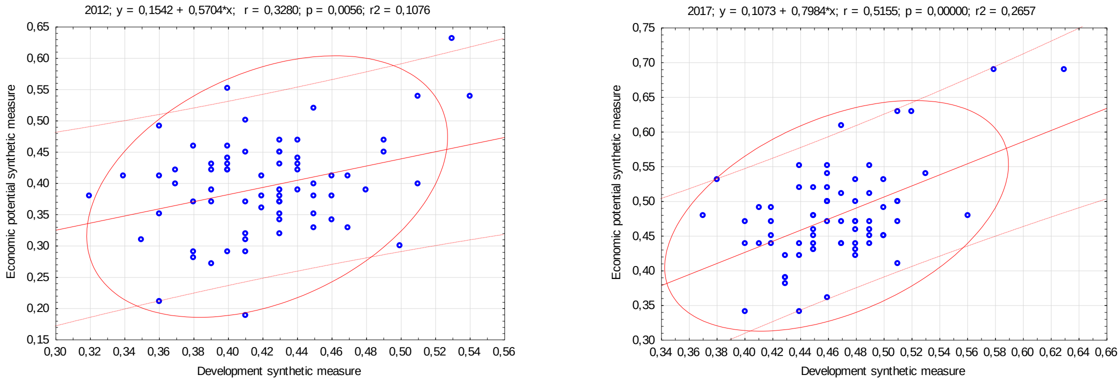
measure, i.e. Sitkowka—Nowiny and Morawica, at the same time, showed a high level of development measure.



Source: author's calculations based on Local Data Bank of Central Statistical Office

Fig. 3. **Relation of synthetic measures with the fitting of the regression line for rural communes of the Swietokrzyskie province (years 2012, 2014, and 2017)**

Conclusions, proposals, recommendations

1) Decisions taken by the communal government bodies are directly and indirectly reflected in the local economy. The factors that allow planning activities related to current matters and investments are economic, infrastructural and demographic potentials. They also contribute to the development process of the communes.
2) The spatial polarisation processes, i.e. differences in development between the rich and poor areas tend to deepen. Rich areas develop due to the utilisation of their potential and favourable economic situation. Poor areas, however, are left behind for various reasons.
3) Economic potential of the communes consists of four components, namely economic, social, technical ecological potentials. They make it possible to create new structural combinations by rational utilisation of endogenic resources and the development process enhancement.
4) The operation of a unit or its development takes place in multidimensional space. The latter forms a network of relations and works towards the local community welfare. Effectiveness and efficiency of commune operation depends, to a large extent, on rational recognition and use of time and space variables.
5) The method used in the paper allows a comparative overview of the units analysed. The method makes it possible to identify stronger and weaker aspects of the unit activities. In the case of low spatial aggregations, data deficits are found that are most frequently caused by the lack of representativeness of data.
6) In 2012, the value of development synthetic measure ranged from 0.32 (Naglowice, the weakest unit, economic potential measure - group B) to 0.54 (Morawica, the strongest unit, economic potential - group A). In 2017, the measure value varied from 0.37 (Naglowice, the weakest unit, economic potential measure - group B) to 0.63 (Sitkowka—Nowiny, the best unit, economic potential - group A). The information on the unit belonging to a given group is valuable for investors, local, and also central authorities.

Bibliography

1. Brol, R. (2008). *Kapital spoleczny w gospodarce lokalnej (Social capital in local economy)*. In: Gospodarka lokalna i regionalna w teorii i praktyce, (ed.) R. Brol. Prace Naukowe UE we Wroclawiu, nr 3.
2. Glowicka-Woloszyn, R., Wysocki, F. (2016). Kondycja finansowa gmin wiejskich a zrodla ich dochodow w wojewodztwie wielkopolskim (Financial condition of rural communes and sources of their income in the Wielkopolskie voivodship), *Stowarzyszenie Ekonomistow Rolnictwa i Agrobiznesu Roczniki Naukowe*, tom XVIII, zeszyt 1.

3. Churski, P., Borowczak A., Dolata, M., Dominik, J., Hauke, J., Perdal, R., Konecka-Szydlowska, B. (2013). Czynniki rozwoju obszarow wzrostu i obszarow stagnacji gospodarczej w Polsce (*Development factors in growth areas and economic stagnation areas in Poland*), Uniwersytet im. Adama Mickiewicza, Poznan.
4. Dziekański, p. (2016). *Spatial Changes and Assessment of the Financial Condition of Local Government Units in the Context of the Income Structure*. In: Formankova S., International Conference on Management (ICoM), Trends of Management in the Contemporary Society (Peer-Reviewed Conference Proceedings), Brno, Publisher: Mendelova univerzita v Brně.
5. Dziekanski, p. (2016). Spatial Differentiation of the Financial Condition of the Świetokrzyskie Voivodship Counties. *Barometr Regionalny*, Tom 14 nr 3/2016, p. 79-91.
6. Dziekanski, p. (2018). *Territorialisation of spatial disproportions of infrastructure and development of rural areas of the swietokrzyskie voivodship*. In: Proceedings of the 2018 International Conference "Economic Science For Rural Development" No 47 Jelgava, LLU ESAF, 9 11 May 2018, p. 73-80.
7. Dziekanski, P., Wyszkowski, A. (2018). Ocena przestrzennego zroznicowania sytuacji finansowej gmin wojewodztwa swietokrzyskiego z wykorzystaniem miary syntetycznej (Asessment of spatial differentiation in the financial condition of the Swietokrzyskie province communes with the use of synthetic measure), *Optimum. Economic Studies*, nr 1 (91), p. 219-238.
8. Kalinowski, T. (ed) (2008). Atrakcyjnosc inwestycyjna regionow i podregionow Polski 2008 (*Investment attractiveness of Poland's regions and subregions 2008*). Instytut Badan nad Gospodarka Rynkowa, Gdansk.
9. Korenik, S. (2011). *Region ekonomiczny w nowych realiach spoleczno-gospodarczych (Economic region under new social and economic conditions*). CeDeWu, Warszawa, p. 76.
10. Krakowiak-Bal, A. (2006), Potencjal gospodarczy gmin przygranicznych Polski poludniowej (Economic potential of border communes in southern Poland). *Infrastruktura I Ekologia Terenow Wiejskich*. nr 2/2/, Polska Akademia Nauk. o/w Krakowie, p. 149–158
11. Kukula, K. (2000). Metoda unitaryzacji zerowanej (*Zeroed unitarization method),* PWN, Warszawa.
12. Malina, A. (2004). Wielowymiarowa analiza przestrzennego zroznicowania struktury gospodarki Polski wedlug wojewodztw (*Multidimensional analysis of spatial differentiation of Poland's economy structure by provinces*), Wyd. Akademii Ekonomicznej w Krakowie, Krakow, p. 96-97.
13. Markowski, T. (2008). *Teoretyczne podstawy rozwoju lokalnego i regionalnego (Theoretical bases of local and regional development). In: Gospodarka regionalna i lokalna*, (ed.) Z. Strzelecki. Wyd. Nauk. PWN, p. 13-28.
14. Mioduchowska-Jaroszewicz, E. (2013). Metody i kierunki oceny kondycji finansowej jednostek samorzadow terytorialnych (Methods and lines of assessment of the financial condition of local government units), Z*N US*, nr 786, Finansowe, Ubezpieczenia, nr 64/2, p. 127–140.
15. Mlodak, A. (2006*). Analiza taksonomiczna w statystyce regionalnej (Taxonometric analysis in regional statistics), Dif*in, Warszawa.
16. Pajak, K. (2011). *Rozwoj lokalny jako nowa kategoria ekonomiczna (Local development as a new economic category) In: Kryzys ekonomiczny a przestrzenny i funkcjonalny wymiar polityki gospodarczej,* (ed.) K. Pajak, J.J. Tomidajewicz. Wyd. Adam Marszalek, Torun, p. 30-60.
17. Prus, P., Drzazdzynska, K. (2017). *Farmers' Assessment of Training Services and the Impact of Agricultural Advisory on Selected Developmental Factors Affecting Farming. In: Proceedings of the International Scientific Conference „Economic Science for Rural Development*", Latvia University of Agriculture, Jelgava, Latvia, No. 44, pp. 338-344.
18. Prus p. (2018). Farmers' Opinions about the Prospects of Family Farming Development in Poland. In: *Proceedings of the 2018 International Conference „ECONOMIC SCIENCE FOR RURAL DEVELOPMENT"*, Jelgava, Latvia, No 47, pp. 267-274.
19. Stanny, M. (2013). *Przestrzenne zroznicowanie rozwoju obszarow wiejskich w Polsce (Spatial differentiation in the develo pment of rural areas in Poland)*, IRWiR PAN, Warszawa.
20. Truskolaski, T. (2011). Strategiczne wyzwania rozwoju lokalnego na przykladzie Bialegostoku (Strategic challenges in the local development on the example of Bialystok). *Samorzad Terytorialny*, 12.
21. Wysocki, F. (1996). *Metody statystycznej analizy wielowymiarowej w rozpoznawaniu typow struktury przestrzennej rolnictwa (Methods of multidimensional statistical analysis for recognizing types of agriculture spatial structure)*. Roczniki AR w Poznaniu, seria: Rozprawy Naukowe, z. 266, Poznan.
22. Wysocki, F. (2010). *Metody taksonomiczne w rozpoznawaniu typow ekonomicznych rolnictwa i obszarow wiejskich (Taxonomic methods for recognizing economic types of agriculture and rural areas),* Wydawnictwo Uniwersytetu Przyrodniczego w Poznaniu. Poznan.
23. Wysocki, F., Lira, J. (2005). *Statystyka opisowa (Descriptive Statistics)*. Wyd. Uniwersytetu Przyrodniczego w Poznaniu, Poznan.
24. Zalewski, W. (2012). Zastosowanie metody TOPSIS do oceny kondycji finansowej spolek dystrybucyjnych energii elektrycznej (TOPSIS method application to the assessment of the financial health of electricity distribution companies), *Economics and Management*, 4, p. 137–145.

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EFFECTS OF INCOMES ON DOMESTIC TOURISM: THE CASE OF TUKUMS MUNICIPALITY

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Abstract. Overall, tourism has grown considerably in Latvia, and employment in the tourism industry, the direct contribution of tourism to the gross domestic product of Latvia and tourism exports have increased year by year as well. As technologies and infrastructures get more advanced and incomes of the population rise, people travel more today. As a result of the mentioned trends, tourism can generate extra revenue for the country as a whole and the municipalities. The research aims to examine the responsiveness of demand for domestic tourism services to a change in incomes based on the case of Tukums municipality. The research is based on a theoretical literature review of income elasticity of demand for tourism and described the supply of tourism services in Tukums municipality. Based on statistical data, the research verified the responsiveness of demand for domestic tourism services to a change in incomes. The research employed document analysis and statistical analysis for verifying causal relationships and making forecasts. At a high rate of income growth, the residents of Latvia prefer traveling to more distant tourist destinations than Tukums municipality, which is located in the middle of Latvia. The lower the income growth rate is, the more local tourists stay overnight in Tukums municipality.

Key words: tourism economics, Tukums municipality, income elasticity of demand, tourism forecasting.
JEL code: Z30.

Introduction

There are two key prerequisites for travel: free time and money. Today, an increase in the standard of living contributes to an increase in both disposable income and free time or vice versa. The world has never experienced as high a standard of living and as many new technological solutions used in daily life as today. This is supported by both studies of consumerism and daily experience. However, with the society developing and the standard of living rising, economic principles continue being effective, providing maybe not a 100 % guarantee, as it is with gravity in physics, that all individuals act the same way, yet the key principles are in force. Tourism became a mass phenomenon in the 20th century owing to the above-mentioned aspects. Tourism has become the object of interest for many researchers. From the economic perspective, tourism might be viewed as a macroeconomic phenomenon, which provides jobs, attracts investments, affects many industries and is accounted for in tourism satellite accounts. From the perspective of regional economics, the multiplier effect of tourism is very important, as tourism provides opportunities for economic growth in rural areas and reducing disparities between urban and rural areas. In microeconomics, income elasticity of demand allows forecasting the flow of tourists. Besides the economy, tourism is also associated with the society, government policies, ecology and leisure time (Freijers V., 2011).

In 2017, the tourism industry continued making life real for millions of people, promoting growth, creating new jobs, reducing poverty and contributing to overall development and tolerance. Over the last six consecutive years, tourism growth outpaced the growth of the global economy, demonstrating stability under geopolitical uncertainty and economic instability. In 2016, the contribution of tourism to the global economy totalled USD 7.6 trillion (10.2 % of the global GDP) and created 292 million jobs (one in ten jobs in the world) (*The Travel & Tourism…, 2017*).

The domestic demand for tourism has not been extensively researched despite the fact that it makes up a significant share of total tourism activities. The research aim is to examine the

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responsiveness of demand for domestic tourism services to a change in incomes based on the case of Tukums municipality. The specific research tasks are as follows: to make a theoretical literature review of income elasticity of demand for tourism; to describe the supply of tourism services in Tukums municipality; to analyse the responsiveness of demand for domestic tourism services in Tukums municipality to a change in incomes of the population of Latvia.

The research employed literature review and statistical analysis as well as used information and data provided by the Central Statistical Bureau of Latvia (CSB) and the Tukums Tourism Information Centre for analysis and identifying causal relationships.

Research results and discussion

Travel destinations are important. According to Leiper (1990), a destination is where tourist activity occurs by offering services that are characteristic of the place. The selection of destinations is strongly influenced by pull and push factors (events, exhibitions).

Transport development made tourism transcontinental, as it allowed reaching almost any destination in the world. Most of the populations of civilised countries conceptually accepted tourism and travel rules and contributed to the growth of this industry through their involvement (Kaufmane D., 2011).

Based on the findings of M.Marinin and J.Bleily, Birzakov (2003) came up with the following social development scenario, which affected the intensive growth of tourism over the last decades, for Europe: with the economies reviving after World War II, Europeans first experienced the wave of „being well fed", followed by the wave of „being well dressed", afterwards – „one's own house and car" and finally – the „wave of tourism". With its supply of tourism, Latvia has also become a part of the mentioned developments.

Society might be considered an essential exogenous factor affecting tourism, and its effects on tourism could be viewed from a number of aspects. The dominant lifestyle and the attitude of society to tourism and tourists affect the attractiveness of tourism destinations. In a country of tourism, the mentioned factors could be analysed through the prism of social values – interests, travel prestige etc. (Pompl W., 1996; Kaufmane D., 2011). Travels are a component of the life quality of society.

Travels require funds; therefore, individuals being able to spend much money are important for tourism business (Mak J., 2004). The choice of individuals between leisure time and work affects the demand for tourism. The phenomenon of a „leisure time society" has emerged. A leisure time society also lives 24 hours a day. The basic problem is how to allocate time between leisure and work. This involves leisure time costs. An opportunity cost of leisure time represents income lost while not working. An interesting question is how the allocation of time between work and leisure by individuals changes in response to a **change in their incomes**. Let us assume that incomes increase, thereby making two potential effects: the substitution and income effects. An increase in incomes leads to an increase in the opportunity cost of leisure time. In this case, one may expect consumers to demand less leisure time. This is called the substitution effect. Consumers tend to prefer work to leisure time, thus demonstrating the higher opportunity cost of their leisure time. Leisure time could be classed as a normal good or service, and an increase in income will result in a higher demand for the leisure time. This is called the income effect. The substitution and income effects could be regarded as two competing aspects. One of them, specific to the situation if incomes rise, is an increase in consumer satisfaction with leisure time (income effect). Satisfaction involves social and

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psychological factors – some individuals enjoy their leisure time, whereas others are bored by it (Tribe J., 2016).

Higher incomes usually lead to a higher demand for travels for the purpose of entrainment. But how much higher? Let us analyse the types of elasticity, giving some examples regarding leisure time. Economists use income elasticity of demand to measure the responsiveness of market demand to a change in consumer incomes. This indicator could be calculated by Equation 1.1 (Mak J., 2004):

$$income\ elasticity\ of\ demand\ for\ product\ X = \frac{\%\ change\ in\ demand\ for\ product\ X}{\%\ change\ in\ consumer\ incomes} \quad (1.1.)$$

Income elasticity of demand is usually expressed in numerical terms. If the income elasticity of demand for product X is equal to 2, a one percent increase in consumer incomes increases the demand for product X by two percent. Demand could be income elastic (elasticity of more than 1) or income inelastic (elasticity of less than 1, but not below 0). Income inelastic products are very sensitive to changes in consumer incomes because a small percentage change in incomes results in a large percentage change in demand. The demand for products being income inelastic is not so sensitive to a change in consumer incomes. The demand for luxury goods is income elastic, whereas the demand for necessities is income inelastic (Mak J., 2004). The estimated income elasticity is greater than one, which suggests that domestic demand for tourism is a luxury good (Alvarez-Diaz M., D'Hombres B., Ghisetti C., 2017). A number of research studies done in Spain have shown that domestic tourism is affected not only by income elasticity of demand but also by distance (De la Mata T., Llano-Verduras C., 2011). In Latvia, any tourism object can be reached within a few hours; the distance therefore does not play a significant role.

Overall, tourism grew in Latvia. The numbers of accommodation facilities, bed-places, visitors to hotels and foreign tourists increased year by year. Employment in the tourism industry, the direct contribution of tourism to the gross domestic product of Latvia and tourism exports grew in Latvia as well. As technologies and infrastructures get more advanced and incomes of the population rise, people travel more today; accordingly, the tourism industry is expected to develop. Owing to the mentioned trends, tourism can generate extra revenue for the country as a whole and the municipalities.

What is the situation in individual municipalities? Tukums municipality was chosen as the research object. Tukums municipality was established on 1 July 2009 by amalgamating 10 civil parishes: Degole, Dzukste, Irlava, Jaunsati, Lestene, Pure, Seme, Slampe, Tume and Zentene. The municipality borders on the municipalities of Roja, Talsi, Kandava, Jaunpils, Dobele, Jelgava, Babite and Engure. The area of Tukums municipality is 1194 km^2, and in terms of area it is the largest municipality in Riga region and the eleventh largest municipality in Latvia (Tukuma novads, [s.a.]). In terms of population, Tukums municipality is the third largest municipality in the country. According to the CSB, 28 thou. residents were registered in the municipality at the beginning of 2018, of which 17 thou. lived in the town of Tukums, meaning that the population was mainly concentrated in the town. (CSB, 2018).

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Source: authors' calculations based on Google Map

Fig. 1. **Tukums municipality**

Tukums municipality has a lot to offer to tourists, beginning with sightseeing places through to bird observation sites, countryside goodies, various events, tourist accommodation facilities and catering services. According to Singh (2011), tourism could be classified as follows: 1) recreational tourism, 2) environmental tourism, 3) historical tourism, 4) ethnic tourism, 5) cultural tourism, 6) adventure tourism, 7) health tourism, 8) religious tourism, 9) musical tourism, 10) village tourism, 11) business tourism, 12) scientific or congress tourism. Tukums municipality can offer almost all of them: 1) recreational objects: the Square of Liberty with a fountain, the Cherry Garden, Durbe Palace and the Durbe Park, Jaunmoku Palace; 2) environmental tourism sites: the deer farm „Rudini", the nature trail „Viesata River Curves" and the Spunni Boulder, the Kaive Oak, the nature trail in Ruzciems, the Great Kemeri Bog Boardwalk and the Dunduri Meadows; 3) historical tourism: a fragment of the wall of the Livonian Order Castle and the historical museum Castle Tower, the museum „Pastarins", the Sati Church and the Kuksi manor house; 4) ethnic tourism: Lestene Brothers' Cemetery; 5) cultural tourism: the Weaver Workshop of the Tukums Museum, the Smith Workshop of Gints Haneckis; 6) adventure tourism: Cinevilla, a golf court and a croquet court, entertainment on water, entertainment flights, distance skiing at the campsite „Sveikuli", curling and skating at the Tukums Ice hall; 7) health tourism: the bathhouse „Amajas" and Russian bathhouses; 8) religious tourism: the Lestene Lutheran Church; 9) musical tourism: the Tukums Cultural Centre building, the Durbe Open Air Stage; 10) village tourism is popularised by means of countryside goodies, thereby popularising not only the rural areas but also the town of Tukums; the horse farm „Skudru stalli", the farm „Mengeli" and the winery „Tevini"; 11) business tourism and 12) scientific or congress tourism services are not offered in Tukums municipality.

Besides the mentioned tourism places, various events are traditionally held to attract tourists in Tukums municipality. In 2017, the largest events in terms of number of visitors were as follows: the Awakening of the Fountain, the Long Night of Museums, the evening market in Pure, traditional wedding games in Tukums and the New Year's Eve Festivities in Tukums (Turisms. Tukuma turisma…, 2018). Of the five most popular events, four are held in the town of Tukums. Two events are held in

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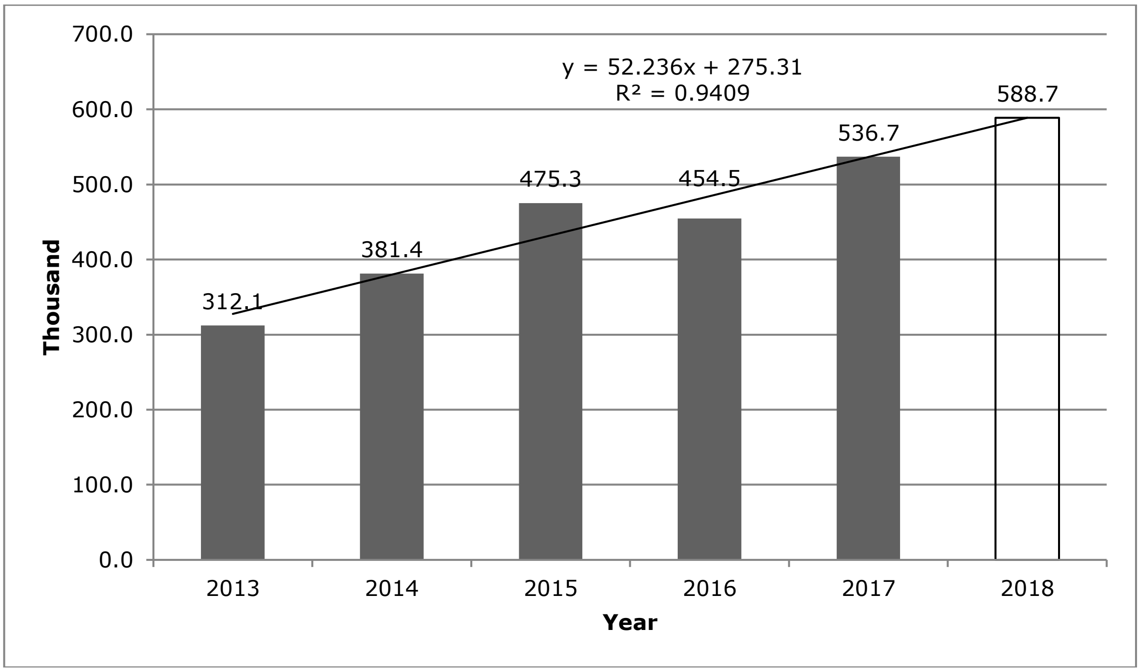
Pure rural territory and one in Tume rural territory. The other events held in Tukums municipality, according to the Tukums Tourism Information Centre (TIC), are not among the most popular and visited events.

The supply of tourism services is very broad in Tukums municipality, beginning with sightseeing places through to environmental tourism services and various activities and events in both summer and winter. Most of the tourist accommodation facilities and catering businesses are located and the most popular events are held in the town of Tukums; the Tourism Information Centre, which is the local government's institution is also located there. After examining and describing the supply of tourism services in Tukums municipality, one can conclude that the municipality is a responsible and sustainable municipality with regard to tourism, as it preserves its cultural and historical objects as well as natural objects and nature. The Tourism Information Centre is located in the town of Tukums, yet it also offers the information through the mobile application Visit Tukums. The application provides all the basic information needed for tourists: sightseeing places, activities, events, accommodation facilities and the best places where to eat and drink in Tukums municipality and its vicinity.

Characteristics of tourism in Tukums municipality.

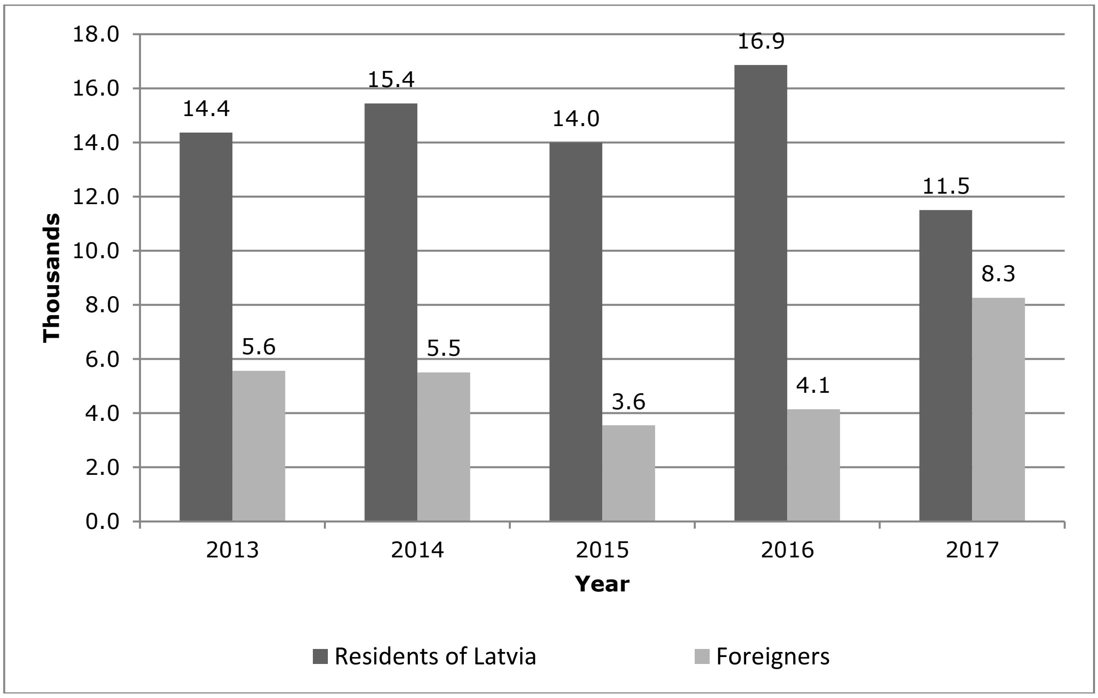


Source: authors' calculations based on* Turisms*.* Tukuma turisma*…, 2018

Fig. 2. **Number of tourists in Tukums municipality in the period 2013-2017, thou.**

In the period 2013-2017, the number of tourists rose by 224.6 thou. or 41.8 %. Such a significant increase could be explained by cooperation between the Tukums TIC and the municipalities of Engure, Jaunpils and Kandava and the Kurzeme Tourism Association, making joint efforts to popularise tourism in Tukums municipality and the entire region of Kurzeme (Tukums Municipality Council, 2014). A trendline for the data processed in MS Excel showed that an increase in the number of visitors could be expected in 2018. The determination coefficient R2~0.9, which indicated that the approximation function was of high quality. The annual number of visitors identified by means of the MS Excel trendline equation for 2018 was forecasted to increase by 52 thou. or 8.8 %. However, every travel-related activity cannot be accounted for, and at least once a year it is possible to aggregate data on tourism objects and events where tourists are registered.

The attractiveness of a region is characterised by the number of visitors to tourist accommodation facilities. The number of overnight visitors was variable in Tukums municipality in the period 2013-2017, as in the period 2013-2015 their number decreased by 2.4 thou. or 12.06 %, whereas in the period 2015-2015 their number increased by 3.51 thou. or 16.7 %. It was followed by a decrease by 1.21 thou. or 5.8 % in 2017. This indicates that the number of overnight visitors in Tukums municipality was unsteady. The total number of overnight visitors in 2013 compared with 2017 was almost the same, whereas within this period it both decreased and increased. In contrast, the annual number of foreign visitors demonstrated a positive trend.



***Source: authors' calculations based on* Turisms. Tukuma turisma…, 2018**

Fig. 3. **Number of overnight visitors in Tukums municipality in the period 2013-2017, thou.**

In the period 2013-2017, the number of overnight visitors – residents of Latvia – in Tukums municipality rose by 2.5 thou. or 14.8 %, while in the period 2016-2017 it declined by 5.4 thousand or 31.9 %. The decline could be explained by the fact that Riga is located near Tukums municipality, and many individuals went by train to Tukums municipality, yet No entertainment was offered in the municipality in evenings. The number of foreign overnight visitors rose by 2.3 thou. or 32.5 % in the period 2013-2017. One of the reasons of the rise might be the mobile application provided by the Tukums TIC, which facilitated tourist daily life by means of information available in Latvia, Russian and English. Nevertheless, the total number of overnight visitors – residents of Latvia – was larger than that of foreign overnight visitors. In 2017, the total number of domestic overnight visitors was larger than that of foreign overnight visitors by 3.2 thou. or 27.83 %. As incomes rise, individuals use their short holidays to travel across their country. Financial wellbeing is strongly associated with economic growth. An increase in financial wellbeing, which manifests itself as an increase in income and consumption, could be interpreted as a factor contributing to the standard of living, as the population can afford to spend more on recreation and travel during their free time.

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Table 1

Disposable income per household member in Latvia (EUR per month) and the number of domestic overnight visitors in Tukums municipality

Year	Disposable income per household member (EUR per month)	Change, %	Number of domestic overnight visitors in Tukums municipality (thou.)	Change, %	Income elasticity
2013	353.99		14.4		
2014	386.91	9	15.4	7	0,8
2015	416,5	8	14.0	-9	0,1
2016	437,11	5	16.9	21	4,2
2017	488,84	12	11.5	-32	0,1
				Average	1.3

Source: authors' calculations based on Turisms. Tukuma turisma..., 2018, CSB 2019

The calculations of income elasticity of demand revealed that tourism services in Tukums municipality were worth spending on and consuming. The average income elasticity of demand was more than one, which proved that for domestic tourists, tourism was a normal luxury product. It was particularly true for the year 2016 when domestic tourism was very attractive to the residents of Latvia. For the population of Latvia, tourism was a valuable service. However, in view of increases in income, more distant tourist destinations than Tukums could get attractive to the population of Latvia. Nevertheless, the given data are sufficient for making a forecast of demand for tourism.

The latest research studies have found the behaviour of tourists to be asymmetric, and this allows enhancing tourism forecasts. Unlike conventional demand models, the Smeral model divides economic growth into two stages: fast-growth periods and slow-growth periods. Both stages are processed separately by the Smeral model. The authors conclude that income elasticity of demand changes at both stages, whereas price elasticity of demand does not change considerably. In view of the asymmetric effects observed in simulations, the forecasts could be enhanced. This conclusion could contribute to further research on tourism forecasting and take into account the nonlinear demand for tourism. In the world (e.g. in Austria), big data are employed in forecasting, e.g. Google Trends data and the „LIKES" of Facebook posts of destinations (Li G., Wu D. C., 2018). Tourists could be counted more accurately in the territory of Latvia by means of big data of mobile communication operators, yet the legal framework of the EU prohibits the use of big data.

The methodology for tourism forecasting gets more advanced. Empirical research studies show that combined forecasting performance is superior to single models. Finally, both artificial intelligence models and hybrid models are growing in the tourism forecasting literature. The second trend is the use of big data and search engine data-based research methods. Tourism forecasting employs innovative, state-of-the-art forecasting techniques, applies online tourist behaviour data, takes account of asymmetric tourist behaviours, moves from destination-level demand forecasting to attraction site visit forecasting and integrates judgmental forecasting with statistical forecasting (Li G., Wu D. C., 2018).

Conclusions, proposals, recommendations

1) The domestic demand for tourism is very important for the national economy of Latvia with regard to economic growth and employment. However, despite the economic role it plays, the number of research investigations into factors affecting the flow of domestic tourists in Latvia is very

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small. The estimated elasticities provided by researchers are essential for policy-makers and tourism manager.

2) As technologies and infrastructures get more advanced and incomes of the population rise, people travel more today. As a result of the mentioned trends, tourism can generate extra revenue for the country as a whole and the municipalities. High-quality forecasts based on the latest technologies and big data, providing researchers with access to the big data, are needed to plan tourism development.
3) Even though Tukums municipality is not among the main tourist destinations in Latvia, the assortment of tourism services supplied in the municipality is diverse and appropriate for medium-income tourists of various categories. In Tukums municipality, the tourism services are mainly supplied in the town of Tukums, yet there are some opportunities as well as personalised tourist routs are designed, beyond the administrative territory of the municipality too, in cooperation with the neighbouring municipalities.
4) At a high rate of income growth, the residents of Latvia prefer traveling to more distant tourist destinations than Tukums municipality. At a low rate of income growth, the residents of Latvia prefer traveling to the nearest tourist destinations, e.g. Tukums municipality. Higher incomes allow making more expensive travels.

Bibliography

1. Alvarez-Diaz, M., D'Hombres, B., Ghisetti, C. (2017) Modelling Inter- and Intra-regionalTtourism Flows in Spain – a spatial econometric approach. Regional Statistics, Vol. 7. No. 2. 2017. pp. 3–34.
2. Birzakov, M.B. Introduction to Tourism. Fifth ed. Saint Petersburg: Publishing house Gerda. 320 p.
3. CSB (2018) ISG020. *Population Number and Its Change by Statistical Region, Cty, Town and County*. Retrieved: http://data1.csb.gov.lv/pxweb/lv/iedz/iedz__iedzskaits__ikgad/ISG020.px/table/tableViewLayout1/?rxid=f1079a5f-ef71-48f1-9755-a4dd79c2cac3 Access: 17.11.2018.
4. CSB. (2019) IIG040. *Households Disposable Income (euro, per month)*. Retrieved: http://data1.csb.gov.lv/pxweb/lv/sociala/sociala__mb__ienakumi/IIG040.px/?rxid=6745fda6-3aec-448b-aab4-8c7bdf67cf74 Access: 22.01.2019.
5. De la Mata, T., Llano-Verduras, C. (2011). Spatial Pattern and Domestic Tourism: An Econometric Analysis using Inter-Regional Monetary Flows by Type of Journey. *Papers in Regional Science*, Volume 2, Number 4, pp. 1-34.
6. Freijers, V. (2011) *Turisma marketings (Tourism Marketing).* Riga: Turiba University. 621 p.
7. Kaufmane, D. (2011). Cooperation Systems in Tourism: the Case of Zemgale Region. Doctoral dissertation. Jelgava. 174 p.
8. Leiper, N. (*1990*). *Tourism systems*. Occasional Paper 2. Department of Management Systems, Massey University, Auckland, New Zealand. 382 p.
9. Li, G., Wu, D. C. (2018). Introduction to the Special Focus: Tourism Forecasting—New Trends and Issues. *Tourism Economics*, 1-4. Retrieved: https://www.academia.edu/38197969/Introduction_to_the_Special_Focus_Tourism_forecasting_New_trends_and_issues?email_work_card=view-paper Access: 25.01.2019.
10. Mak, J. (2004) *Tourism and the Economy: Understanding the Economics of Tourism.* Retrieved: https://books.google.lv/books?id=B6EYxvSvW20C&pg=PA26&lpg=PA26&dq=tourism+income+elasticity&source=bl&ots=lw8Muif94n&sig=sa63KdRtRYLHNUCV-L1QRJAPsq0&hl=lv&sa=X&ved=2ahUKEwj-67Wc-ZreAhULXCwKHewWAJEQ6AEwA3oECAUQAQ#v=onepage&q&f=false Access:22.01.2019
11. Pompl, W. (1996) Touristikmanagement/ Beschaftungsmanagement. Sprinder Verlag. 341 S.
12. Singh, I. (2011) *What is Tourism and its Types?* [Retrieved: https://www.indiastudychannel.com/resources/140791-What-is-tourism-and-its-types.aspx Access:07.09.2018.
13. *Travel & Tourism* (2017) Retrieved: https://www.wttc.org/-/media/files/reports/economic-impact-research/countries-2017/latvia2017.pdf Access:22.01.2019.
14. Tribe, J. (2016). The Economics of Recreation, Leisure and Tourism. Fifth edition. London and New York: Routledge. 459 p.
15. *Tukuma novads (Tukums municipality).* Retrieved: https://www.tukums.lv/lv/tukuma-novads. Access: 16.11.2018.
16. *Turisms. Tukuma turisma regions* (2018) (Tourism. Tukums Tourism region). Tukums: Tukums TIC. 34 p.

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THE ROLE OF INSTITUTIONS IN REGIONAL DEVELOPMENT

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Abstract. Regional disparities have been a focus of scientific discussions for more than a century. Today, economic growth or development factors are as much important as, for example, sustainable development factors in the environmental and social dimensions. Social equality and public participation in state and environmental governance – through regional institutional cooperation – are among the priorities of sustainable development. Research on institutional cooperation is an urgent priority. Previous research studies indicated that local governments in the regions of Latvia implemented isolationistic policies both at the horizontal and at the vertical level, which was promoted by their competition aimed at benefiting themselves, ignoring common public interests. Previous cooperation among regional institutions was fragmented and based on short-term economic interests.
The research aim is to assess the role of institutional cooperation, placing a special focus on research done by national economists. After performing a literature review, the authors concluded that the research papers of both foreign and national researchers have stressed the essential role of institutional cooperation in regional economic development. Further and more detailed research has to be done on the pace of territorial growth, depending on local and national institutional cooperation.

Key words: new institutional economics, regional development, cooperation, collaboration.
JEL code: H79, I25, O38, R11.

Introduction

Successful (unsuccessful) institutional cooperation at the regional, national and international levels affect regional development. The role of institutions in regional development in Latvia has been researched, yet the aspect of institutional cooperation as an instrument for economic growth has to be researched more extensively. A considerable part of the mentioned research focused on reducing the administrative burden (Upite I., Pilvere I., Nipers A., 2011; et al.), cooperation among municipalities in Latvia (Bite D., 2012), cooperation among nongovernmental organisations (Razma N., 2013; et al.) as well as institutional effects on socio-economic development (Vitola A., 2016). Growth factors in the regions, the choice of public policies and potential development models (Kalnina-Lukasevica Z., 2013) as well as the urban system in Latvia and the prospects for it have been researched as well (Zaluksne V., 2014). Institutional cooperation in the regions of Latvia has been insufficiently researched at the academic level, while any research study on this field referred to the need to improve the institutional cooperation in particular. Most often, any analysis of institutional cooperation models refers to best practices to be taken over from foreign twin cities or formal measures prescribed by the government. There is a lack of comprehensive studies on institutional cooperation practices in cities under state jurisdiction and scientifically substantiated recommendations for improving the cooperation models. The research aim is to assess the role of institutional cooperation, placing a special focus on research done by national economists. The research analysed the scientific literature, policy documents and the relevant legal framework.

F.Hindriks and F.Guala point out that institutions are present everywhere – even writing their research paper entitled Institutions, Rules, and Equilibria: a Unified Theory, the authors had to indicate their position – professors – and workplaces – universities etc., namely their institutional affiliation (Hindriks F., Guala F., 2015). New institutional economics states that particularly institutions are those whose formal (legal framework) and informal (undefined yet existing rules) mechanisms represent the reason of economic disparities across nations. In his General Theory of

[1] Contacts to be added to the author, as a footnote at the bottom of the first page (6 point Verdana font)

Employment, Interest and Money, British economist John Meynard Keynes stressed the role of the government in economic development as well as pointed out that it is important to comprehend the economic principles under which the society live (Keynes, 1936).

Research results and discussion

Institutional cooperation at the horizontal and at the vertical level is a research problem for regional economics in Latvia; for example, this problem has to be researched by conducting an expert survey, a focus group survey or processing statistical data. To date, the roles of local or national governments in the economic development of the regions as well as institutional socio-economic effects have been a research problem. For this reason, focusing on institutional cooperation effects on economic processes is currently urgent in Latvia.

Pranab Bardhan points out that institutional economics is a topical field in economic science, as the key difference between wealthy and poor nations, perhaps, lies in the institutional system in particular in the countries (Bardhan P., 2010). A considerable contribution to institutional economics has been made by a US economist, Nobel peace prize winner (1993) Douglass North. D.North has pointed out that individuals have established institutions to create order and reduce uncertainty in economic activity, as well as the fact that the institutions are those shaping the economic structure promoting or hindering growth, including ownership, the tax system, fiscal and monetary policies (North D., 1991). Collecting qualitative data on institutions, Aljaz Kuncic, an economist at Ljubljana University, has classified institutions into three categories: legal, political and economic. He made a set of data on 197 countries, for the period from 1990 to 2010. The data allow identifying whether the government improves the institutional framework and whether it might be done in a better way. It is important to assess the extent to which a country develops its institutional framework to achieve economic growth; accordingly, relevant criteria have to be selected. A.Kuncic points out that institutional quality, including cooperation, is associated with geographical division – the highest quality is reported in North America, Japan, Central and Northern Europe, as well as a positive correlation is found between institutional characteristics and economic indicators (e.g. GDP per capita). Making considerable efforts, the researcher managed to make a data set for a period of 21 years and for more than 100 countries, which allows tracing the dynamics of the institutional framework as well as enables other researches and institutions to use it (Kuncic A., 2014).

The White Paper on European governance (2001), which was adopted on 25 July 2001, refers to five principles – openness, participation, accountability, effectiveness and coherence – as those of best governance. Out of the five principles, at least three directly underpin the significance of institutional cooperation: openness – institutions have to be more open and actively communicate among one another; participation – the effectiveness of institutions is directly dependent on how successful is the participation of the other ones; coherence – cooperation among regional institutions have to be coordinated. Of course, the other two principles referred to in the White Paper on European governance – accountability and effectiveness – also represent the basis of good cooperation.

At the national level, a good example of cooperation among national and regional institutions and entrepreneurs is the support programme of the Cohesion Fund, administered by the Ministry of Environmental Protection and Regional Development, for entrepreneurship in municipalities in the period 2014-2020. The purpose of it is to foster entrepreneurship and revitalise brownfield areas so that the areas belonging to local governments are redeveloped and entrepreneurship centres are established in the planning regions of Latvia.

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Institutional cooperation could be viewed as an opposite of competition. Competition is perceived as a struggle, a race for someone to win and someone to lose, whereas cooperation arises from another paradigm – any institution exists in the same space where overall development, a boom could be achieved based on cooperation. Development is promoted by cooperation, taking into account the strengths and weaknesses of the region, as well as the opportunities and threats and contributing to the economic pattern characteristic of the region and innovation – scientific, technological, economic and other ideas – that result in developing new goods or services and making them available on the market. In his voluminous work An Inquiry into the Nature and Causes of the Wealth of Nation, the founder of classical economic thought, Adam Smith, has stressed that the highest motive for the activity of individuals is their egoism and the wish to benefit themselves. It is likely that A.Smith made this finding based on his own experience, as in his previous work entitled the Theory of Moral Sentiments he referred to individuals as ethical and moral beings. One could understand that egoism as a prudent care about one's own benefit could be seen a positive until it begins restricting another individual's right to freedom and reasonable benefits. Of course, A.Smith pointed out that by seeking to satisfy one's own needs, every member of society also benefits the society as a whole (Smith A., 1776).

The present research views cooperation from the win-win perspective defined by S.Covey – both (or all) institutions involved are winners in the result of their cooperation rather than some of the parties gains, whereas another one loses or all the parties lose. According to S.Covey, who is an internationally recognised authority on leadership and an advisor to organisations on strategies, the win-win situation or mutual benefit means that an agreement or solution is mutually beneficial (for everyone) and satisfies both (all) parties involved. Owing to mutual benefit, all the parties involved feel satisfied and associated through a jointly accepted plan of action. Mutual benefit is the third alternative. It is not the path of one or another party; it is the best possible path (Covey R.S., 1989). It is important to use the win-win principle, which is the basis of successful cooperation, in cooperation among institutions in order to contribute to economic development in the regions.

To observe economic principles, economic activities have to be innovative, competitive and resource-efficient; it could be achieved if effective institutional cooperation is implemented. A lack of cooperation, including communication, is often the cause of an unfavourable entrepreneurial environment in municipalities. Researching economic transformation processes and results in Kurzeme region, K.Kreslins and his colleagues have found that regional institutions have to change their dominant „residential district mentality" that has emerged owing to the tax system imposed at the national level – the key source of tax revenues for local governments is the individual income tax, which urges them to compete for residents to be declared in their administrative territories. It is important to create an institutional framework that contributes to knowledge-based entrepreneurship and motivates businesses to invest in education and science. The researchers point out that it is important to establish networks of cooperation among universities as knowledge creators, business incubators as institutions conducive to entrepreneurship and entrepreneurs being ready to implement new ideas in practice, thereby contributing to the development of the regions. A considerable share of the researchers' conclusions refer to the need to continue cooperation among various institutions as well as make targeted investments in education and science, which contributes to the creation of new knowledge-intensive jobs in the region. As an excellent example of institutional cooperation, the researchers suggest establishing clusters representing a network of independent organisations comprised of enterprises and institutions creating knowledge (innovations) (i.e.

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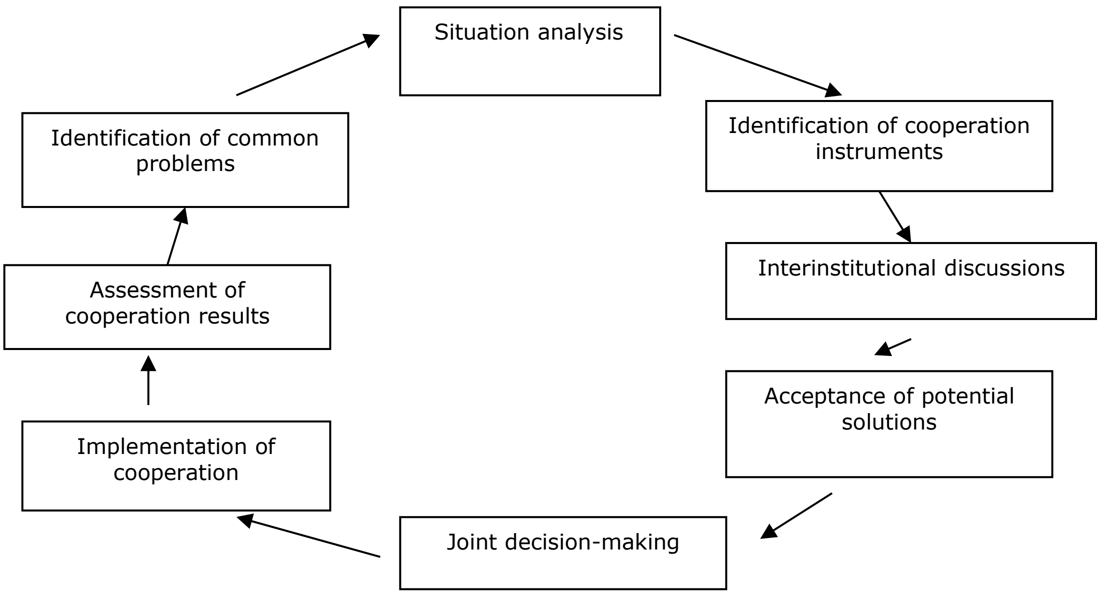
universities, research centres) and national and municipality-level institutions. The establishment of clusters would ensure the transfer of knowledge and skills as well as cooperation and the implementation of common interests (Kreslins K., et al., 2018).

Effective and fruitful cooperation emerges among institutions if it is shaped according to a scheme presented in Figure 1.



Source: authors' construction

Fig. 1. **Schematic representation of institutional cooperation**

Institutional cooperation is a non-stop process; it is meaningful if the planned outcome or even a better outcome is achieved. If the planned outcome, or even a better one, is not achieved, the institutions have to continue working on the solution to the problem. According to the scheme of institutional cooperation, the process of cooperation begins when the institutions identify a common problem. As long as No common problem has been identified, institutional cooperation is not necessary. Accordingly, the first essential step to be made is the identification/definition/determination of a common problem. After the common problem has been identified – institutions perform a situation analysis; depending on the nature of the problem, the analysis could be either detailed or simple. Based on the situation analysis, institutions determine cooperation instruments and carry out interinstitutional discussions on potential solutions and making the common final decision, which is based on the win-win principle making all the parties involved beneficiaries, so that none of the institutions is a loser or „sacrificed" in the result of cooperation. Only after the win-win decision has been made, institutions implement cooperation aimed at achieving the outcome; during the cooperation, an interim assessment of the outcome is made as well. Only if it is a win-win outcome, one can consider the goal has been achieved. If the win-win outcome has not been achieved, institutions continue tackling the problem until the win-win outcome is achieved or the planned outcome is changed/corrected.

To achieve a win-win outcome, institutional cooperation has to be both vertical, e.g. implemented on an international/national/regional scale, which is based on a uniform/similar legal framework throughout the European Union, and horizontal. It is essential that the employees of organisations are focused on achieving synergy, trust and cooperation, allow different views while cooperating and possess other important traits needed for cooperation. This paper section is essential for institutional cooperation, yet in more detail it is not discussed further.

Researching the knowledge-based economy in Vidzeme region, G.Krumins and his colleagues point to a positive fact that the region has the Valmiera Business Incubator and the Madona Business Incubator, Vidzeme University of Applied Sciences and other educational institutions providing support to entrepreneurs and therefore a competitive advantage, e.g. in designing business plans (Krumins G. et al., 2018). In surveys conducted by the researchers, entrepreneurs pointed out that mostly those who graduated from a particular educational institution were engaged in cooperation with the institution; accordingly, based on the surveys one can conclude that, first, the fact that an educational institution is located in the region or municipality could be regarded as a competitive advantage; second, both the educational institution and the entrepreneurs who have not graduated from it have to be ready to cooperate in order to develop their businesses. For example, just like the business incubators, Vidzeme University of Applied Sciences offers new entrepreneurs bureaus in some of its rooms and Internet connection. In the mentioned surveys, the chairman of the Cesis Council has pointed out that cooperation with educational institutions is useful because „if our schools teach the basics of computer programming, the relevant human resources will be available. If a specialist can have a job, s/he is interested in staying in the municipality". In the mentioned research, Cesis was analysed as a good example shoving that regional institutions have to cooperate not only with regional educational institutions but also with a national-level university – Riga Technical University. As national-level institutions, business incubators effectively provide support to new entrepreneurs through giving them bureaus, advice and funds. As solutions to the development of human resources in Vidzeme region, the researchers recommend municipality institutions to cooperate with nongovernmental and private institutions in order to tackle problems caused by migration, establish a cooperation network with the educational and research institutions of the region in order to stimulate innovation in entrepreneurship and contribute to communication, thereby giving way to private initiatives (Krumins G. et al., 2018). An analysis of the mentioned research on the knowledge-based economy in rural areas allows concluding that business incubators are one of the most successful examples how to shape cooperation among various institutions – the European Union (ERDF), national institutions (Investment and Development Agency of Latvia (IDAL)), a local government and new entrepreneurs. Cooperation occurs among political (EU), legal (IDAL, local government) and economic institutions. The authors (Krumins G. et al., 2018) believe that this is a good example of successful cooperation that indicates that institutional cooperation leads to a real improvement in economic indicators – new enterprises are started up, new jobs are created, unemployment declines and GDP per capita in the region increases.

After researching economic growth problems in Zemgale region, B.Rivza, M.Kruzmetra, A.Zvirbule and Z.Vitolina suggest expanding cooperation among scientific and practice institutions, administrative institutions and the population, as well as cooperation among the residents themselves as a priority for contributing to the knowledge-based economy. A positive example is the Department for Technology and Knowledge Transfer of Latvia University of Life Sciences and Technologies; the purpose of it is to contribute to the commercialisation of scientific innovations. Owing to cooperation with entrepreneurs, innovative products such as baby foods under the brand Rudolfs, cereals MILZU, dietetic foods produced from natural raw materials for people with health problems, chewing beebread pastilles, vegeTable products and many other products have been created. The researchers point out that in Zemgale region, institutional information exchange among local governments and entrepreneurs is developed well within the e-environment. In cooperation among the Jelgava Entrepreneur Association (nongovernmental organisation), the Latvian Chamber

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of Commerce and Industry (nongovernmental organisation) and the Jelgava Business Incubator of the Investment and Development Agency of Latvia (governmental institution), a series of activities „Business Club" are held to contribute to professional competences of entrepreneurs, sharing experience and a good environment for communication among entrepreneurs. Even though there are good examples of institutional cooperation in Zemgale region, further progress in the knowledge economy requires, first, more cooperation between local governments and local residents – a focus has to be put on jointly defining the goals to be achieved and the specific tasks to be performed by (local governmental and nongovernmental) institutions to achieve the goals. Not a less important priority is how to make entrepreneurs associate so that they share their knowledge, skills and experience, thereby contributing to the entrepreneurial environment in the regions. The population too should be more involved in nongovernmental organisations, the purpose of which would be to contribute to the knowledge economy in the regions (Rivza B. et al., 2018).

I.Jundrupa and M.Senfelde, conducting a research study on competitiveness in the planning regions of Latvia, suggest establishing an institution being trusted by all the stakeholders and responsible for cooperation and setting common goals and holding interinstitutional meetings etc. (Jundrupa I. et al., 2011). At the national level, the Cross-Sectoral Coordination Centre has been established that, in accordance with its Statute, is the leading national development planning institution. In cooperation with other national institutions, it designs national-level policy documents as well as provides interinstitutional cooperation and joint action for common national goals. A separate research study should be done on the performance of the Cross-Sectoral Coordination Centre in relation to its responsibility for cooperation and coordination.

After getting familiarised with the research studies in regional economics by national scientists, one can conclude that in the regions where regional universities or research centres are located, local institutions demonstrate more initiatives, cooperating with municipality institutions, research institutions and entrepreneurs, thereby promoting innovation in the region. Good examples of institutions contributing to a favourable environment for development and innovation are as follows: Vidzeme University of Applied Sciences, Ventspils University College, Liepaja University, Latvia University of Life Sciences and Technologies, Daugavpils University and Rezekne Academy of Technologies. Of course, it is essential that the national legal framework contributes to an environment conducive to cooperation among various institutions, thereby fostering economic growth. An analysis of the research studies on regional development in Latvia by national scientists allows concluding that in order to promote cooperation among regional institutions in the regions of Latvia, it is important to:

1) create a national and municipal legal framework conducive to cooperation among regional institutions aimed at introducing innovations rather than competition with one another;
2) design a regional **strategy** for a particular municipality to cooperate among local institutions and introduce innovations;
3) provide national institution **support** (financial and nonfinancial instruments) for cooperation among local institutions with the aim of introducing innovations;
4) promote cooperation among national and regional institutions aimed at introducing innovations.

Conclusions, proposals, recommendations

1) The scientific literature review allows concluding that institutions represent a behaviour accepted in society that has developed over a long period. It is required to distinguish the formal

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(institutions) – the legal framework – from the informal – the dominant views, values and standard behaviour of a particular society that are not regulated by a legal framework but are observed by the society them because „it is acceptable" in the society.

2) In the regions of Latvia, institutions are often insufficiently oriented towards cooperation and mainly make isolationistic policies that hinder the development of the region in a long-term.
3) Innovative enterprises generating higher value-added goods and services are mainly established in the regions of Latvia where universities and research centres are located and effectively perform as well as institutions oriented towards cooperation are available.

Bibliography

1. Bardhan, p. (2010). *Institutional Economics of Development: Some General Reflections*. Institutional Microeconomics of Development. , MIT Press, 2010.
2. Bite, D. (2012). *Cooperation of Local Governments in Latvia"*. Riga 2012.
3. Covey, R.S. (1989). *The 7 Habits of Highly Effective people*.
4. Hindriks, F., Guala, F. (2015). *Institutions, Rules, and Equilibria: a Unified Theory*. Journal of Institutional Economics (2015), 11:3, 459-480.
5. Jundrupa, I., Senfelde, M. (2011). *Konkuretspejas novertesana Latvijas planosanas regionos (Competitiveness Assessment in the Planning Regions of Latvia)*. Scientific Journal of Riga Technical University, Economics and Business. Economy.
6. Kalnina-Lukasevica, Z. (2013). *Development of Regions in Latvia – the Model of Regional Economic Development, Planning and Evaluation*. Riga. University of Latvia.
7. Keynes, J.M. (1936). *The General Theory of Employment, Interest and Money*. https://www.marxists.org/reference/subject/economics/keynes/general-theory/index.htm
8. Kreslins, K., Libkovska, U., Sunina, L., Stefenberga, D. (2018). *Tautsaimniecibas transformacijas procesi un rezultati Latvijas regionos. Kurzemes regions*. Zinasanu ekonomika Latvijas lauku un regionu dzivotspejai (Economic Transformation Processes in the Regions of Latvia. Kurzeme Region. The Knowledge Economy for the Viability of Rural Areas and Regions of Latvia). pp. 51-72.
9. Krumins, G., Rozentale, S., Melbarde, V., Ore, M., Andersons, A., Eglitis, R. (2018). *Tautsaimniecibas transformacijas procesi un rezultati Latvijas regionos. Kurzemes regions*. Zinasanu ekonomika Latvijas lauku un regionu dzivotspejai (Economic Transformation Processes in the Regions of Latvia. Kurzeme Region. The Knowledge Economy for the Viability of Rural Areas and Regions of Latvia). pp. 160-228.
10. Kuncic, A. (2014). *Institutional Quality Dataset*. Journal of Institutional Economics (2014), 10, pp. 135-161.
11. North, D.C. (1991). *Institutions*. Journal of Economic Perspectives – Volume 5, Number I-Winter 1991, pp.97-112.
12. Razma, N. (2013). *Nevalstisko organizaciju darbibas arvalstu prakses izpete un sadarbibas modela izstrade. Priekules novads* (Examination of Foreign Practices of Nongovernmental Organisations and the Development of a Model for Cooperation. Priekule Municipality).
13. Rivza, B., Kruzmetra, M., Zvirbule, A., Vitolina, Z., *Tautsaimniecibas transformacijas procesi un rezultati Latvijas regionos. Zemgales regions. Zinasanu ekonomika Latvijas lauku un regionu dzivotspejai* (Economic Transformation Processes in the Regions of Latvia. Zemgale Region. The Knowledge Economy for the Viability of Rural Areas and Regions of Latvia). pp. 228-282.
14. Smith, A. (1776). *An Inquiry into the Nature and Causes of the Wealth of Nations*. https://www.ibiblio.org/ml/libri/s/SmithA_WealthNations_p.pdf
15. *The White Paper „European Governance"*. Brussels. 25.07.2001.
16. Upite, I., Pilvere, I., Nipers, A., (2011). *Economic Evaluation of Administrative Burden for Construction in Jelgava Municipality.* International Journal of Economics and Finance Studies. Vol 3, No.2, 2011.
17. Vitola, A. (2016). *An Evaluation of the Socioeconomic Impact of Institutions*. RTU Publishing House.
18. Zaluksne, V., (2014). *The Urban System in Latvia and its Development Prospects*. Jelgava.

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PROFESSIONAL SUPPORT MEASURES FOR TEACHERS IN REGIONS OF LATVIA

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Abstract. The authors in the paper present the results of the on-line survey on teachers' professional support measures which was carried out in collaboration with the Latvian Trade Union of Education and Science Employees. The aim of the research was to explore, how teachers assessed availability and level of professional support measures within a context of current education reforms. The quantitative research design was used in the study and the quantitative survey of the teachers was conducted via web tool visidati.lv (n=1258) from November 2 till November 27, 2018. The questionnaire comprised the statements on following measures of professional support: financial, material and technological, methodological, and societal. Teachers' opinions regarding their provision with resources and support were analysed by region. The results witness about regional disparities mainly between Riga and Latgale regions. There are statistically significant differences between both regions in how teachers are provided with health insurance. The need for financial and societal support was assessed as most important for teachers in Riga region, while Latgale teachers considered the need for methodological and material support. Teachers in Zemgale more often than the respondents from other regions agreed with the statement that when integrating students with special needs into general education institutions, teachers are not paid for additional duties. The authors conclude that different professional support measures are available for teachers in Latvia, but there is no common support system in place to address which functions and support measures should be implemented at national level and which at municipal level.

Key words: educational institutions, professional support, regions, teachers.
JEL code: R23, K31.

Introduction

The support that teachers need includes financial, material and methodological support, as well as broader public awareness and involvement in the implementation of reforms. Policy pointers of the European Union „highlight the need for incentives to be set to ensure investment in teachers' and trainers' professional development, taking into account the differing needs of each role" (European Union, 2018, p.3). The development of professional competencies and the extent to which the specially designed teachers' professional competence development programs should be ensured in Latvia is determined by the Cabinet of Ministers Regulations No. 569 (Noteikumi par pedagogiem ..., 2018). They concern the general competences of the teacher, the content of the education and didactics, and the management of education. Although the offer is diverse, teachers admit that socially and technologically changing conditions require more up-to-date content measures than they are available to date. To some extent this is acknowledged also in other studies (for example, Sprott, 2018). Each country looks for the appropriate way how to support educators at both national and local levels. As OECD report states, „in half of the OECD countries and economies with available data, school heads and teachers working in a disadvantage or remote area are rewarded with additional compensation" (OECD, 2018:26).

To understand the broader picture and opinions of the teachers in Latvia, the Latvian Trade Union of Education and Science Employees (LIZDA) conducted a web-survey in autumn, 2018. The aim of

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the research was to explore, how teachers assessed availability and level of professional support measures within a context of current education reforms. The following tasks of the study were defined: (1) to identify problems in various aspects related to teachers 'professional support, (2) to compare results across regions and Latvia as a whole, and (3) to develop proposals for the improvement of teachers' professional support. The article presents the results of the LIZDA study, which focus on the assessment and improvement of the professional support of teachers.

Research methodology

Quantitative research strategy was used for the research. The questionnaire was developed and posted on the webpage *visidati.lv* and was available from November 2 till November 27, 2018. Information about the survey was disseminated via LIZDA homepage, trade union's member organizations in schools, social media, and website *eklase.lv*. The questionnaire comprised the statements on various measures of professional support: financial, material and technological, methodological, and societal. All these measures were assessed within a context of current education reforms: (1) support for the introduction of competence-based content; (2) support for novice teachers; (3) support for the provision of inclusive education; (4) support for principals of educational establishments. The respondents were offered to use symmetric 5-point Likert scale (strongly agree, slightly agree, neither agree nor disagree, slightly disagree, strongly disagree) in order to assess the statements. The teachers' survey was conducted on the basis of the methodological and ethical principles of the online survey (Roberts & Allen, 2015; Toepoel, 2015). The survey was anonymous and the results were used only in an aggregated way.

The research sample was made of 1258 respondents, more than half of whom (68 %) were LIZDA members. Of the teachers surveyed, 40 % lived in cities, while 60 % lived in rural municipalities. Among the respondents, 94 % were women and 6 % were men. The teachers surveyed represented all planning regions of Latvia: Vidzeme (25 %), Kurzeme (15 %), Zemgale (18 %), Latgale (24 %) and Riga region (18 %). Respondents represented all levels of education (preschool, elementary school, primary school, secondary school) and positions; they were with different seniority and represented different age groups.

For the descriptive analysis of quantitative data mean (M) was calculated by using statistical program SPSS (Statistical Package for Social Science v21) and Independent samples t-test was calculated to analyse differences in opinions of the respondents representing different regions.

Research results and discussion

1. Teachers' views on their professional support in Latvia's planning regions

The main areas of support in the research were related to support for the implementation of competence-based content, support for novice teachers, support for inclusive education and support for principals of educational institutions. The comparison of teachers' professional support in Latvia's planning regions was performed by comparing the views of teachers on available provision with resources for teaching methods, materials for technical, financial and public support. Figure 1 shows which types of support teachers considered as the priority for their professional development.

Methodological support as very important was most often assessed in Latgale (51 %) and Kurzeme (47 %). Material and technological support was assessed as the most significant in Latgale region (43 %), while societal support in Riga region (44 %). In general, the survey results revealed that in the regions of Latgale and Riga teachers were more likely to assess all forms of professional support as important, so they felt the need for aid. In teachers' opinions of the regions of Riga and

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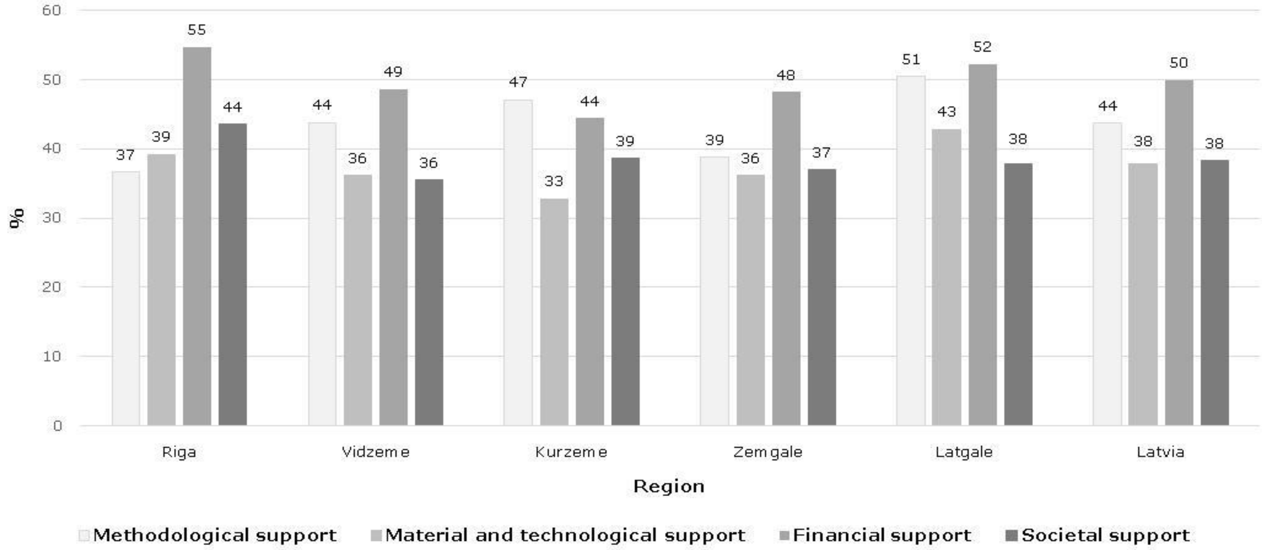
Latgale, contrary to the comparison of all other regions, were statistically significant differences ($p<0.05$) in assessment of importance of all support measures: financial support (Riga M=1.90; Latgale M=1.92); material and technological support (Riga M=2.11; Latgale M=2.05); methodological support (Riga M=2.24; Latgale M=1.97); societal support (Riga M=2.15; Latgale M=2.22).

In general, teachers of Latvia assessed financial support (50 %) and methodological support (44 %) as a priority. Technical support (38 %) and societal support (38 %) were equally important. As a priority, the financial support was more often assessed by teachers in the regions of Riga (55 %) and Latgale (52 %), although Riga teachers have higher average wages compared to other regions, but less frequently in the region of Kurzeme (44 %).



Source: Authors' calculations based on LIZDA survey data

Fig. 1. **Teachers' views on the importance of types of their professional support (aggregate of the assessments 'strongly agree' and 'slightly agree', %), n=1258**

2. Financial support

As part of the study, teachers were asked to assess the statements related to the lower salary rate and the motivation of young people for the work of the teacher and for additional obligations regarding inclusive education (see Figure 2). Nearly all teachers agreed (90 %) that the lowest rate of wages for teachers set out in the regulatory enactments does not increase the prestige of the profession (92 % of Riga teachers supported this statement) and believed that the salary rate of the teacher cannot be lower than the average salary in the country, multiplied by a factor of 1.2 (93 % of Riga and 94 % of Vidzeme respondents). The regions of Riga and Latgale had statistically significant differences in teachers opinions ($p<0.05$, Riga M=1.36, Latgale M=1.55), as well as the regions of Riga and Zemgale ($p<0.05$, Riga M=1.36, Zemgale M=1.46). Vidzeme teachers more frequently (97 %) than the respondents on average (93 %) agreed that teacher remuneration is not motivating for young people to choose a job in this profession. Zemgale teachers more often (81 %) than teachers in the country on average (75 %) agreed with the statement that when students with special needs are integrated in general education institutions, teachers are not paid for any additional duties. Regarding this statement, the regions of Riga and Latgale have statistically significant differences ($p<0.05$, Riga M=1.36, Latgale M=1.64).

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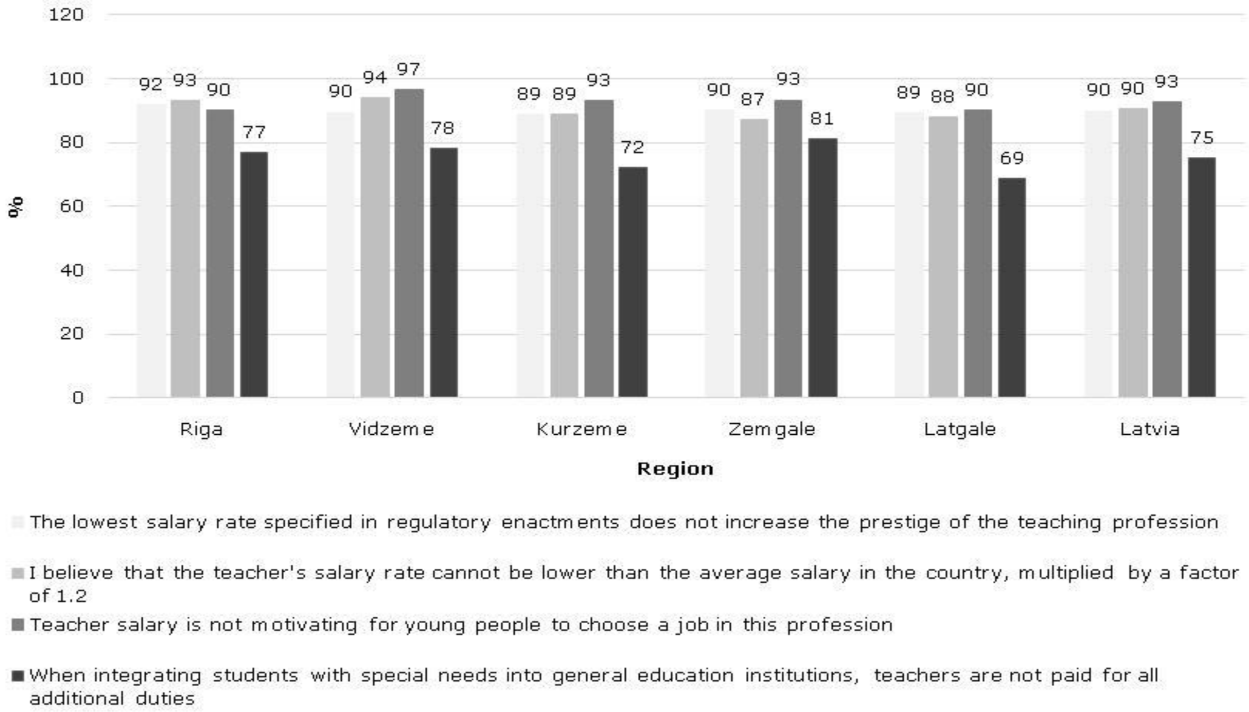
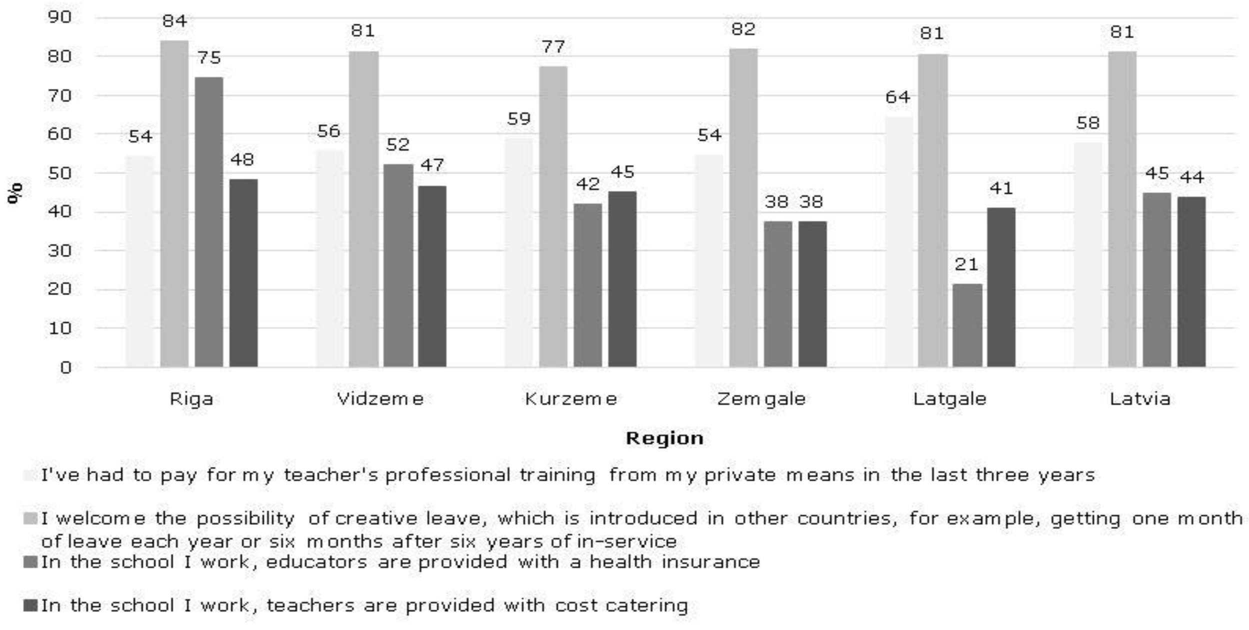


Source: Authors' calculations based on LIZDA survey data

Fig. 2. **Teachers' assessment on salary and motivation for work (aggregate of the assessments 'strongly agree' and 'slightly agree', %), n=1258**

Teacher ratings on the statements of job motivation factors (aggregate of answers 'strongly agree' and 'slightly agree') are presented in Figure 3.



Source: Authors' calculations based on LIZDA survey data

Fig. 3. **Assessment of teachers on motivational factors for work in the education sector (aggregate of the assessments 'strongly agree' and 'slightly agree', %), n=1258**

In Latgale, teachers more often (64 %) than average in Latvia (58 %) strongly agreed and slightly agreed that they have funded their teacher's professional development from their private resources over the last three years. The regions of Riga and Latgale, contrary to the comparison of all other regions, had statistically significant differences ($p<0.05$, Riga $M=2.87$, Latgale $M=2.42$) regarding this statement. Around 80 % of the respondents in all regions strongly agreed or slightly agreed they

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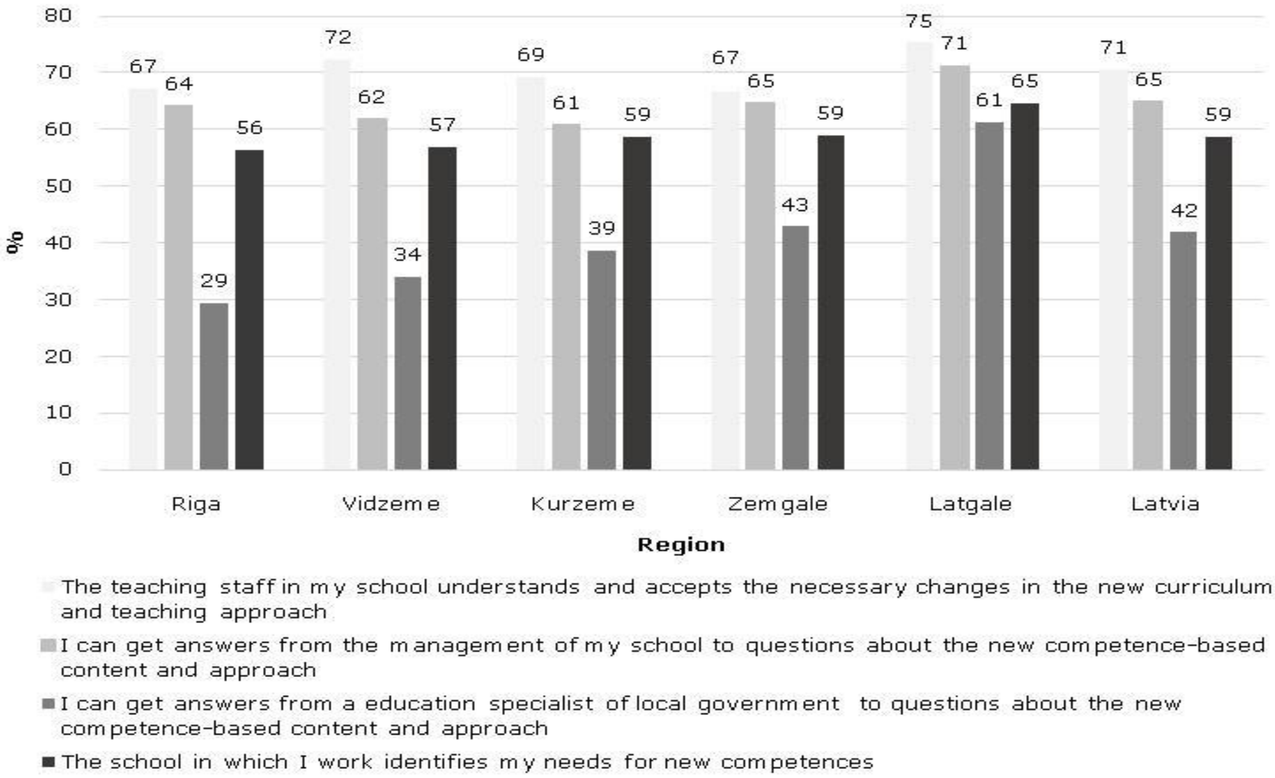
value positive experience of other countries in giving teachers creative leave. There were No statistically significant differences in teachers' opinions between regions regarding this statement. Regarding provision of health insurance there are statistically significant differences between the regions of Riga and Latgale ($p<0.05$); in the region of Riga the 75 % of the respondents have received health insurance, while in Latgale there were only 21 %, which is the least result in comparison to all other regions. Approximately 40-50 % of teachers in all regions had cost catering; there were No statistically important regional differences in this.

3. Methodological support

When comparing the statements on cooperation for the development of professional skills in the educational establishment (see Figure 4), it should be concluded that there were No statistically significant differences between regions and all regions equally dominated by the notion that the educational establishment understands and accepts the necessary changes in the new teaching content and teaching approach, and that teachers receive answers to questions about the new competence-based content and approach from the school leaders. There was a significant difference between Riga and Latgale regions: in Riga 29 % of teachers received answers to questions about the new competence-based content and accessed support from an education specialist in local municipality, while in Latgale 61 % of the respondents reported on positive experience. In all regions, equally around 60 % of the teachers acknowledged that the educational institution was aware of the needs for new, necessary competencies.



Source: Authors' calculations based LIZDA survey data

Fig. 4. **Teachers' assessment on cooperation to improve professionalism in the educational establishment (aggregate of the assessments 'strongly agree' and 'slightly agree', %), n=1258**

There are No statistically significant differences between regions in teacher opinions on cooperation to improve professionalism in educational establishments for the implementation of competence-based content (see Figure 5). The study shows that fewer (average 56 %) teachers are

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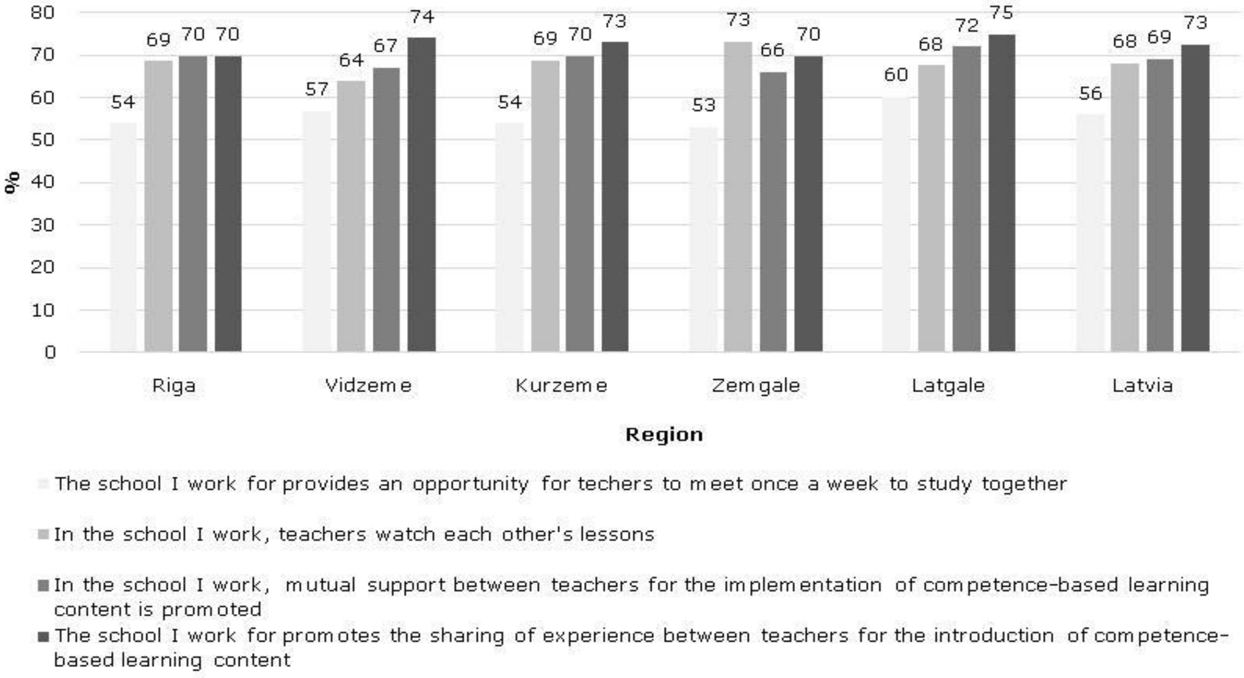
given the opportunity to meet once a week to study together, but more often (average 73 %) teachers believe that they are promoted to share experience.



Source: Authors' calculations based on LIZDA survey data

Fig. 5. **Teachers' assessment on support for implementation of competence-based education (aggregate of the assessments 'strongly agree' and 'slightly agree', %), n=1258**

4. Societal support

In the Kurzeme region, it is more common (47 %), but in the Riga region it is uncommon (69 %) that teachers consider it necessary to educate members in municipalities in order to take various decisions on educational development issues (see Table 1).

Table 1

Teachers assessment on societal support for work in the educational sector (aggregate of the assessments 'strongly agree' and 'slightly agree', %), n=1258

No	Statements	Riga	Vidzeme	Kurzeme	Zemgale	Latgale
1.	In the municipality in which my school is situated, it is necessary to educate members of municipality on the development of the educational sector	69	75	77	75	72
2.	As one of the options, I welcome the partial organisation of methodological work at both national level and at municipal level.	65	62	68	63	64
3.	Employer provides supervision to teachers when needed	29	26	31	26	29
4.	National media needs to reflect more on good practices in the education sector	88	89	91	88	89

Source: Authors' calculations based on LIZDA survey data

In Kurzeme, teachers have been more critical of organising methodological work at all levels, as well as the need to reflect good practices in the education sector in the media. In this region, employers have provided more frequent supervision for teachers (31 %) than in Vidzeme (26 %) and Zemgale (26 %). When assessing the views of teachers on social support for work in the education sector, it can be concluded that there are No statistically significant differences in opinions across regions.

5. Material and technological support

Views of teachers on technology provision are summarized in Table 2.

Table 2

Teachers' assessment on the provision of technical support in the educational establishment (aggregate of the assessments 'strongly agree' and 'slightly agree', %), n=1258

No	Statements	Riga	Vidzeme	Kurzeme	Zemgale	Latgale
1.	The necessary support for technology use is available	73	76	77	80	79
2.	There is a computer available with the Internet connection	83	80	76	83	76
3.	There is sufficient support with different programs on computers	72	68	62	72	75
4.	There is unlimited access to the printer	63	70	63	69	78
5.	There is unlimited access to the copier	69	77	75	77	81
6.	There is unlimited access to the scanner	51	58	58	55	66
7.	There is an opportunity to use an interactive blackboard in the learning process	50	54	54	59	58
8.	A smartphone is available and paid for using it	20	21	23	24	26
9.	Municipal Service apartments are available for attracting teachers	14	10	7	17	9

Source: Authors' calculations based on LIZDA survey data

It should be concluded that there are No statistically significant differences in the views of teachers between the regions, but the continued trend is that teachers in Latgale region are more positive in terms of technology provision compared to the teachers of the Riga region. It is positive that in Zemgale municipalities (17 %) and Riga municipalities (14 %) more teachers have access to service apartments what motivates teachers to work in municipalities.

Conclusions

1) In comparison with other regions, teachers in Latgale and Riga regions are more likely to assess all forms of professional support as important. The regions of Riga and Latgale have statistically significant differences in assessing all types of professional support. There are No such differences between the views of teachers in other regions.
2) The need for financial and societal support is most important for teachers in Riga region, while Latgale teachers consider the need for methodological and material support.
3) Compared to other regions, teachers in Riga and Vidzeme are more critical in their assessments of motivation for work in the teaching profession and its impact on the prestige of the teaching profession. Teachers in Vidzeme more often than in Latvia, on average, agree that the teacher's salary is not motivating so that young people choose a job in this profession.
4) Teachers in Zemgale more often than teachers in the state, on average, agree with the statement that when integrating students with special needs into general education institutions, teachers

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are not paid for additional duties. Teachers in the regions of Riga and Latgale have statistically significant differences in this view.

5) There are statistically significant differences between the regions of Riga and Latgale, as well as the regions of Riga and Zemgale, in teachers' assessments of the lowest salary rate, which should be similar to the average salary in the country, multiplying it by a factor of 1.2.
6) In Latgale, the teachers more frequently strongly agree and slightly agree with the statement that over the last three years, they had to finance their own teacher's professional development from their private means. Regarding this statement, there are statistically significant differences between the regions of Riga and Latgale.
7) There are statistically significant differences between the regions of Riga and Latgale in how teachers are provided with health insurance: more teachers receive it in the Riga region than in Latgale.
8) Professional support measures are being implemented for teachers in Latvia, but there is No common support system in place to address which functions and support measures should be implemented at national level and which at municipal level.

Bibliography

1. European Union (2018). Teachers and Trainers Matter. How to Support Them in High-performance Apprenticeships and Work-based Learning. 12 Policy Pointers. Luxembourg: Publications Office of the European Union. Retrieved from: http://ec.europa.eu/social/publications Access: 29.01.2019
2. *Noteikumi par pedagogiem nepieciesamo izglitibu un profesionalo kvalifikaciju un pedagogu profesionalas kompetences pilnveides kartibu Nr. 569 (Regulations Regarding Procedures for the Development of Education and Vocational Qualifications and Vocational Competencies of Teachers No 569)* (2018). Retrieved: https://likumi.lv/ta/id/301572-noteikumi-par-pedagogiem-nepieciesamo-izglitibu-un-profesionalo-kvalifikaciju-un-pedagogu-profesionalas-kompetences-pilnveides Access: 29.01.2019
3. OECD (2018). *Education at a Glance 2018: OECD Indicators.* Paris: OECD Publishing. Retrieved: https://read.oecd-ilibrary.org/education/education-at-a-glance-2018_eag-2018-en#page4 Access: 31.01.2019
4. Roberts, D. L. & Allen, J. p. (2015). *Exploring Ethical Issues Associated with Using Online Surveys in Educational Research*. Educational Research and Evaluation, 21(2), pp. 95-108. DOI: 10.1080/13803611.2015.1024421
5. Sprott, A. R. (2018). *Factors that Foster and Deter Advanced Teachers' Professional Development.* Teaching and Teacher Education, 77, pp. 321-331. https://doi.org/10.1016/j.tate.2018.11.001
6. Toepoel, V. (2015). *Doing Surveys Online*. London: Sage Publications, 280 p.

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USE OF RENEWABLE ENERGY IN THE EUROPEAN UNION – TRENDS OF CHANGE

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Abstract. Purpose of the article was to assess the use of energy from renewable sources in the European Union Member States in 2004—2016. Changes in the structure of renewable energy carriers are presented, indicating the directions of changes. A high concentration of renewable energy consumption in the European Union was found. The share of renewable energy in total energy consumption in all EU countries was increasing, but not all countries are able to achieve the national targets. The main source of renewable energy in the European Union was biomass, and its share in the total structure of renewable energy was about 45 %. A weak relationship between the share of renewable energy in final gross energy consumption and the Human Development Index (HDI) was also found.

Key words: renewable energy, renewable energy sources, European Union, energy.
JEL codes: O13, P18.

Introduction

Access to energy resources and security of energy supply are the main conditions contributing to socio-economic progress. This is particularly evident in the case of the European Union, which established its energy policy on the basis of these two criteria. However, economic development and associated energy use, mainly derived from non-renewable sources, adversely affects the environment. It should also be remembered that exhaustible resources from conventional sources will be reduced the next several decades. The solution enabling the economic growth of the European Union and individual Member States, while respecting the natural environment, is the use of energy from renewable sources. Positive and negative aspects related to the use of renewable energy were discussed by many authors (Wicki L., 2017; Golebiewski J., Rakowska J., 2017; Wysokinski M., Trebska P., Gromada A., 2018). The use of renewable energy sources in various countries is often difficult due to the existence of non-renewable energy sources in a given country (Rokicki T., 2016). It is therefore important to reduce total energy consumption, its rational use and increasing the share of renewable energy sources in total energy consumption. This approach has been included in many directives and regulations issued by European Union institutions and bodies.

One of the objectives of the EU energy policy, in accordance with art. 194 of the Treaty on the Functioning of the European Union (European Union, 2012) is to support renewable forms of energy. This objective is pursued by the directive on the promotion of the use of energy from renewable sources (European Parliament, 2018). This directive is part of the 'Clean energy for all Europeans' legislative package, the introduction of which will contribute to increasing energy efficiency, achieving global leadership in the use of energy from renewable sources by the European Union and creating fair conditions for consumers. This package contains 8 different legislative texts (Clean Energy for all Europeans):

- Directive of 30 May 2018 on the energy performance of buildings,
- Directive of 11 December 2018 on the promotion of the use of energy from renewable sources,
- The Energy Efficiency Directive of 11 December 2018,
- Regulation of 11 December 2018 on the Governance of the Energy Union and Climate Action,
- Electricity Directive,
- Electricity Regulation,

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- Risk-Preparedness Regulation,
- Rules for the regulator ACER (Agency for the Cooperation of Energy Regulators).

Pursuant to the directive, the use of energy from renewable sources in total energy consumption in 2030 should amount to 32 %. The Commission pointed out that this objective may be increased due to the decrease in energy consumption in the European Union, Union obligations related to decarbonisation or reduction of renewable energy costs. This goal has changed over the past few years. In the Directive of 23 April 2009 on the promotion of the use of energy from renewable sources (European Parliament, 2009), the 20 % share of energy from renewable sources was assumed for 2020. In 2014, the European Commission proposed that this share should be at least 27 % for the year 2030 (European Commission, 2014) but in view of the aspirations set out in the Paris Agreement (United Nations, 2015), the development of technologies related to renewable energy and the reduction of costs in in this sector, the objective set out in the Directive of 11 December 2018 was adopted.

Considering abovementioned objectives of the European Union, it is important to analyse the current state and identify the trends of changes in this area currently taking place in EU Member States.

Research results

The study adopted five research tasks:

- valuation of the share of renewable energy sources (RES) in the European energy mix,
- estimation of the share of individual carriers of renewable energy sources in the structure,
- establishing groups of European Union member states, depending on the share of renewable energy in the final gross energy consumption and the level of the Human Development Index,
- establishing of the correlation between RES and the Human Development Index (HDI),
- estimation of the concentration of renewable energy in the European Union.

The following research methods were used to implement the above-mentioned tasks:

- literature study,
- Gini index and Lorenz curve,
- Pearson's linear correlation coefficient.

The research was based on data from Eurostat and Human Development Data.

Renewable energy sources are characterized by a growing share of gross energy consumption in the European Union (Figure 1). In all EU countries, share increased in 2016 compared to 2004 by at least 4 p.p. The largest increase took place in Denmark (17.3 p.p.) and Sweden (15.1 p.p.). Furthermore, Sweden was the only country in Europe where the share of renewable energy in the final gross energy consumption was higher than 50 %. The average share in 2016 for the entire European Union was 17 % and was twice as high as in 2004, however, it has not yet achieved the 2020 target. Each Member State has set its own target for 2020. These objectives include the starting point, the potential for the development of renewable energy and economic results. Among the 28 countries of the European Union, 11 reached the target set for 2020 in 2016. They were: Bulgaria, the Czech Republic, Denmark, Estonia, Croatia, Italy, Lithuania, Hungary, Romania, Finland and Sweden. In addition, the share of renewable energy in the final gross energy consumption in Austria was 1 p.p. lower than the designated goal. At the other end of the scale are the Netherlands (8 p.p. below the target), France (7 p.p.), Ireland (6.5 p.p.), the United Kingdom (5.7 p.p.) and Luxembourg (5.6 p.p.).

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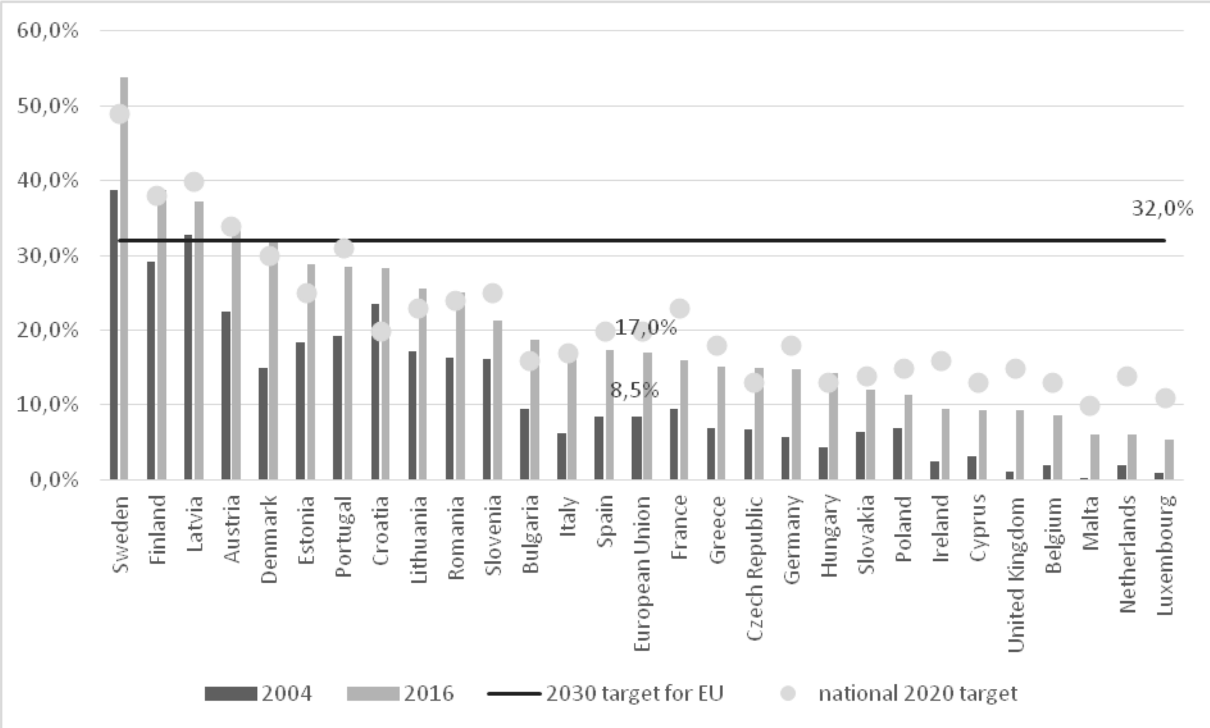

Source: author's calculations based on data from Eurostat

Fig. 1. **Share of renewable energy in gross final energy consumption in European Union in 2004-2016**

The main source of renewable energy in the European Union was biomass. Its share in the total structure of renewable energy in 2016 amounted to 45.37 %, which means a decrease by over 10 p.p. compared to 2004 (Figure 2). However, despite the decline in the share in the structure, biomass consumption in the analysed period increased by nearly 55 %, from 63.5 million tonnes of equivalent oil (Mtoe) to over 98 Mtoe. According to a study conducted by the International Renewable Energy Agency (IRENA) in cooperation with the European Commission (IRENA, 2018), it will remain the key source of renewable energy in the EU by 2030. It results from the possibility of wide use of biomass during decarbonisation processes of energy sources in the region, when other solutions are unprofitable. In addition, biomass was the main source of renewable energy in industry, while in transport it was the second largest source.

The fastest growing source of renewable energy in the European Union was solar energy. In 2004, its final gross consumption (sum of solar thermal and photovoltaic solar energy) amounted to 0.7 Mtoe, 12 years later - 13.4 Mtoe (increase by 1825 %). In the analysed period the energy consumption from liquid biofuels increased nearly six times, while the energy from wind power and biogas increased 4 times. Despite the general trend of the development of renewable energy sources, two of them: water energy and geothermal energy were characterized by small increases (by 6 % and 26 % respectively). The general structure of energy sources consumption has also changed. Already in 2004, the three main renewable energy sources (biomass, water energy and wind energy) accounted for 85 % of total gross energy consumption of renewable energy. For comparison, in 2016 share was 71 %.

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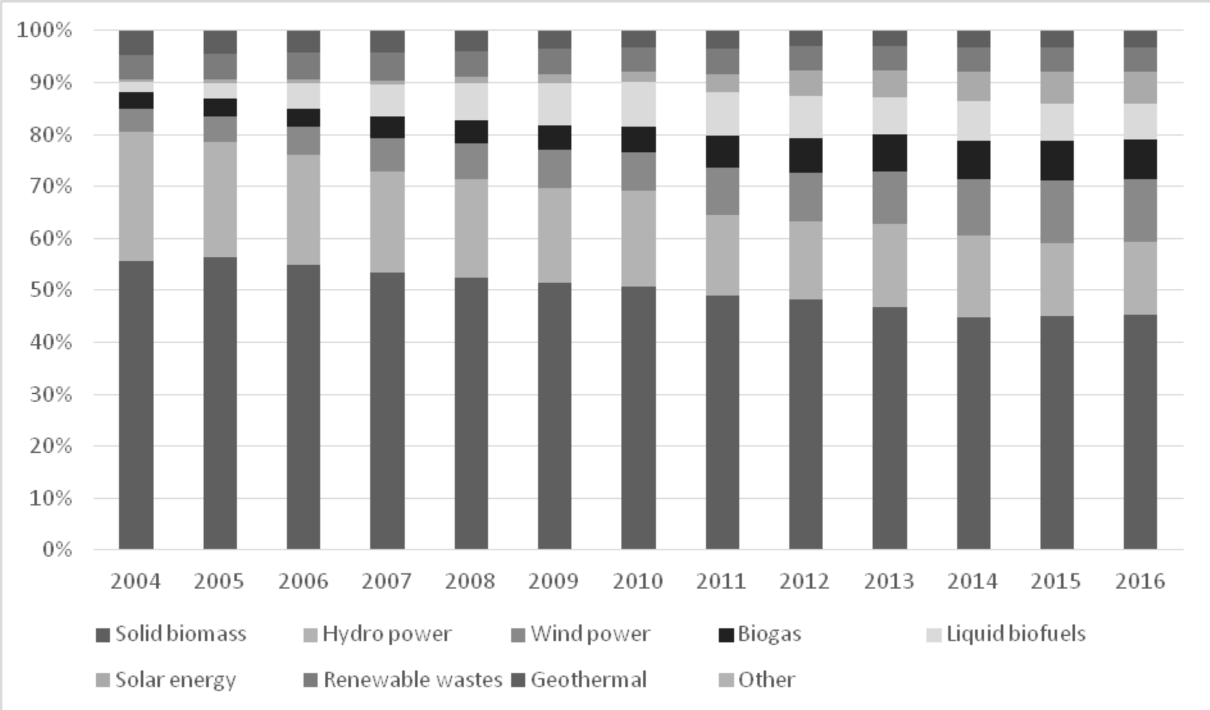


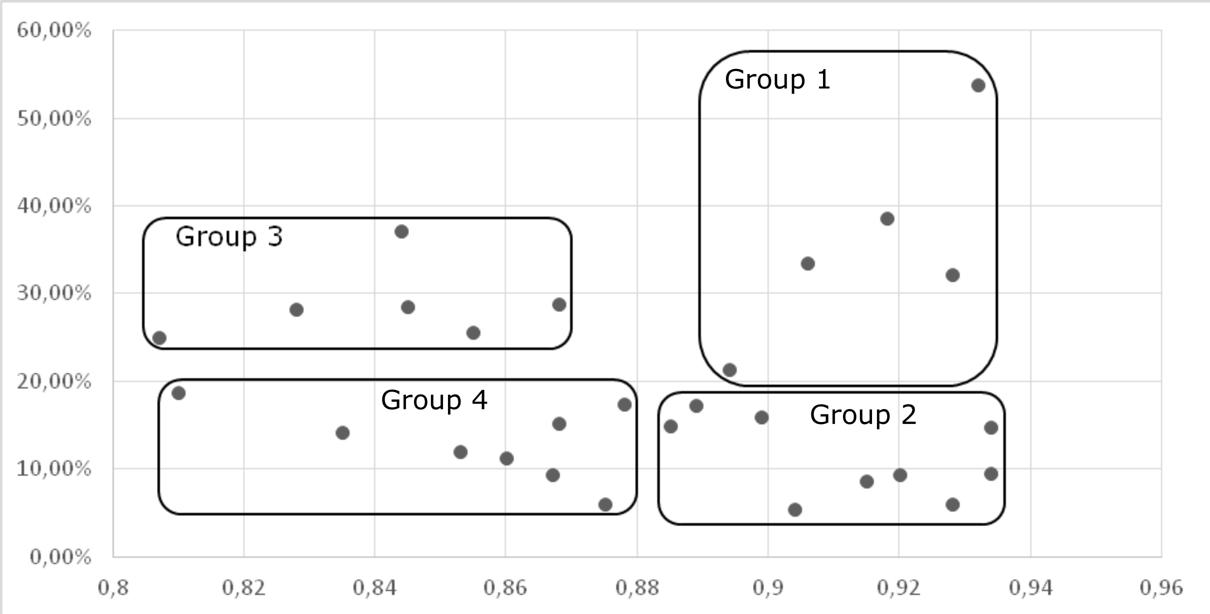
Source: author's calculations based on data from Eurostat

Fig. 2. **Share of renewable energy sources in the gross consumption of renewable energy in European Union in 2004-2016**

Considering the relation between the share of renewable energy sources in gross energy consumption and the Human Development Index, EU Member States can be divided into four groups (Figure 3):

- Group 1 - countries with an HDI higher than the average for the sample (> 0.881393) and the share of renewable energy sources in gross energy consumption higher than the average for the entire European Union (> 19.96 %),
- Group 2 - countries with an HDI higher than the average for the sample (> 0.881393) and the share of renewable energy sources in gross energy consumption lower than the average for the entire European Union (<19,96 %),
- Group 3 - countries with an HDI lower than the average for the sample (<0.881393) and the share of renewable energy sources in gross energy consumption higher than the average for the entire European Union (> 19.96 %),
- Group 4 - countries with an HDI lower than the average for the sample (<0.881393) and the share of renewable energy sources in gross energy consumption lower than the average for the entire European Union (<19,96 %).

Group 1 includes such countries as: Sweden, Finland, Denmark, Austria and Slovenia. These are countries with a high level of social development, for years investing in environmental protection and the development of renewable energy sources. Group 2 includes: Germany, Ireland, the Netherlands, the United Kingdom, Belgium, Luxembourg, France, Spain and the Czech Republic, using mostly large amounts of energy, and therefore are forced to diversify energy sources. This affects the smaller role of renewable energy in these countries. Group 3 are countries, such as Latvia, Estonia, Lithuania, Portugal, Croatia and Romania. In these countries, the share of renewable energy in total energy consumption is high and results mainly from geographical values that favour the development of renewable energy (Romania, Croatia, Portugal) and the small area of the country, which partially affects the amount of energy consumption (Latvia, Estonia, Lithuania). Countries belonging to Group 4 are small island states characterized by low energy consumption (Malta, Cyprus), countries with relatively high energy consumption, in which the transition from conventional energy sources to renewable sources is gradually but slowly (Bulgaria, Hungary, Slovakia and Poland) and the countries of Southern Europe, which were significantly affected by the financial crisis in the euro area (Italy and Greece).



Source: author's calculations based on data from Eurostat and Human Development Data

Fig. 3. **Relationship between the share of renewable energy in gross final energy consumption and Human Development Index in European Union in 2016**

Pearson's linear correlation coefficients were calculated in 2004, 2008, 2012 and 2016 in order to establish the relation between the share of renewable energy in final gross energy consumption and the Human Development Index. A weak negative relationship between the share of renewable energy in final gross energy consumption and the Human Development Index in the analysed years was found. The social development of a given member state in No way affects the share of renewable energy in final consumption.

Table 1

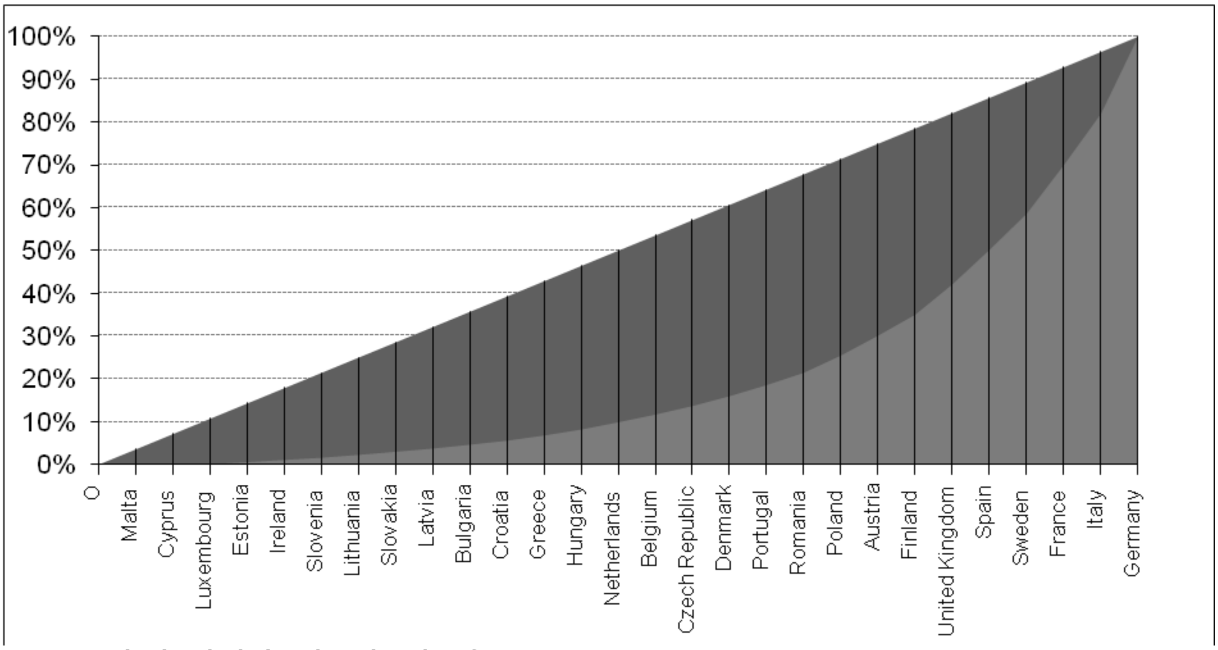
Pearson's linear correlation coefficients between the share of renewable energy in final gross energy consumption and Human Development Index in European Union in 2004-2016

Pearson's linear correlation coefficients for year			
2004	2008	2012	2016
-0,096	**-0.036**	**-0.056**	**-0.029**

Source: author's calculations based on data from Eurostat and Human Development Data Source

The Gini coefficient was used to determine the concentration of renewable energy in the European Union. Data on renewable energy consumption for 2016 in 28 EU countries were used. The Gini coefficient for the audited year was 0.59. This means a high concentration of renewable energy consumption in several European Union countries. Figure 4 presents the concentration of renewable energy consumption in the European Union using the Lorenz curve. On the horizontal axis, the countries of the European Union were classified in an ascending order according to the share in the total consumption of renewable energy. The vertical axis presents the percentage of total consumption of renewable energy in the European Union. In 2016, in nine European Union countries

78.5 % of available renewable energy was used (170 Mtoe). These include Germany, Italy, France, Sweden, Spain, the United Kingdom, Finland, Austria and Poland. The first three countries consumed a total of 89.5 Mtoe, which accounted for over 41 % of total consumption. For comparison, 14 countries at the other end of the scale consumed 21.5 Mtoe in 2016, which accounted for less than 10 % of total renewable energy consumption in the European Union.



Source: author's calculations based on data from Eurostat

Fig. 4. **Concentration of renewable energy consumption in the European Union in 2016**

Conclusions, proposals, recommendations

1) Energy from renewable sources is an important element of the sustainable development strategy of the European Union and the member states. RES are an alternative to traditional primary non-renewable energy carriers. There is a continuous development of renewable energy throughout the European Union, which is caused by the growing public awareness of the consumption of traditional, conventional energy sources.
2) Methods of using energy from renewable sources depend on the conditions prevailing in a given area, i.e. on wind speed, solar radiation intensity, geothermal resources, accessibility to water. The main source of renewable energy in the European Union was biomass, while solar energy was the fastest-growing renewable energy source. Fast-growing sources were also biofuels, wind energy and biogas. The general structure of consumption of renewable energy sources was also changing.
3) The target set in the directive on the promotion of the use of energy from renewable sources, according to which the use of energy from renewable sources in total energy consumption in 2030 should amount to 32 %, was achieved in 2018 by five countries (Sweden, Finland, Latvia, Austria, Denmark), while the next three were close to achieving it (Estonia, Portugal, Croatia).
4) Among the group of countries with the HDI index and the share of renewable energy sources in gross energy consumption higher than the average for the entire European Union, the Scandinavian countries dominated. The studies revealed No positive impact of social development on the increase in energy consumption from renewable sources.

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5) In 2016, a high concentration of renewable energy consumption in the European Union was found - 3 countries with the highest consumption (Germany, Italy, France) were responsible for more than 40 % of total consumption in the EU.

Bibliography

1. Clean Energy for all Europeans. Retrieved: https://ec.europa.eu/energy/en/topics/energy-strategy-and-energy-union/clean-energy-all-europeans. Access: 06.02.2019.
2. European Commission (2014). *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, A policy framework for climate and energy in the period from 2020 to 2030*. Brussels.
3. European Parliament and the Council (2009). *Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC*. Official Journal of the European Union L 140/16.
4. European Parliament and the Council (2018). *Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources*. Official Journal of the European Union L 328/82.
5. European Union (2012). *Consolidated version of the Treaty on the Functioning of the European Union*. Official Journal of the European Union C 326/47.
6. EUROSTAT. Retrieved: http://www.europa.eu. Access: 06.02.2019.
7. Golebiewski, J., Rakowska, J. (2017). *Production and Use of Bioenergy in Poland in the Context of the Development of Bioeconomy*. Proceedings of the 8th International Scientific Conference: Rural Development 2017, Aleksandras Stulginskis University, Lithuania.
8. Human Development Data. Retrieved: http://hdr.undp.org/en/data. Access: 06.02.2019.
9. International Renewable Energy Agency (IRENA) (2018). *Renewable Energy Prospects for the European Union*.
10. Rokicki, T. (2016). *Sustainable Development in Energy Sector in the European Union Countries*. Economic Science for Rural Development. Proceedings of the International Scientific Conference, Jelgava, No 43, pp. 108-116.
11. United Nations (2015). *Paris Agreement*. 2015 United Nations Climate Change Conference, Paris.
12. Wicki, L. (2017). *Food and Bioenergy – Evidence from Poland*. Rural Development and Entrepreneurship: Bioeconomy Production and Co-operation in Agriculture. Proceedings of the International Scientific Conference, 27-28 April 2017, Jelgava, Latvia, pp. 299-305.
13. Wysokinski, M., Trebska, P., Gromada, A. (2018). *Use of Energy in Polish Agriculture*. Rural Development and Entrepreneurship: Production and Co-operation in Agriculture. Proceedings of the International Scientific Conference, 9-11 May 2018, Jelgava, Latvia, pp. 531-536.

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DISPARITIES OF REGIONAL HIGHER EDUCATION INSTITUTIONS IN LATVIA

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Abstract. The aim of the regional development is to promote and ensure balanced and sustainable development of the state. One of the approaches for ensuring equal development is related to the opportunities for acquiring tertiary education. The lack of diverse study programmes may cause risk of „brain drain" in-between the regions, as well as it may question the future sustainability of certain regions, thus causing negative long-term consequences for the regional development. Equal accessibility to higher education in the regions is an important precondition for a balanced development of national economy. The analysis of data on the higher education institution enrolment, graduation and state funded study opportunities are analysed in order to determine the existing regional disparities between the statistical regions of Latvia and the higher education institutions (HEIs) within. The presented data show great disparities in terms of equal availability of graduates of certain fields of study among regions of which Vidzeme region stands out the with highest level of specialization among all RHEIs. The novelty of this study lies in the use of a study thematic fields based approach, thus further indicating the skills based disparities among the regions.

Key words: higher education, regional development, student distribution disparity.
JEL code: D02, H52, I25**.**

Introduction

Higher education is a fundamentally important prerequisite for the creation of a functional knowledge society, while the purpose of the whole education system is to increase the competitiveness of each individual in the general labour market, while it can help to increase social cohesion. The cooperation efforts of the higher education institutions are tailored towards increasing the role of higher education in the integration of regional economic and convergence of every planning region (Knight, 2012; Sinkiene, Grumadaite, 2014; Grizane, Sannikova, Jasaitis, 2017).

In the regions of Latvia, socioeconomic disparities are significant due to the population of the state continuously centring around Riga planning region (especially the capital city), while in other regions the population is decreasing significantly (LR CSP, 2017). Similar situation can be observed also in the higher education system, i.e. the proportion of enrolled students in regions is decreasing while in the HEIs of Riga – increasing. In Latvia, the research on the overall role of regional HEIs (RHEI) in the regional perspective is not very common (Mazure, Viksne, 2007, 2008; Rivza, 2007, 2008; Brekis, 2015), while abroad this topic has been more deeply investigated.

Abroad the research of the RHEIs role has focused towards: (1) the RHEIs as a driving force of entrepreneurship, while increasing the prosperity in regions (Radinger-Peer, Pflitsch, 2017); (2) the HEIs in the commercialization of knowledge (Goldstein, Rehbogen, 2013); (3) the RHEI participation in the local and regional governance (Lawton-Smith, Bagchi-Sen, 2012; Goldstein, Glaser, 2013); (4) the involvement of RHEIs in the regional policy creation process (Trippl, Sinozic & Lawton-Smith, 2015) and (5) the role of RHEIs for ensuring of regional sustainability (Goldstein, 2010). All of the mentioned themes are part of the goals defined in the 'Sustainable Development Strategy of Latvia until 2030' (Latvija 2030), hierarchically the highest national level long-term planning document, calling for the change of HE paradigm (PKC, 2012a). Further the 'National development plan 2014-2020' (NAP) states the mid-term priorities in the field of education and science, while underlining actions for the fields of research, innovation, and tertiary education. The main tasks of the NAP include development of quality higher education according to the needs of the labour market, its

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availability, competitiveness and consolidation (PKC, 2012b). The aim of the regional development, mentioned in the NAP2020, is to promote and ensure balanced and sustainable development of the state (PKC, 2012b). In the situation, when a disproportionate urban emigration of young people from regions to the capital takes place, it is necessary to analyse the statistical data on the students in the RHEIs of Latvia. In these settings the ISCED4 and ISCED 5 data can be considered as the main indicator for the highly educated part of the society Nonetheless the Masters and PhD degree can further the qualitative development of human capital (Mazure, Viksne, Rivza, 2018; Viksne, Mazure, 2007), while the ISCED 6 and ISCED 7 represent the further education trends. Thus the latter group may not be counted on top of the former group.

Aim of the research: to analyse the available statistical data on the regional state funded higher education institutions (HEIs), their enrolment, graduation and study opportunity indicators, thus determining the existing regional disparities between the statistical regions of Latvia and the HEIs within.

Tasks of the research:

1) to carry out analysis of disparities among the RHEIs of Latvia;
2) to investigate the student enrolment an graduation tendencies by their thematical field of studies in statistical regions of Latvia.

$$HHI_s = \sum_{i=1}^{n} \left(\frac{x_i}{x} \right)_s^2 \quad (1)$$

Research methods: monographic method, descriptive statistics. In this research Herfindahl-Hirchman Index (HHI) index is applied. Although (HHI) is commonly used for market concentration measurements in a modified form it can also be used in regional economics. HHI index allows for two-dimensional comparison of the diversification within the given dataset (Kaivo-oja, Vahasantanen, et.al., 2017).The HHI formula is as follows:

where for HHI_y the x_i is the number of graduates of the specific study field (i) at a given RHEI and (x) is the total number of graduates from all study fields in a HEI (s), and (n) is the number of study fields. HHI-index is calculated as the sum of squared study field shares for each HEI. For HHI_x the (i) is the number of HEIs, (n) is the number of HEIs, while x_i is the number of graduates of the specific HEI and (x) is the total number of graduates from the specific field of studies. The index result Table is as follows: a HHI index below 0.01 indicates of a high diversification within the dataset, below 0.1 - an unconcentrated saturation, between 0.1 to 0.18 - indicates of a moderate concentration, above 0.18 – indicates of a high concentration (McCann,2001).

Research sources and materials: the research is based on documents, research papers of local and international origin, statistical data from the Ministry of Science and Education.

Research object: the research investigates the enrolment, graduation and study opportunities of (ISCED 4 to ISCED 7) students in the state established HEIs in the statistical regions of Latvia.

Research limitations: the research specifically focuses on the period from 2009 to 2017, which best describes the post financial crisis tendencies in the tertiary education. The analysis does not include data on state and legal person' established HEI' affiliates nor colleges in any of the statistical regions due to their different competitive role in the higher education system.

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Research approach

The meaning *region*, is defined as a marked territory based on geographical, economic and political traits (Baldunčiks, Pokrotniece, 2007). The term *regional university* is not defined in any of the regulations of the Republic of Latvia, thus author, taking into account the existing linguistic tendencies, state its meaning within this article as 'higher education institutions, which are placed outside of the capital'. In Latvia, a RHEI is considered a HEI which is located outside of the capital Riga (LV006). In the annual review on the „Higher education of Latvia 2017" six RHEIs can be identified: Latvia University of Life Sciences and Technologies (LLU); Daugavpils University (DU); Liepaja University (LiepU); Ventspils University College (VeA); Rezekne Academy of Technologies (RTA) and Vidzeme University of Applied Sciences (ViA) (IZM, 2018[a]). Which are located in four territorial units, Kurzeme (LV003), Latgale (LV005), Vidzeme (LV008), AND Zemgale (LV009) (CSB, 2015). The research includes analysis of data on student enrolment and graduation, as well as the availability of state funded study places on the basic (latv. – '*pamatstudijas'*) and higher (latv. – '*augstaka limena studijas'*) level study thematic fields in six RHEIs. The research is based on publicly accessible information from the Ministry of Education and Science of Latvia (IZM) – annual statistics yearbook „Overview of the higher education" over the period from 2009 to 2017 (IZM, 2018[a]). The statistics include summary indicators for the part-time and full-time students of two separate groups – ISCED (International Standard Classification of Education) 5th and 6th level as well as ISCED 7th and 8th level. The analysed period includes academic year 2009./2010 till 2017./2018. The higher education study programmes' 4th classification level, considers eight study thematic fields (code in brackets) which include: Education, Humanities and Arts, Social Science and Commerce, Nature science, mathematics and IT, Engineering, production, construction, Agriculture, Health Science and Welfare, Services (MK, 2017).

Research results and discussion

The results of the analyses show that the proportion RHEIs versus the total number of HEIs (17 public and 16 legal person established institutions) in the country is 22 %. In 2017 just 3775 students enrolled in RHEIs, i.e. 19.5 % of the total number (19350) of students enrolled in public HEIs, or just 15.6 % of the total number (24141) of students enrolled in both public and private HEIs (IZM, 2018[a]).

The enrolment data (Table 1) shows that the majority of students have enrolled in LLU (1346) and DU (853), while the least in VeA (264) and ViA (254). The overall analysis of the proportion of students choosing studies in any given field, show the most popular are Social science, commerce, law field related studies (22.0 %) and those of Engineering, production and construction field (21.5 %) which have reached parity. Meanwhile the least desirable choice for studies is in the Health and social welfare field (2.9 %).

It can be observed (Table 2) that during the research period among different thematic fields of study the overall numbers of ISCED 5 and ISCED 6 graduate students differ substantially. When comparing the top study fields by the number of graduates in the comprehensive field, the Social science, commerce and law field (7198 graduates) is the largest with the LLU at the front position (2844 graduates), followed by the Education field (3212 graduates) with DU at the forefront (1211 graduates) and Engineering field (3209 graduates) with LLU (2720 graduates) at the front. When ranking the universities by their total corresponding number of graduates in the given period, it is noticeable that the largest is LLU (7592 students), followed by DU (3920), LiepU (3189), RTA (2796),

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ViA (1653) and VeA (1180). When comparing the ISCED 4, ISCED 5 level data region-wise it can be seen that on most of students have graduated in Zemgale region (7592), followed by the Latgale region (6716), Kurzeme region (4369), and the Vidzeme region (1653).

Table 1

RHEI enrollment in tertiary education ISCED 5 to ISCED 8 in 2017/2018 in comparison to the total number of enrolled students in RHEIs (%)

HEI	(1) Education	(2) Humanities and Art	(3) Social science, commerce and law	(4) Nature sciences, mathematics, IT	(5) Engineering, production, construction	(6) Agriculture	(7) Health and social welfare	(8) Services	Total number of enrolled students per HEI
LLU	4.7	-	18.1	-	44.4	25.7	0.7	6.4	**1346**
DU	24.7	28.6	16.1	15.9	-	-	4.6	10.1	**853**
LiepU	32.4	18.9	14.6	16.9	1.1	-	9.3	6.8	**472**
RTA	18.3	3.9	36	11	24.2	-	2.5	4.1	**591**
ViA	-	-	25.6	34.3	20.1	-	-	20.1	**254**
VeA	-	26.5	39.4	27.7	6.4	-	-	-	**264**
Total number of enrolled students per field	**535**	**426**	**832**	**441**	**813**	**346**	**108**	**279**	**3780**
(%)	14.2	11.3	22.0	11.7	21.5	9.2	2.9	7.4	100

Source: author's calculations based on (IZM, 2018[b])

Table 2

Total number of ISCED 5 and ISCED 6 tertiary level graduates over the period from academic year 2009/2010 until 2017/2018 by RHEI and statistical regions

ISCED Level	RHEI and/or region	(1) Education	(2) Humanities and Art	(3) Social science, commerce, law	(4) Nature sciences, math., IT	(5) Engineering, production, construction	(6) Agriculture	(7) Health and social welfare	(8) Services	Total graduates	HHI $_y$
ISCED 4, ISCED 5	LLU (Total in Zemgale)	272	-	2844	64	2720	1379	-	313	7592	0.30
	DU	1211	915	914	409	-	-	199	272	3920	0.22
	LiepU	1152	404	874	145	3	-	330	281	3189	0.24
	RTA	577	305	1220	111	304	-	51	228	2796	0.26
	ViA (Total in Vidzeme)	-	-	905	360	101	-	-	287	1653	0.38
	VeA	-	443	441	215	81	-	-	-	1180	0.31
	Region	(including Zemgale and Vidzeme region)									$\bar{x}$=0.29
	Kurzeme	1152	847	1315	360	84	-	330	281	4369	0.21
	Latgale	1788	1220	2134	520	304	-	250	500	6716	0.22
	Subtotal:	**3212**	**2067**	**7198**	**1304**	**3209**	**1379**	**580**	**1381**	**20330**	$\bar{x}$=0.26
	(%)	15.8	10.2	35.4	6.4	15.8	6.8	2.9	6.8	100	
	HHI $_x$	0.45	0.52	0.29	0.31	0.73	1.00	0.51	0.27	$\bar{x}$=0.48	

Source: author's calculations based on (IZM, 2018[b])

On a more detailed level, in **Kurzeme** region the three largest groups of graduates are in Social science, commerce and law field (1315), Education field (1152) and Humanities and Art field (847).

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In **Zemgale** region –Social science, commerce and law field (2844), Engineering field (2720) and Agriculture (1379). In **Latgale** region –Social science, commerce and law field (1305), Education field (1029) and Humanities and Art (447). In **Vidzeme** region –Social science, commerce and law field (905), Nature sciences, math., IT (360) and Services (287). In the field of higher tertiary education level (ISCED 6 and ISCED 7), a similar situation can be observed. While the leader universities are different, the top study thematic fields are: Social science, commerce and law field with the DU at the front (868 graduates), followed by the Education field with DU (582 graduates) and Humanities and Art with the DU (406 graduates) in the leader positions.

Table 3

Total number of ISCED 7 and ISCED 8 tertiary level graduates over the period from academic year 2009/2010 until 2017/2018 by RHEI and statistical regions

ISCED Level	**RHEI and/or region**	**(1) Education**	**(2) Humanities and Art**	**(3) Social science, commerce, law**	**(4) Nature sciences, math., IT**	**(5) Engineering, production, construction**	**(6) Agriculture**	**(7) Health and social welfare**	**(8) Services**	**Total graduates**	**HHI $_y$**
ISCED 6, ISCED 7	LLU (in Zemgale)	267	-	832	37	631	471	60	248	**2546**	0.22
	DU	582	406	868	241	-	-	30	215	**2342**	0.25
	LiepU	519	155	195	47	-	-	185	36	**1137**	0.29
	RTA	447	41	437	111	29	0	0	114	**1179**	0.30
	ViA (in Vidzeme)	-	34	171	109	-	-	-	68	**382**	0.32
	VeA	-	166	175	58	29	-	-	-	**428**	0.34
	Region	(including Zemgale and Vidzeme region)									$\bar{x}$=0.29
	Kurzeme	519	321	370	105	29	-	185	36	**1565**	0.23
	Latgale	1029	447	1305	352	29	-	30	329	**3521**	0.26
	Subtotal:	**1815**	**802**	**2678**	**603**	**689**	**471**	**275**	**681**	**8014**	$\bar{x}$=0.24
	(%)	22.6	10.0	33.4	7.5	8.6	5.9	3.4	8.5	**100**	
	HHI$_x$	0.42	0.47	0.36	0.41	0.84	1.00	0.51	0.38	$\bar{x}$=0.45	
	Total:	**5027**	**2869**	**9876**	**1907**	**3898**	**1850**	**855**	**2062**	**28344**	
	(%)	17.7	10.1	34.8	6.7	13.8	6.5	3.0	7.3	100	
	HHI$_x$	0.44	0.50	0.30	0.33	0.75	1.00	0.47	0.29	$\bar{x}$=0.46	

Source: author's calculations based on (IZM, 2018[b])

Ranking of the universities by their total corresponding number of ISCED 6 and ISCED7 graduates output (Table 3) reveals that most of students have graduated in Latgale region (3521), Zemgale region (2546) and Kurzeme region (1565) followed by Vidzeme region (382 graduates).

On a more detailed level, in **Kurzeme** region the three largest groups by thematic fields are of graduates in Education field (519) Social science, commerce and law field (370), and Humanities and Art field (321). In **Zemgale** region – Social science, commerce and law field (832), Engineering field (631) and Agriculture (471). In **Latgale** region – Social science, commerce and law field (1305), Education field (1029) and Humanities and Art (447). In **Vidzeme** region –Social science, commerce and law field (171), Nature sciences, math., IT (109) and Services (68).

When comparing the diversification of number of graduates within RHEIs according to the Herfindahl-Hirchman Index (HHI), due to the specificity of the research object, the HHI index Table can not be applied, since every HHI result is larger than 0.18. Therefore a decision was made

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to separate the calculated results by a median. It can be seen, that on the ISCED 5 and ISCED 6 level (Table 2) on a HEI perspective (HHI_y) the ViA (0.38), VeA (0.32) and LLU (0.30) have a slightly higher level of specialization levels than median (0.29) within certain fields of studies. On a regional level the highest HHI index has the Vidzeme region (0.38) and Zemgale (0.30) at $\bar{x}$=0.26 which indicates of an elevated level of specialization in certain fields of study. When evaluating among the study fields (HHI_x), the highest level of HHI was observed in Agriculture (1.00); Engineering, production, construction (0.73); Humanities and Art (0.52); followed by Health and social welfare (0.51) at $\bar{x}$=0.48, thus indicating of somewhat limited opportunities to prepare the needed professionals within all regions. On the ISCED 7 and ISCED 8 level (Table 3) on a HEI perspective (HHI_y) VeA (0.34), ViA (0.32) and RTA (0.30) have an elevated diversification level at $\bar{x}$=0.29 within certain fields of studies. On a regional level the highest HHI index belongs to the Vidzeme region (0.32) and Latgale (0.26) at $\bar{x}$=0.24 which indicates of an elevated level of specialization in certain fields of study. When evaluating among the study fields (HHI_x), the highest level of HHI was observed in Agriculture (1.00), Engineering, production, construction (0.84), followed by Health and social welfare (0.51) and Humanities and Art (0.47) at $\bar{x}$=0.45 indicating of somewhat limited opportunities to prepare the needed professionals within the given region.

Table 4

State funded ISCED 4,5,6 7 study places in RHEIs from 2009/2010 until 2017/2018 (%)

HEI	(1) Education	(2) Humanities and Art	(3) Social science, commerce, law	(4) Nature sciences, mathematics, IT	(5) Engineering, production, construction	(6) Agriculture	(7) Health and social welfare	(8) Services	In total
LLU (total Zemgale reg.)	45.2	-	40.6	82.2	77.5	61.4	96.7	57.1	**70.7**
DU	64.5	84.8	46.0	95.4	-	-	53.5	67.4	**61.6**
LiepU	63.2	76.5	28.0	86.2	100.0	-	59.9	72.2	**62.4**
RTA	72.3	88.1	62.3	95.1	79.2	-	62.6	73.4	**73.8**
ViA (total Vidzeme reg.)	-	81.8	51.8	83.8	83.7	-	-	67.9	**80.8**
VeA	-	74.7	70.7	94.3	97.3	-	-	-	**67.8**
Region									
Total in Kurzeme reg.	63.2	75.6	47.8	90.5	97.6	-	59.9	72.2	**63.2**
Total in Latgale reg.	67.6	85.4	54.1	95.3	79.2	-	55.5	69.2	**71.9**
State funded study places in total per study field (%)	**63.6**	**81.7**	**48.1**	**90.5**	**78.9**	**61.4**	**61.6**	**66.2**	**67.4**
State funded study places in 2017/2018 (%)	59.1	92.0	59.7	85.0	83.3	65.6	65.7	72.4	**72.9**

Source: author's calculations based on (IZM, 2018[b])

The analysis of the situation according to the state funded study places (Table 4) shows that the financial availability of studies differs widely among the HEIs, regions and fields of study. The largest quantity of state funded study places were available in Vidzeme region, i.e. ViA (80.8 %), while the least in Kurzeme region (63.2 %). On a regional level, the most subsidized field of studies were Nature sciences, mathematics, IT (90.5 %) and Humanities and Art (81.7 %), while the least – Social science, commerce and law (48.1 %). Overall an increase of financial support can be seen in every study field in 2017/2018 except for the Nature sciences, mathematics and IT field which saw a drop from 90.5 % to 85.0 %.

Data indicates that over the period from 2009/2010 until 2017/2018 in the most supported field – Nature sciences, mathematics – the percentage of enrolments was 11.7 %, the graduates' percentage was 13.8 %, while the financial support in 2017/2018 was reduced to 85 %. In Humanities and arts the percentage of enrolments was 11.3 %, the graduates percentage was 10.1 %, while the financial support in 2017/2018 was increased to 92 %. In the meantime, in the Social science, commerce and law field the percentage of enrolments was 22.0 %, the graduates percentage was 34.8 %, while in 2017/2018 the financial support was increased to 59.7 %. The significant differences in terms of both total quantity of graduate students and the diversity of study thematic fields (on both study level groups) between the leader region (Zemgale) and the lager region (Vidzeme) may have long-term implications for a sustainable regional growth thus questioning the role of government, regional planning bodies and the local municipalities in this process.

Conclusions, proposals, recommendations

1) Financial support to students of RHEIs in form of state funded study places has been disproportionate – the largest quantity has gone to Vidzeme region i.e. ViA (80.8 %), while the least to DU (61.6 %). On a regional level, the most subsidized field of studies were Nature sciences, mathematics, IT (90.5 %) and Humanities and Art (81.7 %), while the least – Social science, commerce and law (48.1 %) which still has had the largest quantity of (7198 graduates).
2) In terms of the total number of ISCED 5 and ISCED 6 tertiary level graduates, in **Kurzeme** region the largest quantity of graduates is in Social science, commerce and law (1315), Education (1152) and Humanities and Art (847). In **Zemgale** region – Social science, commerce and law (2844), Engineering (2720) and Agriculture (1379). In **Latgale** region – Social science, commerce and law (1305), Education (1029), Humanities and Art (447). In **Vidzeme** region – Social science, commerce and law (905), Nature sciences, math., IT (360) and Services (287).
3) In terms of the total number of (ISCED 7 & 8) graduates, in **Kurzeme** region the three largest groups by thematic fields constitute of graduates in Education field (519) Social science, commerce and law field (370), Humanities and Art field (321). In **Zemgale** region – Social science, commerce and law field (832), Engineering field (631) and Agriculture field (471). In **Latgale** region – Social science, commerce and law field (1305), Education field (1029) and Humanities and Art (447). In **Vidzeme** region – Social science, commerce and law field (171), Nature sciences, math., IT (109) and Services (68).
4) The Herfindahl-Hirchman Index (HHI) diversification of graduates within RHEIs indicates that on ISCED 5 and ISCED 6 level the Vidzeme (0.38) and Zemgale (0.30) regions are specializing in certain fields of study. In terms of graduates of certain fields Agriculture (1.00); Engineering, production, construction (0.73); Humanities and Art (0.52); followed by Health and social welfare (0.51) graduates are least equally disseminated among regions. Similarly on ISCED 7 and ISCED 8 level the leaders in specialization are Vidzeme (0.32) and Latgale (0.26) regions while graduates of Agriculture (1.00), Engineering, production, construction (0.84), followed by Health and social welfare (0.51) and Humanities and Art (0.47) fields are least equally disseminated among regions of Latvia.
5) Further research is needed on the availability of study programmes within certain disciplines of higher education in the regions of Latvia as well as in terms of specialization of certain RHEIs and their harmonization with the long-term needs of the region. The presented data shows great disparities in terms of equal availability of graduates of certain fields of study in regions among

which Vidzeme region stands out the with highest level of specialization among all RHEIs. Thus the ability to reach the long-term goals set by the government, regional planning bodies and the local municipalities in terms of tertiary education and regional development of Latvia should be further examined.

Bibliography

1. Baldunciks, J., Pokrotniece, K. (2007). Svesvardu vardnīca. Riga: Jumava, 931 lpp.
2. Brekis, E., Vilerts, K., Krasnopjorovs, O. (2015). Izglitibas ietekme uz algam Latvija ekonomiskas krizes laika un peckrizes perioda (2006.-2012. gada datu vertejums), Riga: Latvijas banka, p.51.
3. CSB (2015). Par statistiskajiem regioniem. Retrieved: http://www.csb.gov.lv/dokumenti/par-statistiskajiem-regioniem-28607.html. Access: 05.01.2019.
4. Goldstein, H. (2010). The 'Entrepreneurial Turn' and Regional Economic Development. Mission of Universities. Annals of Regional Science, Vol. 44(1), pp.83-109.
5. Goldstein, H., Glaser, K. (2012). Research Universities as Actors in the Governance of Local and Regional Development, Journal of Technology Transfer, Vol. 37 (2), Abstract, pp. 158-174.
6. Goldstein, H., Rehbogen, A. (2013). University Engagement and Knowledge Commercialization: an Analysis of Faculty Attitudes, Knowledge Commercialization and Valorization in Regional Economic Development., pp. 61-84.
7. Grizane, T. Sannikova, A., Jasaitis, J. (2017). Impact of Regional Higher Education Institutions on the Convergence of Regions. pp.44-52. Retrieved: http://www.esaf.llu.lv/sites/esaf/files/files/lapas/Krajums_Nr_44_04092017.pdf. Access: 05.01.2019.
8. IZM (2018a). Parskats par Latvijas augstako izglitibu 2017.gada. Galvenie statistikas dati. Retrieved: https://www.izm.gov.lv/images/zinatne/Prskats-par-Latvijas-augstko-izgltbu-2017.gad_2.pdf. Access: 03.01.2019.
9. IZM (2018b). Statistika par augstāko izglītību. Galvenie statistikas dati. Retrieved: http https://www.izm.gov.lv/lv/publikacijas-un-statistika/statistika-par-izglitibu/statistika-par-augstako-izglitibu Access: 03.01.2019.
10. Kaivo-oja S., Vahasantanen S. (2017) Smart specialization strategy and its operationalization in the regional policy: case Finland. Business, Management and Education ISSN 2029-7491, 2017, 15(1): 28–41. Retrieved: https://journals.vgtu.lt/index.php/BME/article/download/391/274
11. Knight, J. (2012). A Conceptual Framework for the Regionalization of Higher Education: Application to Asia, in Higher Education Regionalization in Asia Pacific. Implications for Governance, Citizenship and University Transformation, (ed.) John N. Hawkins, Ka Ho Mok, Deane E. Neubauer. London: Palgrave Macmillan, p.215.
12. Lawton-Smith, H., Bagchi-Sen, S. (2012). The Research University, entrepreneurship and regional development: Research propositions and current evidence. Entrepreneurship & Regional Development, Vol. 24 (5-6), pp. 383-404.
13. LR CSP (Latvijas republikas centralas statistikas parvalde) (2017). ISG01. Pastavīgo iedzivotaju skaits regionos gada sakuma. Retrieved: http://data.csb.gov.lv/pxweb/lv/Sociala/Sociala__ikgad__iedz__iedzskaits/IS0010.px/table/tableViewLayout2/?rxid=cd. Access: 04.10.2018.
14. Mazure, G., Viksne, D., Rivza, B. (2008). Contribution of Higher education Institutions to Regional Development of Latvia. Proceedings of the 2nd International Conference on Educational Economics, (ICEE 2008), Greece: Athens, Fakulty of Economics at the National and Kapodistrian Universuty of Athens, p.17.
15. McCann, p. (2001): Urban and Regional Economics. Oxford University Press.
16. MK (2017) Cabinet of Ministers rules, No 322 on Clasification of Education of Latvia. Accepted in 13.06.2018.
17. PKC (Parresoru koordinacijas centrs) (2012a). POLSIS (Politikas planosanas dokumentu datubaze) Latvijas ilgtspejigas attistibas strategijas līdz 2030.gadam istenosanas uzraudzibas zinojums. Retrieved: http://polsis.mk.gov.lv/documents/3323. Access: 02.01.2019.
18. PKC (Parresoru koordinacijas centrs) (2012b). Latvijas Nacionalais attistibas plans 2014.-2020.gadam (NAP2020). Retrieved: https://www.pkc.gov.lv/lv. Access: 06.01.2019.
19. Radinger-Peer, V., Pflitsch, G. (2017). The role of higher education institutions in regional transition paths towards sustainability. Review of Regional Research, Vol. 37(2), pp 161–187.
20. Sinkiene, J., Grumadaite, K. (2014). Sumanaus regioNo konceptualus modelis. Viešoji politika ir administravimas, Vol.13 (3), pp.414–426.
21. Trippl, M., Sinozic, T., Lawton-Smith, H. (2015). The role of universities in regional development: conceptual models and policy institutions in the UK, Sweden and Austria. European Planning Studies Vol.23 (9), pp.1722–1740.
22. Vīksne, D., Mazūre, G. (2007). Development of Human and Financial resources in RHEIs of Latvia. Economic and Rural Development, Vol 3 (2), Kaunas: Akadēmija, pp. 28-36.

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INTENSITY OF TRITICALE PRODUCTION IN DIFFERENT REGIONS OF POLAND

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Abstract: The paper presents the main reasons for the intensity of triticale production in various regions of Poland. The analysis was based on statistical data from the Central Statistical Office (GUS) for the years 2015—2017, compiled by voivodships. The statistical analysis was performed on 19 variables. Cluster analysis was used to group voivodships. Five groups of voivodships were distinguished, which differed in triticale production. The intensity of triticale production in the regions of Poland is determined by the intensity of animal production (pigs, cattle and poultry population) and structural and organisational factors. The amount of triticale yields obtained is determined by the intensity of farming and the level of agricultural culture. The Wielkopolskie Voivodeship and the central and eastern parts of Poland have a significant share in the national production of triticale.

Key words: triticale, groups of voivodships, yields.
JEL code: R19.

Introduction

The area under cultivation and the share of triticale in the structure of cereal sowing in Poland is the largest among all countries in the world. By 2015, the area under cultivation increased to 1.52 million hectares (CSO, 2017). In 2017, it amounted to 1.35 million ha and 5.1 million tons of grain were harvested. It was 84 % destined for feed, mainly due to its high nutritional value (Djekic et al., 2011; Jaskiewicz and Szczepanek 2016, 2018). The increase in triticale cultivation area was accompanied by a decrease in rye cultivation area (Jaskiewicz and Sulek, 2017). Thanks to its high yield potential and good nutritional value, triticale has become competitive with other cereal species (Fardet, 2010; Mcgovern et al., 2011).

A research hypothesis was made that the intensity of triticale production is determined by the intensity of animal production, i.e. the level of livestock density and structural and organisational conditions of agriculture.

The aim of the study is to determine the factors that have led to the diversification of triticale production intensity in different regions of Poland.

To analyse the intensity of triticale production in Poland, GUS data from three years 2015-2017 were used. The production of triticale was analysed by subjectively selecting 19 variables, which were subjected to statistical analysis. The main indicators of triticale production (by voivodships) were: grain yields (dt.ha-1) and the percentage in the sowing structure (%).

On the basis of statistical characteristics of the analysed variables by voivodships, their extreme values and coefficients of variation were evaluated. Correlations between the production of triticale in the country and the level of analysed variables, were calculated. Groups of voivodships, which differed in triticale production volume, were separated by means of Ward's cluster analysis. The separated groups were described using the analysed indicators, and compared against the national average.

Research results and discussion

Main indices of triticale production: grain yields and its percentage in the sowing structure, are characterized by regional differentiation (Fig. 1). Voivodships located in the southern part of Poland, except for Slaskie, are characterised by a lower share of triticale in the structure of cereal crops. Higher triticale yields were recorded in the western part of the country. The grain yields in voivodships were shaped by natural conditions and extensification of production. This includes reduced use of mineral fertilisers, plant protection products, and certified seeds (Krasowicz and Kopinski, 2006).

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Kopinski and Krasowicz (2010) state that the low level of cereal yields is determined by both soil and climatic conditions in Poland, low production intensity, and high negligence in cereal agrotechnology. According to Jaskiewicz and Sulek (2017), the area of triticale sown was related to trends in animal production. Pig fattening, farm poultry production and cattle production based on dry fodder composed of cereal grain with the addition of protein concentrates, favoured the expansion of triticale cultivation (Jaskiewicz, 2006).

The statistical characteristics of the analysed variables are presented in Table 1. The lowest variability was found for the percentage of cereals in the sowing structure and the index of agricultural production space valorisation, while the highest for the density of pigs, the number of individual farms, use of calcium fertilisers, purchase of cereals, and employment in agriculture.

The comparison of simple correlation coefficients shows that triticale yields were significantly positively correlated with cereal yields, Agricultural Production Space Valuation Ratio (WWRPP), use of mineral fertilizers (NPK), nitrogen fertilizers, use of lime, percentage of farms with an area above 50 ha, average farm area and purchase of cereals. On the other hand, significant negative correlations among triticale grain yields and acidic and very acidic soils, soils with very low and low phosphorus and potassium contents, and the number of individual farms, were found. The percentage of triticale in the sowing structure was significantly negatively correlated with the total percentage of wheat in the sowing structure, with the quality of natural conditions (WWRPP) as well as the percentage of soils with very low and low content in phosphorus. Agricultural producers interested in commercial cereal production are introducing wheat for cultivation in weaker positions meant for triticale cultivation (Jaskiewicz and Sulek, 2017). Positive correlations were found between the percentage of triticale in the sowing structure with the percentage of cereals in the sowing structure, cattle population, the numbers of pigs and chickens per 100 ha of AL, and employment in agriculture.

The regional diversity of yields obtained in production and the share of triticale in the sowing structure is determined by factors determined by means of discrimination analysis: agrotechnical, structural and organisational, intensity of animal production organisation (Filipiak and Wilkos, 1998). On the basis of these factors, 5 groups of voivodships, diversified in terms of triticale production, were distinguished (Fig. 2). The characteristics of variables in groups of voivodships are presented in Table 2.

Group 1 comprises three voivodships: Dolnoslaskie, Opolskie, and Kujawsko-Pomorskie. This group is characterized by the highest Agricultural Production Space Valuation Ratio. Favourable natural conditions, especially the high quality of soils, determine the high percentage of winter wheat and a small percentage of triticale in the sowing structure. The consumption of mineral fertilizers and lime per 1 ha of AL is above the national average in this group of voivodships. A characteristic feature of this voivodship is its favourable agrarian structure. Large-area farms are characterised by a better use of specialised equipment, a higher level of expertise of farmers engaged in specialised cereal cultivation, and easier implementation of technological progress (Kopinski and Krasowicz, 2010). Technological progress is particularly visible in voivodships with intensive grain production. This region specializes in commercial production of cereals (wheat) and a high purchase of cereals. It is distinguished by high grain yields, including triticale.

Group 2 includes seven voivodships (Lubuskie, Zachodniopomorskie Pomorskie, Warminsko-Mazurskie, Slaskie, Swietokrzyskie, Lubelskie). The percentage of cereals, wheat, and triticale in the sowing structure, yield level, and agrarian structure in this group are at the level of the national average.

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Table 1

Statistical characteristics of variables for voivodships (averages from 2015-2017)

No	Variables	Average	Range of variability	Variation coefficient [%]	Correlation coefficients	
					of triticale yield	of share in cropping pattern
1.	Share of triticale in the cropping pattern [%]	11.3	2.2-21.5	55.6	0.03	-
2.	Triticale yield [$dt \cdot ha^{-1}$]	37.3	29.8-47.3	15.1	-	0.03
3.	Share of cereals in the cropping pattern [%]	72.7	64.0-77,0	4.8	0.21	0.53*
4.	Cereale yield [$dt \cdot ha^{-1}$]	40.1	29.2-56.3	17.5	0.86*	-0.36
5.	Share of wheat in the cropping pattern [%]	40.4	18.0-64.0	32.4	0.37	-0.80*
6.	Valorization index of agricultural area [point]	67.4	55.0-81.4	9,4	0.48*	-0.75*
7.	Share of acid very acid soil [%]	40.1	18.0-57.0	28,9	-0.81*	0.29
8.	Share of soil with very low and low K content [%]	40.8	25.0-61.0	28.7	-0.88*	0.21
9.	Share of soil with very low and low P content [%]	32.7	18.0-54.0	30.3	-0.62*	-0.68*
10.	Mineral fertilization consumption [kg $NPK \cdot ha^{-1}$ of AL]	128.4	74.0-198.0	27.6	0.75*	-0.05
11.	Nitrogen fertilization consumption [kg $N \cdot ha^{-1}$ of AL]	71.7	37.0-112.0	29.0	0.80*	0.02
12.	Agricultural limestone consumption [kg $Ca \cdot ha^{-1}$ ha^{-1} of AL]	50.9	16.3-109.1	58,9	0.84*	0.03
13.	Share of farms with area > 50ha [%]	2.0	0.4-4.0	55.2	0.51*	0.32
14.	Private farms [thousand piece]	86.1	20.0-215.0	67.8	-0.55*	0,04
15.	Cattle of stock [large $units \cdot 100ha^{-1}$ of AL]	35.9	11.0-91.3	58.2	-0.40	0.43*
16.	Share of swine [$heats \cdot 100ha^{-1}$ of AL]	66.4	22.0-233.0	80.4	0.33	0.44*
17.	Share of poultry [$heats \cdot 100ha^{-1}$ of AL]	1003.0	391.0-2001.0	45.8	-0,12	0.51*
18.	Grain purchase [$kg \cdot ha^{-1}$ of AL]	910.0	152.0-1956.0	59,6	0.86*	-0.09
19.	Employment in farming [$persons \cdot 100ha^{-1}$ of AL]	9.2	3.6-24.5	59,5	0.32	0.52*

** - significant relationship*
Source: author's calculations based on the GUS (2015-2017)

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Source: author's calculations based on the GUS (2015-2017)

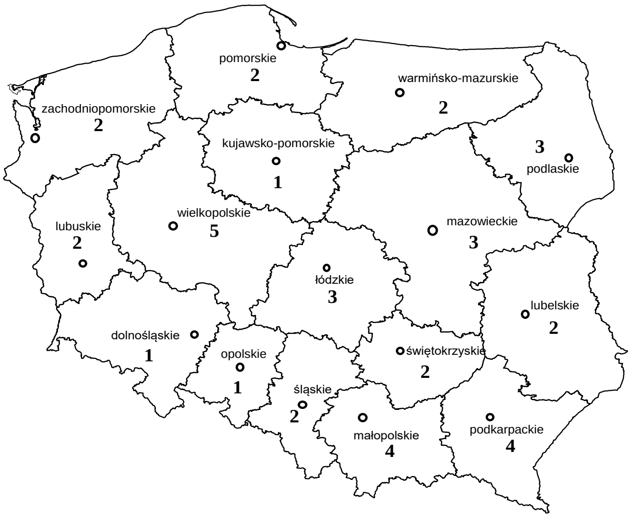
Fig. 1. **Triticale grain yield in dt·ha^{-1}(A) and its percentage in the sowing structure (B) in 2015-2017**

Table 2

Variables in groups of the voivodships analysed with the cluster method

No	Variables	Region group* 1 n=3	2 n=7	3 n=3	4 n=2	5 n=1	Average for the country
1.	Share of triticale in the cropping pattern [%]	6.23	11.6	18.5	3.5	18.3	11.3
2.	Triticale yield [dt·ha^{-1}]	43.7	37.9	32.0	30.8	42.7	37.3
3.	Share of cereals in the cropping pattern [%]	71.7	73.7	75	66.5	75.0	72.7
4.	Cereal yield [dt·ha^{-1}]	49.9	40.0	31.3	37.8	42.9	40.1
5.	Share of wheat in the cropping pattern [%]	54.7	41.3	21.3	52.0	26.0	40.4
6.	Valorization index of agricultural area [point]	75.8	67.1	60.0	69.8	64.8	67.4
7.	Share of acid very acid soil [%]	24.0	37.8	55.0	53.5	33.0	40.1
8.	Share of soil with very low and low K content [%]	29.0	36.6	57.3	51.5	35.0	40.8
9.	Share of soil with very low and low P content [%]	28.7	31.9	30.3	53.0	18.0	32.7
10.	Mineral fertilization consumption [kg NPK·ha^{-1} of AL]	184.0	120.7	112.3	80.0	161.0	128.4
11.	Nitrogen fertilization consumption [kg N·ha^{-1} of AL]	104.3	68.6	62.3	40.0	87.0	71.7
12.	Agricultural limestone consumption [kg Ca·ha^{-1} ha^{-1} of AL]	92.1	42.5	31.4	20.1	106.1	50.9
13.	Share of farms with area > 50ha [%]	2.5	2.0	1.9	0.7	4.0	2.0
14.	Private farms [thousand piece]	48.3	64.3	130.7	136.5	121.0	86.3
15.	Cattle of stock [large units·100ha^{-1} of AL]	27.3	27.9	65.0	22.9	56.4	35.9
16.	Share of swine [heats·100ha^{-1} of AL]	72.0	52.1	63.0	30.0	233.0	66.4
17.	Share of poultry [heats·100ha^{-1} of AL]	719	967	1211	843	1797	1003
18.	Grain purchase [kg·ha^{-1} of AL]	1712	888	467	375	1069	910
19.	Employment in farming [persons·100ha^{-1} of AL]	8.1	8.2	9.8	5.3	24.5	9.2

**- see Fig. 2*
Source: author's calculations based on the GUS (2015-2017)



Source: author's calculations based on the GUS (2015-2017)

Fig. 2. **Groups of voivodships designated with cluster analysis according to their triticale production volume**

This region is very diverse in terms of soil quality (Zulawy and Kaszuby). The consumption of mineral and calcium fertilisers is slightly below the national average. The same is true for the number of poultry, pigs, and cattle per 100 ha of farmland. These voivodships are characterised by a commercial production similar to the national average. Kopinski and Krasowicz (2010) indicate a relationship between the value of indicators characterising the level of agrotechnology with the agrarian structure and the related scale of production.

Group 3 consists of three voivodeships: Lodzkie, Mazowieckie, and Podlaskie. The pig population is at the level of the national average while the poultry population is above theis average. A region with a significant percentage of permanent grassland is characterised by a relatively twice as high density of cattle in comparison with the national average. This group of voivodships has a low share of large-area farms. There is a high number of individual farms. One of the factors determining relatively low yields of triticale is the lowest Agricultural Production Space Valuation Ratio, low level of calcium fertilisation, and low quality of soils. In the group of these voivodships, the purchase of cereals is two times lower than the national average. The research by Tluczak (2015), Krasowicz and Matyka (2015) indicates that in the conditions of intensifying market competition, the concentration of cow breeding takes place, which is shifting to large-area groups specializing in animal production. As a result, there is a strong and growing regression of livestock number in the region of fragmented agriculture. Two regions have been designated within this group: south-eastern region with a very unfavourable and a central-eastern region with a relatively favourable area structure of farms.

Group 4 consists of two voivodships: Malopolskie and Podkarpackie. This group has relatively the lowest percentage of triticale in the structure of cereal sowing. The low level of triticale yields is determined, among others, by agro-technical negligence manifested in the low level of mineral fertilisation and very low consumption of nitrogen and calcium fertilisers. The soil quality is poor. This region is characterised by the percentage of wheat in the sowing structure above the national average. This wheat is produced for the needs of the farms where it is grown as these voivodships are generally characterised by low commerciality of production. The region is distinguished by the high number of individual farms. Krasowicz and Matyka (2015) and Parzonko (2013) emphasized the significant role of agrarian fragmentation and the size of farms as a factor of regional diversification. The number of poultry, pigs and cattle per 100 ha of agricultural land is below the national average.

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Group 5 comprises the Wielkopolskie Voivodeship. It is characterized by a high density of poultry, pigs and cattle per 100 ha of agricultural land. Triticale accounts for 18.3 % of the sowing structure. Consumption of mineral and nitrogen fertilizers and fertilizer lime is above the national average. High yields of triticale and cereals are obtained in comparison to the national average. The characteristic feature of this region is the low proportion of very acidic and acidic soils, and a very low and low abundance of phosphorus and potassium. This indicator often indicates the level of agricultural culture. Due to this criterion, the region is assessed positively. This indicates a relatively good use of the potential created by natural conditions (Krasowicz and Kopinski, 2006). In recent years, there has been an increase in the intensity of productivity of production animals (milk yield of cows, laying hens, slaughter efficiency and production). This applies to all regions and is related to breeding progress, change of animal nutrition and concentration of production (Kopinski, 2011). Cereal grains, including triticale as a component of compound feed, is used to feed farm animals. Farmers prepare such mixtures themselves on their own farm, adding also supplementary mixtures from the purchase.

Conclusions, proposals, recommendations

1) Different intensity of triticale production was found in Polish regions. This is determined by the intensity of animal production (pigs, cattle, poultry population) and structural and organisational factors.
2) In Dolnoslaskie, Opolskie (group 1) and Wielkopolskie (group 5) voivodeships, the area structure is definitely better than in the south-eastern part of Poland, which is reflected in higher triticale yields.
3) The level of agricultural culture and intensity of farming is related to the yields of triticale.
4) Wielkopolskie voivodeship and the central and eastern part of Poland, have a significant share in the national production of triticale

Bibliography

1. Djekic, V. Mitrovic, S. Milovanovic, M. Djuric, N. Kresovic, B. Tapanarova, A. Djermanovic, V. Mitrovic, M. (2011). *Implementation of Triticale in Nutrition of Non-ruminant Animals.* Afr. J. of Biotechnol, Vol. 10, Issue 30, pp. 5697–5704.
2. Fardet, A. (2010). *New hypotheses for the health-protective mechanisms of wholegrain cereals: what is beyond fiber?* Nutrition Research Reviews, Vol. 23, pp. 65-134.
3. Filipiak, K., Wilkos, S. 1998. *Wybrane metody analizy wielozmiennej i ich zastosowanie w badaniach przestrzennych.* Seria R. Pulawy, IUNG, Vol. 349, pp. 1-59.
4. GUS. 2016-2018. *Rocznik statystyczny Rolnictwa*. Warszawa
5. Jaśkiewicz, B. Sułek, A. (2017). *Kierunki zmian produkcji zbóż w Polsce*. Rocz. Nauk. SERiA. Vol. 1, pp. 66-74.
6. Jaśkiewicz, B., Szczepanek, M. (2016) *Crop management and variety have influence on alkylresolcinol content in triticale grain*. *Acta Agriculturae Scandinavica,* Section B- Soil Plant Science, Vol. 66, Issue 7, pp. 570-574. doi.org/10.1080/09064710.2016.1201139
7. Jaśkiewicz, B., Szczepanek, M. (2018) *AmiNo acids content in Triticale grain depending on meteorological, agrotechnicaland genetic factors*. Latvia University of Life Sciences and Technologies, Proceedings of 24-th International Scientific Conference, Jelgava, Vol. 2, p. 28–35 Available at: http://www2.llu.lv/research_conf/proceedings.htm
8. Kopiński, J., Krasowicz, S. (2010). Regionalne zróżnicowanie warunków produkcji rolniczej w Polsce. Studia i Raporty IUNG-PIB, Vol. 22, pp. 9-29.
9. Kopiński, J. (2011). *Tendencje zmian w intensywności produkcji rolniczej w Polsce w aspekcie potencjalnych oddziaływań środowiskowych*. Zeszyty Naukowe SGGW. Problemy rolnictwa światowego. Vol.11, Issue 1, pp. 95-104.
10. Krasowicz, S. Kopiński, J. (2006). *Wpływ warunków przyrodniczych i organizacyjno- ekonomicznych na regionalne zróżnicowanie rolnictwa w Polsce*. [W]: *Regionalne zróżnicowanie produkcji rolniczej w Polsce.* Studia i Raporty IUNG-PIB, No. 3, pp. 81-99.

11. Krasowicz, S., Matyka, M. (2015). *Zmiany w polskim rolnictwie a wykorzystanie rolniczej przestrzeni produkcyjnej.* Materiały szkoleniowe IUNG-PIB, Puławy, No.103, pp. 1-32.
12. Mcgovern, C.M., Snyders, F., Muller, N., Botes, W., Fox, G., Manley, M. (2011). *A review of triticale uses and the effect of growth environment on grain quality*. J.Sci Food Agric. Vol. 91, pp. 1155-1165.
13. Parzonko, A. (2013). *Regionalne zróżnicowanie produkcji mleka w Polsce – uwarunkowania przyrodnicze i ekonomiczne.* Roczniki Naukowe SERIA, Vol.2, pp. 265 – 270.
14. Tłuczak, A. (2015). *Specjalizacja regionalna a potencjał rolnictwa w Polsce.* Roczniki Naukowe SERIA, Vol. 5, pp.

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THE ROLE OF HIGHER EDUCATION INSTITUTIONS IN ENSURING INTEGRATED AND SUSTAINABLE REGIONAL DEVELOPMENT

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Abstract. Higher Education Institutions (HEIs) impact the development of their host regions. Systematic empirical research into the effects of HEIs on their host regions likewise has a long tradition. Even more, countless studies demonstrate the positive impact of HEIs on their regional environment. Various politicians, administrators and researchers have emphasised the role of HEIs in developing of territory there HEIs are operating. In addition, the focus of practitioners and academics has been on role of HEIs in ensuring integrated and sustainable development of their administrative territory.

Taking into account before mentioned, the aim of the paper is to analyse the role HEIs in ensuring integrated and sustainable regional development of the territory there HEIs are operating, especially in case of Latvia.

The tasks are formulated as follows:

1) to review the theoretical background on the role of HEIs in ensuring integrated and sustainable regional development;

2) to analyse empirical research on importance of HEIs in ensuring integrated and sustainable regional development;

3) to analyse case of Latvia, namely how HEIs in regions ensure integrated and sustainable regional development.

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

Main results and conclusions of the paper: the analysis of the scientific literature and empirical studies shows that HEIs matter the development of the host region and affect the integrated and sustainable regional development via channels of teaching, research and outreach activities. In case of Latvia, regional HEIs have dissimilar impact on integrated and sustainable development of the region through different teaching, research and outreach activities.

Key words: higher education institutions, regional development, sustainability.
JEL code: R11, I23, I25.

Introduction

HEIs matter to the development of their host regions. Even more, HEIs have the potential to spur a regional transition towards sustainability via the channels of teaching, research and outreach. Countless studies demonstrate the positive impact of HEIs on their regional environment.

The changing political and scientific discourse has influenced the engagement of HEIs in regional development in general, and sustainable development in particular. HEIs have developed and continue to develop from their „traditional" role as mere educational infrastructure and research institutions, to „new" roles as drivers for innovation and as stakeholders in public and private partnerships, as well as in planning processes (Chatterton and Goddard, 2000). This „3rd mission" depicts a broader and more adaptive role for HEIs, and their contribution to social, cultural and environmental development based on regional needs (Chatterton and Goddard, 2000; Gunasekara, 2006).

LozaNo et al. (2015) outline seven spheres where HEIs may engage in implementing sustainability:

1) institutional framework,

15. campus operations,

16. education,

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17. research,
18. outreach and collaboration,
19. on-campus experience,
20. assessment and reporting.

Stephens et al. (2008) deepen the definition of sustainable development by not only focusing on the activities of HEIs, but also by taking the content of teaching and research activities into account. They apply the term „change agent" to describe four paths of university action supporting sustainable transitions:

1) providing a model of sustainable practices for society;
21. teaching students how to deal with complex problems and exercise system-thinking;
22. performing practice based research-activities; and
23. promoting and enhancing engagement between individuals and universities situated as transdisciplinary agents.

Taking into account before mentioned, as well as recent public discussion on role of HEIs on development of Latvia and importance of regional HEIs in context of regional development, the analysis on importance of Latvian regional HEIs on integrated and sustainable development is needed.

The hypothesis of the research: regional HEIs of Latvia have limited impact on integrated and sustainable regional development of the region.

The aim of the paper is to analyse the role HEIs in ensuring integrated and sustainable regional development of the territory there HEIs are operating, especially in case of Latvia.

The tasks are formulated as follows:

1) To review the theoretical background on the role of HEIs in ensuring integrated and sustainable regional development;
2) To analyse empirical research on importance of HEIs in ensuring integrated and sustainable regional development;
3) To analyse case of Latvia, namely how HEI in regions ensure integrated and sustainable regional development.

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

Novelty and topicality of the research: in case of Latvia, there had been conducted studies on impact of HEIs on economy of Latvia. The aspect of impact of regional HEIs on integrated and sustainable development of region has not been analysed yet.

Problematic questions of the conducted research:

1) How to formulate integrated and sustainable regional development for further research on regional HEIs impact on it?
2) What indicators could be used to analyse the impact on integrated and sustainable regional development?

During the research, following **information sources** were used: scientific literature, published empirical studies, statistical data, official websites of regional HEIs, and published interviews with experts.

Delimitations of research subjects: in case of Latvia, attention would be focused on regional HEIs (not on branches of HEIs located in Riga).

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Theoretical discussion

Systematic empirical research into the effects of HEIs on their host regions likewise has a long tradition. Initially, much of this research focused on how the expenditures of HEI, faculty, staff and students affect their host regions through direct and indirect „demand-side" effects of consumption and investment (Blume et al., 2017). Time and again, researchers estimated these effects to be substantial (Drucker and Goldstein, 2007). It is similarly well-established that HEIs exert „supply-side" effects through the production of graduates (Stephan, 2012).

Case study evidence supporting the notion of HEIs as important players in regional innovation systems abounds. Many observers have noted the role that Stanford University, and also UC Berkeley, played in Silicon Valley's ascent to become the global centre of the computer industry and related high-tech activities (Kenney and Mowery, 2014; Klepper, 2016).

Moving from individual cases to a more aggregate econometric approach, the impact of HEI research on regional innovation was shown in numerous empirical contexts including, e. g., Germany (Fritsch and Slavtchev, 2007; Schubert and Kroll, 2014), or Italy (Cowan and Zinovyeva, 2013).

In a broader definition of the „third mission", HEIs are also expected to engage in their region's social and societal deliberation and decision-making processes (Chatterton and Goddard, 2000; Breznitz and Feldman, 2012). In this context, sustainability has become an important issue. However, the definitions of what sustainability means are still diverse (Pike et al., 2007). Agreement exists on the belief that sustainability should encompass economic, but also social and environmental objectives (Brundtland, 1987).

Radinger-Peer and Pflitsch (2017) concentrate on another aspect of HEIs' third mission and study the contribution of HEIs to the regional transition towards sustainability. Brenner and Pflitsch (2017) look at the opposite causal direction and examine whether research at HEIs - in this case research on sustainability - is influenced by local circumstances. While sustainability was originally a rather politically developed and propagated concept, it has become a central issue in many disciplines in the meantime. The political focus on this topic - expressed for example in the Global Sustainable Development Goals - has provided new impetus and new resources to this field (Blume et al., 2017).

In this context, sustainable regional development has become an important issue. The literature on regional sustainability transitions takes a specific perspective. In line with the concept of sustainability transitions (Geels, 2011), it is argued that a systemic transition affecting various socio-technical regimes is necessary within the region (McCormick et al., 2013). Leadership plays a crucial role in such a transition (Horlings and Padt, 2013).

Empirical studies show that at the regional level actors initiate more general institutional and organisational changes that lay the foundation for changes in multiple socio-technical regimes and thematic areas. Over time, incremental changes can this way lead to a more fundamental change in direction of a regional path towards sustainability (Rohracher and Spath, 2014; Strambach and Pflitsch, 2017).

In a more general understanding, the model of the „engaged HEI" attempts to conceptualize the comprehensive role HEIs may play for their location region, thus going beyond mere recognition of economic impacts - as argued by the Regional Innovation System Model as well as the „entrepreneurial model" - of HEIs activities (Radinger-Peer and Pflitsch, 2017). The „engaged HEI" characterizes HEIs as active „animateurs" (Shiri et al., 2012), which are capable of providing tailor-made solutions to region-specific challenges and problems (e. g. urban development, transport, health, sustainable development). Also the term „change agent" (Stephens et al., 2008) raises the

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expectation that HEIs have the potential to take agency and thus trigger institutional and organisational changes in the regional path.

Recent research (Radinger-Peer and Pflitsch, 2017) revealed that HEIs have the potential to enact institutional and organisational change and thus spur a regional transition towards sustainability via the channels of teaching, research and outreach. Activities to incorporate sustainability into teaching are highly dependent on the bottom-up motivation of single faculty members and the top-down consolidation of the university management. Research activities in contrast are shaped by field-level drivers such as national and international funding programmes as well as regional allocation of contract research. Especially outreach activities have proven to have also a strategic dimension of ensuring future funding or taking agency to trigger structural change.

Researchers generalized that there is No role played by HEIs as a whole in sustainable regional development, but as a multi-level organisation, different spheres within the HEI ranging from HEI management to individual researchers have become active. In addition, researchers deduced that the role of HEIs in sustainable regional development has to be regarded as the result of the dynamic interplay of HEIs, regional and state level actors (Radinger-Peer and Pflitsch, 2017).

Research results and discussion

In this section case study of regional HEIs of Latvia will be analysed in context of integrated and sustainable regional development.

According to current situation, there are six state-funded regional HEIs (Fig. 1):

- Daugavpils University (DU);
- Latvia University of Life Sciences and Technologies (LLU);
- Liepaja University (LiepU);
- Rezekne Academy of Technologies (RTA);
- Ventspils University College (VeA);
- Vidzeme University of Applied Science (ViA).

Source: author's illustration

Fig. 1. **HEIs in the regions of Latvia**

In order to comprehensively characterise regional HEIs, the analysis of main indicators is provided in Table 1.

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Table 1

Main indicators of regional HEIs in Latvia

HEI	Year of foundation	Faculties	Number of students 2017/18	Number of academic personnel 2017/18	Number of publications per 1 acad. personnel*
DU	1921	Faculty of Natural Sciences and Mathematics, Faculty of Education and Management, Faculty of Music and Arts, Faculty of Social Sciences, Faculty of Humanities	2379	110	68
LLU	1938	Faculty of Agriculture, Forest Faculty, Faculty of Veterinary Medicine, Faculty of Engineering, Faculty of Environment and Civil Engineering, Faculty of Food Technology, Faculty of Economics and Social Development, Faculty of Information Technologies	4176	279	20
LieU	1954	Faculty of Science and Engineering, Faculty of Humanitarian Sciences and Arts, Faculty of Pedagogy and Social Work, Faculty of Management and Social Sciences	1356	75	8
RTA	1993	Faculty of Education, Languages and Design, Faculty of Engineering, Faculty of Economics and Management	1881	84	12
VeA	1997	Faculty of Information Technologies, Faculty of Economics and Management, Faculty of Translation Studies	817	37	20
ViA	1996	Faculty of Society and Science, Faculty of Engineering	768	58	0

**full time equivalent, 2015*
Source: author's calculations based on Ministry of Education and Science, 2018

LLU stands out with highest number of students and academic personnel and wider range of faculties and study programmes. DU – university with long history – is distinguished not only with relatively high number of students and academic personnel but with outstanding research results in comparison with other regional HEIs. LiepU and RTA show average results in teaching and research. VeA as most recently established HEI shows good results in research, while ViA focuses more in teaching.

In order to analyse the impact of regional HEIs on region, the share of students matriculated in full-time studies in regional HEIs depending on place of residence is provided (Table 2).

Table 2

Share of students matriculated in full-time studies in regional HEIs depending on place of residence

HEI	Riga region	Vidzeme region	Kurzeme region	Zemgale region	Latgale region
DU	0.04	0.04	0.02	0.07	0.83
LLU	0.32	0.10	0.12	0.40	0.06
LieU	0.17	0.04	0.75	0.04	0
RTA	0.07	0.07	0	0.03	0.83
VeA	0.15	0.03	0.74	0.07	0.01
ViA	0.25	0.62	0.02	0.06	0.05

Source: author's calculations based on Ministry of Education and Science, 2018

It can be concluded that in case of DU, LiepU and RTA mayor share of matriculated students resides in relevant region. In case of LLU and ViA - significant share of matriculated students resides in relevant region, however because of geographical location of LLU and ViA students from other

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regions choose these HEIs for studies. Taking into account the data about residence of matriculated students, it can be concluded that regional HEIs play significant role in providing the education for regional future labour.

In order to investigate the role of regional HEIs in ensuring sustainable and integrated regional development in Latvia, activities of these HEIs were analysed in terms of teaching, research and outreach that corresponds to integrated and sustainable development of the region (Table 3).

Table 3

Activities of regional HEIs in teaching, research and outreach towards integrated and sustainable regional development

HEI	Teaching	Research	Outreach
DU	Study programmes „Environmental Science", „Environmental Planning" Concept of sustainable and integrated regional development is included in various study programmes (e.g. study programme „Biology", „Civil Security and Protection", „Natural Recreation") and study courses	Research projects on regional development and sustainability (e.g. EEA/Norway grants projects "Promoting the Research Potential of Higher Education Institutions for Regional Development", „Role of social and economic networks in territorial development") Master and PhD thesis	Annual international and local scientific conferences (reports and section related to regional development and environmental science) Scientific-practical conference "Happy Children in a Safe Environment" „Green Biology School" for pupils
LLU	Faculty of Environment and Civil Engineering Study programmes „Forest Ecology and Forestry", „Environmental, Water and Land Engineering", „Environment and water management" Concept of sustainable and integrated regional development is included in various study programmes (e.g. study programme „Landscape Architecture and Planning", „Economics", „Land use and land surveying") Wide range of lifelong learning study courses that cover regional development topics	Doctoral study programme „Environmental Engineering", „Agrarian and regional economy" Priority research directions „Research on climate change and environmental technologies, hydrology and agriculture", „Exploring the potential for sustainable development of territories", „Economics of sustainable development of bio-resource industries" Co-usage of research infrastructure that promotes sustainable regional development	Participation in development of pupils research work, including environmental topics Scientific conferences like „Bioeconomy and Rural development", „Engineering for Rural Development", „Rural Environment. Education. Personality" LLU Bioeconomy and Sustainable Resource Management Center activities: seminars, forums, participation in working groups with policy planners Consultations with industry on different topics related to sustainable regional development Participation in different networks that promote sustainable and integrated regional development (The Baltic University Programme, Baltic Sea Region University Network etc.)
LieU	Study programme „Environment and Renewable Energy Management and Engineering" Concept of sustainable and integrated regional development is included in some study courses	NordPlus project „Practical Approach for teaching Circular Economy", INTERREG project „Improving smart specialisation implementation of the Baltic Sea Region through orchestrating innovation hubs" (SMART-UP), EEA/Norway project „Development of Educational module "Climate change" at LiepU"„	Participation in development of pupils' research work, that may cover regional development issues
RTA	Study programme „Environmental engineer" Concept of sustainable and integrated regional development is included in some study courses	Regional Institute of Regional Studies Master and PhD thesis on topics that include regional development issues Project „Effects of Structural and Social Change on Municipalities in Germany and the Baltic States" (CliMBinG)	International Student Scientific-Practical Conference "Man. Environment. Technology" International Scientific-Practical Conference „Environment. Technology. Resources"
VeA	Concept of sustainable and integrated regional development is included in some study courses	Center for Entrepreneurship, Innovation and Regional Development (supported by Ventspils Municipality) – elaborates research according to the needs of the Municipality	Integrated and comprehensive cooperation with municipality International scientific conference „Entrepreneurship, Innovation and Regional Development - EIRD 2017 Smart Growth of the Local Community in the Global World" Forum „Challenges in Kurzeme on the Way to Smart Economy"
ViA	Concept of sustainable and integrated regional development is included in some study courses	Medium-term objective of research is to promote the development of national and Vidzeme region smart specialization sectors and increase productivity by carrying out research in the direction of topical public and technological challenges	Smart Lunch with Maris Olte (famous spokesman of environmental issues) International Scientific-Practical Conference „SOCIETY. TECHNOLOGIES. SOLUTIONS." Student research conference „SOCIETY. TECHNOLOGIES. SOLUTIONS. „

Source: author's summary based on official websites of HEIs

It can be concluded that all regional HEIs include concept of sustainable and integrated regional development in some study courses; some of them implement study programmes that are especially devoted to sustainable regional development (DU, LLU, LiepU and RTA). Good practice on promotion integrated and sustainable regional development includes establishment of close cooperation with local and regional authorities by elaboration of research on topics that are topical for local and regional development, organization of comprehensive outreach events including different stakeholders, participation in policy planning, providing consultations and services for local entrepreneurs, and ensuring life-long study courses for local society. Especially, cases of LLU and VeA outstand with different activities that promotes integrated and sustainable development, focusing on dealing with regional challenges and active participation in decision-making processes with local, regional and even national authorities. Other HEIs have rather limited impact on integrated and sustainable development of the region.

Conclusions, proposals, recommendations

1) HEIs impact the development of their host regions. Systematic empirical research into the effects of HEIs on their host regions likewise has a long tradition. Empirical research had demonstrated that HEIs have the potential to spur a regional transition towards sustainability via the channels of teaching, research and outreach.
2) The hypothesis of the research - regional HEIs of Latvia have limited impact on integrated and sustainable regional development of the region – has approved partly. HEIs like LLU and VeA showed systemic approach on participation in integrated and sustainable regional development of the region by comprehensive teaching, research and outreach activities. Other HEIs perform different activities that corresponds to integrated and sustainable regional development, however these activities are rather fragmented and more relate to common mission of HEI.
3) Latvian regional HEIs should put as a priority establishing productive relationships with local and regional authorities (on issues of regional development – with national authorities) in order to serve the needs of the region. Good practice includes developing research directions according to the needs of the region, organizing and participating in different outreach activities aimed at integrated and sustainable regional development as well as involving the concept of integrated and sustainable regional development in teaching.

Bibliography

1. Blume, L., Brenner, T., Buenstorf, G. (2017). Universities and Sustainable Regional Development: Introduction to the Special Issue. *Review of Regional Research*, Volume 37, Issue 2, pp. 103–109.
2. Brenner, T., Pflitsch, G. (2017). The Raise of Publications on Sustainability – a Case Study in Germany. *Review of Regional Studies*, Volume 37, pp. 189–225.
3. Breznitz, S.M., Feldman, M.P. (2012). The Engaged University. *The Journal of Technology Transfer*, Volume 37, pp. 139–157.
4. Brundtland, G.H. (1987). *Report of the World Commission on Environment and Development: „Our Common Future"*. United Nations, Oslo.
5. Chatterton, P., Goddard, J. (2000). The Response of Higher Education Institutions to Regional Needs. *European Journal of Education*, Volume 35, pp. 475–496.
6. Cowan, R., Zinovyeva, N. (2013). University Effects on Regional Innovation. *Research Policy*, Volume 42, Issue 3, pp. 788–800.
7. Drucker, J., Goldstein, H. (2007). Assessing the Regional Economic Development Impacts of Universities: a Review of Current Approaches". *International Regional Science Review*, Volume 30, pp. 20–46.
8. Fritsch, M., Slavtchev, V. (2007). Universities and Innovation Space. *Industry and Innovation*, Volume 14, Issue 2, pp. 201–218.
9. Gunasekara, C. (2006). Academia and Industry. The Generative and Development Roles of Universities in Regional Innovation Systems. *Science and Public Policy*, Volume 33, Issue 2, pp. 137–150.

DOI: 10.22616/ESRD.2019.069

10. Kenney, M., Mowery, D.C. (eds) (2014). *Public Universities and* Regional *Growth: Insights from the University of California*. Stanford University Press, Palo Alto.
11. Klepper, S. (2016). *Experimental Capitalism: the Nanoeconomics of American high-tech industries*. Princeton University Press, Princeton.
12. Lozano, R. et al. (2015). A Review of Commitment and Implementation of Sustainable Development in Higher Education: Results form a Worldwide Survey. *Journal of Clean Production*, Volume 108, pp. 1–18.
13. Parskats par Latvijas augstako izglitibu 2017.gada galvenie statistikas dati (Latvia's Higher Education Report 2017, Main Statistical Data) (2018) Ministry of Education and Science of Latvia, 98 p. Retrieved: http://www.izm.gov.lv/images/zinatne/Prskats-par-Latvijas-augstko-izgltbu-2017.gad_2.pdf Access: 16.02.2019.
14. Pike, A., Rodriguez-Pose, A., Tomaney, J. (2007). What Kind of Local and Regional Development and for Whom? *Regional Studies*, Volume 41, Issue 9, pp. 1253–1269.
15. Radinger-Peer, V., Pflitsch, G. (2017). The Role of Higher Education Institutions in Regional Transition Paths towards Sustainability. The Case of Linz (Austria). *Review of Regional Research*, Volume 37, Issue 2, pp 161–187.
16. Rohracher, H., Spath, p. (2014). The Interplay of Urban Energy Policy and Socio-technical Transitions: The Eco-cities of Graz and Freiburg in Retrospect. *Urban Studies*, Volume 51, Issue 7, pp. 1415–1431.
17. Schubert, T., Kroll, H. (2014). Universities' Effects on Regional GDP and Unemployment: the Case of German. *Papers in Regional Science*, Volume 1, pp. 1–24.
18. Shiri, M., Breznitz, M., Feldman, p. (2012). The Engaged University. *Journal of Technology Transfer*, Volume 35, pp. 139–157.
19. Stephan, P.E. (2012). *How Economics Shapes Science.* Harvard University Press, Cambridge.
20. Stephens, J.C. et al. (2008). Higher Education as a Change Agent for Sustainability in Different Cultures and Contexts. International Journal of Sustainable Higher Education, Volume, 9, Issue 3, pp. 317–338.
21. Strambach, S. (2010). *Path Dependence and Path Plasticity: The Co-evolution of Institutions and Innovation in the German Customized Business Software Industry*. In: Boschma, R., Martin, R. (eds) The Handbook of Evolutionary Economic Geography. Edward Elgar Publishing Limited, Cheltenham, pp. 406–431.

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MEASUREMENT OF THE QUALITY OF LIFE IN THE REGIONS OF LATVIA

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Abstract. Increasing the quality of life is one of the main long-term development goals mentioned in Latvian planning documents. In order to assess whether the goals are achieved, it is necessary to find the optimal solution for quality of life evaluation. The aim of the article is to find the most suitable method for assessing and comparing quality of life in the regions of Latvia. The most popular and easy-to-use method for quality of life evaluation is calculation of the complex index, but the indicators could be normalized according to different methodology. In this paper 7 methods of calculation of indexes were compared and the advantages and disadvantages of each method were determined, as well as the optimal method for calculating the quality of life index at the regional level was chosen. To evaluate quality of life, factors such as financial situation, health, economic activity, education, dwelling, security and environment were used and 10 descriptive indicators were selected. In the assessment of the quality of life in the regions of Latvia, it was concluded that Pieriga and Riga regions have the highest quality of life, but the lowest quality of life is in Latgale region. The most appropriate method for assessing the quality of life is to calculate the Quality of Life (QoL) Index as a percentage of the average, or by using the min—max normalization formula and obtaining index values in the range from 0 to 1.

Key words: quality of life, index, complex measurement system, normalization.
JEL code: R11, R12, I31.

Introduction

The quality of life has become an important research object in many countries of the world. Over time, a number of different methods have been developed to measure quality of life, because quality of life is studied in different sciences from different perspectives. Improving quality of life is also mentioned as one of the main goals of sustainable development in the hierarchically highest planning document of Latvia *Sustainable Development Strategy of Latvia until 2030*: „Within the scope of the sustainability model, the only possibility of successful response to global challenges is to create such development policy where there is a balance between the necessity to promote the economic growth and to improve the quality of life of each member of the society, the necessity to ensure social unity and safety, as well as the necessity to preserve the ecological environment for future generations." (Cross—Sectoral Coordination Centre, 2010). *The National Development Plan of Latvia for 2014—2020*, in its turn, states: „There is inequality between regions and local municipalities in terms of income and economic activity, as well as access to services – which produces pronounced disparities in the quality of life of residents of different regions. This situation encourages the outflow of economically active people from less to more developed territories, which, together with the low level of productivity, further reduce the prospects of growth and available jobs in the less developed territories." (Cross—Sectoral Coordination Centre, 2012). Thus, one of the basic goals of socio—economic development in Latvia is to increase the quality of life throughout the country. The problem is how to measure the quality of life and assess whether the goal is achieved. A **hypothesis** of the research is - it is possible to find one optimal method for calculating the Quality of Life (QoL) index and for checking how the set goal is reached in the regions of Latvia. Therefore, the **aim** of the article is to choose the most suiTable method for assessment and comparison of quality of life in regions of Latvia. In order to achieve this goal, the following **tasks** were set: to study the existing researches on quality of life and its assessment methods; to select a relatively small number of indicators for assessing the quality of life at the regional level in Latvia; to calculate the QoL index by 7 methods;

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to choose the most appropriate method for calculating such index. **Research methods** used were literature overview, analysis, synthesis, monographic or descriptive method, statistical data processing methods, index calculation. **Limitations** of the research: not all quality of life assessment methods were researched and summarized; only a limited number of indicators were selected for life quality assessment; No population survey was conducted to get subjective indicators; limited statistics at regional level. The **scientific novelty** of the article is related to the calculation of the QoL index using several approaches.

Life quality research in different fields of science has led to huge discussions among scientists, so the concept of quality of life is recognized as interdisciplinary. The origins of the concept of quality of life are found in ancient philosophy. In European culture it is believed that a happy person is person who has achieved high goals in terms of welfare, education, culture and social status (Tisenkopfs T., Bela B., 2006; Veenhoven R., 2007). The period of industrial development can be considered as the beginning of life quality research from an economic point of view, when issues of poverty and wealth were discussed (Grinfelde A., 2010). A. Smith considered that the welfare of the state was determined by the goods and services it produced. But such production could have also negative side effects (Eisel D. et al., 2014). The development of psychology in the second half of the 1950s helped to include subjective factors in the assessment of quality of life (Veenhoven R., 2000). In the field of sociology, quality of life is perceived as a subjective understanding of well—being, taking into account individual needs. The health sector has played an important role in the development of the concept of quality of life, because in general people live longer, but that does not mean that better (Pinto S. et al., 2017; Susniece A., Jurkauskas A., 2009).

It is necessary to pay attention to the concepts of *quality of lif*e and *wellbeing*, which are interchanged in literature (Glatzer W. et al., 2015). Des Gasper, a professor at the Erasmus University in Rotterdam, explains that the concept of *well—being* is more widely used at the individual level, but the concept of *quality of life* - for the general public (Gasper D., 2009). The authors of the article conclude that the definition of quality of life offered by professor R. Cummins of Deakin University is the best for the purpose of the study and will be the basis of this research: „Quality of life is a set of objective and subjective factors that include material well—being, health, productivity, intimacy, security, community and emotional well—being." (Skestere I., 2012). Various definitions of quality of life, as well as different approaches to quality of life research, prove that a universal definition is impossible. However, the World Health Organization's Special Interest Scientists' Group has developed some "conceptualization principles": quality of life is ensured by the ability of a person to meet its needs, as well as the opportunity to further improve living conditions; quality of life is affected by subjective and objective components; quality of life is based on individual needs, individual choice and control; quality of life is multidimensional, influenced by both personal and environmental factors (Schalock R.L. at al., 2002). These approaches to the definition of quality of life were taken as the basis how to select indicators for calculating the QoL index.

Research results and discussion

Because the quality of life is a multidimensional concept, the most optimal method for its evaluation is the composite index. To develop the QoL index at the regional level of Latvia and to choose the most optimal method for its calculation, several existing quality of life assessments in the world and in Latvia were studied.

One of the most frequently used indexes for comparison of countries is *The Human Development Index*, which allows assessing long—term development of nations. A broader range of indicators is included in the OECD *Better Life Index*, which includes 11 aspects of life quality. The EU statistical centre Eurostat publishes quality of life indicators *GDP and beyond*, providing statistical information on the quality of life in the EU countries. The publication offers a detailed analysis of the 8 + 1 quality of life aspects that can be evaluated statistically. In 2005, the Economist Intelligence Unit developed a specific *quality of life index* based on a unique methodology - linking research results (surveys) to subjective life satisfaction. The index was calculated including 9 quality of life factors. Latvia's view on the concept of quality of life was created in 2006, when the Strategic Analysis Commission developed the *quality of life index* for Latvia. Key factors that are assessed in all these QoL indexes are housing, income, work, society, education, environment, civic participation, health, life satisfaction, security, work—life balance (United Nations, 2018; OECD, 2019; Eurostat, 2019; The Economist Intelligence Unit, 2005; Karnitis E. et al., 2006).

In this article, quality of life is not evaluated according to the developed methods, because not all information of the indicators included in these methods is available at the regional level, as well as the survey is not carried out to evaluate subjective factors of the life quality. For the assessment of the quality of life in the regions of Latvia, the Better Life Index, developed by the OECD, will be used as the basis to choose factors, because authors of the article are sure that the index covers the most important aspects of quality of life. The assessment of the quality of life will include factors and indicators that are summarized in the Table 1.

Table 1

Factors and indicators characterizing quality of life

Factors	**Indicators**
Financial position	Mean disposable income per household member (EUR/per month) Severe material deprivation rate among persons (%)
Health	Life expectancy of new-borns (years)
Economic activity	Employment level (15-74 years old, %)
Education	Share of population with higher, vocational or professional secondary education (15-74 years old, %) Participation in adult education (%)
Dwelling	Dwelling supply with different amenities (water pipe, hot water, sewerage, town gas, %) Average size of dwelling (m^2)
Security	Share of households identifying crime, violence or vandalism in the area as problem regarding their household environment (%)
Environment	Share of households identifying pollution, grime and/or other environmental problems in the area as problem regarding their household environment (%)

Source: developed by authors

The period for data analysis is 2005-2017. If data for this period of time were not available, they were obtained by the linear extrapolation method. Based on generally accepted data normalization and index calculation methods, 7 data normalization methods were selected. The QoL Index was calculated as the arithmetic mean of the normalized indicators (Formula 1).

$$QoL = \frac{\sum_{i=1}^{n} X_{norm_i}}{n} \quad (1)$$

Where:

QoL – Quality of Life index;

X_{norm} – normalized indicator;

i – sequential number of indicator;

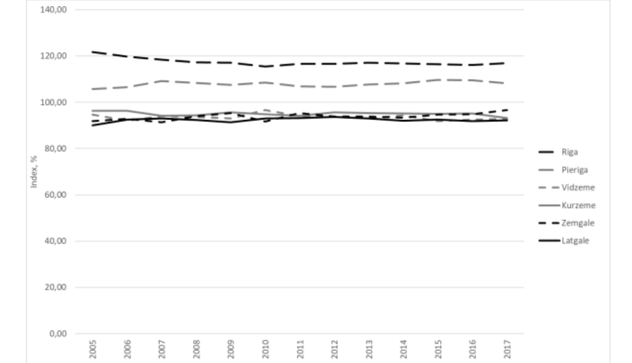
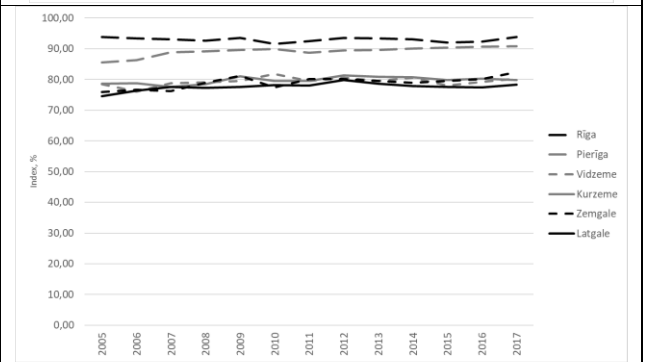
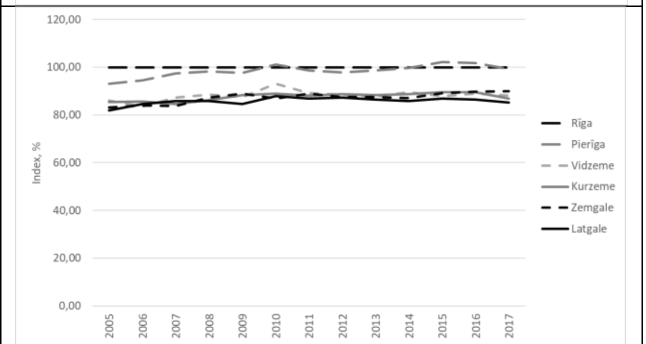
n – total number of indicators.

To determine which normalization method is the most suiTable for the calculation of the QoL Index, it was assumed that all factors have the same relative weight, or all factors are equally important in the assessment of quality of life.

One of the common methods for index calculation is to calculate it as a percentage of the selected indicator. Table 2 shows the calculation options for this type of indexes.

Table 2

Options of the QoL Index calculation as a percentage of the selected indicator

Formula for normalization of indicators	**Results for statistical regions of Latvia**
$X_{norm} = \frac{x}{x_{avr}} \cdot 100\%$ (2) Where: X_{norm} – normalized indicator; X – actual value of the indicator; X_{avr} – average value of the indicator in the regions.	
$X_{norm} = \frac{x}{x_{\max}} \cdot 100\%$ (3) Where: X_{norm} – normalized indicator; X – actual value of the indicator; X_{max} – maximum value of the indicator among the regions.	
$X_{norm} = \frac{x}{x_{Riga}} \cdot 100\%$ (4) Where: X_{norm} – normalized indicator; X – actual value of the indicator; X_{Riga} –value of the indicator in Riga region.	

Source: author's calculations based on CSB

The QoL Index, calculated according to Formula 1 and using Formula 2 for normalization of indicators, shows the quality of life in each region compared to the average level in Latvia. The average value is taken as 100 %, and the actual percentage value for each region may be higher or lower. There are No limits for values of the QoL index. This index shows that the highest quality of life is in Riga region, followed by Pieriga region. Only in these two regions the quality of life is above average. In other regions of Latvia, however, the quality of life is below average and Latgale region takes the last place. The disadvantage of this index is that it is not possible to assess how the quality

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of life has changed over time, because the average level is 100 % throughout the analysed period, regardless of whether it has increased or decreased.

The QoL Index for regions expressed as a percentage of the maximum indicator between regions shows the quality of life in regions compared to the region with the highest score. The maximum value of the index is 100 %. This index shows how far each region is from the highest quality of life value. In this case, the maximum score is not the defined target, but the maximum result achieved among regions. It can be seen that the closest to the maximum quality of life is in Riga region, but Latgale region is the most behind.

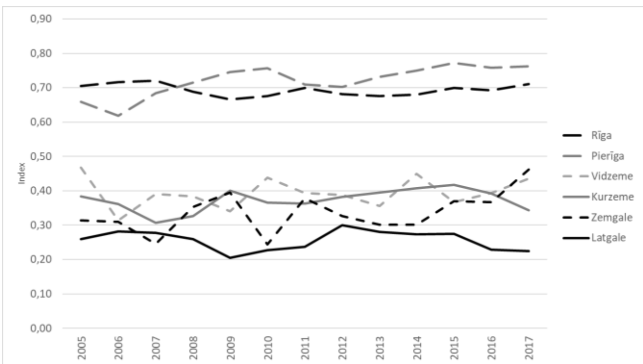
The QoL Index for regions, expressed as a percentage of a selected target region, allows to compare the quality of life in each region with the selected region. Authors of the article assumed that the quality of life in the Riga region is a target for other regions and it is 100 %. It can be seen that from 2014 there is a higher quality of life in Pieriga region than in Riga region. Latgale region lags behind the Riga region most of all. The disadvantage of this index is that it is impossible for the chosen reference region to determine whether the quality of life has changed over time.

None of the methods listed in Table 2 is directly applicable to determine whether the quality of life in the regions has increased and whether the objectives set have been achieved. However, they can be improved by inserting target values as the basis of comparison. It would then be possible to assess whether the regions are approaching or lagging behind the target.

There are also other methods of index calculation described in the literature. One of them is calculation of the index using the min-max normalization of indicators. Such approach is seen, for example, in the calculation of Human Development Index (United Nations, 2018). The other approach is to calculate the index taking into account the standard deviation. This approach is used to calculate the Territory Development Index in Latvia (Cabinet of Ministers, 2014). Examples of calculating these indices in Latvian regions are summarized in Table 3.

Table 3

Options of the QoL Index calculations

Formulae for normalization of indicators	**Results for statistical regions of Latvia**
$X_{norm} = \frac{x - x_{\min}}{x_{\max} - x_{\min}}$ (5) Where: X_{norm} – normalized indicator; X – actual value of the indicator; X_{min} – minimum value of the indicator in the regions; X_{max} – maximum value of the indicator in the regions.	

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<table>
<tr><th>Formulae for normalization of indicators</th><th>Results for statistical regions of Latvia</th></tr>
<tr><td>

$$X_{norm} = \frac{x - x_{avr}}{s} \quad (6)$$

Where:

X_{norm} – normalized indicator;

X – actual value of the indicator;

X_{avr} – average value of the indicator;

s – standard deviation.

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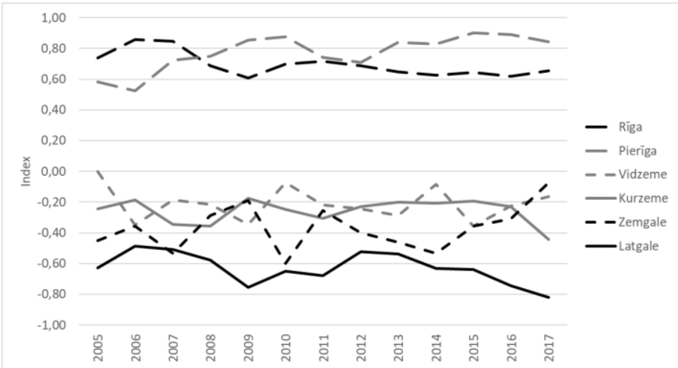

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Source: author's calculations based on CSB

Both index calculations show that since 2008 the Pieriga region has the highest quality of life and the Latgale region has the lowest quality of life during all analysed period. When Formula 5 is used for data normalization, the index limits are from 0 to 1. No limits are set for index, if Formula 6 is used. The advantage of min-max normalization is that the boundaries of the range, in which the index values will be, can be changed depending on the needs of the researcher. This index is easy to understand and explain.

The last group of indexes includes calculation methods that show changes in time. One of them was used in Latvia to calculate the Quality of Life Index, using Formula 8 (Karnitis E. et al., 2006). The essence of the method is to compare the changes that have occurred in relation to the chosen base period. Methods are shown in Table 4.

Table 4

Options of the QoL Index calculations showing changes in time

<table>
<tr><th>Formulae for normalization of indicators</th><th>Results for statistical regions of Latvia</th></tr>
<tr><td>

$$X_{norm} = \frac{x}{x_0} \quad (7)$$

Where:

X_{norm} – normalized indicator;

X – actual value of the indicator;

X_0 – base value of the indicator.

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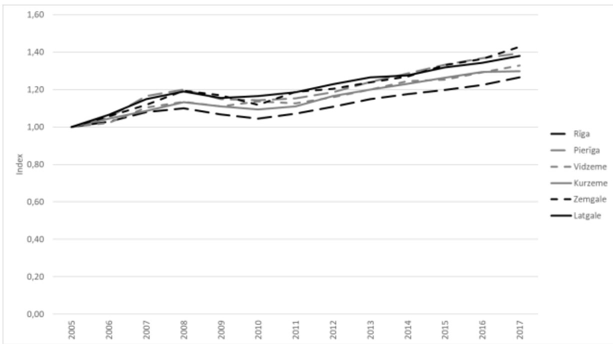

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<tr><td>

$$X_{norm} = \frac{x_n}{x_{n-1}} \quad (8)$$

Where:

X_{norm} – normalized indicator;

X_n – actual value of the indicator;

X_{n-1} – previous period value of the indicator.

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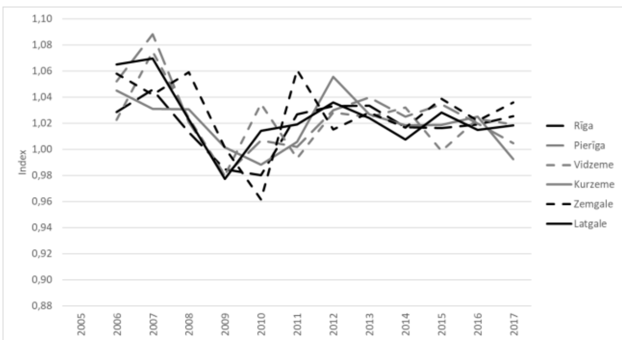

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</table>

Source: author's calculations based on CSB

The methods summarized in the Table 4 can be used to assess the development of indicators over time. To calculate the QoL Index using Formula 7 for data normalization, indicators of the year 2005 was chosen as the base values. According to this index, the quality of life in all regions compared to situation in 2005 has increased. The biggest increase was in Zemgale, Pieriga and Latgale regions, but the modest - in Riga region. This could be explained by the relatively high quality of life in Riga region and a lower starting position for other regions of Latvia. In turn, the QoL Index, in which calculation Formula 8 was used, is not easy to understand and it is difficult to compare each region and determine its place among the other regions. From the analysis of this index it can be seen that in 2008-2010 the quality of life in the regions has decreased, but in recent years it has gradually increased.

Conclusions, proposals, recommendations

1) Quality of life is a multidimensional concept and the most suiTable method for its evaluation is the calculation of the composite index.
2) There is No need for a single definition of quality of life, because the concept is interpreted differently within different sciences, as well as the personal experience and perceptions of quality of life of researchers make definitions different.
3) Depending on the chosen data normalization method, the highest quality of life is in Riga or Pieriga regions. Latgale region is at the last place among statistical regions of Latvia. However, the quality of life has improved in all regions compared to the situation in 2005.
4) The hypothesis has been partially proved, because there is more than one index calculation method, that would be optimal for the calculation of the QoL Index and that could be improved in order to be able to assess the progress of the set goals.
5) To calculate the QoL Index in the regions of Latvia the authors of the article recommend to use one of the following methods: calculation of the index as the percentage of the selected indicator or calculation of the index using min-max normalization. They are the easiest to read and explain to the public, and they represent the situation in the regions of Latvia. However, in order to be able to check the achievement of the goal of improving the quality of life, it would be necessary to set target indicators. They could be placed in those indexes and then it could be possible to find out whether and how much we are lagging behind the target.
6) In order to improve the quality of life assessment, the index developed by authors should be improved by adding subjective indicators and giving importance to the factors. This would be the task of further research.

Bibliography

1. Cabinet of Ministers of the Republic of Latvia (2014). Regionalas attistibas uzraudzibas un novertesanas kartiba. MK noteikumi Nr.367. Retrieved: https://likumi.lv/doc.php?id=267737. Access: 06.02.2019.
2. Central Statistical Bureau (CSB) Database (2019). Retrieved: http://www.csb.gov.lv/dati/statistikas-datubazes-28270.html. Access: 13.02.2019.
3. Cross-sectoral Coordination centre (2010). *Sustainable Development Strategy of Latvia until 2030*. Retrieved: http://www.pkc.gov.lv/sites/default/files/images-legacy/LV2030/LIAS_2030_en.pdf. Accessed: 23.01.2019.
4. Cross-sectoral Coordination centre (2012). *The National Development Plan of Latvia for 2014-2020.* Retrieved: http://www.pkc.gov.lv/sites/default/files/images-legacy/NAP2020 %20dokumenti/NDP2020_English_Final.pdf. Accessed: 23.01.2019.
5. Eisel, D., Rokicka, E., Leaman, J. (2014). *Welfare State at Risk. Rising Inequality in Europe*. Switzerland: Springer. Retrieved: https://books.google.lv/books?id=Qe8VAgAAQBAJ&printsec=frontcover&hl=lv&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false. Access: 29.04.2018.

DOI: 10.22616/ESRD.2019.070

6. Eurostat (2019). Measuring GDP and Beyond. Retrieved: http://ec.europa.eu/eurostat/web/gdp-and-beyond. Access: 02.04.2018.
7. Gasper, D. (2009). Understanding the Diversity of Conceptions of Well-Being and Quality of Life. *The Journal of Socio-Economics,* Vol 39, pages 351-360. Retrieved: https://www.sciencedirect.com/science/article/abs/pii/S1053535709001474. Access: 15.04.2018.
8. Glatzer, W., Camfield, L., Moller, V., Rojas, M. (2015). *Global Handbook of Quality of Life*. The Netherlands: Springer. 894 p.
9. Grinfelde, A. (2010). *Pensionaru dzives kvalitate Latvijas regionos*. Summary of dissertation. Jelgava: LLU. 113 p.
10. Karnitis, E. et al. (2006). *Latvijas iedzivotaju dzives kvalitates indekss*. Report of Commission of Strategical Analysis. Cross-sectoral Coordination centre. Retrieved: http://petijumi.mk.gov.lv/sites/default/files/file/VP_Latv_dzives_kval_indekss.pdf. Access: 23.01.2019.
11. OECD (2019). *Better Life Index*. Retrieved: http://www.oecdbetterlifeindex.org/#/11111111111. Access: 02.04.2018.
12. Pinto S., et al. (2017). Comfort, Well-being and Quality of Life: Discussion of the Differences and Similarities among the Concepts. *Porto Biomedical Journal*, Vol 2, pages 6-12 Retrieved: https://www.sciencedirect.com/science/article/pii/S2444866416301076. Access: 02.04.2018.
13. Schalock R. L., at al. (2002). Conceptualization, Measurement, and Application of Quality of Life for Persons with Intellectual Disabilities: Report of an International Panel of Experts. American Association on Mental Retardation Retrieved: https://pdfs.semanticscholar.org/e542/e17038b0ab3f3be8d10f1b3744cda0e9906d.pdf. Access: 02.04.2018.
14. Susniene, A., Jurkauskas, A. (2009). The Concepts of Quality of Life and Happiness – Correlation and Differences. *Engineering Economic*, Vol 3, pages 58 – 66 Retrieved: http://www.inzeko.ktu.lt/index.php/EE/article/download/11648/6329. Access: 16.05.2018.
15. Skestere, I. (2012). *Petijums par dzives kvalitates izvertejuma metodem un instrumentiem (1.daļa)*. Sabiedribas integracijas fonds. Retrieved: http://www.sif.gov.lv/nodevumi/nodevumi/4881/petijums_dz_kvalit_1.pdf. Access: 01.03.2018.
16. The Economist Intelligence Unit's Quality-of-Life Index (2005). Economist.com. Retrieved: https://www.economist.com/media/pdf/QUALITY_OF_LIFE.pdf. Access: 02.04.2018.
17. Tisenkopfs, T., Bela, B. (2006). *Dzives kvalitate Latvija*. Strategiskas analizes komisija. Riga: Apgads „Zinatne". 430 p.
18. United Nations Human Development Report Office (2018). *Technical Notes of HDI Calculation*. Retrieved: http://hdr.undp.org/sites/default/files/hdr2018_technical_notes.pdf. Access: 04.02.2019.
19. Veenhoven, R. (2007). Quality of Life Research. *Bryant, C.D. & Peck, D.L. '21st Century Sociology, A Reference Handbook' Sage,* Thousand Oaks, California USA, Volume 2, chapter 7, pages 54-62. Retrieved: http://www.academia.edu/2975712/Quality-of-Life_Research. Access: 02.04.2018.
20. Veenhoven, R. (2000). The Four Qualities of Life: Ordering Concepts and Measures of the Good Life. *Journal of Happiness Studies*, Vol 1, pages 1-39. Retrieved: http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.199.9770. Access: 02.04.2018.

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ECONOMIC IMPACT OF THE US-CHINA TRADE CONFLICT

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Abstract. The trade conflict between the US and China, which started at the beginning of 2018, was the result of the growing imbalance in trade relations between the two countries. The aim of the study was to show the potential effects of this conflict on mutual trade and on the economies of both countries. The 25-point increase in tariff rates on products imported from China, as announced by the US, will reduce imports of Chinese products, which will contribute to a reduction in the US trade deficit. Most of the costs resulting from the imposition of duties will be borne by the Chinese companies, as their profit margins will decrease. Customs receipts can be used to compensate for the social losses of US consumers. However, the losses for China as a result of the introduction of import duties by the USA may be lower if the Chinese decide to take retaliatory action.

Key words: US-China foreign trade, trade conflict.
JEL code: F17, F180.

Introduction

The strategy implemented by Donald Trump since March 2018 to increase pressure on China through the threat of a customs war is aimed at solving the problems that have been growing for years in economic relations with China. From the point of view of the United States, the biggest problems are: China's persistent surplus in trade with the US, restrictions to access to the Chinese market, the undervalued yuan or the lack of sufficient protection of intangible property in China. As a result of actions taken by the United States, at the end of September 2018 the Americans introduced customs duties on nearly 50 % of products imported from China. In 2019, the Trump administration intends to increase import duties on many Chinese products by 25 percentage points. The US administration's actions meet with the retaliate actions of the Chinese authorities. Therefore, the public debate stresses that the trade conflict not only harms China, but also has negative effects on the American economy.

The aim of the study was to show the potential effects of the trade conflict between the US and China on mutual trade and on the economies of both countries, especially the US economy.

Protectionism and free trade in economic theory and practice

Throughout the post-war period, as in previous years, we saw two opposing directions of trade policy in the world economy: free trade and protectionism. At that time, both trade policies were present with varying levels of intensity in individual countries. However, the intensification of globalization processes was accompanied by a deepening liberalisation of international exchange (Wrobel, 2013). Economic theory and practice, which point to the advantages of market liberalisation in the process of efficient allocation of resources in the global economy, are still confronted with the instruments of economic protectionism, which is particularly strong in times of the economic downturn. In the economic theory, there is No doubt about the sense of trade liberalisation. Already economics classics, such as A. Smith and D. Ricardo pointed out that if each nation specialises in an area in which it has an absolute or comparative advantage, it can produce more effectively and any obstacles to free trade will significantly reduce these benefits. The theory of economics did not stop at a simple explanation of the benefits of trade by D. Ricardo, referring to natural conditions. Later on, attention was also drawn to the abundance of labour and capital resources held by individual countries. The theory gradually developed, covering, among others, the issues of economies of scale

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of production, the network effect (profitability increasing with the growing number of customers), consumer choice, and the creation of a global value chain. The conclusion remained unchanged: the increase in specialization and international exchange leads to an increase in income for all nations participating in these processes (Orlowski, 2016).

The policy of protectionism referring to mercantilism or Keynes' theory is a manifestation of the primacy of national interest in the external actions of states or, in other words, the primacy of the national economy in relation to the world economy. This concept can be defined as striving to develop domestic production, protect the internal market from foreign competition and support own expansion into foreign markets (Kofman, 1992). These objectives are pursued by the state through the means and tools of foreign economic policy, including in particular trade policy. By pursuing a protectionist strategy, the government can also to some extent shape the structure of the economy and foreign trade. If certain domestic industry branches are considered crucial, they obtain preferential treatment and their foreign competitors face duties, limits, regulations, etc. Similarly, in the case of unwanted or irregularly manufactured goods, their imports can be drastically reduced using appropriate protectionist tools. State subsidies or subventions, partly financed e.g. thanks to revenues from customs duties or concessions, may also serve to prevent the problems of high unemployment or low wages, improving the situation of employees and enterprises (Gietkowski Protectionism...).

In the history of the economy, support for free trade and protectionism has changed. In the 19th century, free trade gradually became more and more important, leading to a boom in trade turnover. Rapidly falling transport costs were the main driving force behind the increase in trade exchange. However, nations benefited from this unevenly: while the Western countries gained, and colonial and half- colonized areas were on the loss side, unable to establish an equal competitive struggle mainly due to the unequal political position (Orlowski, 2016). The first half of the 20th century was a period of world wars and crises. During this period, countries tried to save their producers by using the tools of protectionism and suspending currency convertibility. This has led to a significant fall in the value of international trade.

The second half of the 20th century was a period of gradual liberalisation of the world trade as a result of agreements concluded during the GATT negotiating rounds and the creation of integration groups, such as the European Union, NAFTA and MERCOSUR, among others. However, the real triumph of free trade occurred only during the "second wave of globalisation" in the last decades of the 20th century. Communism collapsed, liberal capitalism triumphed, global exports grew rapidly, large companies began to treat the whole world as their market and reach out to consumers all over the world. The progressive process of globalisation has contributed to the rapid development of international trade, the development of the world economy and the economies of many countries. However, the critics of these processes appeared, organized in alter-globalization movements. Some economists are also of the opinion that the principles of the current stage of globalisation have been imposed on the world by the developed countries, especially without taking into account the interests of the developing countries. The criticism of globalisation also comes from a part of Western societies. The relocation of labour-intensive production to developing countries increases the profits of companies, the income of highly skilled workers and lowers prices for consumers. At the same time, it reduces the number of jobs for people with lower qualifications, as a result of which their wages are falling, and the income disparity within societies is increasing (Orlowski, 2016]). This results in

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protests organized in the developed countries and, above all, in France. The change in the United States' foreign economic policy is part of the current processes in many countries around the world.

Trade between the United States and China

Economic and trade reforms launched in 1979 helped to transform China into one of the world's largest and fastest growing economies. China's economic growth and trade liberalisation, including comprehensive trade commitments made by China following its entry into the World Trade Organisation (WTO) in 2001, led to the rapid development of US-China trade links. The trade between these countries increased sharply after the restoration of diplomatic relations and the signing of the bilateral trade agreement in July 1979. In 1980, total trade between the US and China amounted to approximately USD 4 billion. China was considered the 24th largest trading partner of the United States, the 16th largest export market and the 36th largest source of import. In 2017, total US trade in goods with China amounted to USD 636 billion, making China the largest trading partner of the US (Table 1).

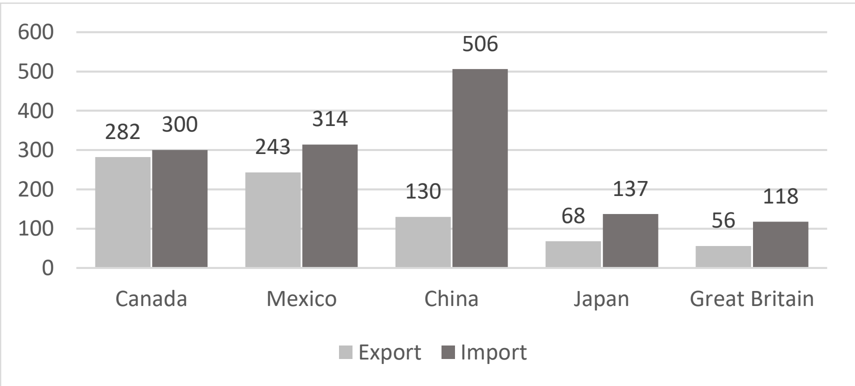
Table 1

US foreign trade with China in the years 1980-2017 in USD billion

Years	Export	Import	Balance
1980	3.8	1.1	2.7
1990	4.8	15.2	-10.4
2000	16.3	100.1	-83.8
2010	91.9	365.0	-273.0
2011	104.1	399.4	-295.3
2012	110.5	425.6	-315.1
2013	121.7	440.4	-318.7
2014	123.7	468.5	-344.8
2015	115.9	483.2	-367.3
2016	115.6	462.6	-347.0
2017	130.4	505.6	-375.2

Source: U.S. International Trade Commission (USITC) DataWeb

In 2017, China was the third largest export market in the United States, after Canada and Mexico, and by far the first import market (Fig. 1).



Source: U.S. International Trade Commission (USITC) DataWeb

Fig. 1. **US trade turnover with major trading partners in 2017 in USD billions**

However, with all these countries, the United States had a negative trade balance in 2017. A record deficit of 376 billion US dollars was noted in trade with China that year. Among the products exported by the US to China in 2017, aviation and space products (mainly civil aircraft and parts), oilseeds (mainly soy beans), motor vehicles, semiconductors and electronic components dominated.

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Americans imported from China mainly communication equipment, computer equipment, various finished goods (such as toys and games), and clothing.

The main problem for many US policymakers is the size of the US trade deficit with China, which rose from USD 10 billion in 1990 to USD 367 billion in 2015. This deficit was reduced to USD 347 billion in 2016, but rose again to USD 375 billion in 2017 (Tab. 1). Over the past few years, the US trade deficit with China has been much larger than with any other trade partner (Morrison, 2018). China's long-standing trade surplus is the result of China's internal economic policy, aimed at providing systemic support to the manufacturing sector. It is based, among other things, on maintaining a fixed exchange rate between the yuan and the US dollar and low interest rates for big business, as well as on many years of halting wage growth. This leads to effective subsidisation of the export sector, which ensures its international competitiveness. US dollar surpluses obtained from exports are invested in the absorptive American capital market, financing American imports from China. In other words, the long-term US trade deficit with China is financed through the import of Chinese capital and rising debt to China. The current economic policy of countries that regularly record surpluses in trade with the USA (apart from China also Germany, Japan, and South Korea) is considered harmful to the American economy, causing a loss of competitiveness and relocation of production from the USA abroad in the actual sphere, and leading to interest rate cuts and the creation of bubbles on asset markets in the financial sphere (Jakobowski, 2018).

Analysts and politicians are therefore of the opinion that the large trade deficits with China indicate that trade relations between these countries are somehow unsustainable, unfair and damaging to the US economy. Others claim that such deficits are largely a reflection of changes in global production and the emergence of extensive and complex supply chains, where China is often the ultimate collection point for export-oriented multinational companies that supply goods from many countries (Morrison, 2018).

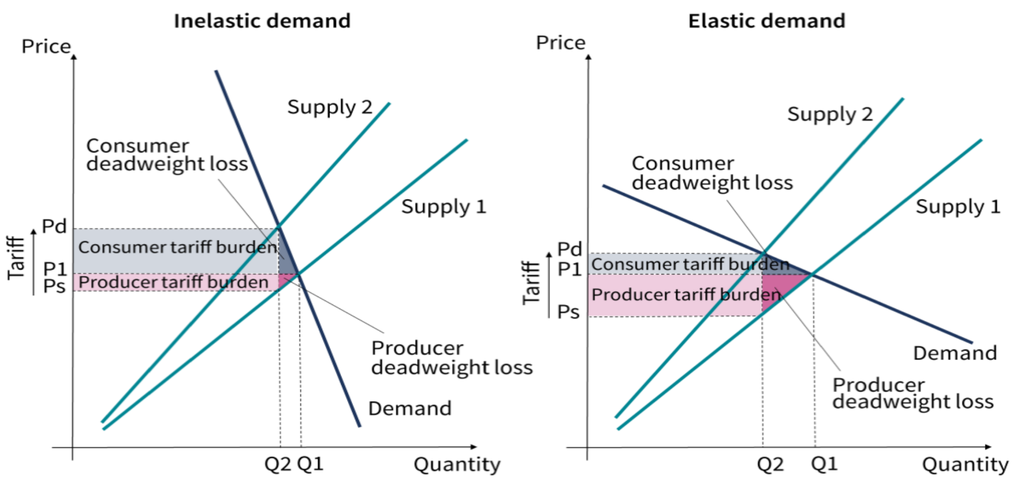
The course of the US-China trade conflict

The US trade deficit with China was the main cause of the trade conflict between the two countries. The US strategy of increasing pressure on Beijing through the threat of a customs war is an evolution in relation to the beginning of Donald Trump's presidency. In 2017, the Americans offered China a form of dialogue aimed primarily at increasing US exports to China and opening up the Chinese market. The result was the signing of agreements for the sale of US products and services worth USD 250 billion and the development of a 100-day plan to open the Chinese market. According to the American side, the Chinese did not fully comply with the agreements, as a result of which from March 2018 onwards Donald Trump adopted a tactic of increasing tension in mutual American-Chinese relations, threatening to start a customs war (Jakobowski, 2018).

In April 2018, the US government published a list of 1333 Chinese products worth USD 50 billion, on which duties could be imposed. The US Government justified the introduction of customs tariffs with unfair Chinese trade practice, especially in the field of technology transfers and the lack of adequate protection of intellectual property. In response, China submitted in June 2018 a list of US products to be subject to duties. In August this year, both countries introduced customs duties on the products on the lists. The conflict escalated the following month. In September 2018, the US government presented a second list of 6,000 Chinese products with a total value of approximately USD 200 billion, on which duties were to be imposed. At the end of September, the US government began to impose duties on goods on the second customs list. This means that 50 % of Chinese imports and 12 % of total US imports are subject to import duties. Initially, it was planned to introduce 10 % tariff rates, but it was decided that in 2019 duties would increase by 25 percentage points (Bown, Kolb, 2018). American-Chinese negotiations at the beginning of 2019 resulted in the US government refraining from increasing tariff rates for the time being. The Chinese authorities did not remain indifferent and decided to retaliate, which resulted in the announcement of the introduction of customs duties and their introduction on 6,000 groups of goods imported from the USA with a total value of USD 60 billion (We are facing an escalation...). It seems, however, that the ongoing negotiations, resulting, among other things, in the suspension of the US Government's increase in tariff rates on trade with China, as well as China's agreement to support US exports and measures aimed at reducing inequalities in mutual trade, have increased the chances of concluding an agreement. On the other hand, a country that wins a trade war may not be interested in ending it.

Economic and social consequences of the US-China trade war

A direct symptom of the trade conflict between the United States and China has been the raising of existing tariff rates or the introduction of new tariff rates in trade between the two countries. In the absence of an agreement and the pessimistic scenario, tariff rates on US imports from China may increase to 27.5 % in 2019, because some products had already been subject to customs duties. However, most of the products imported from China were not subject to tariff rates, and in their case the tariff rates may increase from zero to 25 %.



Source:* *G. Felbermayr, B. Zoller-Rydzek, Who is Paying for the Trade War with China?, EconPol Policy Brief 11/2018

Fig. 2. **Tariff incidence on a partial market without domestic supply**

Such a situation may concern the vast majority of consumer goods and semi-finished products. The introduction of such high duties would have a negative impact mainly on companies importing and using semi-finished products from China for production in the US. US import duties will increase the prices of Chinese products and reduce profit margins for Chinese companies. As a result, vulnerable Chinese companies may limit production and exports to the US market. This raises the question of whether US companies will be able to adapt their supply chains and fill the supply gap that might arise, or whether the effect will be an increase in the prices of Chinese products in the US. In such case, both US companies and consumers will be affected. If the response of consumers to price increases is weaker than that of producers, customs tariffs will first and foremost result in the increase in consumer price. Otherwise, the producer price will initially decrease, for example

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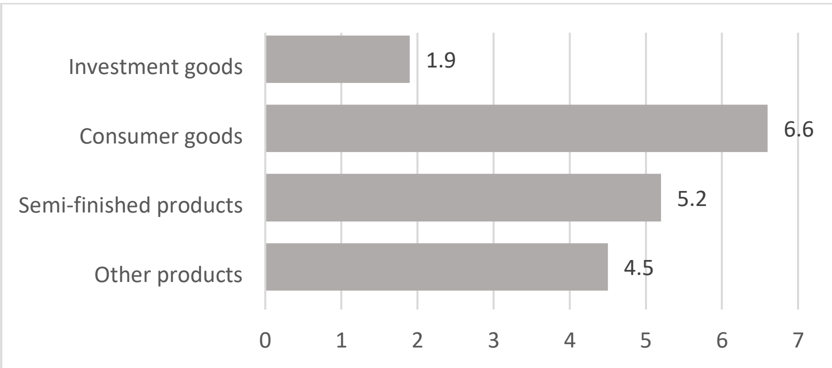
because companies will give up their margins. This effect is mainly related to the availability of substitute goods on the market. Figure 2 shows the effect of introducing a duty in a sub-balance market where there are No direct domestic competitors. In the absence of a duty, supply balances with demand at price P1 and quantity Q1. Producer and consumer prices are identical. An import duty of e.g. 25 % is a wedge between the consumer price Pn and the price Pa that producers receive. With inelastic demand, the volume of goods sold decreases slightly, the producer price decreases slightly, and the consumer price increases significantly. If demand is elastic, consumer prices increase, leading to a significant reduction in demand. At the same time, producer prices are falling sharply. In both cases, the duties in place distort the decisions of consumers and suppliers. The degree of distortion depends on the evolution of supply, the evolution of price (duty amount) and relative price flexibility. Due to the increase in domestic commodity prices, consumption is declining, resulting in a loss of welfare for consumers and producers. The US Secretary of the Treasury will receive duty revenue of (Pn-Pa) Q2, but only part of the cost (Pn-P1) Q2 is borne by domestic consumers. The remaining part (P1 - Pa) Q2 is a transfer of Chinese producers to the US government. Whether the introduced duty reduces or increases welfare (here: consumer pension plus the customs revenue of the state) depends on whether the transfer from abroad exceeds the losses caused by a drop in consumption or not (Broda, Limao, Weinstein, 2008).

After an increase in import duties by 25 percentage points



Source: G. Felbermayr, B. Zoller-Rydzek, Wer bezahlt Trumps Handelskrieg mit China? ifo Schnelldienst 22/2018

Fig. 3. **Average price increase for American consumers (percentage points)**

Figure 3 shows the expected average price increase of Chinese imports for consumers in four categories. By far the highest price increase caused by the introduction of import duty would occur in the case of consumer goods, it would be slightly lower in the case of semi-finished products and by far the lowest for investment goods. Thus, households with the lowest incomes will be most affected by the increase in consumer goods prices because they spend a significant part of these incomes on purchasing cheap Chinese products (Felbermayr, Zoller-Rydzek, 2018). Import duties will therefore lead to a relatively greater decrease in real income of these households.

Figure 4 shows the price development of Chinese producers' products due to the US import duties. If import duties were increased by 25 percentage points, the average price would fall by more than 20 percentage points. The biggest price decrease would occur in the case of investment products.

After an increase in import duties by 25 percentage points

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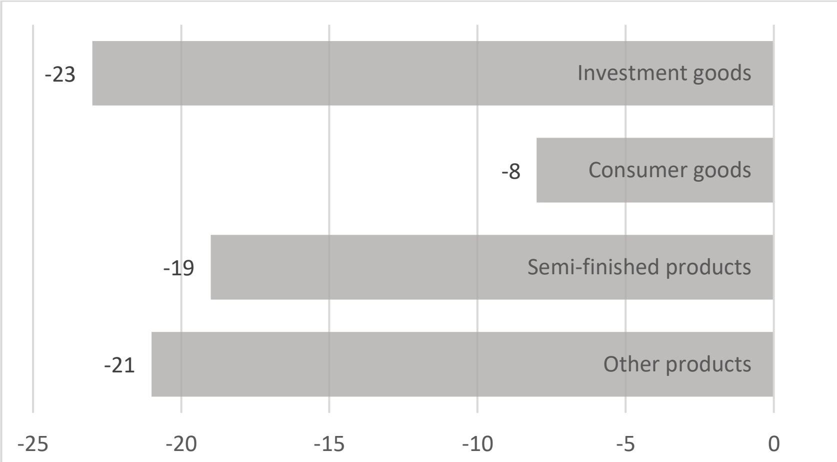

Source: G. Felbermayr, B. Zoller-Rydzek, Wer bezahlt Trumps Handelskrieg mit China? ifo Schnelldienst 22/2018

Fig. 4. **Average decrease in Chinese producer prices (percentage points)**

Such a significant reduction in prices may cause many Chinese companies to withdraw from the US market. Felbermayr and Zoller-Rydzek (2018) in their analyses indicate that an increase in tariff rates for Chinese products by 25 percentage points will result in a 37 percentage point decrease in imports of Chinese products on average, including a decrease in consumer goods by more than 40 percentage points and in investment good by around 28 percentage points, which will contribute to a USD 63 billion decrease in the US trade deficit. This will be the case if the US-Chinese trade is not affected by other factors, especially China's retaliatory actions, which can certainly be expected.

The total economic effect of the possible introduction of US import duties on Chinese products can be defined as the total of the surface areas of two triangles indicating the social losses of producers and consumers (Fig. 2.). Total social losses in China and the US amount to approx. USD 1.6 billion. About one third, or USD 522 million, of these losses are borne by US consumers, while the rest of the losses are borne by Chinese companies exporting their products to the United States. In order to assess the overall economic effect of the introduction of duties, the potential revenue from the duties introduced should also be taken into account. Most of the costs resulting from the imposition of duties will be borne by the Chinese companies, as their profit margins will decrease. Customs receipts can be used to compensate for the social losses of US consumers. As a result, the revenues from customs duties that President Trump may introduce amount to USD 22.5 billion, of which USD 18.9 billion is to be paid by Chinese companies. This represents a net increase in prosperity for the US economy of USD 18.4 billion (Felbermayr and Zoller-Rydzek, 2018).

Summary

The trade conflict between the US and China is now entering a decisive stage. It is difficult to predict whether the negotiations between the US and Chinese administrations will halt this conflict, or whether the Americans will increase import duties on Chinese products by the planned 25 percentage points. Should this happen, the US Government, through a strategic choice of Chinese products, especially those with elastic demand, will not only minimise the negative effects of price increases on US consumers and companies, but will also contribute to significant net welfare gains in the US. However, consideration should be given to the possibility of China introducing trade retaliation, which is acute for the US. The situation in the United States is also complicated by China's current position in global value chains, particularly in high-tech industries. The Chinese factories manufacture computers, electronic and telecommunication equipment of all major global manufacturers. The imposition of duties will result in a loss of competitiveness for US technology

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companies (losing access to the manufacturing base in China), as well as destabilising the economies of US allies in East Asia.

References

1. Bown, C., Kolb, M., (2018). *Trump's Trade Wars Timeline: An Up-to-date Guide. The Peterson Institute for International Economics*, https://piie.com/system/files/documents/trump-trade-war-timeline.pdf. Access:29.12.2018.
2. Broda, C., N. Limao und D. Weinstein (2008). Optimal Tariffs. *The Evidence American Economic Review 98(5)*, pp. 2032–2335.
3. *Czeka nas eskalacja konfliktu miedzy USA a Chinami? (Does an escalation of the conflict between the USA and China await us?)* https://strefabiznesu.pl/czeka-nas-eskalacja-konfliktu-miedzy-usa-a-chinami/ar/13739992 Access: 03.01.2019.
4. Felbermayr, G. Zoller-Rydzek, B. (2018). Wer bezahlt Trumps Handelskrieg mit China? *ifo Schnelldienst* No. 22. pp. 30-35.
5. Felbermayr, G., Zoller-Rydzek, B. (2018). Who is Paying for the Trade War with China?, *EconPol Policy Brief* No. 11, p.3.
6. Gietkowski, P., *Protekcjonizm a wolny handel (Protectionism and free trade)*, http://mme.sknfm.pl/protekcjonizm-a-wolny-handel/ Access: 03.01.2019.
7. Jakobowski, J. (2018). Konflikt handlowy USA–Chiny. Etap drugi, Komentarze (US-China trade conflict. Stage Two, Comments), *the Marek Karp Centre for Eastern Studies in Warsaw*, No. 277, pp.2-3.
8. Kofman, J. (1992). *Nacjonalizm gospodarczy – szansa czy bariera rozwoju (Economic nationalism - development opportunity or barier)*. Wydawnictwo Naukowe PWN, Warsaw, p. 99.
9. Morrison, W. M. (2018). China-U.S. Trade Issues, *Congressional Research Service,* Washington, pp. 8-10.
10. Orlowski, W. M., *Wolny handel: Roosevelt kontra Trump, (Free Trade: Roosevelt versus Trump),* https://www.nbp.pl/edukacja/dodatki_educational_2016/rot/slow_handel_all_do_konta_polityka_20_26.04.2016.pdf Access:06.01.2019.
11. Stokes, B. (2018). *Americans, Like Many in Other Advanced Economies, Not Convinced of Trade's Benefits,* PEW Institute, http://www.pewglobal.org/2018/09/26/americans-like-many- in-other-advanced-economies-not-convinced-of-trades-benefits/.
12. Wrobel, A. (2013). Liberalizacja i protekcjonizm w polityce panstwa – przyklad sektora rolnego, (Liberalisation and protectionism in state policy - an example of the agricultural sector), *Faculty Scientific Journals of the University of Economics in Katowice. Economic Studies* No. 139.

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ANALYSIS OF WOOD PELLET PRODUCTION IN LATVIA

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Abstract. The European Union has set a target of at least a 27 % share of renewable energy consumption by 2030. This objective has resulted in a surge in the production and consumption of wood pellets. The global production of pellets was approximately 31 million t in 2017, and Latvia was the third largest producer of wood pellets in Europe. Latvia shipped 90 % of its total wood pellet production abroad and consumed only about 10 % of the total in its domestic market. The research aim is to examine the production of wood pellets and identify opportunities for the expansion of wood pellet production in Latvia. The research found that in the period 2008-2017, the production of wood pellets increased four-fold in Latvia (to 1166 thou. t in 2017) and the consumption of wood pellets increased almost nine-fold (from 16 thou. t in 2008 to nearly 140 thou. t in 2017). However, the total consumption of wood pellets was low in Latvia, as there were No industrial consumers of this product. Households were the main consumers of wood pellets in the domestic market; therefore, almost the entire quantity of wood pellets was exported from Latvia to industrial consumers in Europe. Besides, wood pellets were also imported in order to be re-exported. Based on expert interviews and a SWOT analysis, the research designed the following strategies for the expansion of wood pellet production in Latvia: the expansion of torrefied wood pellet production, the promotion of wood pellet consumption by households and enterprises and the entry of new markets for the purpose of reducing the dependence of the wood pellet industry on the current export markets.
Key words: wood pellet, renewable energy.
JEL code: Q2, Q42.

Introduction

The use of wood pellets as an alternative to oil products for heating began during the energy crisis in the early 1970s. The very first wood pellet factory began operating in the USA in 1978, while in Europe this industry began developing faster in the early 1990s (Ericsson K., Nilsson L., 2004) when Sweden introduced a tax on CO_2 emissions from fossil fuels (oil products, coal and gas), which made the prices of renewable energy sources more competitive (Sun L., Niquidet K., 2017). Nevertheless, only a slight increase in the production and consumption of wood pellets was observed in the 1990s and early 2000s. The situation considerably changed when the Climate Change Act of 2008 was adopted, which stipulated that the United Kingdom would have to reduce its CO_2 emissions by at least 80 %, compared with the 1990 level, by 2050 in efforts to avoid global warming by two degrees.

A number of European Union (EU) policy documents have considerably contributed to increases in the output of wood pellets. The EU set itself the target of at least a 27 % share of renewable energy consumption by 2030 (Communication from the…, 2014). This initiative continues on the path set by the adoption of the legally binding target imposing 20 % of total energy consumption to derive from renewable energy sources by 2020 (Directive 2009/28/EC of…, 2009). Biomass, not the least woody biomass, currently accounting for around half of the total renewable energy consumption of the EU, plays an important role in attaining these targets (Jonsson R., Rinaldi F., 2017). These ambitious objectives have resulted in a surge in the consumption of wood pellets. However, many countries do not have sufficient domestic feedstock to meet renewable energy production targets and the European Commission estimates that 200-260 million m^3 of wood will need to be imported in order to meet the EU target. With such large expected increase in demand, questions have arisen

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regarding the sustainability of foreign supply sources and the potential impact on pellet and other wood product prices (Johnston C. M. T., van Kooten G. C., 2016).

The global production of pellets was approximately 31 million tons in 2017. Latvia is the third largest producer of wood pellets in Europe (behind Germany and Sweden). Besides, one of the largest wood pellet factories in Europe is located in Latvia. Furthermore, Latvia is a significant European-scale wood pellet exporter, shipping 90 % of total production abroad and consuming only about 10 % in its domestic market. Domestic consumers are mostly households that use wood pellets for heating, yet there are No significant industrial consumers in the country. It could be explained by the fact that the use of wood pellets on an industrial scale is hindered by a lack of power plants running on coal, as Latvia produces most of the electricity from hydropower and natural gas, while small power plants run on woodchips or natural gas.

The research **aim** is to examine the production of wood pellets and identify opportunities for the expansion of wood pellet production in Latvia. To achieve the aim, the following specific research **tasks** were set: 1) to give insight into the production of wood pellets in Latvia; 2) to determine opportunities for the expansion of wood pellet production in Latvia.

To analyse trends in the production and consumption of wood pellets, the research employed statistical analysis methods – descriptive statistics and time series analysis. To identify challenges and opportunities for the wood pellet industry in Latvia, the research did four expert interviews with representatives of wood pellet producers (Byko-Lat Ltd and Latgran Ltd) as well as a representative of the Latvian Biomass Association and the EN plus certification system in Latvia and a representative of the Forest Department, Ministry of Agriculture. Based on the expert interviews and an analysis of documents, the research did a SWOT analysis and designed strategies for the expansion of wood pellet production in Latvia. During the research, secondary data was also gathered, for example, documents, annual reports, web-pages and so on to provide triangulation of reference materials for further analysis (Creswell J. W., 2003).

1. Characteristics of wood pellet production in Latvia

Over the last decade, the output of wood pellets significantly increased in Latvia. As the output rose, Latvia became the third largest producer in the EU behind Germany (1.9 mln. t) and Sweden (1.7 mln. t) (Global forest products…, 2016). Totally, 15 licensed enterprises having the licence to produce wood pellets, in compliance with the ISO 17225-2 quality standard, to be used for complicated heating equipment were registered in Latvia in 2018.

In the period 2008-2017, the production of wood pellets increased four-fold in Latvia. Two considerable increases in output were observed in 2009 and 2012, which could be explained by the growing demand in Western Europe. In 2016 and 2017, the output declined because of a decrease in market demand, which was due to an untypically warm winter in Europe and a sharp decrease in prices on wood pellets. Overall, the output of wood pellets grew in the analysed period of 2008-2017 (Table 1).

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Table 1

Output and consumption of and trade in wood pellets in Latvia in the period 2008-2017

Indicator	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2017/ 2008, %
Output of wood pellets, thou. t	378	526	616	722	1048	1103	1381	1577	1517	1466	287.8
Imports, thou. t	2	1	7	3	34	41	88	127	171	187	9250.0
Exports, thou. t	381	476	590	664	902	1057	1290	1553	1627	1606	321.5
Total consumption, thou.t	16	13	31	33	136	96	150	150	140	138	762.5
Final consumption, thou.t	14	11	27	27	126	83	142	143	132	129	821.4
Total consumption as % of output in Latvia	4.2	2.5	5.0	4.6	13.0	8.7	10.9	9.5	9.2	9.4	123.8
Exports as % of output	100.8	90.5	95.8	91.9	86.1	95.8	93.4	98.5	107.3	109.5	8.6

Source: authors' construction based on CSB data

In Latvia, the total **consumption** of wood pellets increased almost nine-fold from 16 thou. t in 2008 to nearly 140 thou. t in 2017. The consumption increase could be explained by an increase in the number of wood pellet factories in Latvia, the popularity and availability of heating boilers running on wood pellets as well as ecological thinking. The total consumption of wood pellets rose at the highest rate in 2012 compared with 2011 – by 312.1 % or 133 thou. t. Over the next years, the total consumption of wood pellets was quite steady in Latvia – in the range from 100 to 150 thou. t a year. Nevertheless, the total consumption of wood pellets, compared with the total output of this product, has been low over the entire period of analysis (~10 % of the total output). In Latvia, households consumed wood pellets the most (up to 80 % of the total quantity). However, such a distribution of consumption was not observed for the entire analysis period. Before 2009 in Latvia, according to the CSB data, the consumption of wood pellets was considerably lower by households than by the commercial, manufacturing and construction sectors; for example, the consumption by households ranged from 14.29 % to 18.18 %, while that by the commercial, manufacturing and construction sectors accounted for about 80 % of the total. However, since 2010 a steady increase in the consumption of wood pellets by households has been observed, as heating boilers running on wood pellets became popular. This indicates a steady change in the consumer structure.

An analysis of **average prices on wood pellets for final consumers** reveals that the prices were volatile (from 121.00 EUR/t in 2010 to 151.00 EUR/t in 2015). The largest annual increase in price was reported in 2011 when the final price rose by 17 %. The price volatility was determined by changes in market demand, which was considerably affected by weather conditions. If a winter is cold, the demand for wood pellets is high, and the price increases significantly. Since the consumption of wood pellets by households comprises most of the total domestic consumption of this product in Latvia, the average price for final consumers is mainly affected by the sales price set for the households. For this reason, the average price for final consumers is related to the price set for households. The prices of wood pellets set for the commercial, manufacturing and construction sectors were lower than those for households almost in the entire period of analysis, which could be explained by price discounts set for businesses purchasing large quantities of this product (Table 2).

Table 2

Average prices of wood pellets for final consumers (VAT excluded) in Latvia in the period 2008–2017, EUR/t

Indicator	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2017/ 2008, %
Average prices for final consumers	134	137	121	142	134	124	134	151	116	123	-8.2
Manufacturing	122	139	134	137	125	114	124	139	112	113	-7.3
Construction	144	137	138	124	130	148	141	135	138	137	-4.9
Commercial and public sectors	128	114	115	134	141	148	165	151	127	130	1.6
Annual change in average prices for final consumers	-	2.2	-11.7	17.4	-5.6	-7.5	8.1	12.7	-23.2	6.0	-

Source: authors' construction based on CSB data

An analysis of the ratios of **exports** to quantities produced and consumed for wood pellets (Table 1) for Latvia allows concluding that the total domestic consumption was low because there were No industrial-scale wood pellet consumers. Households were the main consumers of wood pellets in the domestic market; therefore, almost the entire quantity of wood pellets were exported from Latvia to industrial consumers in Europe. Besides, wood pellets were also imported in order to be re-exported.

In 2017, 1466 thou. t of wood pellets were produced in Latvia, while the exports of wood pellets comprised 1606 thou. t. The domestic consumption of wood pellets amounted to only 138 thou. t or 9.4 % of the total output, which was a very low rate. The exports exceeded the output because wood pellets were also imported to be resold in foreign markets. Overall, the imports of wood pellets tended to increase in Latvia (Table 1). Over the entire analysis period, Belarus and Russia were among the main exporters of wood pellets to Latvia. In 2017, the imports of wood pellets from Belarus, Russia and Lithuania made up 90.69 % of the total quantity imported by Latvia. This allows concluding that there are import risks for Latvia, as the country depends on three large import markets. As regards the exports of wood pellets from Latvia, the main markets for the exports were Estonia, Denmark and the United Kingdom. Estonia and Denmark accounted for 80.13 % of the total exports of wood pellets in 2017.

2. Opportunities for wood pellet production in Latvia

To analyse the situation in the wood pellet industry in Latvia and identify the opportunities for the expansion of wood pellet production, the authors did a SWOT analysis and designed strategies. The SWOT analysis was based on expert opinions as well as an analysis of relevant documents and scientific literature.

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Table 3

SWOT analysis with strategies for wood pellet production in Latvia

Opportunities and threats	**Strengths and weaknesses**	
	Strengths (S)	**Weaknesses (W)**
	New and environment-friendly fuel Raw material for pellet production are by-products of other industries and waste Production process is relatively simple and fast Energy density of wood pellets is high Latvia has a lot of forest resources for acquiring raw material Wood pallets are easy to transport; logistics and storage costs are low Developed logistics system Wood pallets are a fuel easy to use, even in densely populated places	Raw material production costs are high Wood pallets are a standardised product Wood pallets are a moisture non-resistant product Investments in production equipment and capacity enlargement are large Dust is produced in the manufacture, storage and logistics process Variable raw material quality High transport cost to deliver raw material
Opportunities (O)	**SO strategy**	**WO strategy**
Development of the forestry industry in Latvia Ratification of legal documents restricting emissions Non-renewable energy price hikes (excise tax) Increase in the demand for energy Increase in industrial consumption Stronger cooperation with current foreign partners and entry into new export markets Co-funding for buying woodchippers Support for production modernisation	In a short-term: To popularise the use of wood pellets by households, enterprises To increase wood pellet sales in densely populated places In a long-term: To promote the industrial consumption of wood pellets, gradually replacing fossil energy with renewable one	In a short-term: To promote the use of fibrous by-products and waste produced by local small enterprises and households as raw material To lower transport cost in total production cost, raw material should be supplied to the factory from the nearest locations In a long-term: To use the climate change instrument to modernise production, lower raw material production cost To contribute to the entry into new markets, thereby reducing dependence on the current export market To promote the production of torrefied wood pellets in Latvia
Threats (T)	**ST strategy**	**WT strategy**
Unfavourable weather conditions Growth of other industries using the same raw material Sustainable raw material available in limited quantities Variable quality and price of imported raw material (from Russia, Belarus) Overproduction Decrease in sales price Decrease in competitiveness with other energy sources Entry of new, more energy-efficient renewable fuels into the market Changes in policies on the forest industry Increase in the bureaucratic burden	In a short-term: Wood pallets (particularly torrefied ones) have a high energy density and are easy to transport; in case there is overproduction in Europe, the product could be sold in other markets In a long-term: To enhance technological and production processes, thereby making the final product more energy efficient and the production cost lower To strengthen cooperation with partners in various export markets, thereby contributing to sales stability in a long-term	In a short-term: To effectively operate in the market for standardised products, it is required to lower production cost by using the raw material available in the nearest locations in order to lower transport cost for low-energy-density raw material In a long-term: To strengthen cooperation with partners in the neighbouring countries by concluding contracts for the supply of raw material meeting the quality standards To invest more funds in research on the wood pellet industry and promotion of torrefied wood pellets

Strengths. Scientists stress the economic, social and environmental benefits of wood pellets (Vigants H., 2017). Use of wood pellets as a sustainable energy alternative is an effective instrument in the fight against climate change (Mola-Yudego B. et al., 2014; Sgarbossa A. et al., 2015). Also, it

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represents a positive globalization of wealth and local employment creation (Nunes L. J. R. et al., 2016).

Even though wood pellet production requires costly equipment, the production process itself is relatively simple and fast, resulting in a high-energy-density product (10MJ/m^3), which is 2.5-fold higher than that for firewood (4MJ/m^3). Therefore, from the user perspective, wood pellets are a convenient fuel to be used in technologically advanced heating systems, which are autonomous and automated (Nunes L. J. R. et al., 2016). Furthermore, compared with firewood and woodchips, wood pellets require less storage space, and the transport of wood pellets is easier to do. In addition, the production of wood pellets is fostered in Latvia by the well-developed infrastructure and the favourable geographical location, which are significant factors making logistics cost lower.

Weaknesses. Even though the process of production of wood pellets is simple and fast, the production requires fibrous raw material of certain quality. The production of raw material requires time and financial resources. Besides, production equipment is technologically complicated and costly; consequently, beginning the production or increasing output capacity requires large investments. It is particularly difficult for small and medium enterprises to get funds for production modernisation.

Wood pallets are simple and convenient to store and transport, yet the pallets are not resistant to moisture. The assurance of quality of wood pallets requires regularly cleaning storage facilities and transport containers from dust. Besides, wood pallets are quite fragile – they may not be vibrated during the entire transport process. Because of vibrations, wood pellets get broken and their quality deteriorates, leading to a lower market price. Besides, an important role is played by transport cost. The longer the distance between a wood pellet factory and the site of raw material, the higher the transport cost. As pointed out by the experts, the most efficient solution is to transport raw material within a distance of 50-70 km. However, one can find that wood pellets are produced from both domestic and imported raw materials. Russia and Belarus accounted for the highest proportions of total raw material imports into Latvia, which were transported by railway because it was the cheapest mode of transport. Consequently, large quantities of wood (woodchips, pellets) were supplied, yet the quality of raw material imported from third countries was variable, and often a lot of impurities and foreign bodies were present, which did not allow manufacturing high-quality wool pellets. Consequently, raw material imports from Belarus have considerably decreased in recent years.

Opportunities. According to the State Forest Service, forests in Latvia occupy 3.38 mln. ha, the forest area comprises 52 % of the total land area. In view of the fact that in wood-processing, final products account for approximately 60 % of the total volume of logs, and 40 % are available for the production of renewable energy. Accordingly, as logging activity and the manufacture and exports of higher value-added wood products increase, the quantity or raw material available for wood pellet production increases proportionally, which can contribute to the sustainable development of the wood pallet industry in Latvia. Wood waste produced by households and small enterprises – in shrub clearings and forest management operations – could be used for wood pellet production as well.

At present, the quantity of wood pellets used for industrial purposes is very small (8 thou. t in 2017). A slightly larger quantity was consumed by the commercial and public sectors for heating purposes (27 thou. t in 2017). This means that at the national level, it is possible to increase the industrial consumption of wood pellets as well as the consumption of this product by the commercial and public sectors, as the sectors use other energy sources. The situation could be changed if making purposeful efforts. For example, financial support for enhancing or changing the heating system; in

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the industrial sector, tax relief could be granted to the enterprises using a significant quantity of wood pellets for industrial purposes.

Since equipment for manufacture of wood pellets is technologically complicated and costly, a lot of funds are needed to purchase the equipment, which limits the growth of small and medium enterprises. A solution could be the efficient use of EU funding for business promotion and sustainability. At the national level, the growth of the wood pellet industry could be promoted by granting tax relief to the enterprises investing in modern technologies. To promote the availability of raw material on a national scale, the Climate Change Fund that co-funds the purchase of woodchippers by local governments and small and medium enterprises could be used, thereby increasing the availability of raw material and contributing to the sustainability of the wood pellet industry.

To contribute to the use of environment-friendly and efficient renewable energy sources by households, a zero value-added tax rate could be introduced for environment-friendly and efficient renewable energy sources at the national level, thereby motivating final consumers to choose the most energy-efficient kind of heating while also reducing environmental pollution.

Threats. In the wood pellet manufacture process, one of the most crucial factors is raw material – the availability and quality of it. To ensure the sustainability of the wood pellet industry, only by-products from other industries and waste, which are available in limited quantities in Latvia, may be used as raw material. If the wood-processing industry grows slowly in Latvia, the quantity of raw material for the production of wood pellets will be insufficient. To offset a lack of sustainable resources, the wood pellet industry will have to import the raw material from the nearest countries in order not to considerably increase transport and production costs. Nevertheless, importing raw material from the nearest neighbouring countries (Russia and Belarus) creates quality and price risks.

The wood pellet industry is considerably affected by weather conditions and the unpredictability of the weather. A long wet period makes forest paths difficult to drive for forestry machinery, which makes impossible to supply raw material neither for wood-processing nor wood pellet production. To avoid such situations, one of the solutions is to invest in the construction of raw material storage facilities, which allows supplying the raw material continuously. However, every enterprise has to individually assess the feasibility of a storage facility in a long-term in order not to incur extra costs that exceed those arising from downtime because of climatic conditions.

In view of the fact that the wood pellet industry grows in the whole world, technological advancements in the industry could result in cheaper wood pellets manufactured in other countries, allowing supplying this product at a lower price, which can increase imports of wood pellets for sales in Latvia instead of re-exports. The sales volume and final price of wood pellets could be affected by the modernisation of this industry and the consequent increase in the output of wood pellets in Europe as well as climatic conditions – warm winters –, which would lower the final price and reduce the profit margin.

Based on a SWOT analysis, the authors designed **short- and long-term strategies**. Of the strategies, three could be considered to be the most important ones. The first one involves the expansion of torrefied wood pellets in Latvia. It could be explained by the fact that the properties of torrefied wood pellets are better than those of raw biomass (higher thermal capacity, more moisture resistant), as well as CO_2 emissions and transport cost are lower (Manouchehrinejad M., 2018). However, the introduction of torrefaction technology requires large investments and, given the favourable conditions for the production of regular wood pellets in Latvia, the interviewed experts pointed out that at present the manufacture of torrefied wood pellets was not economically feasible.

The second strategy entails promoting the use of wood pellets by households and businesses by means of support mechanisms. Since wood pellets are easy to transport, have a high energy density and produce little waste, it is possible to popularise their use in densely populated urban areas, thereby increasing the sales market for and the domestic consumption of wood pellets in Latvia. In a long-term, however, it is required to increase the domestic sales market for wood pellets by promoting the industrial uses of this product, which would considerably increase the consumption of it in Latvia. For enterprises, a new fixed investment is a serious decision, as the payback period of the investment is long. The opinion of the general public shifts towards gradual replacement of non-renewable fossil energy sources with renewable ones, thereby increasing the demand for wood pellets in the entire world. In Latvia, there all the necessary prerequisites and preconditions for meeting the growing demand for energy – well-developed infrastructure (railway network, seaports), a relatively cheap workforce and the availability of raw material.

The third strategy focuses on the production and exports of wood pellets. To reduce the dependence of the wood pellet industry on current export markets, the producers have to enter new markets and strengthen international cooperation in a long-term. The entry into new markets reduces climatic or political risks, thereby contributing to market demand stability in a long-term.

Conclusions, proposals, recommendations

1) Latvia is the third largest producer of wood pellets in Europe. The production and consumption of wood pellets considerably rose in Latvia in recent years (in 2017, the production totalled 1166 thou. t, while the consumption amounted to 16 thou. t). However, the total domestic consumption was low, as there were No industrial-scale wood pellet consumers. Households were the main consumers of wood pellets in the domestic market, and almost the entire quantity of wood pellets (90 %) was exported from Latvia to industrial consumers abroad.
2) The increase in the production and consumption of wood pellets could be explained by the economic, social and environmental benefits of use of wood pellets. The production process of wood pellets is relatively simple and fast, resulting in high-energy-density pellets. It is a kind of fuel that is easy and relatively simple to transport. However, the production of wood pellets requires high-quality raw material that, in its turn, determine the need for appropriate storage facilities and transport. Furthermore, large initial investments have to be made to begin producing this product.
3) The imports of wood pellets into Latvia increased – mostly from Belarus, Russia and Lithuania (90.69 % of the total imports of wood pellets). This creates import risks for Latvia, as the country depends on three large import markets; besides, the quality of raw material imported from the third countries often does not meet the quality standards.
4) The research determined the following strategies for the wood pellet industry in Latvia: the expansion of torrefied wood pellet production, the promotion of wood pellet consumption by households and enterprises and the entry of new markets for the purpose of reducing the dependence of the wood pellet industry on the current export markets.

Bibliography

1. *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: a Policy Framework for Climate and Energy in the*

DOI: 10.22616/ESRD.2019.072

Period from 2020 to 2030 (2014). European Commission, Brussels. 18 p. Retrieved: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52014DC0015&from=EN. Access: 15.01.2019.

2. Creswell, J. W. (2003). Research Design: *Qualitative, Quantitative, and Mixed Methods Approaches* (2nd ed.). Thousand Oaks, CA: Sage, p. 246.
3. *Directive 2009/28/EC of the European Parliament and the Council of 23 April 2009 on the Promotion of the Use of Energy from Renewable Sources and Amending and Subsequently Repealing Directives 2001/77/EC abd 2003/30/EC* (2009). European Parliament and the Council of European Union. 47 p. Retrieved: https://iet.jrc.ec.europa.eu/remea/directive-200928ec-european-parliament-and-council-23-april-2009-promotion-use-energy-renewable. Access: 15.01.2019.
4. Ericsson, K., Nilsson, L. (2004). *International Biofuel Trade – a Study of the Swedish Import. Biomass Bioenergy*, Volume 26, Issue 3, pp. 205-220.
5. *Global forest products Facts and Figures 2016* (2016). Food and Agriculture organization of the United Nations. 20 p. Retrieved: http://www.fao.org/3/I7034EN/i7034en.pdf. Access: 15.01.2019.
6. Johnston, C. M. T., van Kooten, G. C. (2016). *Global Trade Impacts of Increasing Europe's Bioenergy Demand*. Journal of Forest Economics, Volume 23, pp. 27-44.
7. Jonsson, R., Rinaldi, F. (2017). *The Impact on Global Wood-product Markets of Increasing Consumption of Wood Pellets within the European Union*. Energy. No. 133, pp. 864-878.
8. Manouchehrinejad, M., Giesen, I., Sudhagar, M. (2018). *Grindability of Torrefied Wood Chips and Wood Pellets*. Fuel Processing Technology, Volume 182, December, pp. 45-55.
9. Mola-Yudego, B., Selkimaki, M., Gonzalez-Olabarria, J. R. (2014). *Spatial Analysis of the Wood Pellet Production for Energy in Europe*. Renewable Energy. No. 63, pp. 76-83.
10. Nunes, L. J. R., Matias, J. C. O., Catalao, J. p. S. (2016). *Wood Pellets as a Sustainable Energy Alternative in Portugal*. Renewable Energy. No. 85, pp. 1011-1016.
11. Sgarbossa, A., Costa, C., Menesatti, P., Antonucci, F., Pallottino, F., Zanetti, M., Grigolato, S., Cavalli, R. (2015). *A Multivariate SIMCA Index as Discriminant in Wood Pellet Quality Assessment. Renewable Energy*. No. 76, pp. 258-263.
12. Sun, L., Niquidet, K. (2017). *Elasticity of Import Demand for Wood Pellets by the European Union. Forest Policy and Economics*. No. 81, pp. 83-87.
13. Vigants, H. (2017). *Granulu razosanas ilgtspejiga attistiba* (Sustainable Development of Pellets Production). Summary of dissertation. Riga: Riga Technical University, p. 38.

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THE IMPACT OF NATURE CONSERVATION TYPES ON THE HOUSE INVESTMENTS DEVELOPMENT

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Abstract. The objective of the article is to determine a relationship between the development of housing investments and the degree of terrain coverage with nature protection forms. The data concerning the number of building permits issued in districts and the coverage of those districts with nature forms were compared. The gathered data were verified through the application of a correlation analysis. In this way one of the correlation planes between the implementation of investments and nature protection was determined. The research results indicate relation between the location of nature conservation type and house investments.

Key words: local development, nature protection forms, housing investments.
JEL code: R11, R58.

Introduction

According to the concept of sustainable development, environmental and natural values must coexist with other objects to a certain degree. The requirement of reconciling different conditions also refers to reconciling natural values and investment development, including housing investments. In this context, the application of nature protection instruments, including designation of nature protection forms, may constitute one of the collision points of different qualities.

The purpose of the article is to define the relationship between the development of housing investments and the degree of terrain coverage with nature protection forms. It will involve both a statistical analysis of the data covering the West Pomeranian Province, as well as an extensive reflection concerning the contact points of both these spheres. The subject of research concerns new house investments development in districts, depending on the degree of their coverage by the form of nature protection. In order to achieve the research objective, the data concerning the number of building permits issued in individual years for housing investments along with the data concerning the degree of coverage of districts with nature protection forms were gathered. Following that, on the basis of a correlation analysis, an attempt was undertaken at defining the scope of correlations existing between such data – both in all the districts of the West Pomeranian Province, as well as in the districts featuring specific properties from the point of view of the research assumptions.

Research results and discussion

Development of housing investments

The need for the development of housing investments is emphasised and implemented in the policy of many countries (Cowem T., 1998). Recent solutions implemented in Poland can serve as an example of that. Those solutions raise numerous doubts of procedural nature as well as doubts related to their compliance with the system of land management. Nevertheless, the above does not change the fact that the development of housing investments, from the perspective of the national economy, social needs related thereto, is fully desirable. Presently it is demonstrated in Poland in particular through the following solutions proposed:

- the creation of National Public Real Estate Resources. The implementation of investments related to those resources and renting the real estate from those resources would be aimed, on the one hand, at offering facilitations for an investor, and on the other hand, at creating rent offers for a community;

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- the so-called special purpose housing act, enabling the implementation of larger housing investments irrespectively of a spatial order existing in a given municipality (in land planning acts).

The doubts related to those solutions and the problems involving their implementation do not change the fact that housing needs really do need to be fulfilled (Krueger A., 1991). From the perspective of land management, this issue brings about some spatial conflicts (Nowak M., Mickiewicz P., 2012) and a question of to what degree can „the need for the implementation of housing investments" serve as a justification for the destruction of other space assets. However, the sigs of „struggle for space" are still noticeable in that sphere. Thus, various concepts and plans are confronted. In the analysed context one more aspect becomes evident: on the basis of the contents of the studies regarding conditions and directions of spatial development as well as local zoning plans it is possible to determine a definite overestimation of the sites designated for housing development in those documents. It is a paradox of sorts: on the one hand, in the land planning dimension this sphere is chaotically overestimated, and on the other hand, particularly in regulatory sphere, insufficient resources of housing policy are still felt (which also entails the implementation of new housing investments). This is one of the examples of a land management system crisis in Poland, as well as an example of the lack of a consistent and categorical differentiation of land planning and regulatory spheres, as well as maintaining the cohesion between them. This dissonance needs to be kept in mind when analysing the issue undertaken in the article.

It is also possible to differentiate these conflicts in the objective and subjective aspects. From the perspective of this article, a conflict between (widely understood) housing investors and the authorities in charge of nature conservation seems to be crucial. In other words, on the one hand the conflict entails extensive investment development (justified by the necessity to satisfy the society's housing needs) and the protection of natural values (Furuboth E., Pejovich S., 1974).

Nature conditions and nature protection forms

The objective issue needs to be examined also from a different perspective. The study ought to answer a question whether natural values, particularly the ones extensively present in a given area (Schumpeter J., 2005), constitute a barrier to the development of housing investments. Additionally, the issue may be analysed multi-dimensionally, but one of the most important elements of such an analysis involves a comparison of the processes related to investment implementation in various local-government units, covered to a different degree by nature protection forms. It is the scope in which these forms are present in given areas that will constitute one of the crucial points of reference. In the literature of the subject the objective related to universal nature conservation raises No doubts. It involves:

- maintaining ecological processes, ecosystems stability and maintaining or reinstating natural habitats to their proper condition;
- maintaining biological diversity;
- conservation of landscape amenities;
- shaping proper attitudes towards nature among people (Poskrobko B., 2007).

The concrete fulfilment of those objectives is based primarily institutionally (Williamson O., 2000) on nature protection forms. It is the establishment, location of such forms in a given area that constitutes an expression of the fulfilment of all the tasks stipulated above. Territorial forms of nature protection include: national parks, nature reserves, landscape parks, protected landscape areas, Natura 2000 areas. In this context it needs to be noted where the limitations in land-use planning originate from with regard to nature protection forms. These forms constitute ways of counteracting the degradation of nature values (limited though they may be). The impact of the economy on natural environment has been frequently judged to be excessively high, the evidence of which is the designation of environmental risk areas in Poland. According to E. Mazur, the greatest impact on the natural environment is exerted by:

- industrial activity;
- urbanization activity (along with municipal services);
- transportation activity (Mazur E., 2010).

An analysis of concrete effects must be adjusted to particular terrain functions. Nature protection forms cover most of them. D. Laguna provided an interesting description of individual stages of the degradation of nature values in suburban areas, in which a particular urban pressure is evident (Laguna D., 2009). In this perspective, the process entails the following:

- zoning of building plots, which comprise terrains unsuited for development from geotechnical point of view (owners decide on such a division because they wish to gain the highest profits possible);
- making building development gradually denser by reducing land plot surface or increasing building development density (owners, particularly property developers, aim to zone the smallest possible plots and to reach the highest possible unit price);
- eliminating publicly accessible green areas from all land-use planning solutions: they are maintained only in those localities where there is No formal and legal possibility of converting them for the purpose of building development.

In the context of the analysed issue, the following conclusion may be drawn:

- as a rule, the implementation of a new building development leads to the destruction of nature values of the terrain involved;
- the sole effective protection in those circumstances (referring not to the entire sphere of environment protection, but to nature protection) entails the establishment of nature protection forms. Other types of limitations (though introduced in the sphere of zoning policy) may be incidental at the most, with an exceptionally restricted range of impact.

In this situation one may view the relationships between housing investments and nature protection forms in a variety of ways. The location of a nature protection form may be perceived as a barrier, even if just from the perspective of a cursory, simple analysis. Its consequences include limitations and prohibitions of building development on specific terrains. However, the scope of limitations introduced on account of specific protection forms and the scale of investments in the protection zones of some of those investments will remain a contentious issue. What is more, the assumption presented above would need to be combined with a concept according to which an investor entitled to carry out building development should have an opportunity of implementing an investment in possibly the largest terrain and in this sense the development in itself remains a significant quality (Mc Cann B., Folta T., 2008). However, the considerations related to spatial order force us to question this point of view.

Housing investments and nature protection forms

The study includes the districts located in the West Pomeranian Province. In this province an extensive range of territorial nature protection forms has been implemented. From the standpoint of

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this article the districts that are significant are the ones qualified in the Local Data Bank of the Main Statistical Office for the implementation of nature protection forms and which may be assessed from the perspective of the number of building permits issued (the authority issuing permits is a district head, being a part of a district authorities structure).

Table 1

Percentage share of the terrain designated for nature protection form in the total district area (%)

No.	Year	2011	2017	No.	Year	2011	2017
1.	**Bialogardzki**	0.27	0.3	10.	**Mysliborski**	44.06	43.6
2.	**Choszczenski**	54.43	54.6	11.	**Policki**	3.29	3.3
3.	**Drawski**	43.33	47	12.	**Pyrzycki**	0.05	0.1
4.	**Goleniowski**	3.5	8.8	13.	**Slawienski**	13.72	15
5.	**Gryficki**	0.59	0.7	14.	**Stargardzki**	10.75	10.6
6.	**Gryfinski**	24.51	24.5	15.	**Szczecinecki**	28.53	28.9
7.	**Kamienski**	7.61	7.4	16.	**Swidwinski**	14.08	15.2
8.	**Kolobrzeski**	6.89	6.4	17.	**Walecki**	51.49	51.7
9.	**Koszalinski**	20.36	20.5				

Source: author's calculation based on the Local Data Bank of the Main Statistical Office

In the Table 1, a percentage share of nature protection forms in the entire district area was presented for 2011 and for 2017 (i.e. the start and end of the research period). The differences in these cases are only slight. At this juncture, Choszczno, Drawsko, Mysliborz and Walcz districts need to be emphasised as the ones that are covered by nature protection forms to the highest degree (districts significantly covered by nature protection forms). The districts that need to be distinguished as being specific include: Gryfino, Goleniow and Police district (districts located in a metropolitan area). In those districts nature protection forms are present to a scant degree. At the same time, parts of those districts are subject to suburbanisation process on account of their close proximity to the province capital – Szczecin.

The subsequent part of the analyses concerns the relationship between the location of nature protection forms and the realized housing investments. For the purpose of the research it was assumed that in the analysed context the most adequate reflection of the latter involves the information on the building permits issued in individual years in a district. Such an assumption was made for the following reasons:

- building permits constitute the most universal form of a building consent, equivalent to being granted the possibility of investment implementation;
- their issue at the same time contains an assessment of a building design compliance with all and any other limitations and guidelines, including the ones related to the limitation on building development due to the location of nature protection forms;
- their issue constitutes an expression of public authorities' operation.

At a later stage obviously, construction works are subject to verification (or in some cases also occupancy permits are issued). However, from this perspective the widest substantive assessment takes place earlier. That is why it was assumed that the moment of issuing a decision regarding a building permit is equivalent to a formal approval of the presented conditions relative to a building design. It is chiefly at that point when limitations linked to nature protection forms may block an investment.

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Table 2

Number of building permits for one-family buildings

Year	2011	2012	2013	2014	2015	2016	2017
Bialogardzki	52	55	45	48	61	67	92
Choszczenski	73	81	69	58	76	64	85
Drawski	93	91	100	75	83	80	92
Goleniowski	272	201	165	191	200	200	249
Gryficki	116	128	113	121	142	135	174
Gryfinski	169	152	126	106	138	160	156
Kamienski	131	149	136	125	145	152	176
Kolobrzeski	170	116	105	106	117	152	199
Koszalinski	393	327	254	307	288	305	402
Mysliborski	101	83	91	68	95	102	153
Policki	376	216	212	169	207	288	352
Pyrzycki	69	64	49	34	55	68	65
Slawienski	139	102	74	108	96	79	99
Stargardzki	226	200	219	206	262	313	344
Szczecinecki	83	82	83	75	105	113	155
Swidwinski	57	53	47	48	50	56	55
Walecki	77	76	63	61	95	75	84

Source: author's calculation based on the Local Data Bank of the Main Statistical Office

First of all, the building permits issued for one-family buildings were subjected to analysis (Tab.2). In the districts featuring the most extensive degree of coverage by nature protection forms a lower number of building permits issued is indeed observed in comparison to other districts. In turn, in the districts at least partially belonging to Szczecin Metropolitan Area, the number of permits is decidedly higher. This observation obviously does not at this stage allow one to draw any farther conclusions. On the one hand, there is No doubt that a proximity to a large city translates into a greater range of investments (which can be concluded without the analysis of Tab.2). On the other hand, a lower number of permits in given districts may also result from other factors than natural ones, be it a distance from larger centres. Nevertheless, already at the present stage of the analysis the observed trends are worth indicating. Simultaneously, one more thing needs to be noted: as a rule, in the examined period the number of building permits issued within a year is increasing. It is most certainly not a result of previously mentioned statutory changes, since they do not refer to one-family houses.

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Table 3

Number of building permits for multi-family buildings

Year	2011	2012	2013	2014	2015	2016	2017
Bialogardzki	3	0	4	0	2	3	3
Choszczenski	4	1	0	0	1	2	0
Drawski	1	2	1	5	6	2	0
Goleniowski	7	4	6	7	3	5	10
Gryficki	2	1	2	3	3	6	8
Gryfinski	4	5	2	0	4	1	6
Kamienski	9	7	5	6	12	9	8
Kolobrzeski	7	10	10	12	12	7	20
Koszalinski	12	18	5	12	4	16	13
Mysliborski	4	2	1	1	4	2	2
Policki	36	15	26	39	39	50	69
Pyrzycki	2	1	0	1	1	1	1
Slawienski	5	2	1	3	0	0	0
Stargardzki	3	6	2	6	8	11	12
Szczecinecki	3	0	0	3	6	3	9
Swidwinski	0	1	0	1	0	1	1
Walecki	2	0	1	3	0	5	4

Source: author's calculation based on the Local Data Bank of the Main Statistical Office

The next stage of studies involved isolating the number of building permits issued in individual districts for multi-family buildings. From Table 3 it arises that in this aspect the number of issued decisions is influenced by a variety of factors, the best example of which is a number of building permits issued in Kolobrzeg district (which is linked to the investments implemented in urban terrains that are attractive for touristic reasons). However, once again, the number of decisions issued in the districts located in a metropolitan area that prevails over a small number of decisions issued in the districts covered significantly by nature protection forms will be noticeable.

It also ought to be noted that the number of objective decisions in the examined districts is not growing (which confirms a proposition of limited efficiency of governmental programmes). Nevertheless, the presented Figures may constitute the basis for determining the existence of a risk posed to spatial order by uncontrollable building development.

Table 4

Analysis of the correlation between the numbers of building permits issued and the area of a district covered by nature protection forms

Year	2011	2012	2013	2014	2015	2016	2017
One-family	- 0.3	- 0.25	- 0.24	- 0.28	- 0.26	- 0.33	- 0.3
Multi-family	- 0.24	- 0.2	- 0.38	- 0.28	- 0.23	- 0.29	- 0.31

Source: author's calculation based on the Local Data Bank of the Main Statistical Office

On the grounds of preliminary analyses, further studies were conducted (Tab. 4). A Pearson correlation coefficient was determined in the following data pairs:

- the number of building permits issued for one-family buildings and a percentage share of the district covered by nature protection forms;
- the number of building permits issued for multi-family buildings and a percentage share of the district covered by nature protection forms.

The choice of data is justified in terms of the fulfilment of the research objective. It was assumed that the location of nature protection forms may constitute one of the factors affecting the scope of housing investment implementation. That is why it is justified to compare both groups of data.

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Differentiating between the decisions issued for one-family and multi-family buildings is justified chiefly by differing economic effects of both those administrative decisions. One must additionally bear in mind that, as a rule, in both cases separate categories of investors will predominate, each having different capabilities of influencing public authorities.

From Table 4 it arises that in all the examined years in both pairs there is a negative correlation. This would preliminarily confirm the proposition that the number of building permits issued and the share of the areas covered by nature protection forms are correlated. However, one must take into account that in the scale of all the studied districts a significant correlation has not been achieved. That means that the presented results may be treated as preliminary ones at the most, ones that do not allow for the formulation of an unequivocal conclusion. As previously demonstrated, in certain examined districts the numbers of decisions regarding building permits are affected by entirely different factors.

Table 5

Analysis of the correlation between the number of building permits issued and the area of a district covered by nature protection forms in the districts covered by nature protection forms to a significant degree and in the district located in close proximity to Szczecin

Year	2011
One-family	- 0.87
Multi-family	- 0.59

Source: author's calculation based on the Local Data Bank of the Main Statistical Office

Bearing in mind the above, subsequent studies were conducted (Tab. 5). The districts covered by nature protection forms to a significant degree as well as the districts located in metropolitan areas were selected. Within the scope of a correlation analysis, the numbers of building permits for the years 2011 – 2017 were compared together with a percentage share of the area of the districts covered by nature protection forms. The analysis conducted for the specified districts in total (49 pairs were compared twice) leads to a negative significant correlation.

The choice of these districts is fully justified. It is in their territory that the collision of urban pressure with the objectives of nature conservation will occur most extensively (obviously, in both groups of districts for different reasons). The significance of correlation confirms unequivocally the proposition that both factors are correlated. It is important in this respect that in the districts covered by nature protection forms not only the terrains covered by nature protection forms are taken into consideration, but so are the terrains located in those districts that are not covered by such forms, or the ones subject to prohibitions. In those terrains there are No objective formal and legal contraindications for the implementation of housing investments (within a much larger scope than the one actually realized). From Table 5 it arises that the impact of nature protection forms also refers to those terrains.

Conclusions

The fact of the actual limitation in the number of building permits issued in the districts covered by nature protection forms to a significant degree should unequivocally be assessed positively, particularly in the context of the issues related to the increase of spatial chaos and the limitation of nature values. The positive aspect is that such advanced nature protection instruments as nature protection forms fulfil their intended goals in their basic scope. This does not change the fact that both in terms of the tasks related to widely-understood nature protection as well as in terms of comprehensive shaping of space, they are not sufficient solutions. The inability of public authorities, particularly at the central level (legislative level), needs to be noted in that regard. As demonstrated above, nature protection within the scope exceeding nature protection forms currently assumes various degrees, at times having highly limited effectiveness. The solution ought to involve comprehensive improvement, a change of land management system, within the scope of which social and economic planning would become integrated.

The confirmation of a correlation between the number of issued decisions regarding building permits and the percentage share of a district covered by nature protection forms leads to yet another conclusion. Effective nature protection is possible; however, it ought to constitute a more significant inspiration in the entire planning process.

Bibliography

1. Cowem, T. (1998). PUBLIC GOODS AND EXTERNALITIES (w:) T. Cowen (red.) The Theory of Market Failure. A Critical Examination, George Mason University Press, Fairfax, p. 1.
2. Furuboth, E., Pejovich, S. (1974). THE ECONOMICS OF PROPERTY RIGHTS, Ballinger Publishing Company, Cambridge, pp. 367.
3. Krueger, A. (1991). GOVERNANCE FAILURES IN DEVELOPMENT, NBER, Working Paper No 3340/1991, Cambridge, p. 4.
4. Laguna, D. (2009). Rola obszarow przyrodniczych w ksztaltowaniu przestrzeni podmiejskiej (The role of natural areas in shaping the suburban space) (w:) T. Markowski, D. Drzazga (red.) System przyrodniczy w zarzadzaniu rozwojem obszarow metropolitalnych, Studia KPZK PAN, t. CXXIII, Warszawa, p. 82.
5. Mazur E. (2010). Srodowisko przyrodnicze jako podstawa bytu i dzialalnosci czlowieka (w:) K. Machowski (red.) Gospodarka a srodowisko i ekologia, CeDeWu, Warszawa, p. 27.
6. Mc Cann, B., Folta, T. (2008). LOCATION MATTERS. WHERE WE HAVE BEEN AND WHERE WE MIGHT GO IN AGGLOMERATION RESEARCH "Journal of Management" No 34/2008, p. 534.
7. Nowak, M., Mickiewicz, p. (2012). Plan zagospodarowania przestrzennego wojewodztwa jako instrument zarzadzania rozwojem regionalnym (Spatial development plan for the voivodeship as an instrument for regional development management), CeDeWu, Warszawa, p. 53-60.
8. Poskrobko, B. (2007). Zarzadzanie srodowiskiem (Management of the natural environment), Polskie Wydawnictwo Ekonomiczne, Warszawa, pp. 173.
9. Schumpeter, J. (2005). DEVELOPMENT "Journal of Economic Literature", t. XLIII/2005, p. 108 - 120.
10. Williamson, O. (2000). THE NEW INSTITUTIONAL ECONOMICS: Taking Stock, Looking Ahead "Journal of Economic Literature" t. XXXVIII/ 2000, p. 15.

https://bdl.stat.gov.pl/BDL/start Access: 03.01.2019.

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URBAN TRANSPORT QUALITY IN TERMS OF THE SUSTAINABLE DEVELOPMENT

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Abstract. Transport is one of the most significant factors determining the economic development of a city or a region. Ensuring suiTable infrastructure and efficient transportation system constitutes a guarantee of economic growth. Public transport has long been the most inexpensive way of travel. The development of automotive industry increase of the society's affluence, and thereby an improved quality of life are conducive to people expecting an improvement in the quality of the provided transportation services. Transport companies face a challenge of continuous improvement of their services, upgrading their quality and paying particular attention to how passengers perceive them, as well as satisfying passengers' requirements and needs. The article presents an analysis of the results of Bydgoszcz public transport quality surveys conducted in 2014 and 2018. The aim of the article is a comparative analysis of the results of quality and satisfaction surveys of public transport customers in Bydgoszcz over the last four years. The conducted surveys demonstrated an increase in the mobility of the analysed agglomeration residents and a resultant more frequent use of urban public transport.

Key words: mobility, sustainable development, urban transport, quality.
JEL code: R11, R58.

Introduction

Road investments, particularly of regional or supra-regional character, constitute one of the most important factors having an impact on shaping the opportunities for regional and local development and on its quality (Mickiewicz P., Nowak M.J., 2018). Adequately developed transport infrastructure (roads, railways) as well as dynamic advance of an agglomeration influences the choice of a suiTable strategy for solving problems related to transportation serves provided to residents. Moving around in urban areas is, according to research, one of the 10 most significant factors determining the quality of life (Witkowski J., Kiba-Janiak M., 2012). Mobility contributes to both growth and decrease of unemployment (Niebuhr A., 2003). It has a substantial impact on the sustainable development of the European Union. Solving transport problems is a complex challenge, since big-city centres it concerns are dominated by individual vehicle transport (Janecki R., 2011). It results in a chain of negative phenomena. First of all, it entails an insufficient capacity of infrastructure used for that form of transport and environment pollution. Transport is one of the most difficult sectors in terms of controlling CO2 emissions. Technological advancements, greater traffic intensity and the manner of driving in built-up areas (lack of smooth driving), constitute an ever-increasing source of CO2 and nitrogen oxide emissions. Thanks to the legal measures provided by the EU, we have been lowering the limits of harmful substances emissions for new vehicles over the course of the last 15 years. Overall, we have managed to reduce nitrogen oxides and particulates emission by 30-40 %. It occurred despite an increase in the traffic volume (Green Paper - Towards …, 2017). Within the scope of further elimination of undesirable consequences, alternatives to private passenger vehicle transport are promoted and made more appealing, including above all the use of mass transport (Plan Zrownowazonego Rozwoju …, 2016).

Such steps favour the improvement in the quality of living and increasing the wealth of residents, and they further impact on the growth of the competitiveness of the entire agglomeration. The

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concept of sustainable development is strongly linked with an implemented spatial planning policy (Nowak M.J, Mickiewicz P., 2012).

Urban transport is perceived as an efficient tool in the fight with congestion and environment pollution problems. The quality of transport services offered by transport operators is a highly important element. The concept may be defined as a function of its characteristic properties assuming specific values, which determine an overall value of a functional service (Drob-Zaba E., Zaba K., 2008). In Poland, the application of quality control of urban mass transport is at its initial stage of development. Legal regulations related to the issue can be found in the Public Transport Act of 16 December 2010. The act assumes that the plan for the sustainable development of public mass transport is devised by, inter alia, a district of at least 80 000 residents – in terms of a transportation service or a transportation network in district passenger transport (Ustawa z dnia …, 2010). The nature of public transport in the territory of Bydgoszcz District is based on the operation and development of modern and environmentally-friendly mass transport, meeting passengers' expectations. Reliable urban transport is a crucial element in the existence of every city, one of the most important factors regulating its operation (Szymczak M., 2008).

The objective of the article is to find out and analyse individual needs of mass transport passengers in Bydgoszcz with regard to selected aspects of transport quality and their satisfaction with transportation services over the course of the last 4 years. The study was undertaken since the clients' evaluation of quality is becoming an overriding method that describes their feelings, the degree of their satisfaction, but also their acceptance of the charges incurred on account of the services (Bakowski W., 2008). From the point of view of the entities responsible for urban transport organization the aim of analysing the quality of transport as well as the evaluation of residents' transportation routines is to develop the strategy that will enable them to shape a market focused on keeping the existing passengers and to solicit new service users in the long term (Wyszomirski O., 2008). It must be stressed that the quality of transportation services is always multi-dimensional. It encompasses a multitude of quality properties that reflect transportation suggestions made by passengers. A benchmark of quality ought to feature a comparison of suitably selected attributes so that the considered quality of transport entails users' impressions (Starowicz W., 2007).

On 18 May 1888 the first horse-drawn tram line in Bydgoszcz was put into operation. In 1896, the first electrical trams appeared, serving two tram lines. In 1897, Bydgoszcz trams carried 1 278 801 passengers covering 346 thou. Km; and in 1906, the number of transported passengers already reached 2 880 791. The first buses took to the streets in 1943 and one year later they were joined by trolleybuses. In 1954, 42 million passengers used mass transport in Bydgoszcz, in 1971 – 144 million, and in 1975 – 170 million passengers, which was linked, in particular, to a growing number of city residents (323 thou.). Currently 26 bus services running during the day and 6 night services as well as 10 tram services operate in Bydgoszcz, which involves: 175 buses and 76 trams. In 2016 26.04 million passengers were carried by trams. Two transportation companies operate in the city: Public Transportation Company Sp. z o.o., Irex - Trans Sp. z o.o. Tickets in Bydgoszcz include single (reduced-fare and full-fare) tickets, short-term tickets, long-term bearer tickets as well as tickets registered in a passenger's name (http://www.zdmikp.bydgoszcz.pl).

In 2007, an A+T interchange system was implemented in Bydgoszcz allowing passengers changing from a bus to a tram (or the other way around) to travel using one ticket. „BiT-City" agglomeration ticket was in operation until 2008. Thanks to this solution, when travelling on a tram on a single agglomeration ticket in Bydgoszcz-Torun relation (or the other way around), one may use any transportation service in Bydgoszcz or Torun for 60 minutes. The access to public transport for the disabled has also become easier thanks to the adaptations introduced in the rolling stock to suit their needs (introduction of a greater number of low-deck vehicles). Since 2011 passengers are also able to buy public transport tickets via a mobile phone app. In 2016 a tram service to Fordon was put in operation. ZDMiKP also implemented a Smart Urban Transport System for public transport. At present, electronic LCD and LED displays have been installed at the main transport interchanges and terminuses, showing bus and tram service departures in real time. LCD displays also inform of any traffic obstructions and they display messages of any changes in public transport (http://www.zdmikp.bydgoszcz.pl). In 2018, under a resolution of Bydgoszcz City Council, new long-term tickets were introduced for the youngest passengers, which have made the offer of urban transport significantly more attractive (Uchwala Rady Miasta …, 2018). Urban transport is under constant supervision of ZDMiKP in terms of its punctuality and quality of provided services (marking, information displayed on the means of urban transport, ticket availability, operationability of validating machines, vehicle cleanliness, etc.). More than 23 thou. individual inspections of the rolling stock are conducted per year by all three operators (http://www.zdmikp.bydgoszcz.pl).

Research results and discussion

The survey research was conducted in the period from 4 to 24 September 2014 and from 10 to 28 December 2018. The choice of the second date for the survey was selected for a purpose and it was linked to the fact that the authors wanted to learn the opinion of survey respondents regarding an extension of a tram service by a section running to Fordon, which was started in 2016. The study was conducted on the basis of a CAWI method. CAWI research methodology involves an interview conducted online. A respondent receives and fills in a survey online. Currently it is without a doubt one of the most popular techniques, and at the same time, one of the most dynamically developing methods of marketing studies and not only – it is also used in academic, market, business research, etc. Microsoft Excel software was used for survey results processing and their presentation. Due to the lack of data regarding the number of people using urban transport in Bydgoszcz, the study was conducted on approx. 250 individuals. With such a number of respondents and with the level of confidence of 95 %, the error rate is approx. 6.5 %.

The survey was addressed to the individuals using mass urban transport in Bydgoszcz and it contained 22 questions of closed and semi-open-ended nature, as well as questions devised according to demographic category. Semi-open-ended questions enabled the respondents to add their own answers through which they wanted to express their own impressions. The questions concerned various aspects of travelling by mass transport and the respondents' opinion on the operation of the urban transport. In 2014, women constituted 49.5 % and men constituted 50.5 % of all 257 respondents. However, only 221 of those individuals declared that they used public transport in Bydgoszcz and the subsequent survey results refer to that number. 230 individuals participated in a survey conducted in 2018, among whom 58 % were women and 42 % were men.

The first survey question concerned the frequency of using mass transport in Bydgoszcz. The results demonstrated increased interest in this mode of transportation. There was a rise in the number of individuals using the services of mass urban transport daily (from 57.5 % in 2014 to 61.5 % in 2018). As far as the individuals using mass transport several times a week are concerned, similar Figures were obtained – 18 % in 2014 and 18.2 % in 2018. Nearly 19 % of respondents used mass transport several times a month in 2014 and 20.3 % in 2018. Average trip time, according to

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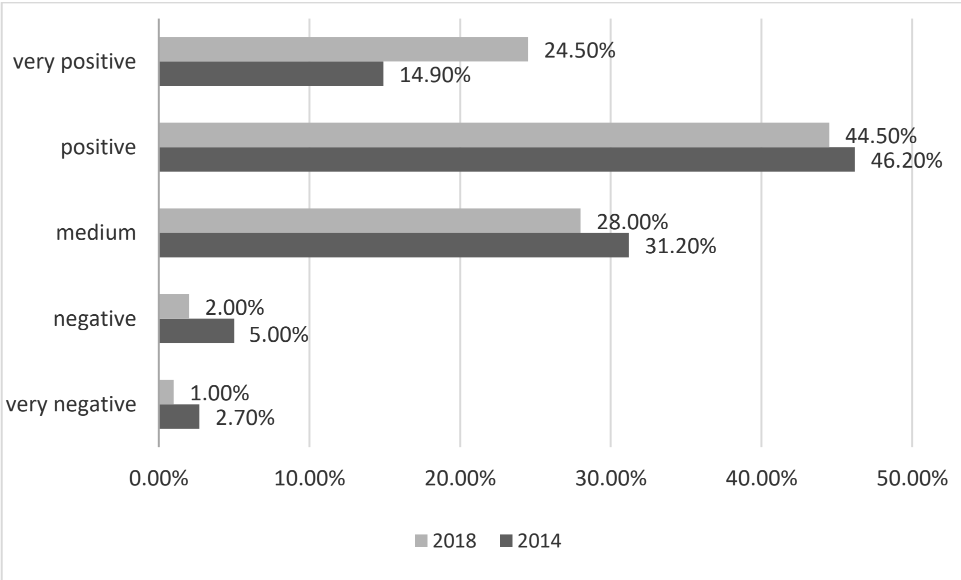
the respondents, was as follows: in 2014 the most frequently indicated trip duration was between 16-30 minutes (48.5 %), whereas in 2018 the respondents most often specified the duration of 30 minutes (47.6 %) – which is linked to an extension of a tram line to Loskon tram stop, which increased the competitiveness of this mode of transport in comparison to a car trip, especially in the rush hours. In 2014, only 15.8 % of the survey respondents did not need to change their means of transport, currently that Figure grew to 21 %. At present, a majority of passengers use one transport service, while in 2014 62 % used 2 or 3 bus lines or tram lines, in order to get to their destination. Along with an increase in the number of people taking advantage of public transport, the percentage of people using A+T combined system grew slightly from 77.40 % to 78 %. This may indicate a greater appeal of public transport use, owing to a shortened trip length and a better trip synchronisation, and hence greater mobility of Bydgoszcz residents.

An important question concerned the form of paying for public transport fare. The most numerous group of passengers was made up of people using a monthly ticket both in 2014 and in 2018 (2014 – 65.6 %, 2018 - 66 %). Another group of passengers are those using single tickets (a rise from 20.8 % in 2014 to 22 %). Both in 2014 and in 2018 there were individuals admitting to not paying public transport fares. In 2014 paying with a mobile phone app was highly popular – as many as 72.9 % of the respondents declared its use, and at present the survey responds equally frequently buy tickets on-board a public means of transport with a proximity card – as many as 43 % of respondents.

In 2014, the majority of passengers were of the opinion that ticket prices were adequate to the quality of services rendered by transport carriers – 76 %. Currently as many as 86 % of those surveyed believe so, and this trend may be related to the prices for young passengers that were introduced in March of that year. The answers to a question regarding evaluation of bus or tram ride comfort indicate it has improved over the course of the last 4 years (Figure 1.).



Source: author's construction

Fig. 1. **Evaluation of the comfort of transport for city inhabitants**

The transport operators' actions aimed at improving travel conditions undertaken over the course of several years prior to both surveys have important results. Better synchronisation of transportation links, a possibility of buying tickets on-board a vehicle with a proximity card or displays showing bus and tram departures in real time have all had a positive impact on passengers' experience. In 2014,

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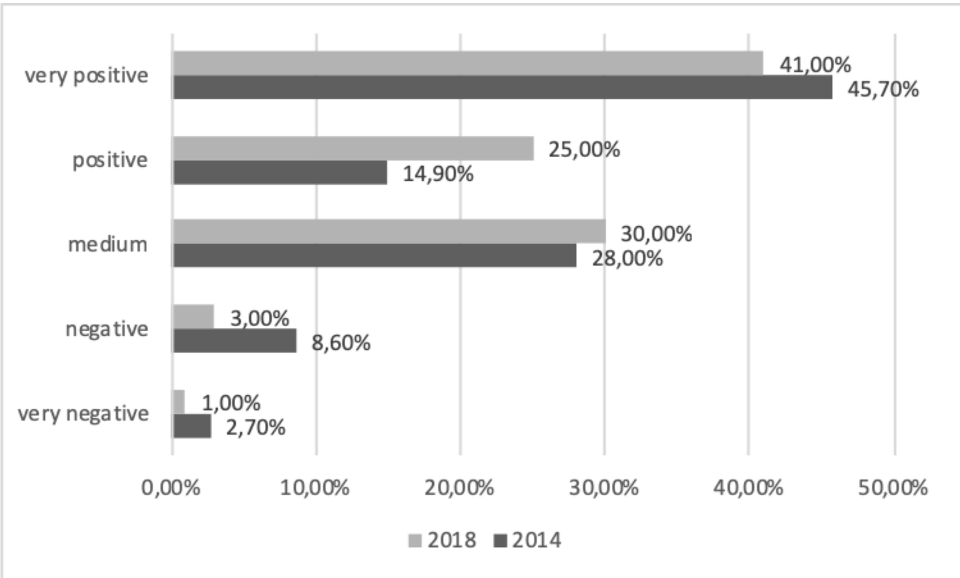
60.2 % of those surveyed found the comfort of travelling by public transport to have improved significantly in the recent years. At presents 75.2 % of respondents declare that, whereas only 4.9 % of respondents do not observe any positive changes.

As far as the punctuality of bus and tram arrivals are concerned, the greatest number of respondents (19.9 %) was forced to wait at a stop owing to a delay several times a week 4 years ago – at present 16.9 % of respondents gave such an answer. Waiting several times a month concerned respectively 48.9 % and 32 % of respondents. In turn, 22.1 % of them in 2014 and 15 % at present claim that they rarely or never experienced any delays in the timetable. Currently, fewer individuals indicated any unsuiTable location of stops (a drop from 13.1 % to 10.1 %).

Both in 2014 and in 2018 passengers were mostly bothered by overcrowding (respectively 21.7 % and 26.7 % people), unpleasant smells (respectively 19 % and 17 %), or the behaviour of other passengers (27.2 % in 2014 and 20.2 % in 2018). However, in 2014 many other factors were named, such as lack of seating places, inadequate cleanliness, the manner of vehicle driving by a driver, inadequate temperature in vehicles or poor synchronisation of bus and tram timetables, which in 2018 was virtually unnoticeable.

Trip duration times in urban means of transport presented a completely different picture, which 41 % of respondents evaluated as being highly positive and 25 % judged to be positive. In 2014, nearly 46 % indicated 'very positive' as an answer (Figure 2).



Source: author's construction

Fig. 2. **Evaluation of trip duration on urban means of transport**

The research also indicates that the sense of safety in mass transport vehicles in Bydgoszcz has improved. It results from the assumptions of the Plan of Mass Public Transport Sustainable Development for Bydgoszcz District, which guarantee additional equipment of vehicles that would ensure travel comfort and safety: air conditioning of passenger space, surveillance of passenger space with image recording, wireless Internet access (WiFi). That is why this element received good and very good opinions from 84.6 % of passengers in 2014 and from 92 % in 2018.

Marking of public transport stops and transport services gained better ranking as well, which was due to LCD displays that inform additionally of traffic obstacles and show communications of any changes in a public transport schedule. More than half of those surveyed (65.4 %) deemed them to be very good – that is far more than in 2014 (48.4 %).

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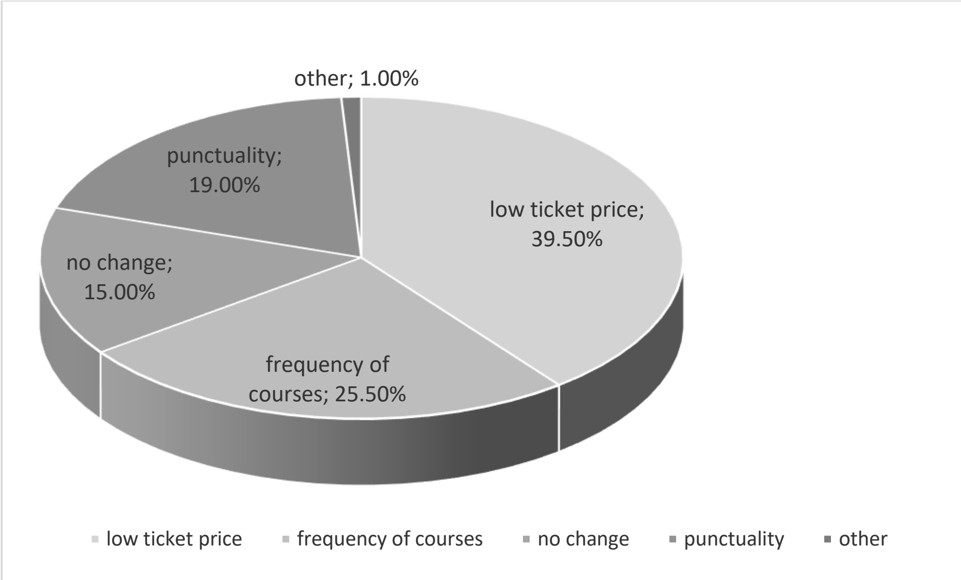
The respondents found low fare prices to be the most important aspect in traveling by public transport in contradistinction to the status of 4 years prior in terms of the quality of service and similarly to 2014 a high frequency of trips (Figure 3).



Source: author's construction

Fig. 3. **The most important aspects of passengers traveling by public transport in 2018**

The respondents appreciate shortened trip time owing to a better synchronisation of connections, notification of delays and obstructions. We observe that passengers tend to use the innovations implemented in subsequent years: in 2014 it entailed paying for tickets via an app, and in 2018 paying for tickets with a proximity card. The use of A+T combined system enjoys similar popularity. According to passengers, low ticket price adequate to services rendered is becoming the most important aspect. The safety fact is turning into a very important aspect, which has decidedly improved after the implementation of vehicle surveillance. The respondents still find the following factors discomforting: overcrowding of vehicles, behaviour of other passengers, unpleasant smells, insufficient cleanliness, or inadequate manner of bus or tram driving. However, it needs to be added that the development of public city transport in increasing the mobility of residents does not only refer to one parameter, but it is a long-term process. These dynamics is affected by all the elements to which passengers pay attention and which they find important.

Conclusions

1) Public transport is a catalyst of processes leading to economic growth – in the territory in which it operates. The conducted research demonstrates that people using city transport have a better opinion of it more often than other respondents.
2) When analysing the surveys conducted in 2014 and 2018, an improvement of the opinions on city transport becomes noticeable with respect to a majority of considered factors. Owing to a series improvement and the development of tram infrastructure, passengers use public transport more often, thanks to which their opinions are much higher than they were 4 years before. Increasing the attractiveness and accessibility of public transport correlates with the city's sustainable development policy.
3) The conducted analysis allows the authors to conclude that public transport companies are successful in introducing improvements, raising the quality and appeal of public transport vehicles for passengers. Respondents have noted the improvement in the quality of services provided by

public transport operators and appreciate in particular the innovations they introduce. Passengers are treated as clients who deserve the highest quality of service at a relatively low price. Unfortunately, the factors that depend on road infrastructure, the number of passengers as well as the manners and hygiene of passengers themselves constitute a barrier that cannot be overcome.

4) The improvement in the quality of city transport in Bydgoszcz has had a definite impact on the greater mobility of its residents. Development of public city transport is also a long-term process. These dynamics is affected by all the elements to which passengers pay attention and which they find important.

Bibliography

1. Bakowski, W. (2008). *Mechanizmy uruchamiajace potrzebe jakosci w pasazerskim transporcie zbiorowym.* (Mechanisms that trigger quality life in passenger mass transport) „Transport Miejski i Regionalny", nr 3, p. 2-5.
2. Drob-Zaba, E., Zaba, K. (2008), *Zastosowanie CRM w przedsiebiorstwach komunikacji miejskiej*. (Application of CRM in public transport enterprises) „Transport Miejski i Regionalny", nr 6, p. 20-25.
3. Janecki, R. (2011). *Rozwoj systemu kolejowych przewozow regionalnych w aglomeracji gornoslaskiej poprzez integracje miedzygaleziowa,* (Development of the regional rail transport system in the Upper Silesian agglomeration through inter-branch integration) „Transport Miejski i Regionalny", nr 11.
4. Mickiewicz, P., Nowak, M.J. (2018). ZARZADZANIE PRZESTRZENIA - PROBLEMY ROZWOJU ZROWNOWAZONEGO, (SPACE MANAGEMENT - PROBLEMS OF SUSTAINABLE DEVELOPMENT) Zeszyty naukowe "Organizacja i Zarzadzanie" Politechnika Slaska w Gliwicach, z. 129, p. 267-280.
5. Niebuhr, A. (2003). Spatial Interaction and Regional Unemployment in Europe. European Journal of Spatial Development, No 5.
6. Nowak, M., Mickiewicz, p. (2012). Plan zagospodarowania przestrzennego wojewodztwa jako instrument zarzadzania rozwojem regionalnym (Spatial development plan for the voivodeship as an instrument for regional development management), Warszawa, CeDeWu.pl.
7. PLAN ZROWNOWAZONEGO ROZWOJU PUBLICZNEGO TRANSPORTU ZBIOROWEGO DLA POWIATU BYDGOSKIEGO Wersja z dnia 28 stycznia 2016 r.
8. Starowicz, W. (2007). *Jakosc przewozow w miejskim transporcie zbiorowym* (Quality of transport in urban public transport), Wydawnictwo Politechniki Krakowskiej, Krakow.
9. Szymczak, M. (2008). *Logistyka miejska* (City logistics), Wydawnictwo Akademii Ekonomicznej w Poznaniu, Poznan, p. 110
10. UCHWALA NR LIV/1203/18 RADY MIASTA BYDGOSZCZY z dnia 24 stycznia 2018 r.
11. Ustawa z dnia 16 grudnia 2010 r. o publicznym transporcie zbiorowym, art. 9.
12. Witkowski, J., Kiba-Janiak, M. (2012). Correlation between City Logistics and Quality of Life as an Assumption for Referential Model. Procedia - Social and Behavioral Sciences 39.
13. Wyszomirski, O. (2008). *Transport miejski* (City transport). Ekonomika i organizacja, Wydawnictwo Uniwersytetu Gdanskiego, Gdansk.
14. http://www.mielec.pl/data/documents/mks_zielona_ksiega.pdf Access: 30.12.2018.

http://www.zdmikp.bydgoszcz.pl Access: 30.12.2018.

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TRANSPORT CORRIDORS AS AN IMPORTANT ELEMENT OF THE SUSTAINABLE DEVELOPMENT POLICY WITH PARTICULAR EMPHASIS ON RAILWAYS

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Abstract. The development and shaping of transport systems in the international and national system is important both in the aspect of globalisation processes and the aspect of sustainable development. The initiative of a New Silk Route (NSR) may be a good example for analysing this process. The "One Belt, One Road Initiative" is intended to ensure even closer contact between the Middle Kingdom and the Western world.

In order to achieve economic objectives, it is essential to build and modernise the global transport network, both at sea and on land. The importance of the problem is demonstrated by the "Roadmap to a Single European Transport Area — Towards a competitive and resource efficient transport system" adopted by the European Commission in 2011 (the so-called "white book"). The so-called transport corridors, whose railway will be an important link, will play a special role in the implementation of this objective and in the construction of the NSR. Modern rail transport can be cheaper and faster than road and sea transport, fitting much better into the concept of sustainable development. Using statistical data and plans for the development of the transport infrastructure, the author demonstrates a chance for the growth of the importance of railways, which, at the end of the twentieth century, experienced a clear regression.

Key words: the New Silk Route (NSR), transport corridors, railway, sustainable development.
JEL code: Q01, Q55, Q56, R40.

Introduction

Undoubtedly, the new Silk Road is a huge project of building and modernising the existing transport infrastructure, as well as an opportunity to shape international relations and global governance based on new principles and values. The project is open to all nations and its "win-win" formula indicates that each party (country) can benefit.

Since the announcement of the initiative in 2013, China has concluded more than 130 bilateral transport agreements, more than 350 international roads have been opened for passenger and freight transport, more than 4,000 direct connections with 43 countries, 39 rail links with Europe, and six more transport corridors between Europe and Asia are under construction, and new connections in central and eastern Africa are being developed.

The initiative, which is still open, is already engaged in several dozen countries, which have nearly 4.4 billion inhabitants, producing 55 % of the world's GDP, with nearly 3/4 of energy resources at their disposal.

A huge population and the diversification of economic development can contribute to an increase in trade flows and social welfare, while respecting cultural diversity, all the more so as the project assumes the free movement of factors of production, and one of the basic objectives is the achievement of diversified, independent and sustainable development of individual countries (Vision and Actions on Jointly Building..., 2015).

In this respect, the development of an effective transport network, including the so-called corridors (including railway corridors), which may lead to the strengthening of economic, social and cultural contacts between the two distant ends of the two continents, remains important: Europe and Asia, but also Africa. To this end, the European Commission adopted the White Paper on 28 March 2011. The document sets a target of reducing greenhouse gas emissions in the transport sector by at least 60 % by 2050 compared to 1990 (White Paper, 2011). Regulation (EU) No 1316/2013 of the

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European Parliament and of the Council provides, inter alia, that trans-European networks should facilitate cross-border connections, foster greater economic, social and territorial cohesion and contribute to improving the competitiveness of the social market economy and to combating climate change (Regulation (EU) No 1316/2013, 2013).

Research hypothesis: the development of transport corridors, including the development of high-speed railways, is an important initiative and an opportunity to ensure sustainable economic and social development, including the NSR.

The aim of this paper is to analyse the role of the railway in creating transport corridors and promote sustainable development, as well as to assess the global initiative itself, which is the new Silk Road.

The tasks of the research: 1) review and analysis of statistical data on global trade as well as the development of the railway network; 2) collecting and analysing available studies and research on the new Silk Road as well as sustainable development; 3) review of Regulations of the European Parliament and of the Council (EU) regarding the extension of transport corridors and the review of the White Paper on 28 March 2011; 4) assessment of prospects for the expansion of the railway network in China and the expansion of rail corridors in Europe; 5) defining the role of railway in the policy of sustainable development in the aspect of building the new Silk Road.

The following research methods were used in this article: review of scientific literature, Regulations of the European Parliament and the Council, analysis of statistical data; comparative analysis and synthesis techniques.

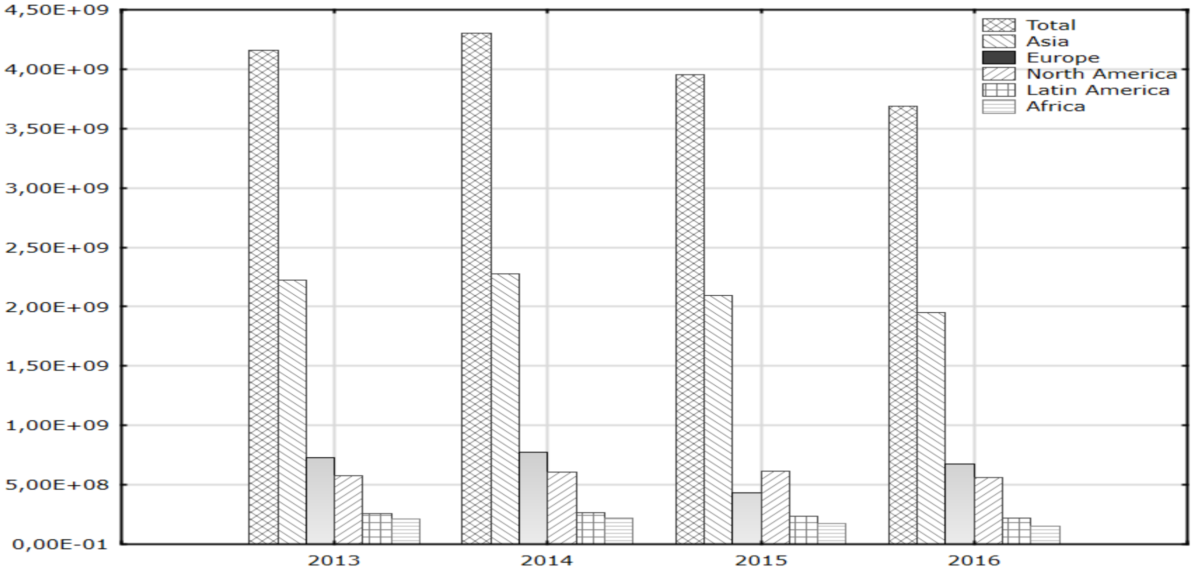
Research results and discussion

The World Trade Organisation (WTO) statistics show that in 2016 the world economy recorded a decline in GDP of 2.3 % (down by 2.7 % in 2015) (World Trade Statistical Review, 2017, 2016). Despite a slight increase in the volume of trade compared to 2015, the value of trade in 2016 decreased. This process has been accompanied by a reduction in the prices of many raw materials (e.g. oil). This result is far from expectations, and one of the reasons for the slowdown in international trade is seen, for example, in the slowdown in China's economic growth rate (World Trade Statistical Review. 2016).

Europe, Asia and North America accounted for more than 83 % (2016) of the world's total trade gap (88 % in 2015). If we look at the five largest economies in the world (China, the USA, Japan, Germany, France), they account for over 38 % of the total world trade in goods. It should be noted that in 2016, for the first time since 1996, China's share in world trade in goods turnover fell to 11.8 % (from 12.25 % 2015), which does not change the fact that the country has the potential.

- China's economy is strongly linked to many areas on the world economic map. Analysing only the last four years of foreign trade, the following tendencies for the Chinese economy can be observed (Fig. 1):
- The value of exports in goods trade exceeded USD 2.34 trillion (2014), USD 2.27 trillion (2015) and USD 2.098 trillion (2016);
- the value of goods exports accounted for 14 % of global exports (2015) and 13.2 % (2016);
- imports of goods amounted to USD 1.95 trillion (2014), USD 1.68 trillion (2015), USD 1.58 trillion (2016);
- the value of imports of goods accounted for 10.1 % of global imports (2015) and 9.8 % (201);

- Asia (largely due to the activity of China) outstripped Europe for the first time in its history in the share of global trade (36.17 % against 36.15 % of Europe).



Source: author's calculations based on: China Statistical Yearbook, (2014-2017), National Bureau of Statistics of China, China Statistics Press, Beijing, Tab. 11-6 Value of imports and exports by country (region) of origin/destination

Fig. 1. **The value of China's foreign trade turnover, including selected regions of the world (thou. USD 2013-2016)**

It should be added that apart from the increase in China's share in international trade, the structure of exports and imports is changing, for example: in 1980, the value of exports amounted to USD 18.1 billion (including unprocessed goods, which accounted for 50.3 %); in 2000, the value of exports reached USD 249.2 billion already (unprocessed goods accounted for only 10 %); in 2010, the value of exports rose to USD 1 577.7 billion (unprocessed goods accounted for only 5.2 %); and in 2015, the result was USD 2 273.4 billion (unprocessed goods accounted for only 4.5 %). The value of Chinese imports amounted to over USD 20 billion in 1980 (including unprocessed goods, which accounted for 34.7 %), in 2000 - USD 225 billion already, in 2010 - USD 1,396.24 billion, and in 2015 - USD 1,679.56 billion (including unprocessed goods, which accounted for 28.1 %).

In 2015, Asia has suffered the slightest decline in exports compared to the rest of the world. The value of foreign investments also grew: in 2015, it amounted to over USD 2657.5 billion and was 11.7 % higher than in 2014 (China Statistical Yearbook, 2016).

China is also one of the main trading partners of the European Union (2nd place after the USA), as is the case for many EU Member States. In 2012 alone, more than 90 million Mt of goods were mentioned by these two partners. Growing trade volumes and fierce competition are encouraging new transport investments that would, on the one hand, allow for fast and undistorted replacement, and, on the other hand, lead to a reduction in freight costs and fit in with the sustainable development strongly advocated by the Western world.

The emergence of many transport nodes is an opportunity to develop intermodal transport and increase trade between different regions of the world, according to the concept of comparative costs.

1. Revitalisation of railways. Importance of transport corridors

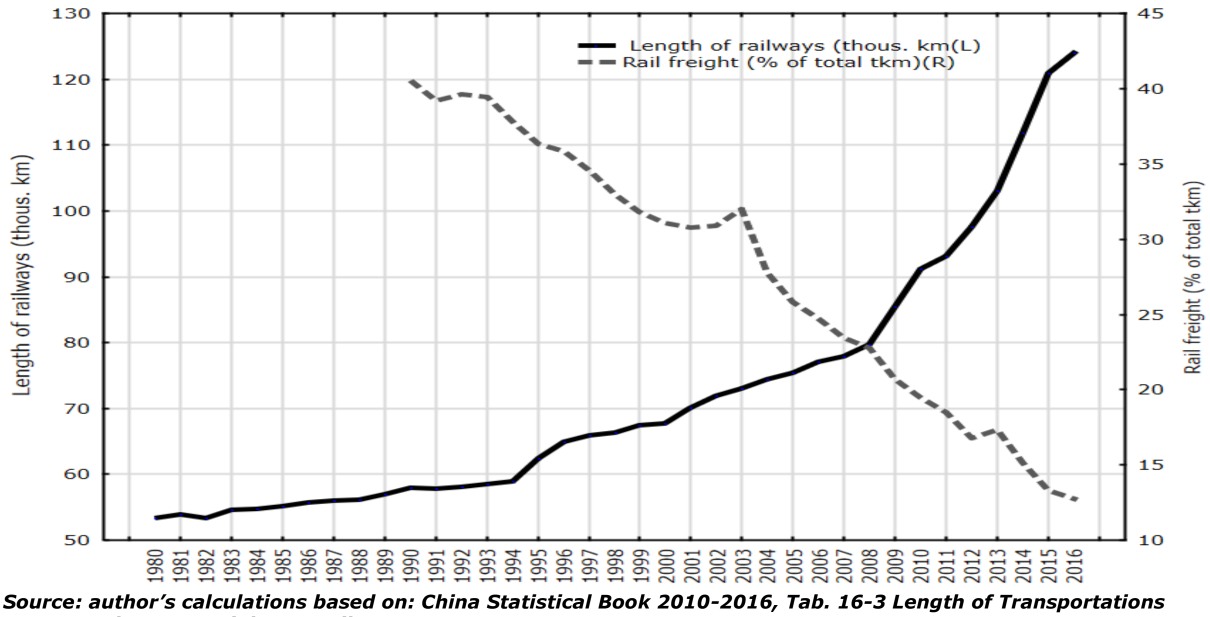
Railways were one of the most important innovations in the conditions of the nineteenth and early twentieth century (Myszczyszyn, 2013), and are currently experiencing a clear crisis. Given the development of deep-sea, wheeled and air transport, they have a chance to play a significant role in the creation of the so-called transport corridors.

Transport corridors play a special role in the development of the transport and communication network. According to Ch. Kunaka, for thousands of years, R. Carruthers' trade and transport corridors have enabled connections between regions, countries and continents. Areas with a well-developed transport network provided an opportunity for fast and efficient transport, and often achieving significant economies of scale ensured relatively low transport costs (Kunaka Ch., Carruthers R., 2014).

Rail is to be an important element of Europe's connection with China, although as T. Puls from the *Institut der deutschen Wirtschaft* points out, foreign trade statistics show that over 90 % of the value of trade with China is currently carried out using maritime transport (Puls T., 2016). Despite the many advantages of sea transport, its big disadvantage is the transport time, which is on average (in contacts with Europe) 30-35 days.

Statistics confirm that rail transport still accounts for a small proportion compared to other modes of transport. For example, in 2012, in China-EU trade, maritime transport was the main mode of transport and accounted for nearly 62 % of total transport, air transport accounted for 23 % and road and rail transport only 7.5 %, including 0.4 % rail transport (S. Frederick Starr S. F., Cornell S. E., Norling N., 2015).

The Figure (Fig. 2) shows the increase in the length of railway routes, and the share of rail transport in China's total freight (% tkm). The percentage was 13.32 % (2015) and 12.75 (2016).



Source: author's calculations based on: China Statistical Book 2010-2016, Tab. 16-3 Length of Transportations Routes, Tab. 16-9 Freight Ton-Kilometres

Fig. 2. **The length of railway lines and the share of railways in freight in China (1980-2016)**

Out of 121,000 km of railways in China (2015), only 61.7 % are electrified and 53.5 % are dual-track.

Given the volume of rail transport in China, it should be noted that:

1) the average annual growth in the volume of rail transport (1990-2015) was 5.22 %;
2) there is a downward trend in the volume of goods transported by rail, especially since 2010. The average annual decrease is -1.38 % (2010-2015), although for 2015-2016, it slowed down to -0.57 %;

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3) in the last two years, the volume of rail transport has fallen to the level recorded in 2007 and a record-breaking volume was reached in 2011 - approximately 2.95 trillion tkm.

The New Silk Route assumes the development of a transport network in many directions, both by sea, road and rail connections.

*The New Eurasian Land Brid*ge, for example*, is* designed to connect Chinese provinces to Europe quickly by rail. Importantly, the congested eastern ports of China are being bypassed and, in addition, railways will influence the development of other western provinces of the central state and other regions of Asia.

It should be added that China, Japan and Germany are among the leading countries in the construction of the high-speed rail system. The Chinese have 12 thousand miles of fast railway, which is more than all (in total) other countries of the world. In addition, the Chinese build relatively cheaply and quickly, which gives them a significant advantage in competition with others. Unfortunately, this sector requires significant capital costs, the railways are more expensive to operate, and China Railway Corporation would have major economic problems under free market conditions (without State aid). It may be particularly difficult to implement fast connections in Russia and Kazakhstan, which are facing economic problems, or countries in Europe, which are experiencing an economic slowdown.

A high-speed Moscow-Beijing railway connection alone would be more than 4350 miles and cost more than 230 billion USD, but it would also reduce the time it takes to transport containers (Trans-Siberian railway) from six to two days.

Although rail transport is not an excellent substitute for maritime transport because in order to replace one container ship about 300 railway depots would have to be checked in, this transport is important for the creation of many connections in neighbouring countries, inside China and also with Europe.

In 2013, a railway connection was opened between China, Poland and Germany, and interestingly the freight time is 16 days and is three weeks shorter than by sea. The railway has also strengthened local development in the design and construction of other railway connections in Russia, Asia and China itself.

Cities such as Lianyungang (Jiangsu Province), Lanzhao, Wuhan, Chongqing, Xian and Urumqi are connected to Western European cities such as Rotterdam and Duisburg in Germany. Chinese goods reach Xinjiang through China's internal rail system. The railway connection runs through Kazakhstan, Russia, Belarus, Poland and the Czech Republic, Germany, to the shores of the Atlantic. This transcontinental railway line, using 39 existing sections, connects 16 Chinese cities with 12 European cities. An important role is played by logistics hubs.

Modal transport statistics for 28 EU Member States suggest a slow increase in the importance of rail as a mode of transport, and so in 2010, rail transport accounted for 11.8 % of total transport (tkm); in 2015, this percentage increased to 12.3 %; although in 2016, it decreased to 11.6 % (Eurostat, 2016, 2017). It can be concluded that land transport between China and Europe is still underdeveloped and that there are strong needs in this respect, both in terms of growth in the volume of trade with China and in bilateral trade.

Rail transport should play a much greater role in EATL (*Euro-Asian Transport Link)* connections. The benefits of rail transport can be achieved through:

- development of cooperation between suppliers, terminal operators, transport companies, forwarding agents, etc.;

- the ability to offer competitive freight prices, and respond in setting tariffs to changing market conditions,
- ensuring flexibility in the planning of individual directions of iron roads;
- international cooperation in long-distance transport.

There is No doubt that the railway sector needs to be reformed. To this end, a variety of strategies have been put in place, which are often dependent on individual regions. And for example:

- EU Member States are the initiators of the 4th Railway Package. The so-called technical pillar of the railway package consists of legislative acts: Regulation (EU) 2016/796 of the European Parliament and of the Council of 11 May 2016 on the European Union Railway Agency and repealing Regulation (EC) No 881/2004, Directive 2016/797 of the European Parliament and of the Council of 11 May 2016 on the interoperability of the rail system within the European Union, Directive 2016/798 of the European Parliament and of the Council of 11 May 2016 on railway safety. Article (1) justifies the objective of progressively establishing a single European railway area and the need to take measures to regulate railways, taking into account the technical aspects of safety and interoperability. Commission Implementing Regulation (EU) 2017/6 of 5 January 2017 on the European Deployment Plan for the European Rail Traffic Management System defines nine core network corridors: 1) Baltic Sea - Adriatic Sea, 2) North Sea - Baltic Sea, 3) Mediterranean Sea, 4) East/Eastern Mediterranean, 5) Scandinavia - Mediterranean, 6) Rhine - Alps, 7) Atlantic, 8) North Sea - Mediterranean, (9) Rhine - Danube. Of the nine corridors, six run through Germany, two run through Poland, one through the Baltic States (Commission Implementing Regulation (EU) 2017/6, 2017);
- countries aiming at integration and membership with EU countries (Turkey, Bosnia and Herzegovina, Macedonia, Serbia, Montenegro) and aiming at integrating the railway network into the EU corridors;
- Russia and other countries of the former USSR, which have either developed their own model of reforms (Russia, Kazakhstan) or have made some reforms, but progress is moderate (Ukraine, Uzbekistan), or reforms are unlikely to have been undertaken (Belarus, Moldova, Tajikistan, Armenia, Azerbaijan, etc.);
- Asian countries that do not belong to any of the above groups, which are characterised by different, varied situations with regard to the development and reform plans in the railway sector (Afghanistan, China, Iran, Mongolia, Pakistan).

Railway transport can successfully compete with road transport, especially in long-distance and heavy-duty transport, while ensuring shorter delivery times. In addition, long-distance rail transport of cargo is relatively cheap, i.e. less than USD 0.03 per 1 tkm, and with a dense rail network, it can oscillate around USD 0.02 per 1 tkm. Rail transport is an important substitute for maritime and inland waterway transport, especially for regions remote from seas, ports, canals and navigable rivers. The electrified grid shall fit into the promotion of sustainable development and the reduction of greenhouse gas emissions. The development of rail transport results in a reduction in air emissions due to reduced road traffic (Environmental Impact Assessment..., 2018). In addition, the core corridors are to form the Trans-European Transport Network using the road, rail, seaports and inland waterways, inland waterways, airports, road-rail terminals. This network could be an important link between the EU countries and other areas and regions in Europe, as well as an important element of the NSR.

In the case of railways, a major weakness in intercontinental connections may be delays in delivery as a result of: transport of goods across national borders, (different types of) inspections on both sides of the border, poor synchronisation of freight trains, which can lead to long waiting times at border stations, damage to goods, especially when locomotives are changed etc. The Commission will continue to take into account the fact that, in the case of railways, delays in the delivery of goods by rail can be a major weakness in intercontinental connections. Studies have shown that on the *New Eurasian Land Transport Initiative (NELTI)* route, 40 % of transport time was spent at national borders (Railway Reform... , 2011). Undoubtedly, the development of modern railways can successfully lead to an increase in social welfare with the fulfilment of the idea of sustainable development.

Conclusions, proposals, recommendations

1) In the last decades of the 20th century and the early 21st century, rail freight has experienced a regression. In global trade, maritime and road transport play an increasingly important role. The New Silk Road Initiative, as well as European Union's transport policy, offer a great opportunity to reverse the downward trend in rail transport.
2) In the future, rail transport corridors will offer the possibility of transporting goods over long distances, which will make it possible to relieve road transport while at the same time being competitively priced (transport tariffs). The completion of the high-speed European rail network by 2050 and the tripling of the existing high-speed rail network by 2030 as well as the maintenance of a dense rail network in all Member States is the objective outlined in the White Paper.
3) Railways are the recommended means of transport to promote a policy of sustainable development in progressive globalisation, as exemplified by the NSR. The above is consistent with the assumptions adopted by the European Commission in the "White Paper" and Regulation (EU) No. 1316/2013, 2013 assuming a 60 % reduction in emissions, including the full development of an integrated European railway market.
4) Existing and new railway connections may contribute to the stabilisation of supplies of goods and raw materials, as well as the time of their realisation, which will be significantly shortened from several dozen days to a dozen or so.
5) In addition to various types of barriers to the development of the global market, including barriers to the development of rail transport, there are technological barriers, procedural barriers, inadequate infrastructure, inefficient processes, inconsistent development of the transport policy and financial barriers. Therefore, a joint commitment by countries to promote the development of transport, including intermodal transport, is required, and the NSR offers an opportunity to do so.

Bibliography

1. China Statistical Yearbook, 2014-2017, National Bureau of Statistics of China, China Statistics Press, Beijing, Tab. 11-6 Value of Imports and Exports by Country (region) of Origin/destination, Tab. 16-3 Length of Transportations Routes, Tab. 16-9 Freight Ton- Kilometres, Tab. 16-8 Freight Traffic.
2. Commission Implementing Regulation (EU) 2017/6 of 5 January 2017 on the European Rail Traffic Management System European deployment plan, Annex I, Official Journal of the European Union.
3. Eurostat. (2016, 2017) (online data codes: rail_go_typeall (rail), iww_go_atygo (inland waterways), road_go_ta_tott (national road transport), road_go_ca_c (road cabotage transport); Eurostat computations (international road transport, air and maritime transport).
4. Kunaka, Ch., Carruthers, R. (2014). Trade and Transport Corridor. Management Toolkit. Washington, World Bank, pp. XIII-XIV and next.

5. Myszczyszyn (2013). Wplyw kolei zelaznych na wzrost gospodarczy Niemiec (1840-1913), Lodz.
6. Prognoza oddzialywania na srodowisko Projektu Strategii Zrownowazonego Rozwoju Transportu do 2030 roku. (2018), Warszawa (https://www.gov.pl/documents/905843/1047987/Raport_nr_2_Prognoza_SRT_8XI2018.pdf/2f6da03e-538c-7fbb-1fb5-4b94fbae60c1).
7. Puls, T. (2016). One Belt One Road – Chinas neue Seidenstraße, IW-Kurzberichte 67.
8. Railway Reform: Toolkit for Improving Rail Sector Performance, The International Bank for Reconstruction and Development. (2011). The World Bank, Washington, pp. 3, 48-49.
9. Regulation (EU) No 1316/2013 of the European Parliament and of the Council of 11 December 2013 establishing the Connecting Europe Facility, amending Regulation (EU) No 913/2010 and repealing Regulations (EC) No 680/2007 and (EC) No 67/2010, Official Journal of the European Union L 348/129.
10. Starr S. F, Cornell, S., E, Norling, N. (2015). The EU, Central Asia, and the Development of Continental Transport and Trade, Silk Road Paper, December, pp. 17.
11. Vision and Actions on Jointly Building Silk Road Economic Belt and 21st -Century Maritime Silk Road 2015/03/28. (2015). the National Development and Reform Commission, Ministry of Foreign Affairs, and Ministry of Commerce of the People's Republic of China, Supra note 28.
12. White Paper, Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system, European Commission, Brussels, 28.3.2011.
13. World Trade Statistical Review 2016. (2016). World Trade Organization, pp. 16, 18, 134-138.
14. World Trade Statistical Review 2017. (2017). World Trade Organization, pp. 16, 148-155.

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COOPETITION ENTERPRISES OF AGRI-FOOD SECTOR IN THE REGION UNDERDEVELOPED ECONOMICALLY

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Abstract. The aim of the study was to identify the most important conditions of coopetition enterprises of agri-food sector in the region underdeveloped economically. The data for the analysis were obtained by means of a diagnostic survey using a questionnaire regarding the status and perspectives of the development of coopetition of business entities from the Braniewo poviat (north-eastern Poland). The agri-food sector is characterized by particularly favourable features that allow the implementation of activities using enterprises' coopetition. Enterprises in the agri-food sector paid a lot of attention to improving cooperation with suppliers and recipients. In the examined region, however, these features did not determine the clear involvement of enterprises in the creation of producer associations and economic clusters. There was limited support of the agri-food sector by the underdeveloped business environment (a situation typical of economically underdeveloped regions). The rational regional policy and the state of development of the business environment in the region can have a significant impact on the development of the coopetition of enterprises. Entities of the agri-food sector deprived of a positive impact of the business environment will have limited opportunities to rationally use coopetition to strengthen their competitive position. Regions underdeveloped economically cannot neglect activities improving the state of the business environment (especially in the area of development of computerization and entities supporting the innovation processes).

Key words: coopetition, agri-food sector, region underdeveloped economically.
JEL code: R11.

Introduction and methodology of research

Coopetition is currently one of the most important types of relations between competitors. This specific relationship is focused on two other jointly appearing: competition and cooperation. Coopetition consists in cooperation of entities that do not cease to be competitors at the same time. By creating economic, organizational and technical relationships, cooperating on innovative projects, they set common strategic goals and often achieve a synergistic effect, inter alia, from the complementarity of resources, organizations and products (Hamel G. et al., 1989; Sulejewicz A., 1997; Cygler J., 2013). Coopetition according to Cygler J. (2009) is characterized by, among others:

- complexity - cooperation and competition are not considered as single relations, but as a set of individual relationships and relations and accompanying processes in strategic terms,
- interdependence - the potentials of the coopetition participants are to a large extent complementary, and the tightening of the cooperation of entities results in a growing dependence of their further actions on these complementary resources,
- dynamism - multifaceted competitive and cooperative relations as well as the need to maintain a proper balance between them, as well as rapidly changing environment, require quick reactions both in the context of individual and joint activities,
- long-term - the complexity of relationships created and strategic goals for coopetition make it necessary to assume long-term benefit,
- openness - No limit of entities involved (Cygler J., 2009).

A practical form of coopetition is, for example, economic clusters that are the focus of mutually cooperating enterprises and the entities (institutions) operating in their environment that can help them compete on the market. Grouping of entities into clusters can be based on various parameters, including economic, organizational, geographical and social. In economic theory, the term cluster

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was disseminated by Porter, who defined it as a geographical focusing of cooperating interrelated enterprises, specialized suppliers, service units, entities operating in related sectors and institutions related to a given activity (eg scientific units, industry organizations) having outstanding competitive success in their areas of activity. The core of the Porter definition is the vertical and horizontal value creation chain. The vertical approach covers the individual stages of the manufacturing process - from suppliers to distribution. The horizontal approach refers to industries, sectors using shared distribution channels or dealing in the production of complementary products or services (Porter M.E., 2001; Gorynia M., Jankowska B., 2008).

The benefits of coopetition can be considered in terms of micro-, meso- and macroeconomic. Kladz K. and Kowalski A.M. (2010) include mainly the following elements:

a) in microeconomic terms (from the point of view of an individual enterprise):

- easier access to various types of information,
- greater ability to identify product niches and access to export markets,
- development of human capital,
- increase of production capacity and flexibility of operation thanks to greater resource relocation capabilities,
- reducing uncertainty and risk in business as a result of creating an atmosphere of mutual trust in a changing environment;

b) in terms of mesoeconomic (benefits for the region's economy):

- creating a local culture of innovation and entrepreneurship and economic activation of the region,
- acceleration of knowledge transfer and specialist know-how to the region's economy,
- increasing the competitiveness of the market through the densification of market rivals,
- creating new jobs as a result of dynamic creation of new business entities, including spin-offs,
- concentration of resources and funds for financing business operations, which enables achieving a critical mass for new investments,
- concentration and development of resources of production factors,
- improvement of the region's image;

c) in macroeconomic terms (impact on the national economy):

- impact on the improvement of the economic situation,
- increasing the level of innovation in the economy,
- attracting FDI,
- activation of economic activity, which translates into GDP growth.

The study refers to the agri-food sector, which has particular predispositions to the practical use of coopetition because it is characterized by functional interdependencies indicating a significant cooperial potential, which could be effectively used with proper mesoeconomic policy in the process of competing. This potential stems from the following dependencies in the sector.

1) Agricultural farms provide a raw material base for food processing. The quantity of raw material in individual regions of the country depends on their structure and productivity. Agricultural farms also shape the quality of raw materials, which are processed in the processing industry. There are practical tools to stimulate the quality of the raw material by the processing industry. It can be done, among others by providing agricultural holdings with knowledge, genetic material, feed, veterinary services etc.

2) Agricultural farms constitute an important stage in shaping the sanitary and hygienic correctness, they are a link preceding the food industry, which should be interested on maintaining high standards in this respect.
3) The possibilities of selling raw materials by agricultural farms depend on the market efficiency of processing enterprises.
4) The competitive position of processing enterprises depends on ensuring systematic supplies to the market dependent on the stability supply of agri raw material from farms.
5) The perception of food producers by consumers is more and more often made through the prism of the region of obtaining raw materials (eg with well-known environmental values) and the production system in farms supplying (e.g. organic) (Nasalski Z., 2008).

Despite these features, the practical implementation of coopetition in the agri-food sector is limited, therefore the aim of the study was to identify the most important determinants of the coopetition of enterprises in the agri-food sector in the underdeveloped region. This can be the basis for optimizing regional development strategies and actions stimulating competitiveness in the field of economic policy in regions with a significant share of the agri-food sector. The study concerns the economically underdeveloped region because very often regions with a traditional economic structure, with prevailing agriculture and food processing, without an efficient business environment usually have limited prospects of economic development. The study refers to one of the least economically developed regions of Poland - the north-western part of the Warmia and Mazury Voivodeship (the Braniewo poviat). The unemployment rate in this region is one of the highest in the country. A significant share in the social structure is long-term unemployed and professionally inactive. Entrepreneurs from the Braniewo poviat are limited in scope to activities focused on innovation and the growth of competitive position.

The adopted mesoeconomic perspective is increasingly being considered in the analysis of economic problems (Gorynia M., 1995; Gorynia M., Jankowska B., 2008). This is mainly due to the application aspects - the macroeconomic approach in some circumstances is too general to solve the problem relating to certain specific sectors of the economy, e.g. individual industries or regions, microeconomic approach, however, most often focuses on the problems of individual economic entities. Modern economy requires more and more often the use of new instruments of competition, e.g. strategic partnership, integrated supply chains, coopetition, synergies, cooperation within proinnovation programs, etc. These activities usually include not individual entities but their groups (e.g. in the region). Data for analysis was obtained by means of a diagnostic survey using a questionnaire concerning the condition and perspectives of the development of coopetition of business entities from the Braniewo poviat. They made it possible to identify the opinions of business owners regarding this issue, among others on the subject of: the importance of the factors that most stimulate the development of enterprises, the influence of environmental institutions on the development of local entrepreneurship in the opinion of entrepreneurs, the most important actions implemented to improve the competitiveness of enterprises. In the questionnaire, the surveyed entrepreneurs determined the occurrence or impact of individual factors on the development of their companies and the economic development of the Braniewo poviat. The method used in the research allowed respondents on a scale of 1 point (which meant a factor with a low impact) to 5 points (a factor with a strong impact) to indicate the importance of particular factors in the functioning and development of their enterprises. The internal conditions of the surveyed units and the impact of factors related to the operations of enterprises were also determined. In the Braniewo poviat, there were in 2017 about 3.1 thou. enterprises, research questionnaires were sent to a representative group of 220 entities. After verifying the completeness of the obtained data, 199 questionnaires were used in the analysis. The structure of the studied group was to a large extent convergent with the actual structure of enterprises located in the Braniewo poviat.

The research hypothesis assumed that the agri-food sector alone would not be able to smoothly integrate enterprises. In order for the coopetition processes to be able to be used in practice, a significant share of the business and institutional environment as well as advanced informatization processes integrating the behaviour of entities is also needed. In a region with low business environment potential there is often a gap in integration processes.

Research results and discussion

The results of the research presented in a synthetic way diagnosed important features of enterprises in the agri-food sector, occurring in business practice indicating high coopetition potential (as compared to other enterprises from the studied region). On the other hand, this potential did not have a clear impact on the creation of business organizations based on coopetition. When comparing the measures implemented to improve the competitiveness of enterprises in the agri-food sector against the background of all surveyed enterprises, it should be noted that the most important was raising the quality of production (services provided), improving work organization and diversifying products (Figure 1). Raising the quality of production usually requires access to the results of innovative research and modern technologies. In the food economy it often requires cooperation consisting, for example, in the coordination of the characteristics of agricultural raw materials sold by many producers to one processor, among others through the flow of knowledge, the supply of genetic material, feed, veterinary services, etc. Enterprises in the agri-food sector appreciated more clearly the improvement of work organization, and lay slightly less emphasis on the diversification of products. In addition, enterprises in the agri-food sector have very clearly paid attention to the development of their own distribution network and product specialization, and most importantly, they attached great importance to improving cooperation with suppliers and customers. According to Jankowska B. (2012), cooperation with the environment (especially with suppliers and recipients) in creative clusters is crucial for their development. The entities from the agri-food sector were very clearly (against the background of all researched enterprises) emphasizing the search for cheaper sources of supply. Companies from the analysed sector, however, paid less attention to employ better specialists and systematic employee training. It should also be pointed out that the enterprises of the agri-food sector are more determined to introduce products to new markets and to enter current markets with new products. What is worrying is the limited scope of IT activities supporting management decisions, actions aimed at reducing production costs and low involvement in establishing business associations and clusters. Firlej K. (2008) research also indicates that there is a large relationship between the competitive advantage of enterprises in the agri-food sector and the place of business activity, which may have a positive impact, inter alia, on on the level of mutual trust and enhance the effects of coopetition.

The researched enterprises declared different knowledge and use of coopetition in business practice, including attitude to participate in economic clusters (but also in producer groups, associations, etc.). According to the declarative level of coopetition, the factors that most stimulate the development of the surveyed enterprises were determined (Figure 2). Enterprises showing a high level of coopetition were more positive towards the majority of factors that could be stimulants for

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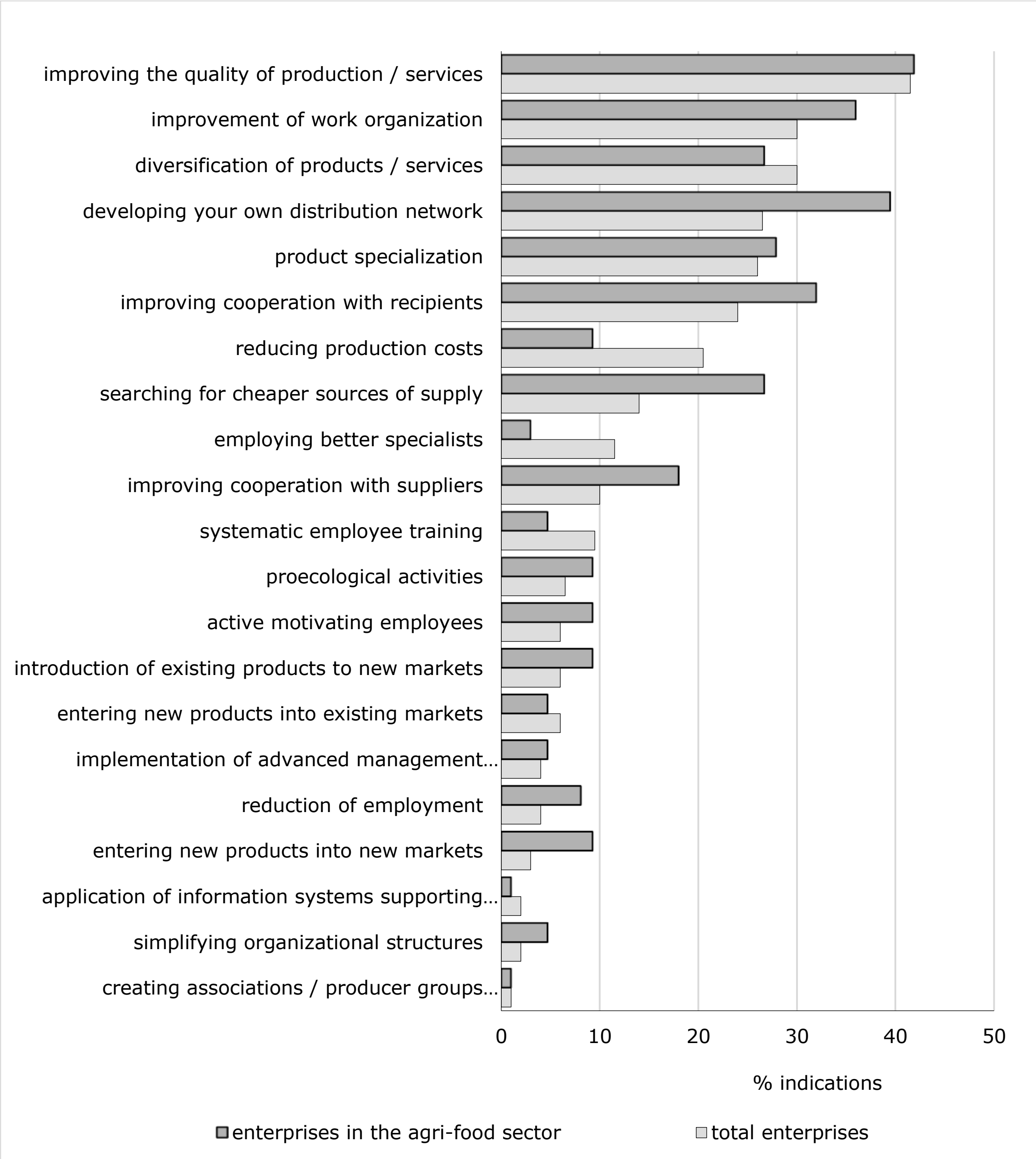
their development. In particular, these enterprises recognize the importance of such factors as: prodevelopment tax system and entrepreneurship-friendly administrative system, low employment costs, relatively small market risk, access to investment areas and absorptive local market.



Source: author's research

Fig. 1. **The most important activities implemented to improve the competitiveness of the surveyed enterprises, with particular emphasis on the agri-food sector (% indications)**

Enterprises declaring a low level of coopetition in their economic activities particularly clearly pointed to the good situation in the industry and the company's potential. These entities were generally less optimistic about using most of the factors of entrepreneurship development.

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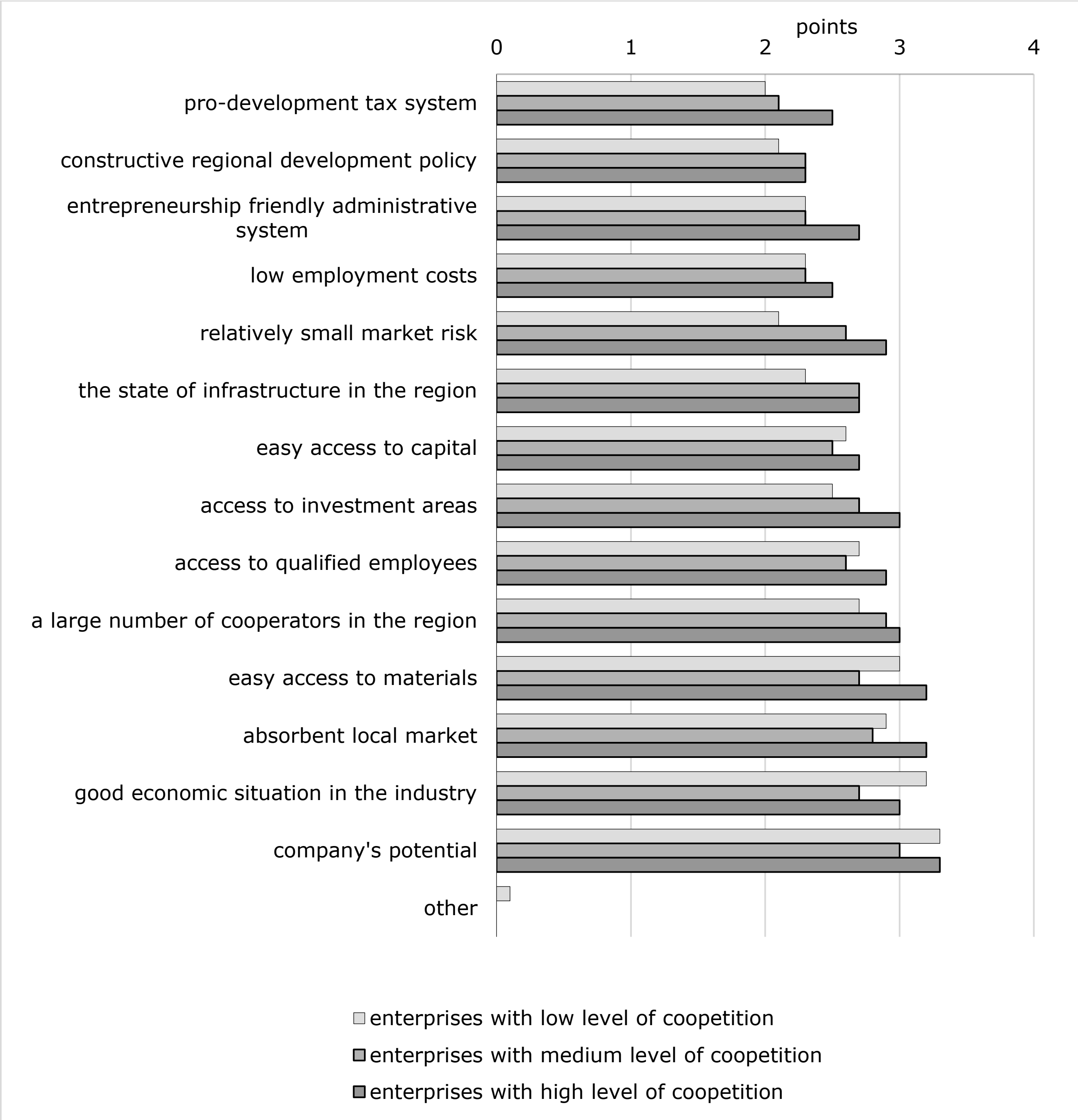
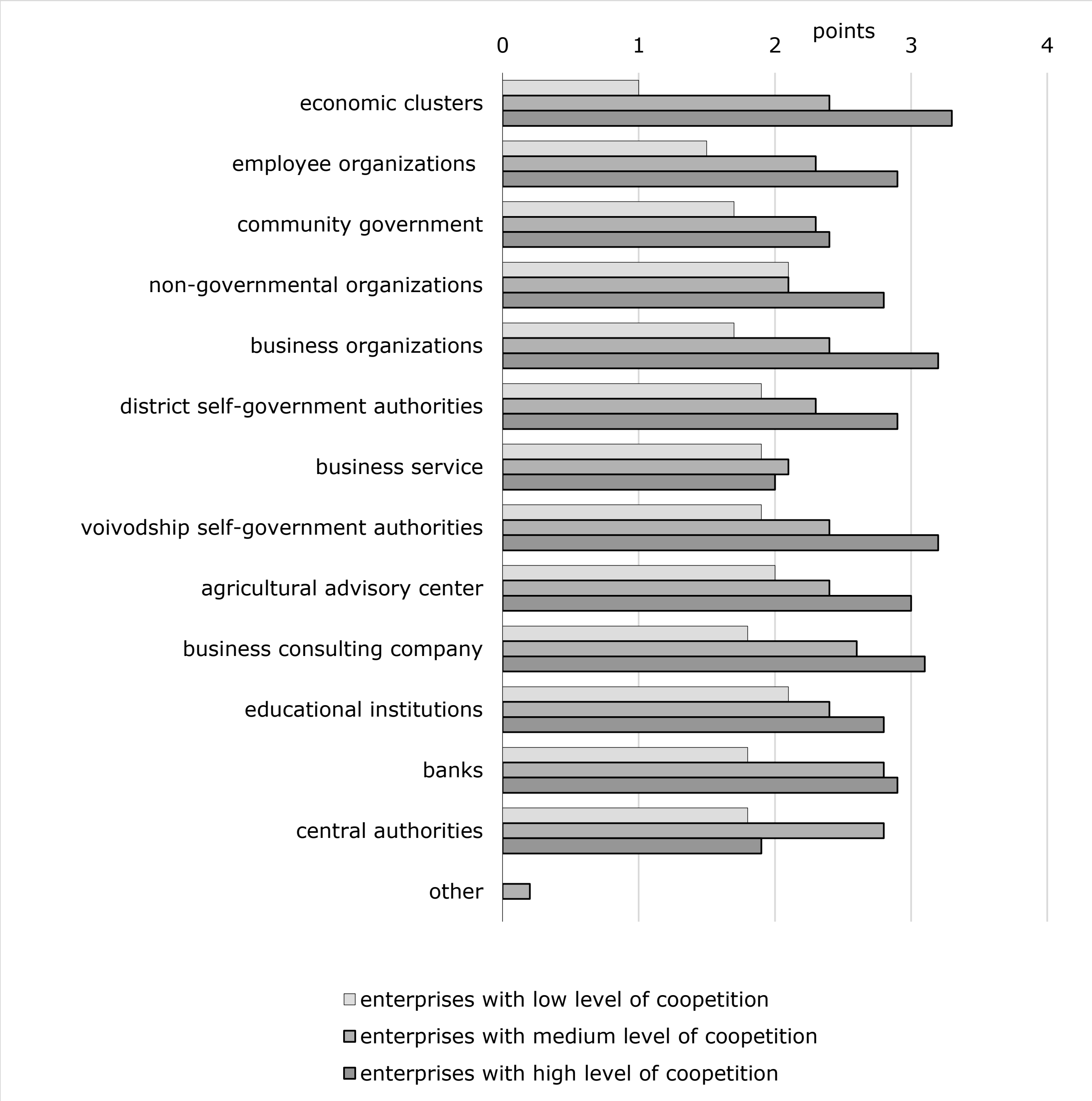


Source: author's research

Fig. 2. **The importance of the factors that most stimulate the development of the surveyed enterprises with varying degrees of coopetition (1 - small significance, 5 - very important) (average points)**

When assessing the impact of the institution on the development of local coopetition, entrepreneurs from the Braniewo poviat, the strongest impact was indicated by the functioning of existing economic clusters, entrepreneurs' organizations and voivodship self-government authorities (Figure 3). The relatively lowest recognition of entrepreneurs was directed at employee organizations (unions) and community authorities. Research by Figiel Sz. et al. (2012) indicate that cluster organizations in the agri-food sector are often based on an eclectic set of cooperating entities, which according to the authors is not always a beneficial one. Skawinska E. and Zalewski R. (2009) and Kowalski A.M. (2013) emphasize the special role of innovative institutions in the development of coopetition.



Source: author's research

Fig. 3. **Impact of the institution on the development of local entrepreneurship in the opinion of the surveyed entrepreneurs with different degrees of coopetition (1 - small, 5 - very large) (average points)**

The researches enterprises showing a high level of coopetition were relatively the most positive attitude towards the majority of business environment entities, especially those with local impact. They assessed the significance of central authorities' actions in the context of the development of coopetition relatively less well.

Conclusions, proposals, recommendations

1) The agri-food sector is characterized by particularly favourable features that allow the implementation of economic activities with the use of coopetition also in economically underdeveloped regions. This is due to from the attention of the entities of this sector to the quality of production, activity in the search for opportunities to develop their own distribution network and product specialization, determination of enterprises to launch products into new markets and enter current markets with new products. These enterprises attached great

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importance to improving cooperation with suppliers and recipients. In the region under consideration, however, these features did not determine a clear commitment to the creation of producer associations and economic clusters. A coopetition gap was identified, consisting of limited support for the agri-food sector (with significant coopetition potential) through a relatively weaker business environment.

2) Regional policy and the state of the business environment in the region have a significant impact on the chances of developing the coopetition of enterprises. Entities exhibiting a high level of coopetition were relatively positive towards using most of the factors that could be stimulants of their development and to cooperate with business environment institutions having an impact on the development of local coopetition. Entities of the agri-food sector deprived of a positive impact of the business environment will have limited opportunities to rationally use coopetition to strengthen their competitive position. Underdeveloped regions cannot neglect activities that improve the state of the business environment (especially in the area of development of computerization and entities supporting innovative activities).

Bibliography

1. Cygler, J. (2009). Kooperencja przedsiebiorstw. Czynniki sektorowe i korporacyjne (*Coopetition of enterprises. Sector and corporate factors*). Oficyna Wydawnicza SGH, Warszawa, pp. 19-22.
2. Cygler, J. (2013). Korzysci kooperencji – oczekiwania i efekty (*Benefits of coopetition - expectations and effects*). Organizacja i Kierowanie 5, pp. 59-75.
3. Figiel, Sz., Kuberska, D., Kufel, J. (2012). Klastry i inicjatywy klastrowe w polskim sektorze rolno-zywnosciowym (*Clusters and cluster initiatives in the Polish agri-food sector*). IERiGZ, Warszawa, pp. 121-126.
4. Firlej, K. (2008). Rozwoj przemyslu rolno-spozywczego w sektorze agrobiznesu i jego determinanty (*The development of the agri-food industry in the agribusiness sector and its determinants*). Wydawnictwo Uniwersytetu Ekonomicznego w Krakowie, Krakow, pp. 173-185.
5. Gorynia, M. (1995) Teoria i polityka regulacji mezosystemow gospodarczych a transformacja postsocjalistycznej gospodarki polskiej (*Theory and policy of regulating economic mesosystems and the transformation of the post-socialist Polish economy*). Wydawnictwo Akademii Ekonomicznej w Poznaniu, Poznan, pp. 34-41.
6. Gorynia, M., Jankowska, B. (2008). Klastry a miedzynarodowa konkurencyjnosc i internacjonalizacja przedsiebiorstwa (Clusters and international competitiveness and internationalization of the company). Difin, Warszawa, pp. 30-50.
7. Hamel, G., Doz, Y.L., Prahalad, C.K. (1989). *Collaborate with Your Competitors and Win*. Harvard Business Review 67/1, pp. 133–139.
8. Jankowska, B. (2012). Koopetycja w klastrach kreatywnych. Przyczynek do teorii regulacji w gospodarce rynkowej (*Coopetition in creative clusters. A contribution to the theory of regulation in the market economy*). Wydawnictwo Uniwersytetu Ekonomicznego w Poznaniu, Poznan, pp. 241-302.
9. Kladz, K., Kowalski, A.M. (2010). Stan rozwoju klastrow w Polsce. [w:] Polska. Raport o konkurencyjnosci 2010. Klastry przemyslowe a przewagi konkurencyjne (*Cluster development status in Poland. [in:] Poland. Report on competitiveness 2010. Industrial clusters and competitive advantages*). Instytut Gospodarki Swiatowej, SGH w Warszawie, Warszawa, pp. 266- 267.
10. Kowalski, A.M. (2013). Znaczenie klastrow dla innowacyjnosci gospodarki w Polsce (*The importance of clusters for innovation in the economy in Poland*). Oficyna Wydawnicza SGH, Warszawa, pp. 99-122.
11. Nasalski, Z. 2008. *Structural gap in the links among agribusiness enterprises*. Olsztyn Economic Journal 3(1), pp. 103-113.
12. Porter, M.E. (2001). Porter o konkurencji (*Porter about competition*). PWE, Warszawa.
13. Skawinska, E., Zalewski, R. (2009). Klastry biznesowe w rozwoju konkurencyjnosci i innowacyjnosci regionow. Swiat – Europa – Polska (*Business clusters in the development of competitiveness and innovation of regions. World - Europe - Poland*). Polskie Wydawnictwo Ekonomiczne, Warszawa, pp. 277-279.
14. Sulejewicz, A. (1997). Partnerstwo strategiczne: modelowanie wspolpracy przedsiebiorstw (*Strategic partnership: modeling of cooperation of enterprises*). Oficyna Wydawnicza SGH, Warszawa, pp. 64-75.

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DETERMINANTS OF ACADEMIC YOUTH'S ATTITUDES TOWARDS THE IDEA OF SUSTAINABLE DEVELOPMENT

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Abstract. The paper presents findings of a study conducted among academic youth in over 30 European countries. The aim of the study was to find out students' opinions and attitudes towards the idea of sustainable development. Respondents' responses to the question concerning living in accordance with the principles of sustainable development have been analysed. When considering the variations in the answers provided to this question, attention was paid to the youth's nationality, which was generalised by grouping their home countries into three categories: EU_{15}, EU_{28-15}, outside of the EU. It has also been examined whether the variation in the responses was impacted by the level of education as declared in the survey section containing respondents' socio-demographic data, i.e. first-, second- or third-cycle studies. Variation in the responses by gender as well as by respondents' background and place of residence, i.e. city or rural area, has also been addressed. The data were obtained by means of a survey questionnaire developed in the English language and processed using pivot tables prepared in Microsoft Excel spreadsheet.

Key words: sustainable development, students' attitudes, surveys.
JEL code: Q56.

Introduction

The concept of sustainable development has for almost five decades been a subject of an in-depth analysis by commentators and representatives of scientific circles, becoming a domain of studies, discussions and exchange of opinions. The subject of sustainable development enjoys great popularity, although the popularity of this term has exceeded its significance and practical effectiveness (Boc J. *et al.*, 2004). Over years, new views have appeared on the idea of sustainable development and its role in shaping social attitudes. Many scholars even raise it in their works to the level of a modern paradigm (Borys T., 2011; Poskrobko B., 2013; Matysiak A., Strus M., 2015; Poczta-Wajda A., Sapa A., 2017).

In general terms, the philosophy of sustainable development boils down to combining two concepts: "growth" and "development" into a compatible whole. Based on discussion by Hulla (1992), it can be assumed that "growth" is a quantitative increase in matter (in the economy - increase in goods and services), whereas "development" is a process of quantitative and qualitative transformations of such matter (in the economy - enabling extension of the existing possibilities or taking advantage of new ones). As an attempt to reconcile both these aspects, the concept of sustainable development proposes a qualitatively new form of a conscious, responsible individual and social life where development is adjusted to the environment - social and natural - taking into account ecological limitations and social expectations (Skowronski A., 2006). It encompasses management of natural, economic and human resources, spatial management, institutional solutions, moral sphere, and building of awareness leading to choosing a specific model of life (Piontek B., 2002). In essence, this concept formulates a new, environmentally optimal and socially satisfactory vision of the development of civilisation (Skowronski A., 2006) which however requires the society to

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understand and shape desirable relationships between the environment, economy and society (Dacko M., Plonka A., 2017).

In order to shape social behaviours consistent with the postulate of intergenerational justice, during the 1992 UN Conference "Environment and Development" in Rio de Janeiro it was agreed under Global Plan of Actions Agenda 21 that there was a need for providing education for sustainable development as part of curricula of all subjects at all levels of the education system. "Strategy of Education for Sustainable Development" of the UN European Economic Commission (2008) was developed highlighting the need to incorporate the principles of education for sustainable development into education systems. The importance of this issue was also stressed during the sustainable development agenda summit held at the United Nations' headquarters in New York in 2015. During the meeting, the document Sustainable Development Agenda 2030 was adopted indicating the provision of inclusive and high-quality education for sustainable development to global society as one of the key objectives of sustainable development. It was agreed that the established international arrangements would be reflected in strategic policies and documents of the individual countries (Agenda…, 2015).

In Poland the principle of sustainable development was raised to the constitutional level and by way of the Act Environmental Law of 2001 an obligation was introduced to include the issues of sustainable development in core curricula of general education for all types of schools (Act Environmental Law..., 2001). However, it seems that the provisions of the act are still not reflected in the curricula adopted in education of Polish youth. An expert report on education for sustainable development in Poland eleven years later showed that the definition of sustainable development was difficult to understand for the society, and the guidelines on introducing education for sustainable development in schools, including in particular in universities, were very general and only applied to certain fields of studies (Ekspertyza… 2012). According to Lorek (2013), the present system of higher education is characterised by an approach focused on narrow specialisations and isolation of the different scientific fields. The curricula often show an incorrect tendency to address economic, social and environmental aspects of sustainable development separately (Lorek A., 2013). Cases of implementing a comprehensive educational programme reflecting the principles of sustainable development are still rare, and the issues of the natural environment have for years been overlooked and ignored in teaching and economic research, which makes it difficult to manage the relationships between the economy and the environment (Kielczewski D., Poskrobko T., 2009; Kielczewski D., Poskrobko T., 2010). Against this background, it makes sense to consider the research problem/question posed by the authors of this work: what are the attitudes of European academic youth towards sustainable development and what determines the differences in these attitudes.

Material and the research method

In order to find the answer to the research problems adopted in this work, extensive research was conducted among a group of 1054 respondents, i.e. academic youth from over 30 European countries. The main research tool was an original survey questionnaire directed at students, prepared in the English language and containing sets of questions concerning, among other things, the interpretation of sustainable development, living in accordance with its principles, and individual actions taken by respondents to implement this idea. The questions contained in the questionnaire were both open-ended and close-ended. An overwhelming majority of them was obligatory, meaning that the respondent was not allowed to skip a question by failing to provide an answer to it. For close-ended questions, a set of possible responses was provided, with their number depending on the type (content) of the question. Focusing on the key research aspects concerning academic youth's attitudes towards the idea of sustainable development as addressed in this paper, each respondent was asked, among other things, whether they try to live in accordance with the principles of sustainable development. As a response to the questions, 5 possible options, ordered on a descending scale, were provided: definitely yes, rather yes, neither yes nor no, rather not, definitely not and one answer indicating lack of knowledge or opinion, i.e. I have No opinion. The issues were examined in terms of adopted determinants, i.e. by the group of European countries to which students belonged, level of education, background and place of residence as well as the gender criterion.

The research was conducted from April 2017 to January 2018. During the 9 months, the questionnaire was filled out by 754 respondents from EU countries and 300 people from outside of the EU. As the respondents represented various European countries, they were divided into three key groups, and then their responses were analysed to see if there were any variations between these groups. The group that for the purpose of this research was called "countries outside of the EU" numbered 300 respondents, mainly from Ukraine, Russia, Belarus, Turkey and Serbia. The "EU_{15} countries" group included responses given by 103 representatives of academic youth from 15 countries of the so-called "old" European Union (with mostly students from Belgium, Finland, Germany, Spain and Sweden). The group that for the purpose of this research was called "EU_{28-15} countries" or "new countries of the EU" included 234 students from countries that joined the European Union as part of 2004, 2007 and 2013 accessions (strongly represented especially by students from Lithuania, Latvia, Estonia, Hungary and Slovakia).

Due to the spatial coverage of the research, it was conducted exclusively in an electronic form, and the respondents were provided with a link to the survey questionnaire on Google Drive. Owing to the kindness and help of many lecturers from various academic facilities (both in the country and abroad), the survey questionnaire was spread among a large group of students. Many responses were obtained as a result of posting the questionnaire at the website homepage of a network of universities and other higher education institutions located in the region of the Baltic See, associated in the international network the Baltic University Programme. This organisation is focused on issues connected with sustainable development, both in the educational, scientific and practical aspects (Dacko M. *et al.*, 2018). Given the above, the findings of the research were not only assessed as satisfactory, but they also entitled the authors to make certain generalisations, although the sampling was not strictly random, but governed by the methods of "attaching and capturing on the way" known from the practice of marketing research (Kowal J., 1998).

Research results and discussion

The awareness of and social attitudes towards the idea of sustainable development among European youth may depend not only on EU membership, but also on how long the different countries have been functioning within EU structures. Following successive accessions, which took place in 1973, 1981, 1986, 1995, 2004, 2007 and 2013, 28 out of 46 European countries function in the European Community. The critical year was 2004, when the Community opened up on a wide scale to the economies of Central and Eastern Europe, accepting as many as 10 new states as its members. It can be assumed that the awareness of and attitudes towards sustainable development may not have been shaped and established so well in the societies of the new member states (with completely

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different socio-economic conditions) as in the EU_{15} countries. Already a few decades ago, the countries of the so-called "old Union" noted that the condition of the environment in the Community depended not only on the developments on its territory, but increasingly on actions taken by third countries. For that reason, the growing European Community became over the years an initiator and an increasingly active participant of international conventions, agreements and arrangements concerning environmental protection and sustainable development. It is worth reminding that as early as in 1973 the first long-term Community Environment Action Programme was developed, with other such programmes (second, third and fourth) successively launched in 1976, 1982 and 1987. Their environmental postulates provide a basis for implementation of future actions in all areas of an environmental policy. As part of horizontal strategies and international negotiations on the environment, they have directly referred since the 1990s (fifth, sixth and seventh programme) to the idea of sustainable development, which became the leading issue in shaping socio-economic order. Given the above, it can be assumed that the awareness of and social attitudes towards sustainable development in European countries functioning outside of the European Community may have been shaped differently.

These assumptions were confirmed in the research findings. Living in accordance with the principles of sustainable development was most often declared by academic youth from the EU_{15} countries. In this group, as many as two thirds of the respondents gave a positive answer: "definitely yes" and "rather yes" (Table 1). Compared to the other groups of respondents, the shares of those indifferent (21.4 %) and without an opinion (5.8 %) were the lowest. It is also worth noting that No one in this group assessed their life as being in stark contrast to the principles of sustainable development. Interesting was the distribution of answers provided by representatives of the other two groups. Living in accordance with the principles of sustainable development was relatively more often declared by students from countries outside of the EU than the countries that have joined it since 2004 (Dacko M. *et al.*, 2018). Although the percentage of negative answers ("rather not" and "definitely not") was higher outside of the EU, respondents from the UE_{28-15} countries relatively more often expressed their indifference towards the principles of sustainable development or lack of opinion on that matter.

Table 1

Living in accordance with the principles of sustainable development in the context of EU membership (% of the sum of the line)

No	Specification	Definitely yes	Rather yes	Neither no, nor yes	Rather not	Definitely not	I have No opinion
1.	Countries of the EU_{15}	18.4	47.6	21.4	6.8	0.0	5.8
2.	Countries of the EU_{28-15}	7.4	29.8	31.2	9.1	1.7	20.9
3.	Countries outside of the EU	12.0	32.2	29.7	14.3	2.7	9.0

Source: authors' work

Living in accordance with the principles of sustainable development was also related to the level of education: in all the groups of countries the percentage of positive answers ("definitely yes" and "rather yes") grew as the level of education increased (Table 2). Academic youth representing the countries of the EU_{15} stood out - the percentage of the answers confirming living in accordance with the principles of sustainable development was markedly higher compared to the answers of the youth from the countries of the EU_{28-15} or countries outside of the EU. The effectiveness of the education

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designed to shape conscious attitudes among youth in the countries of the "old Union" was confirmed by the lack of the answer "definitely no" at all levels of education. Only among first-cycle students there was a small group of people who did not have an established opinion on the issue of living in accordance with the principles of sustainable development. The situation in the countries of the EU_{28-15} looked quite different. There, approximately every fifth surveyed student of first- and second-cycle studies declared lack of opinion, and every third - indifference towards sustainable development. Compared to this group, the students from the countries outside of the EU have shown significantly more sensitivity to the postulates of sustainable development.

Table 2

Living in accordance with the principles of sustainable development and level of education (% of the sum of the column)

No	Specification	Countries of the EU_{15}			Countries of the EU_{28-15}			Countries outside of the EU		
		I	II	III	I	II	III	I	II	III
1.	Definitely yes	12.3	26.1	57.1	7.2	6.9	15.8	10.8	18.6	0.0
2.	Rather yes	45.2	60.9	28.6	27.3	33.3	47.4	28.4	42.4	66.7
3.	Neither no, nor yes	27.4	4.3	14.3	32.5	29.9	15.8	30.2	27.1	33.3
4.	Rather not	6.8	8.7	0.0	9.8	7.8	5.3	17.7	3.4	0.0
5.	Definitely not	0.0	0.0	0.0	2.1	0.5	5.3	3.0	1.7	0.0
6.	I have No opinion	8.2	0.0	0.0	21.0	21.6	10.5	9.9	6.8	0.0

I - undergraduate/engineering studies; II - graduate studies; III - doctoral studies
Source: authors' work

Interesting were also the findings showing the attitudes towards sustainable development among academic youth from the European countries depending on their background and place of residence. The question arises whether residents of rural areas are more likely to be more sensitive to the issues of sustainable development due to more contact with the nature compared to urban residents. Or maybe it is rural residents who feel greater need for sustainable development and want to implement it because they perceive threats to the environment and the nuisances of living in urbanised areas? The authors are not familiar with findings of previous research that would allow them to take a clear position on that issue. Having said that it is worth reminding the experiences of the Chicago school - a current in empirical sociology that already the 1920s emphasised typically urban causes of social problems, such as overcrowded housing estates, high buildings and separation of residents from the nature, i.e. green parks, trees, garden squares or open areas (Wecławowicz G., 2003, Tkocz J., 2005). Later research seemed to confirm these observations: in housing estates with a lot of greenery the number of crimes was on average half of that in housing estates with fewer trees and less greenery. Living in a house surrounded by forests, meadows or in another natural environment contributed to improvement in children's perceptual abilities and generally improved their mental health. Thus, a well-preserved environment has not only an impact on a social subsystem. It is also of key importance to the economic subsystem (higher quality of life, better conditions for running an economic activity, increased interest in land and its prices, increased attractiveness in terms of tourism). Therefore, it seems that in rural areas - at least theoretically - sensitivity to the idea of sustainable development may be higher. However, in the research conducted by the authors, neither background (Table 3) nor current place of residence (Table 4) of academic youth had a clear impact on respondents' declarations regarding living in accordance with the principles of sustainable development.

Table 3

Living in accordance with the principles of sustainable development and the respondent's background (% of the sum of the line)

No	Background	Definitely yes	Rather yes	Neither no, nor yes	Rather not	Definitely not	I have No opinion
1.	City	9.9	32.2	29.3	9.9	2.2	16.5
2.	Rural area	9.5	32.4	30.9	11.3	0.9	15.0

Source: authors' work

Table 4

Living in accordance with the principles of sustainable development and the respondent's place of residence (% sum of the line)

No	Place of residence	Definitely yes	Rather yes	Neither no, nor yes	Rather not	Definitely not	I have No opinion
1.	City	10.0	32.0	30.3	10.1	1.8	15.8
2.	Rural area	8.9	33.3	27.7	11.4	2.0	16.8

Source: authors' work

Analysing the survey results showing the attitudes to and opinions on living in accordance with the principles of sustainable development depending on respondents' gender, No significant differences in the answers have been found. Generally, women studying both in EU member states and outside of the EU gave similar responses to men. It can be, however, noted that women slightly more often declared responses confirming behaviour consistent with the idea of sustainable development, and less often those contradicting such behaviour. However, they more often indicated lack of knowledge and lack of opinion in this area (Table 5).

Table 5

Living in accordance with the principles of sustainable development by the criterion of the respondent's gender (%)

No	Respondent's gender	Definitely yes	Rather yes	Neither No nor yes	Rather not	Definitely not	I have No opinion
1.	Female	9.7	33.0	29.5	8.7	1.6	17.6
2.	Male	9.9	31.2	30.3	12.7	2.1	13.9

Source: authors' work

Conclusions

The verbalised concept of sustainable development still presents itself better in theory than in practice. A range of awareness-related, political and economic barriers stop actual efforts to implement this idea. What is needed is first of all good will on the part of intellectuals, politicians, economic strategists and ruling circles at all levels, from international organisations, to governments and economies of the individual countries, to local and regional authorities. There is also a need for continuous intellectual development leading to a better understanding of this concept and development in people of awareness and responsibility for the living environment and further development of civilisation.

Undoubtedly, education plays a very important role in the process of implementing sustainable development. The surveys have shown that the youth receiving university level education in the countries of the "old Union" was markedly more sensitive to the need to live in accordance with the principles of sustainable development.

Encouraging was the fact that as the level of education increased, awareness of sustainable development grew. However, youth's attitudes may be a cause for optimism only in the case of students of doctoral studies, which are undertaken by only a small percentage of young people.

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Bibliography

1. Agenda Zrownowazonego Rozwoju 2030 (Sustainable Development Agenda 2030). (2015). Retrieved: https://www.polskapomoc.gov.pl/Agenda,Zrownowazonego,Rozwoju,2030,2370.html. Access: 18.01.2019.
2. Boc, J., Nowacki, K., Samborska-Boc, E. (2004). *Ochrona srodowiska* (*Environmental protection).* Wydawnictwo Kolonia Limited, Wroclaw, p. 60.
3. Borys, T. (2011). Zrownowazony rozwoj – jak rozpoznac lad zintegrowany (Sustainable Development – How to Recognize Integrated Order), *Problems of sustainable development*. No. 2, vol. 6, pp. 75-81.
4. Dacko, M., Plonka, A. (2017). Idea rozwoju zrownowazonego w opiniach i postawach rolnikow (Idea of sustainable development in the opinions and attitudes of farmers). *Roczniki Naukowe Stowrzyszenia Ekonomistow Rolnictwa i Agrobiznesu* XIX (1), pp. 38-43.
5. Dacko, M., Plonka, A., Prus, p. (2018). Mlodziez akademicka wzgledem idei rozwoju zrownowazonego (Youth Academic and the Idea of Sustainable Development), *Roczniki Naukowe Stowrzyszenia Ekonomistow Rolnictwa i Agrobiznesu*, XX(1), pp. 24-29.
6. *Ekspertyza dotyczaca edukacji dla zrownowazonego rozwoju w Polsce (Expertise on education for sustainable development in Poland)* (2012). Ministerstwo Srodowiska (Ministry of the Environment).
7. Hull, Z. (1992). Filozoficzne podstawy ekorozwoju (The Philosophical conditioning of sustainable development), *Zeszyty Problemowe Postepow Nauk Rolniczych*, 401, pp. 27-40.
8. Kielczewski, D., Poskrobko T. (2009). Dydaktyka ekonomii zrownowazonego rozwoju (Teaching the economy of sustainable development), *Problemy Ekologii*, 13(5), pp. 238-239.
9. Kielczewski, D., Poskrobko T. (2010). Dydaktyka ekonomii zrownowazonego rozwoju (Teaching the economy of sustainable development) (in:) Poskrobko B., *Ekonomia zrownowazonego rozwoju. Zarys problemow badawczych i dydaktyki (The economics of sustainable development. Outline of research and teaching issues).* Wyzsza Szkola Ekonomiczna, Bialystok, pp. 95-100.
10. Kowal, J. 1998. *Metody statystyczne w badaniach sondazowych rynku (Statistical methods in researches of market).* Wydawnictwo PWN, Warszawa.
11. Lorek, A. (2013). Edukacja dla zrownowazonego rozwoju na przykladzie Uniwersytetu Ekonomicznego w Katowicach (Education for Sustainable Development at the University of Economics in Katowice), *Studia Ekonomiczne. Uniwersytet Ekonomiczny w Katowicach,* 131, pp. 23-31.
12. Matysiak, A., Strus, M. (2015). Paradygmat rozwoju zrownowazonego (Paradigma of sustainable development), *Studia Ekonomiczne. Zeszyty Naukowe Uniwersytetu Ekonomicznego w Katowicach*, 213, pp. 11-22.
13. Piontek, B. (2002). *Koncepcja rozwoju zrownowazonego i trwalego Polski (The concept of sustainable and durable Poland development).* Wydawnictwo PWN, Warszawa, p. 51.
14. Poczta-Wajda, A., Sapa, A. (2017). Paradygmat rozwoju zrownowazonego – ujecie krytyczne (The paradigm of sustainable development: a critical approach), *Progress in Economic Sciences*, 4, pp. 131-142.
15. Poskrobko, B. (2013). Paradygmat zrownowazonego rozwoju jako wiodacy kanon w badaniu nowych obszarow ekonomii (The Paradigm of Sustainable Development as the Leading Standard in the Research on New Spheres of Economics), *Ekonomia i Srodowisko*, 3(46), pp. 10-24.
16. Skowronski, A. (2006). Zrownowazony rozwoj perspektywa dalszego postepu cywilizacyjnego (Sustainable development as the perspective of further civilisation development), *Problemy ekorozwoju,* No 2, vol. 1, pp. 47-57.
17. *Strategia Edukacji dla Zrownowazonego Rozwoju (Education Strategy for Sustainable Development)* (2008). United Nations Economic Commission for Europe. Ministry of the Environment, Warszawa.
18. *Ustawa z dnia 27 kwietnia 2001 r. Prawo ochrony srodowiska (Act of 27 April 2001. Environment protection act)* (2001 r.). Retrieved: http://prawo.sejm.gov.pl/isap.nsf/DocDetails.xsp?id=WDU20010620627 Access: 18.01.2019.
19. Wecławowicz, G. (2003). *Geografia spoleczna miast. Zroznicowania spoleczno-przestrzenne (Social geography of cities. Socio-spatial diversity)*. Wydawnictwo PWN, Warszawa, pp. 1-222.
20. Tkocz, J. (2005). *Podstawy geografii spoleczno-ekonomicznej (Basics of socio-economic geography).* Wydawnictwo Uniwersytetu Slaskiego, Katowice, pp. 1-268.

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BUSINESS EDUCATION EXCELLENCE

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Abstract. Universities prepare professionals who will guide and influence organizations in the future, so the issue of qualitative, excellent business education is and will continue to be relevant. How to identify universities that provide qualitative business education is a topical issue for potential students, parents and universities themselves.

Aim of this research was to explore what is understood in the scientific literature by "business education excellence and quality", by which methods they are evaluated and raised and to develop recommendations for practically applicable methods in a university.

It may be concluded that in the studies on the quality and/or excellence of higher education, the definitions of these terms are often not provided or are different and vary widely. The evaluation methods used are also different. Evaluating the quality and/or excellence of higher education is a difficult task and often impossible because it requires a standard to compare. The quality and/or excellence of higher education can be judged by the use of indicators, such as the number of companies established by graduates, profits of start-ups, the number of jobs created, the amount of taxes paid. In order to produce qualitative results, it is important to provide high quality inputs – program, academic staff, students, material resources, and environment. University ratings and quality certificates shall not be used as key tools for assessing the quality/excellence of higher education. Universities are facing new challenges and their success will be greatly influenced by their ability to change, to be fast, creative and cooperative.

Key words: business education excellence, quality.
JEL code: I23.

Introduction

The concept of „excellence" is mentioned in the development strategies of universities, both in the mission and in the vision. Often, the quality of studies is mentioned in different types of meetings, whether in universities or outside, or that the quality of studies is falling, not always using these terms correctly. How to identify universities that provide qualitative business education is a topical issue for potential students, parents and universities themselves. As Dennis (Dennis et al., 2016) notes, quality and university reputation are the two factors that most influence student choice. Demand for qualified graduates will only increase with the global economy expanding into new markets. According with Kolb (Kolb et al., 2017), universities are the main source of management education and provide a link between knowledge creation and knowledge transfer in business and society at large. Universities prepare professionals who will guide and influence organizations in the future, so the issue of qualitative, excellent business education is and will continue to be relevant.

One of the key issues in this study was whether university ratings and quality certificates can be used as main quality assessment tools. Aim of this research was to explore what is understood in the scientific literature by the terms "business education excellence", „business education quality", by which methods they are evaluated and raised and to develop recommendations for practically applicable methods in a university. The tasks of the research were to analyse scientific literature, to select and study the most often used university ratings and quality certificates, to conduct a survey of graduates of Faculty of Economics and Management of Ventspils University of Applied Sciences, and to provide recommendations, including practically applicable methods. Methods applied in this

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research – monographic or descriptive method, comparative analysis, constructive logic, analysis and synthesis, and survey. Information sources are scientific articles, research about the excellence in higher education, internet sources.

Quality and excellence of business education

The term „excellence" is traditionally associated with a difference, with a quality that is unusually good and goes beyond certain standards (Grifoll, 2016). Malmedy (ENQA, 2014) indicates:

- excellence is closely linked to assessment;
- something is always recognized as outstanding, not in itself, but in relation to a system that contains criteria;
- the judgment of excellence depends on the criteria that have been chosen;
- selected criteria develop in time and space, they are not arbitrary;
- thus, the assessment of excellence depends on the person or society providing it;
- evaluation, judgment given may be emotionally distorted due to personal interests, ignorance of certain facts, bias, non-compliance.

Defining higher education excellence is not an easy task. Often, in researches on the quality, excellence of higher education definitions of these concepts are not provided. At the same time, it is possible to find different definitions of quality, excellence in other studies because its universal meaning is linked to the social and cultural, as well as the political and economic environment that is changing in time and space. As noted by Grifoll (Grifoll, 2016), higher education is an activity (service) that is both public and private. Its private aspect is that graduates are looking for better jobs and better wages in a competitive labour market. Its public dimension is determined by the fact that various positive factors are being created that affect the external environment, such as the possibility of obtaining expertise in areas that contribute to the well-being of society as a whole. Hence, excellence in higher education depends on the party involved - individuals / organizations that define this term (students, families, society, employers, others) and its motivation to do so.

According to Grifoll (Grifoll, 2016), excellence in higher education is:

- a combination of certain inputs (program quality, quality of lecturers, quality of students, etc.) and outputs;
- a culture of use of inputs and cyclical progress towards better results;
- list of expected goals.

When discussing the quality of higher education, it is needed to understand clearly what is being discussed – the study program, its implementation (study process) or its results. The quality, excellence of higher education firstly can be evaluated by its outputs, which are evidenced by indicators such as the number of companies established by graduates, profits of established companies, the number of jobs created, the amount of taxes paid. In order to produce qualitative results, it is important to provide a qualitative study program and its implementation, where inputs are important. The responsibility of the university is to ensure the internal quality so that the student can produce external quality – results (Figure 1).

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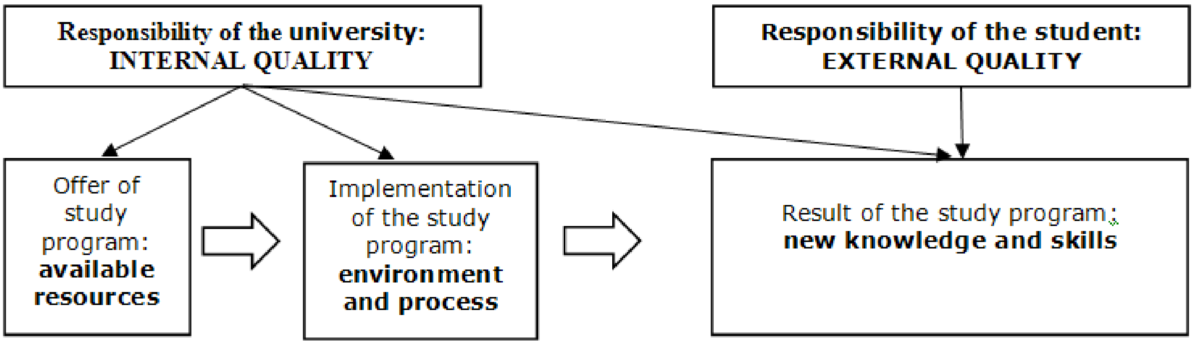

Source: created by authors, based on Bandevica, Ligotne, 2014

Fig. 1. **Components of quality of higher education**

In recent years, the processes of learning and recognition of qualifications have changed in the world, gradually shifting to a competence approach and higher education based on knowledge and experience. The World Economic Forum concludes (Schwab, 2016) that we are on the eve of the Fourth Industrial Revolution, the main challenges of which are how mankind will react in the face of changes in education and labour qualification caused by artificial intelligence. The question is what will be the jobs that artificial intelligence will do in the coming decades. Therefore, innovative and unique ideas are the only source of business excellence and, accordingly, the learning-by-doing approach will enhance the excellence of the business education process.

Evaluation of Quality and excellence of business education

Tavares (ENQA, 2014) mentions that world university ratings are considered key indicators of excellence, reflecting power and political interests, and using the traditional understanding of higher education excellence, emphasizing research rather than teaching and learning. Therefore, one of the key issues in this study was whether university ratings and quality certificates can be used as main quality assessment tools.

University ratings

The world's most well-known university ratings and most often mentioned in the Latvian media are: the Times Higher Education World University Rankings and QS World University Rankings. Thus, these two ratings, and their methodology is described in more detail in this research. Every rating has its own methodology for data selection, compilation and comparison of universities.

<u>The Times Higher Education World University Rankings</u>

The information below is taken from the the World University Rankings website.

The published 2019 rating includes over 1250 universities worldwide. This rank includes the world's best universities by analysing:

- teaching (the learning environment) – 30 % (reputation survey: 15 %, staff-to-student ratio: 4.5 %, doctorate-to-bachelor's ration: 2.25 %, doctorates-awarded-to-academic-staff ratio: 6 %, institutional income: 2.25);
- research (volume, income and reputation) – 30 % (reputation survey: 18 %, research income: 6 %, research productivity: 6 %);
- citations (research influence) – 30 %;
- international outlook (staff, students, research) – 7.5 % (proportion of international students: 2.5 %, proportion of international staff: 2.5 %, international collaboration: 2.5 %);
- industry income (knowledge transfer) – 2.5 %.

Rating data is audited by international company PricewaterhouseCoopers.

It is possible to select universities according to the study fields they offer. Analysing universities offering business and management study programs, the top 10 universities this year are Stanford University (USA), Massachusetts Institute of Technology (USA), Harvard University (USA), Yale University (USA), Imperial College London (UK), University of Chicago (USA), ETH Zurich (Switzerland), John Hopkins University (USA), University of Pennsylvania (USA) and UCL (UK).

Two universities from Latvia have been included in this rating: Riga Technical University (RTU) and the University of Latvia. Both are ranked 801 to 1000 in the rating.

<u>QS World University Rankings</u>

The information below is based on the rating, methodology, aggregated results and data published on the QS World University Rankings website.

This rank includes 1000 of the world's best universities from 85 different countries. The rating is based on the following criteria:

- academic reputation – 40 %;
- reputation of employers – 10 %;
- faculty/student ratio – 20 %;
- citations per faculty – 20 %;
- international faculty ratio – 5 %;
- international student ratio – 5 %.

Also in this rating it is possible to select and analyse universities according to the fields of study programs they offer. The rating includes 1423 universities offering study programs in business and management.

Three universities – Riga Technical University, University of Latvia and Riga Stradins University are included in this rating from Latvia. RTU ranked the highest among Latvian universities – 751st - 800th place. Other two universities are ranked 801 to 1,000.

International ratings can be one of the universities' benchmarking tools, but evaluation of university excellence should not be based on only those ratings, as not all universities are included in the ratings, and Figures can be interpreted differently, so the data does not always reflect the true situation and real university excellence.

Certificates and accreditations

International certification and accreditation is one of the ways to evaluate the quality of education. The three best-known certificates and accreditations that provide a „seal” of excellence for universities in the world education system are AACSB, EQUIS and AMBA.

<u>AACSB</u>

The Association to Advance Collegiate Schools of Business – AACSB – connects educators, students, and business to achieve a common goal: to create the next generation of great leaders. Since 1916, AACSB provides quality assurance, business education intelligence, and professional development services to over 1,600 member organizations and more than 800 accredited universities worldwide.

<u>EQUIS</u>

EQUIS is institutional accreditation system for business and management universities. It is acknowledged worldwide by potential students, faculty, employers, corporate clients and the media, often being a pre-requisite for entry to rankings. EQUIS accreditation ensures a rigorous quality control, benchmarking university against international standards in terms of governance,

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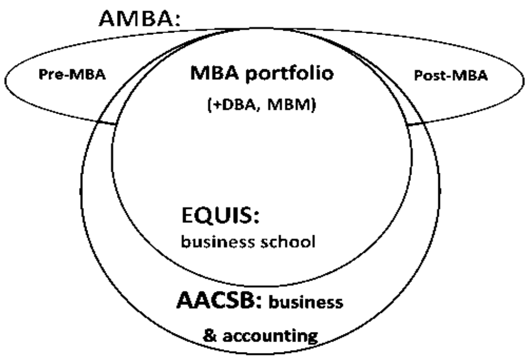
programmes, students, faculty, research, internationalisation, ethics, responsibility and sustainability, as well as corporate engagement.

AMBA

AMBA – the Association of MBAs is the impartial authority on postgraduate management education and is committed to raising its profile and quality standards internationally for the benefit of business universities, students and alumni and employers. AMBA established that vision in 1967 and it is as relevant today as it was over 50 years ago. Accreditation service of AMBA is the global standard for all MBA, DBA and Master's degrees, currently accrediting programmes from the top 2 % of business universities in over 70 countries.

In business education, the triple certification: AACCSB, EQUIS, AMBA, serves as a "gold standard" (Figure 2) – if the organization has all three certificates, then such a university has internationally recognizable advantages over other universities.



Source: https://www.mbaworld.com/about-us

Fig. 2. **Relationships between business education certification organizations**

Alumni database

In order to evaluate the quality of business education provided by Ventspils University of Applied Sciences, the database of graduates of the Faculty of Economics and Management was developed and the number of graduates working in the sector and the number of graduates having established their company was determined.

Since 2001, 1 404 students have graduated from faculty of Economics and Management of Ventspils University of Applied Sciences (Table 1). 991 graduate was interviewed via email, online social network www.facebook.com, and phone calls, asking for a work place, occupation, telephone number and e-mail address, and whether the graduate has established his or her business. 391 graduate responded, representing 28 % of all graduates. 413 graduates were not able to address because there was No telephone number or e-mail, and the person could not be found or identified on the online social networks www.facebook.com and www.linkedin.com.

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Table 1

Results of graduates' survey of the Faculty of Economics and Management of Ventspils University of Applied Sciences

Year	Study Program	Number of graduates	Graduates without contact information	Graduates who have not provided information	Graduates who provided information	Graduates who have founded the company	Graduates working in the industry*
2001-2018	Bachelor	1 064	334	463	267	59	97
2003-2018	Master	340	79	137	124	30	55
Total		1 404	413	600	391	89	152

** Manages a company or department, is a director or specialty manager*
Source: author's calculations based on survey

Summarizing the results of both the bachelor and master program graduates' database, it can be concluded that graduates of Ventspils University of Applied Sciences are competitive in the labour market - on average 23 % of graduates (who provided information) have established their own companies and on average 39 % of graduates (who provided information) have taken managerial positions, are heads of company or department. It has been observed that more companies have been founded by graduates who have graduated from Ventspils University of Applied Sciences earlier, which is likely to be related to accumulated work experience. In contrast, the number of graduates working in the industry is quite similar in all years, which means that younger graduates have also been able to succeed in leading positions.

Increasing the Quality and excellence of business education

Kaplan (Kaplan, 2018) recommends using a resource-based view to better identify the value-creating aspects of business education and to better understand the dimensions that universities will have to adapt. According to the resource-based approach, a sustainable competitive advantage is determined by the organisation's strategic resources, which must be valuable (enabling strategies to improve efficiency), rare (not easily accessible to competitors), non-deployable (non-interchangeable with others) and completely immeasurable. In the case of business universities, Kaplan (Kaplan, 2018) mentions three resource groups – students and alumni, equipment and services, lecturers and researchers, and four major challenges facing business universities – the transition from the ivory tower to the Twittersphere, the transition from auditorium to anti-cafe, a move from stakeholders to shareholders, a transition from knowledge to know-how (Table 2).

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Table 2

Resources and challenges of universities

Challenges		**Resources**		
		Students and alumni	**Equipment and services**	**Lecturers and researchers**
Challenges (tasks)	**From tower to Twittersphere**	Selection takes ability to serve as brand ambassadors and value in rankings and accreditations into account	Importance of branding and communication, architecture, and having the right image	Research topics chosen, in part, for their PR potential; higher importance of star teachers and researchers
	From auditorium to anti-cafe	Evolution from passive consumers of knowledge to active co-producers of course content	Need for flexible layouts to enable group work and interactivity; importance of online courses	Knowledge transmission moved to online sphere; classroom time used for highly interactive teaching
	From stakeholders to shareholders	Shift from students to customers and future donors, resulting in higher customer/student centricity	Shift from bureaucracy and administration to becoming a concierge-like service provider	Faculty becomes one of several stakeholder groups to be managed, creating need for compromise
	From knowledge to know-how	Selection based on soft skills in addition to intellectual achievements (grades)	Importance of expert career service that provides professional advice and job off ers to students based on skill s and personality traits	Evolution of faculty from knowledge professionals to coaches and facilitators in a transversal and interdisciplinary setting

Source: Kaplan, 2018

Conclusions

1) In the studies on the quality and / or excellence of higher education, the definitions of these terms are often not provided or are different and vary widely, due to factors such as time, space and the interested party. The valuation methods used are also different.
2) Evaluating the quality and / or excellence of higher education is a difficult task and often impossible because it requires a standard to compare.
3) The quality and / or excellence of higher education can be judged by the use of indicators, such as the number of companies established by graduates, profits of start-ups, the number of jobs created, the amount of taxes paid. In order to produce qualitative results, it is important to provide high quality inputs - program, academic staff, students, material resources, and environment.
4) University ratings and quality certificates shall not be used as key tools for assessing the quality and / or excellence of higher education.
5) Universities are facing new challenges and their success will be greatly influenced by their ability to change, to be faster and more creative in decision-making and in action, to be able to work with key stakeholders and to create a more dynamic, involved, motivated academic and general staff, students, graduates, a community of different partners, where each of the parties involved will be ready to act as brand ambassadors and promote quality.

Recommendations

1) To make changes to the governance structure of university and promote an entrepreneurial mindset that enables faster decision-making and action.
2) To develop and use an effective, flexible and change-oriented quality assessment system.

3) To create a strategy and action plan for relationship management with graduates.
4) To establish a career guidance centre providing support to students on the one hand and providing companies with access to the best students and academic staff (on a pay-per-view basis) on the other.
5) To prepare regularly a scientifically popular article for the media (about once a quarter).
6) To evaluate the possibility of the university to participate in one of the ratings, fulfil the necessary conditions and provide the necessary data to compare the results with other similar universities, as well as to evaluate the areas and criteria for improvement.
7) Regularly (annually) supplement and update the database of graduates.
8) To create a series of guest lectures, where graduates are invited to encourage and cheer students, to tell students their career success stories.

Bibliography

1. Bandevica L., Ligotne A. Higher Education Study Programme Quality Assessment // Regional Formation and Development Studies. – 2014. – No. 2. – pp. 6-18.
2. Dennis C. et al. The Role of Brand Attachment Strength in Higher Education // Journal of Business Research. – 2016. – Vol. 69. – pp. 3049-3057.
3. ENQA. The Concept of Excellence in Higher Education. – Brussels, 2014. pp. 1-45.
4. Grifoll J. External Quality Assurance Agencies and Excellence in Higher Education // Educacion Medica. – 2016. – Vol. 17, No. 3. – pp. 94-96.
5. Kaplan A. A School is „A Building that has Four Walls … with Tomorrow Inside": Toward the Reinvention of the Business School // Business Horizons. – 2018. – pp. 599-608.
6. Kolb M. et al. Implementing Sustainability as the New Normal: Responsible Management Education – From a Private Business School's Perspective // The International Journal of Management Education. – 2017. – Vol. 15. – pp. 280-292.
7. The World University Rankings. World University Ranking 2019. Available: https://www.timeshighereducation.com/world-university-rankings/2019/world-ranking#!/page/0/length/25/sort_by/rank/sort_order/asc/cols/stats.
8. QS Quacquarelli Symonds Limited. QS World University Rankings 2019. Available: https://www.topuniversities.com/university-rankings/world-university-rankings/2019.
9. AACSB Home Page. Available: https://www.aacsb.edu/. Retrieved: 14.11.2018.
10. EFMD Quality Improvement System. EFMD Global Home Page. Available: https://efmdglobal.org/accreditations/business-schools/equis/. Retrieved: 14.11.2018.
11. Association of AMBAs Home Page. Available: https://www.mbaworld.com/. Retrieved: 14.11.2018.

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ECONOMIC FACTORS IN THE CHOICE OF STUDIES AND WORK

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Abstract. The research analysed changes in earnings in the regions of Latvia in the period 2010—2017 and the effect of the factor „earnings" on the choice of a university study programme by students and on the demand for jobs by the students in the labour market. The research conducted a survey of students (n=391) from seven Bachelor programmes pertaining to two fields – services and social sciences as well as business and law. A nonparametric Mann—Whitney U test revealed that in the choice of a programme for a profession, the factor „earnings" was statistically more significant than the factors „opportunity to do creative work", „skill stability in the future" and „opportunity to work flexible hours", while in the demand for a job it was more significant than the factor „enterprise reputation among the public".

Key words: study programme and job choice factors, earnings, higher education, corporate social responsibility, Latvia.
JEL code: J30, I25, Z31, O15.

Introduction

One of the aspects of corporate social responsibility (CSR) relates to the improvement of the life quality of the society, which is affected also by individuals' responsible attitude to education, learning a profession and choosing a job. Informed and motivated actions of individuals in relation to their careers help the society to be aware of the strengths concerning human resources and to provide the supply of specialists for the national economy.

Research aim: to analyse the role of economic factors in the choice of study programmes and the demand for jobs in Latvia. **Research tasks:** 1) to examine theoretical findings on factors for the choice of studies and work; 2) to conduct a survey and analyse the effects of economic factors on the choice of a study programme by students and on the demand for jobs by the students. **Research methods:** the research employed qualitative methods for a theoretical literature review, a survey of students (n=391) at universities established by legal entities with regard to two fields – services and social sciences as well as business and law – and statistical analysis. **Research sources and materials:** information provided by the Central Statistical Bureau of Latvia, documents, statistics and research studies done in Latvia and by international organizations. **Research limitations.** The research defines the concept of study programme choice factors as the motivational factors of individuals in their choice of a certain study programme in higher education (ISCED levels 4—6); the concept of job demand factors is defined as the motivational factors of individuals to offer their labour services to enterprises or institutions; the concept of economic factors is defined as earnings in the labour market and the demand for labour in the labour market for a particular profession. The research performed an analysis of economic and other factors – their importance – and a comparative analysis of the economic factors.

Research results and discussion

The educational environment is dynamic, which is also determined by the fact that the population of Latvia is expected to considerably decline. Compared with 2015, the population is expected to decline by 3.7 % in 2020 and 12.2 % by 2030 (Eurostat, 2019). The change in the population, which is based on specific assumptions regarding the birth rate, the death rate and migration for the country, requires considering rational use of human resources in the economy, while universities

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have to focus on enhancing their competitiveness in order to attract future students. This consideration is important also because the total population of the EU—28 is expected to increase, compared with 2015, by 1.2 % in 2020 and 3.0 % in 2030. Because of a smaller number of future students, it will be difficult for universities in Latvia to compete with universities in other countries in terms of education quality, as university resources (academic personnel, financial resources etc.) are associated with the number of students. One of the ways to contribute to the engagement of working individuals in higher education is to build up their understanding of whether the competences they plan to acquire meet labour market needs and whether their competences will contribute to the achievement of their individual goals, which represents the corporate social responsibility of the universities. Even though there is an opinion that a profession has to be chosen based on one's own calling and enjoyment of the profession (Dietz 2010), nowadays it is difficult to believe that in the era of economic uncertainty individuals could choose this philosophy as the leading motive and would not base their decisions on economic considerations for the choice of a field of studies and a programme.

The authors believe that individuals act rationally to achieve a higher level of prosperity and implement their ideas, and economic factors are involved in it. Any choice of studies is determined by an individual's future goals, abilities, values and the particular circumstances. Individuals' decision to begin studies is important at the micro—level, and this decision together with other choices made cause socio—economic consequences, thereby affecting the availability of specialists in the labour market.

A study of students' choices of studies done at six universities in Scotland, for two Bachelor programmes (accounting and engineering), revealed that the decisions were determined by a complex of factors (Briggs S., 2006) – the place of residence, the academic reputation of the university and the distance between the university and the residence place, which might be regarded as an indirect economic factor because the longer the distance is, the higher the transport cost is. Other studies found that the choice of a study programme was mainly affected by the student's personal traits and interest in the profession (Worthington, A., Higgs, H., 2004). A formal assessment of the individual's knowledge in key courses, understanding of economic development in the country and knowledge of the relevant industry are important as well. Often, the choice of a profession and a job is encouraged by the relative cost of studies and the economic benefits the individual gets in the life by working in the profession. This means that the expected cash flow in the future, which includes at least earnings and other benefits, encourage individuals to make investments in their education. However, the decision is affected by the study load – the higher the study load to learn the profession, the smaller the number of individuals wishing to learn the profession (Worthington, A., Higgs, H., 2004).

The rational approach is not the only aspect regarding acquiring education, many individuals are guided by their emotions and intuition; accordingly, both individual and interpersonal relation factors are important (Edmonds J., 2012). Studies have proved that individuals tend to be conservative in relation to making investments in building up their competences under difficult socio—economic conditions.

A new aspect in higher education in Latvia is the internationalisation of the environment for university studies. Universities seek to create a favourable environment for foreign students (Roga R., Lapiņa I., Muurseppc P., 2015); therefore, research should be focused on how the new situation affects the wish of residents to choose the programmes in which foreigners are enrolled. In assessing

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the environment for studies, five components are important to potential students: logistics, teaching and learning, assistance for studies, advice and marketing, yet the level of importance of these factors, depending on the form of studies, varies for the students (Bailey, M., Ifenthaler, D., Kretzschmar, M., 2014). The fact that many individuals begin university studies not right after graduating from secondary school but after having some work experience is considered to be important; for this reason, this category of individuals needs a supportive and adapted environment for studies.

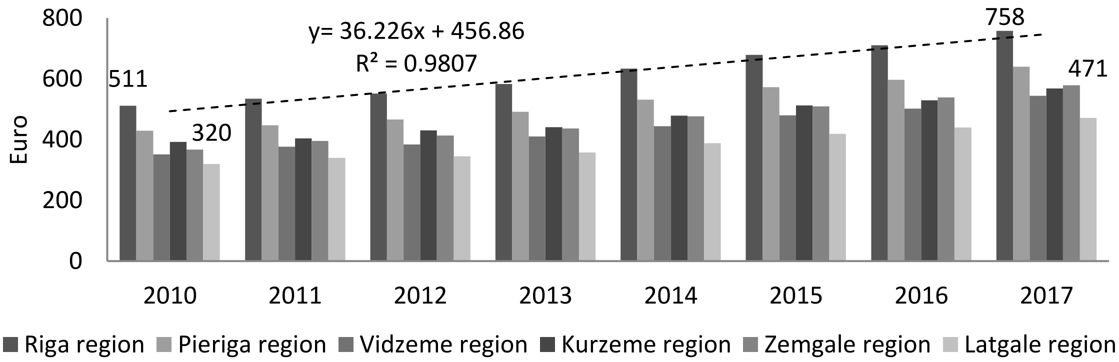
A decision on the choice of a career might be affected also by parents and teachers, yet prospects for employment and earnings in the profession are referred to as one of the dominant factors (Fizer, D. 2013). A survey of undergraduate students (N = 226) studying engineering and business conducted at five universities showed that the choice of the programmes was affected by: 1) higher education prestige among the public and the reputation of the university; 2) economic factors such as employment opportunities and career prospects. This means that the excellence and the price of the environment for studies, which has to be paid for the use of it, is balanced with future opportunities in the labour market.

In view of the role of earnings, which was identified in the examination of theoretical findings, in the rational choices made by individuals for their future, the research analysed statistical data on changes in earnings in the regions of Latvia and Riga region in particular. Average net earnings rose in all the regions of Latvia in the period 2010—2017, while the highest earnings were reported in Riga region (Fig. 1). In 2017, the disparity in average net earnings between the region with the lowest earnings – Latgale (EUR 471) – and Riga region reached EUR 297, which was 50.3 % higher than in 2010. The changes in earnings in Riga region in the period 2010—2017 demonstrated a linear trend (R^2=0.9807), (1):

$$y=36.226x+456.86 \tag{1}$$

where:

x - period (x=t+n), R – determination coefficient.



Source: authors' calculations based on CSB, 2019c

Fig. 1. **Average net earnings in the regions of Latvia in the period 2010—2017**

However, despite the positive trend in average earnings observed in Latvia in recent years, in 2017 the earnings were lower in Latvia than Estonia: average gross earnings in Latvia reached EUR 926 (7.8 % increase compared with 2016) (CSB, 2019c), while in Estonia – EUR 1221 (Statistics Estonia, 2019). In 2017, 11.3 % of the total population of Latvia was very poor, which was 6.0 percentage points higher than the average in the EU—28 (CSB, 2019a).

There were significant disparities in average monthly earnings across industries in Latvia, as the average gross earnings paid to those engaged in financial and insurance activities were the highest

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(EUR 1921), whereas those engaged in accommodation and food service activities had the lowest earnings (EUR 634), thereby making a disparity range of EUR 1287 for the average gross earnings.

The authors believe that this disparity could be a reason why economic returns from education are important to potential students and employees.

In the labour market of Latvia, according to earlier research studies, the demand for and supply of labour are not aligned quantitatively and qualitatively (Sannikova, A., Grizane, T.,2018; LDDK, 2018), which results in vacant jobs and contributes to a surplus of specialists with higher education. The working population declines in the following age groups: 15—24, 25—39 and 40—64 (Sannikova A., Grizane T., Dobele A., 2017). The human resources available in the labour market decrease because of the negative demographic situation.

An empirical research study was done by the authors in 2018. The authors believe that the research could help universities and employers to better understand the behavioural motives of the working population for acquiring new skills and offering their skills in the labour market.

To achieve the research aim, the authors selected a stratified sample of respondents. The survey was done in Riga region at three universities established by legal entities and at a college that delivered programmes in two fields: services and social sciences as well as business and law. The survey involved first—year students in the spring semester of the academic year 2017/18 and the autumn semester of the academic year 2018/19, encompassing seven Bachelor programmes (Accounting and Audit, Management, Creative Marketing and Sales Management, Business Management, Tourism and Hospitality Enterprise Management, International Communication Management, Journalism and Media, Entertainment and Recreational Industry Management). The sample was representative at a confidence level of 95 % and a significance level of ±5 %.

The respondents were requested to rate factors for the choice of a programme and the demand for jobs on a Likert scale (very important – 5, not important–1). The factors were rated by two student groups (n_1=15; n_1=12) in the spring semester 2017/18 who rated how important the factors were and then compared the factors with each other.

Totally, 412 questionnaires were distributed, and 391 were valid for data processing (94.9 % of the total). Of the total respondents who gave replies, 224 were women (57.3 %) and 167 were men (42.7 %); 83.6 % were full—time employees, 8.2 % were part—time employees and 8.2 % were not employed (mostly those studying full—time). Since the survey was conducted in Riga region, the respondents mainly represented this region (59.1 %). The second largest group was from Pieriga region (23.8 %), while the percentage of respondents from the regions of Vidzeme and Kurzeme was the same (4.1 %). The smallest group represented Latgale region with 0.5 %.

The factors for the choice of a study programme included in the questionnaire were divided into two categories: 1) economic factors (earnings; demand for specialists in the labour market); 2) other factors that could be subdivided into several subcategories: skill stability in the future, work arrangement— and working environment—related factors and employer corporative social responsibility for the quality of human resources. The present research does not analyse data on subcategory respondent ratings.

The research divided the respondent replies regarding the factors affecting the choice of a study programme and the demand for jobs (on the part of employees) into two categories: 1) important, which comprised the respondents' ratings that, on a Likert scale, corresponded to „very important" (5) and „important" (4); unimportant, which**.** corresponding to „moderately important" (3), slightly important" (2) and „not important" (1). The results showed that the economic factors – earnings and

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demand for specialists in the labour market – were important ones in the choice of a study programme; besides, the factor „earnings" was referred to in 88 % instances (Table 1). As regards the demand for jobs by potential employees, earnings were as important as enterprise reputation (both factors were referred to in 91.7 % instances). An important factor was „skill stability in the future", as this factor was referred to 72 % in instances. One can conclude that the choice of a study programme was affected by the individual's knowledge of the labour market and understanding of change in the demand for skills in the labour market; another important aspect was the corporate social responsibility of universities concerning building up the skills in students that are in demand in the labour market at least in a medium—term and that could be transformed into new competences.

Table 1

Percentage breakdown of respondent replies regarding factor importance

No	**Factor**	**Designa-tion**	**Degree of importance**			
			Important*		**Unimportant****	
			Total	**% of total ratings**	**Total**	**% of total ratings**
Importance of factors in the choice of a study programme						
1.	Earnings	A	22	**88.0**	3	12.0
2.	Opportunity to do creative work	B	15	60.0	10	40.0
3.	Demand for specialists in the labour market	C	19	**76.0**	6	24.0
4.	Employer support for studies	D	14	56.0	11	44.0
5.	Skill stability in the future	E	18	**72.0**	7	28.0
6.	Opportunity to work remotely	F	6	24.0	19	76.0
7.	Opportunity to work in a foreign company	G	6	24.0	19	76.0
8.	Opportunity to work flexible hours	H	15	62.5	9	37.5
9.	IT application opportunities	I	6	25.0	18	75.0
Importance of factors in the demand for jobs						
10.	Earnings	J	22	**91.7**	2	8.3
11.	Enterprise reputation among the public	K	22	**91.7**	2	8.3
12.	Observance of ethics at the enterprise	L	20	83.3	4	16.7
13.	Working environment standards at the enterprise	N	20	83.3	4	16.7
14.	Engagement of the enterprise in environmental protection	M	13	54.2	11	45.8
15.	IT solutions at the enterprise	O	12	50.0	12	50.0
16.	Occupational safety at the enterprise	P	16	66.7	8	33.3

Notes: important- „very important" (rated at 5), „important" (rated at 4); unimportant **-"moderately important" (rated at 3), „slightly important" (rated at 2), „not important" (rated at 1)*
Source: authors' calculations

To identify whether the respondents' ratings of the factor „earnings" (most important one) in relation to the choice of a programme and the demand for jobs were statistically significant, the research did a Mann-Whitney U test by employing the tools of SPSS 21. The test results are summarised in Table 2.

According to the results, the hypothesis H_0 (H_0: the factor „earnings" and another factor are rated equally) has to be rejected in the first, fourth and eight cases (Table 2). This means that at a confidence level of 95 %, the role of the factor „earnings" (A) in the choice a study programme was

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greater than those of the factor „opportunity to do creative work" (B; p=0,314 >0.05), the factor „skill stability in the future" (E; p=0,700 >0.05) and the factor „opportunity to work flexible hours" (H; p=0,138 >0.05). Even though the factor „earnings" (A) for the choice of a study programme was rated higher than in other instances (e.g. the mean rank of the factor „earnings" (A) was 30.66, while the mean rank of the factor „demand for specialists in the labour market" was 20.34), it was of a casual nature.

Table 2

Mann-Whitney test results for a comparison of the factor „earnings" with the other factors

No	Group	N	Mean Rank	Mann-Whitney U	Z	Asymp. Sig. (2—tailed)
Comparison of factors affecting the choice of study programmes						
1.	A B	25 25	27.42 23.58	264.500	-1.007	**0.314**
2.	A C	25 25	30.66 20.34	183.500	-2.690	0.007
3.	A D	25 25	29.86 21.14	203.500	-2.229	0.026
4.	A E	25 25	26.24 24.76	294.000	-0.385	**0.700**
5.	A G	25 25	34.06 16.94	98.500	-4.274	0.000
6.	A H	25 24	27.80 22.08	230.000	-1.485	**0.138**
7.	A I	25 24	33.48 16.17	88.000	-4.380	0.000
Comparison of factors affecting the demand for jobs						
8.	J K	24 24	27.56 21.44	214.500	-1.728	**0.084**
9.	J L	24 24	29.69 19.31	163.500	-2.840	0.005
10.	J N	24 24	29.42 19.58	170.000	-2.685	0.007
11.	J M	24 24	31.35 17.65	123.500	-3.639	0.000
12.	J O	24 24	31.54 17.46	119.000	-3.730	0.000
13.	J P	24 24	29.63 19.38	165.000	2.774	0.006

Note: factors included in a category are showed in Table 2
Source: authors' calculations

The respondents' replies revealed that at a confidence level of 95 %, the factor „earnings" in relation of the demand for jobs (J) was more important than the factor „enterprise reputation among the public" (mean rank(J)=27.56; mean rank(K)=23.58; p=0.314>0.05). In other cases, the higher ratings of the factor „earnings" (J) were of a casual nature.

Conclusions, proposals, recommendations

- In the scientific arena, the factors affecting the choice of a study programme are extensively researched, stressing the quality of the environment for studies, the prestige of universities, the individual's personal traits, opportunities for employment, returns from education as well as other factors.
- The present research revealed that quantitatively, the factor „earnings" was rated higher than the factor „demand for specialists in the labour market". The nonparametric Mann-Whitney U test confirmed that in the choice of a study programme, the factor „earnings" in the profession was

statistically more significant than the factors „opportunity to do creative work" and „skill stability in the future", while in the demand for a job it was more significant than the factor „enterprise reputation among the public". The research has to be continued to identify whether there are regional differences in rating the factor „earnings", as the earnings are different across the regions of Latvia. The responsibility of universities for building up skills in students should be continued to be researched as one of the aspects of corporate social responsibility in the context of changes occurring in the labour market.

Bibliography

1. Bailey, M., Ifenthaler, D., Kretzschmar, M., (2014). Factors Influencing Tertiary Students' Choice of Study Mode. Retrieved: https://www.researchgate.net/publication/288454306_Factors_influencing_students'_choice_of_study_mode_An_australian_case_study
2. Briggs, S. (2006). An Exploratory Study of the Factors Influencing Undergraduate Student Choice: the Case of Higher Education in Scotland. Studies in Higher Education, 31 (6), 705–722. Retrieved: https://www.tandfonline.com/doi/abs/10.1080/03075070601004333
3. Edmonds, J. (2012). An Exploratory Study of the Factors Influencing Undergraduate Student Choice: the Case of Higher Education in Scotland. Rowan University, May 1, 2012. Retrieved: https://rdw.rowan.edu/cgi/viewcontent.cgi?article=1146&context=etd
4. Eurostat (2018). Population Projections. Retrieved: https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=tps00002&plugin=1
5. Calkins, L.N., Andy Welki, A. (2006). Factors that Influence Choice of Major: Why Some Students Never Consider Economics. Article in International Journal of Social Economics 33 (August):547-564 · August 2006 with 868 Reads. DOI: 10.1108/03068290610678707 Source: RePEc. Retrieved: https://www.researchgate.net/publication/23948988_Factors_that_influence_choice_of_major_Why_some_students_never_consider_Economics
6. Fizer, D. (2013). Factors Affecting Career Choices of College Students Enrolled in Agriculture. A Research Paper Presented for the Master of Science in Agriculture and Natural Resources Degree the University of Tennessee, Martin. December 2013. Retrieved: https://www.utm.edu/departments/msanr/_pdfs/Fizer_Research_Project_Final.pdf
7. LDDK (2018). LDDK: Latvia Needs to Solve the Problem of Availability of a Qualified Workforce (in Latvian). LETA. Retrieved: https://www.delfi.lv/bizness/biznesa_vide/lddk-latvija-jarod-risinajumus-kvalificeta-darbaspeka-pieejamibas-nodrosinasanai.d?id=50393887
8. Central Statistical Bureau of Latvia. (2019a). Poverty Risk and Social Exclusion in Latvia. EU-SILC 2017 Survey Results (in Latvian). Retrieved: https://www.csb.gov.lv/lv/statistika/statistikas-temas/socialie-procesi/nabadziba/meklet-tema/365-nabadzibas-risks-un-sociala-atstumtiba-latvija
9. Central Statistical Bureau of Latvia. (2019b). Social Processes. DSDSG010. Average Monthly Wages and Salaries (in euro; as per cent of previous year).Retrieved: http://data1.csb.gov.lv/pxweb/lv/sociala/sociala__dsamaksa__ikgad/DSG010.px/table/tableViewLayout1/?rxid=44712b66-ad50-4aa6-a1c7-d7c0f3dbb517
10. Central Statistical Bureau of Latvia. (2019c). Social Processes. DSG060. Average Monthly Gross Wages and Salaries in Statistical Regions by Kind of Activity (in euro). Retrieved: http://data1.csb.gov.lv/pxweb/lv/sociala/sociala__dsamaksa__ikgad/DSG060.px/table/tableViewLayout1/?rxid=44712b66-ad50-4aa6-a1c7-d7c0f3dbb517
11. Roga, R., Lapiņa, I., Muurseppc, p. (2015). Internationalization of Higher Education: Analysis of Factors Influencing Foreign Students' Choice of Higher Education Institution. Retrieved: https://www.sciencedirect.com/science/article/pii/S1877042815058619
12. Sannikova, A., Grizane, T., Dobele, A. (2017). Demand for and Supply of Higher Education in Latvia. In: Economic Science for Rural Development 2017, Latvia, Jelgava, 27.04.2017-28.04.2017. Jelgava: LLU, pp. 204-212. ISBN 978-9984-48-261-3. ISSN 1691-3078. ISSN 2255-9930.
13. Sannikova, A., Grizane, T. (2018). Labour Supply in Latvia and Its Impacting Factors. No: Proceedings of the 2018 International Conference „Economic Science for Rural Development": The 2018 International Conference „Economic Science for Rural Development", Latvia, Jelgava, 09.05.2018-11.05.2018. Jelgava: LLU, pp. 237-243; Retrieved: http://www.esaf.llu.lv/sites/esaf/files/files/lapas/Krajums_Nr_48_01.05.2018.pdf. Retrieved: DOI 10.22616/ESRD.2018.090.
14. Statistics Estonia (2019). Average Monthly Gross Wages (Salaries). Retrieved: https://www.stat.ee/stat-average-monthly-gross-wages-salaries
15. Worthington, A., Higgs, H. (2004). Factors Explaining the Choice of an Economics Major: The Role of Student Characteristics, Personality and Perceptions of the Profession. In: International Journal of Social Economics. Retrieved: https://www.emeraldinsight.com/doi/abs/10.1108/03068290410529416

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FARMERS' PERCEPTIONS TOWARDS SELECTED ENVIRONMENTAL VALUES: A REGIONAL STUDY FROM POLAND

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Abstract. Agricultural intensification has a negative impact on environment resulting in, among others, decrease in biodiversity, soil erosion, deforestation and forest degradation, increase of greenhouse gas emissions. In order to keep the balance between intensification and extensification of food production, in the frame of Agricultural Policy (CAP), the Agri-environmental schemes (AES) were introduced. Since 1992 the importance of environmental aspect has grown, which resulted in reforms of AES and a significant increase in expenses for these purposes. However, many studies present the negative environmental impact of agricultural practices as an ongoing problem. It is due to not efficiently implemented AES by farmers. The better knowledge of environmental perceptions by farmers can be a key to the further policy development. We investigate the view of crop fields and mixed farmers towards environmental awareness in Poland, in the FADN region of Mazowsze and Podlasie. In 2017, we conducted a survey on 189 farms, of which 93 participated in AES since 2010. Our results indicate that all surveyed farmers were characterized by high environmental awareness. There were No major differences between AES and non-AES respondents in the perception of environmental threats. The obtained results do not confirm colloquially adopted opinion that farmers participating in AES are more aware of environmental pressure due to the fact that they follow AES regulations. Field corps and mixed farmers from AES and non-AES groups emphasized that there is a need to raise ecological awareness in order to improve the state of environment.

Key words: agri-environmental schemes, environment, field crop farms, mixed farms.
JEL code: Q18.

Introduction

Intensification was one of the factors influencing modernization of agriculture, however, it had the side-effect of growing influence on the environment. Therefore, to resolve this pressure, since 1992 the Agri-environment schemes (AES) have been implemented in all European Union (EU) Member States. AES (now agri-environmental-climate-schemes) are one of the main tools used by the EU to achieve environmental sustainability (EC, 2017). Farmers who voluntary participate in AES receive financial support for adoption of environmentally-friendly management practices. However, a number of studies point out the implementation of agri-environmental measures (AEM) are not always as efficient as planned and expected (Hammes et al., 2016). As farmers play a major role in AES, the better knowledge about their perception towards environmental values can play crucial role in the process of decision-making. This approach is based on the assumption that farmers constitute a very heterogeneous community, think differently and have diverse attitudes, therefore, need to be addressed accordingly. The research presented in this paper makes a contribution to the existing literature on the development of AES schemes.

The aim of the present study was to assess how different farmers perceive environmental values.

The analysis was based on questionnaire survey from a sample of Polish farms from the Region of Mazowsze and Podlasie. The region includes the following voivodships: mazowieckie, podlaskie, lubelskie and lodzkie. This area has been chosen for analysis because the utilized agricultural area (UAA) of the region represents 37.2 % of the country's UAA (CSO, 2017). In the period 2010-2015, the share of farmers who applied for ASE payments amounted to 35 % of all applicants, and the requested amount represented 25 % of the national quota (ARMIR, 2015). To achieve a representative picture of the main production systems of the region, the selection of the farms was

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based on the Farm Data Network (FADN) data for the period of 2010-2015. The research covered only those farms that were in the FADN system throughout the whole period taken into account. The analysis was performed for two groups of farms. First included farms participating in AES and second – not committed to AES (non AES). In each group the two types of farms were selected, based on EU standard classification of type of farming (TF 8) (EC, 2008). The criterion for classification of the agricultural holdings is determined by the relative contribution of the standard output of different characteristics of the holding to the total standard output. Based on these, the analyses were performed for field crops (TF1) and mixed (TF 8) farms. The sample of holdings from FADN database which participated in AES consisted of 147 farms including 75 mixed and 72 field crops. The same number of non AES holdings located as close as possible to AES farms were selected. In total, 294 farms were chosen to participate in a survey in the region of Mazowsze and Podlasie. The questionnaire was designed by authors, based on literature review. Next, it was presented and discussed with farmers and agricultural advisors, then piloted on a small number of selected farmers. Since the holdings were selected from FADN database, socio-demographic variable were not included in the questionnaire. This caused that the questionnaire was shorter and reduced the time required from respondents. The survey included four main sections. The first four sections contained questions related to perceptions on environmental issues. The respondents were asked to answer 'Yes', 'No' or 'I do not have an opinion'. The last part of the survey included questions measuring farmers' attitude to environmental' regulations. The perceptions were assessed on five-point Likert scale, where 1 = strongly disagree and 5 = strongly agree, with three reverse score items. The survey was carried out in analysed area on the farmers' holdings using a uniform questionnaire in face to face interview performed by advisors from Agricultural Extension Services. The interviews were conducted in 2017. The obtained data were processed using descriptive statistics.

Research results and discussion

In total, 189 farmers returned fully completed questionnaires, thus the response rate range from 60 to 67 %. The detail distribution of responses according to the typology of agricultural holdings is presented in Table 1. Because of commitment of agricultural advisors, the response rate was higher than received by other researchers using different channel distributions. Case et al. (2017) performed survey by post and recorded 28 % of response rate. Barnes et al. (2012) conducted telephone survey and obtained a response rate of 33 % whereas Woods et al. (2017) using an online farmer panel – 36 %. Table 2 presents descriptive statistics of survey field crops and mixed farms. In both types of farming the economic size of AES farms was slightly lower than non-AES. However, the family farm incomes of AES farms were higher despite the fact that total outputs were lower compared to non-AES farms. It was due to higher subsidies received by AES farms. In AES farms the labour inputs were lower compared to non-AES farms. The AES filed crop farms were characterized by higher UAA, rented UAA and family farm income compared to non-AES field crop farms. But total assets of those AES farms were lower than of non-AES ones. For the question „Do you think that you have an impact on the environment?" the answer 'yes' was declared by a higher number of non-AES than AES respondents (Table 3). However, more AES than non-AES mixed farmers agreed that intensive agriculture has a negative impact on the environment (Table 4). The views of field crop farmers were opposite compared to mixed farmers. The obtained responses show that mixed farmers are more aware of destructive influence of agriculture on surroundings than field crop farmers. In the opinion of all farmers, the greatest threats to the environment are application

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of high doses of pesticides and fertilizers (Table 5). Intensification of crop production and high concentration of livestock were perceived as a lower danger to environment. On the basis of conducted questionnaire survey we can state that environmental awareness is higher among both types AES than non-AES farmers. Significantly, higher number of non-AES farmers does not see any threat to environment from improper waste management, decline of biodiversity and soil erosion. In addition, a large number of non AES respondents do not have opinion on these issues. Our outcomes are in agreement with the research results obtained by Mroczek et al. (2013). Regarding action which should be taken to improve the state of environment, the findings showed that for majority of respondents the financial incentives are the most important (Table 6). In the second place was the answer – to raise ecological awareness. The % shares of farmers who see the need to raise knowledge on this topic are: 84 and 88 %, respectively for AES and non-AES field crops. In mixed farms more AES (82 %) than non-AES (77 %) see the necessity for increased ecological awareness. A lower percentage of farmers stated that control and punishment for environmental pollution may improve the state of environment. The financial invectives have been indicated as the most important factor in AES and non-AES farms in studies of Mroczek et al. (2013). However, the second one was the control and punishment with scores 36 and 20 %, respectively for AES and non-AES respondents. Only 4 % of AES farmers and 10 % of non-AES farmers indicated the needs of raising of ecological awareness. In our opinion the difference between the answers may have resulted from, inter alia, various sampling and testing periods. Mroczek et al. (2013) performed their survey in 2012 whereas our survey was carried out in 2017. We can assume that up to this period the farmers' knowledge about environment and AES schemes increased. Secondly, Mroczek et al. (2013) did studies on sample farms selected in Lezajsk county whereas in our research we applied a targeted selection based on FADN database. A belief that participation in AES schemes have increased labour input at farm is a commonly circulated opinion. This statement was confirmed by AES respondents in our survey (Tables 7 and 8). However, the descriptive statistics calculated for this sample indicate the contrary (Table 2). The labour inputs were higher in field and mixed non-AES farms. This is in agreement with non-AES farmers' opinions from the questionnaire. Over 50 % of respondents in all questioned groups agreed that implementation of environmental regulations lowers farm income (Tables 7 and 8). Table 2 confirms this statement. In AES field crop farms the total output was by 18 % higher than in non-AES farms. But family farm income of non-AES farms was by 21 % lower compared to AES farms (Table 2). In the mixed farms the differences were as follow: 17 and 5 %, respectively for total output and family farm income. In AES non-field crop samples, the value of total assets was by 10 % higher compared to AES farms but index of assets productivity measure as a ratio of total output to total assets was only by 1 % higher. Presented data show how much AES subsidies influence family farm income in the field crop farms. Results for mixed farms are slightly different. The average value of total assets of non-AES mixed farms was by 5 % lower than AES farms, but index of assets productivity of these farms was by 3 % higher. This shows that non-AES mixed farms were better managed. The need for implementation of environmental regulations as a positive factor for the future of agriculture was declared by more mixed than crop filed farmers (Table 7). The results obtained indicate higher environmental awareness among mixed farm respondents.

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Table 1

Number of farmers who completed survey and response rate in %

No.	Farm type	Number of responses from farmers participating in AES	Response rate (%)	Number of responses from farmers not participating in AES	Response rate (%)
1.	Field Crops	43	60	48	67
2.	Mixed	50	67	48	64
3.	Total	93	63	96	65

Source: authors' calculations based on the survey

Table 2

Descriptive statistics of survey field crops and mixed farms in 2015

No.	General information	Type of farms			
		Field crops		Mixed	
		AES	Non AES	AES	Non AES
1.	Number of farms (SYS03)	43	48	50	48
2.	Economic size (SE005)(EUR)	29 008	32 806	24 381	24 724
3.	UAA (SE 025) (ha)	42.4	40.6	23.2	20.7
4.	Rented UAA (SE030)(ha)	13.3	12.1	5.0	6.4
5.	No animals per farm (SE080)(LU)	2.1	1.5	15.0	17.0
6.	Labour input (SE010)(AWU)	1.35	1.53	1.69	1.77
7	Total output ((SE131)(PLN)	142 762	167 750	101 464	118 469
8.	Family farm income (SE 420)(PLN)	78 980	65 311	41 052	39 212
9.	Total assets (SE 436)(PLN)	996 894	1 093 642	675 505	643 075

Notes: PLN – Polish currency. UAA – Utilised Agricultural Area. AWU – Annual Work Unit, LU – livestock unit
Source: authors' calculations based on the FADN data

Table 3

Responses given to question „Do you think that you have an impact on the environment?" (%)

No.	Farm types	Yes	No	I have No opinion
1.	AES Field crops	86	2	12
2.	Non AES Field crops	90	8	2
3.	AES Mixed	74	8	18
4.	Non AES Mixed	79	2	19

Source: authors' calculations based on the survey

Table 4

Responses given to question „Do you think that intensive agriculture has a negative impact on the environment?" (%)

No.	Farm types	Yes	No	I have No opinion
1.	AES Field crops	81	5	14
2.	Non AES Field crops	86	6	8
3.	AES Mixed	86	6	8
4.	Non AES Mixed	83	6	11

Source: authors' calculations based on the survey

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Table 5

Responses given to question „What are the highest threats to the environment?" (%)

No.	Items	AES Field crops			Non AES Field crops			AES Mixed			Non AES Mixed		
		Yes	No	I have no opinion	Yes	No	I have no opinion	Yes	No	I have no opinion	Yes	No	I have no opinion
1.	Intensification of crop production	65	14	21	63	13	25	70	20	10	44	19	38
2.	High concentration of livestock	74	7	19	79	2	19	78	8	14	81	6	13
3.	High fertilization doses	88	5	7	79	10	10	88	6	6	81	8	10
4.	High pesticides doses	88	2	9	92	0	8	92	4	4	94	2	4
5.	Soil erosion	63	12	26	50	10	40	76	6	18	38	4	58
6.	Waste management	74	12	14	58	13	29	74	14	12	63	2	35
7.	Decline of biodiversity	74	9	16	35	15	50	80	6	14	42	8	50
8.	Emissions of pollutants to the atmosphere	81	12	7	73	10	17	82	6	12	75	2	23

Source: authors' calculations based on the survey

Table 6

Responses given to question „What should be done to improve the state of environment?" (%)

No.	Items	AES Field crops			Non AES Field crops			AES Mixed			Non AES Mixed		
		Yes	No	I have no opinion	Yes	No	I have no opinion	Yes	No	I have no opinion	Yes	No	I have no opinion
1.	Raise ecological awareness	84	5	12	88	0	13	82	2	16	77	6	17
2.	Apply financial incentives	93	5	2	81	6	13	88	6	6	85	4	10
3.	Control and punishment for environmental pollution	65	16	19	50	10	40	64	18	18	48	17	35

Source: authors' calculations based on the survey

Table 7

Responses given by field crops farmers on their attitudes towards environmental regulations (%)

No.	Items	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean (St Dev)
	AES Field Crops						
1.	Environmental regulations increase the farmer's work input	2.3	9.3	11.6	46.5	30.2	3.93 (1.0)
2.	Implementation of environmental regulations lowers farm income	2.3	16.3	25.6	41.9	14.0	3.49 (1.0)
3.	Environmental regulations are good for the future of agriculture	0.0	7.0	30.2	32.6	30.2	3.86 (0.93)
	Non AES Field Crops						
4.	Environmental regulations increase the farmer's work input	6.3	14.6	14.6	50.0	14.6	3.52 (1.10)
5.	Implementation of environmental regulations lowers farm income	4.2	12.5	25.0	43.8	14.6	3.52 (1.02)
6.	Environmental regulations are good for the future of agriculture	0.0	10.4	25.0	35.4	29.2	3.83 (0.96)

Source: authors' calculations based on the survey

Table 8

Responses given by mixed farmers on their attitudes towards environmental regulations (%)

No.	Items	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean (St Dev)
	AES Mixed						
1.	Environmental regulations increase the farmer's work input	2.0	12.0	10.0	44.0	32.0	3.92 (1.04)
2.	Implementation of environmental regulations lowers farm income	0.0	24.0	20.0	48.0	8.0	3.40 (0.94)
3.	Environmental regulations are good for the future of agriculture	2.0	8.0	14.0	50.0	26.0	3.90 (0.94)
	Non AES F Mixed						
4.	Environmental regulations increase the farmer's work input	4.2	12.5	18.8	41.7	22.9	3.67 (1.09)
5.	Implementation of environmental regulations lowers farm income	2.1	10.4	33.3	37.5	16.7	3.56 (0.96)
6.	Environmental regulations are good for the future of agriculture	2.1	10.4	16.7	47.9	22.9	3.79 (0.98)

Source: authors' calculations based on the survey

Conclusions, proposals, recommendations

1) All surveyed farmers were characterized by high environmental awareness. It might result from the fact that the farmers' selection was based on FADN database. It is assumed that farmers who participate in this system have better knowledge about agricultural production.
2) There were No major differences between AES and non-AES respondents in the perception of environmental threats. The obtained results do not confirm the colloquially adopted opinion that

farmers participating in AES are more aware of environmental pressure due to the fact that they follow AES regulations.

3) Field corps and mixed farmers from AES and non-AES groups emphasized that there is a need to raise farmers' ecological awareness in order to improve the state of environment. Therefore, the efforts to expand environmental awareness should be more intensive.
4) Strengthening the ecological culture among farmers is one of the necessary conditions for building a sustainable rural development. The role of AES schemes in nature conservation will grow along with the inputs for their realization and their implementation is important mainly for social reasons.
5) This paper contributes to the literature on the development of AES schemes.

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Bibliography

1. ARiMR (2015). Informacja o liczbie złozonych wnioskow, liczbie i kwocie wydanych decyzji w ramach Dzialania „Program rolnosrodowiskowy PROW 2007-2013" Kampania 2015. (Information on the number of applications submitted, the number and amount of decisions issued as part of the "RDP 2007-2013 agri-environmental program". Campaign 2015.). Retrieved: https://www.arimr.gov.pl/fileadmin/pliki/wdrazane_programy_sprawozdania/PROW_2007-2013/Rolnosrodowiskowe_/28122015_Rolnosrodowiskowe_7-13.pdf. Access: 18.01.2019
2. Barnes, A.P., Toma, L. (2011). A typology of dairy farmer perceptions towards climate change. *Climatic Change* No. 112, pp. 507-522.
3. Case, S.D.C., Oelofse, M., Hou, Y., Oenema, O., Jensen, L.S. (2017). Farmer perceptions and use of organic waste products as fertilisers – A survey study of potential benefits and barriers. *Agricultural Systems*. No.151, pp. 84-95.
4. CSO (2017). *Statistical Yearbook of the Regions – Poland*. Warszawa.
5. EC (2009). Commission Regulation (EC) 1291/2009 of 18 December 2009 Concerning the Selection of Returning Holdings for the Purpose of Determining Incomes of Agricultural Holdings. Official Journal of the European Commission. Commission Regulation (EC) No 1291/2009 of 18 December 2009 concerning the selection of returning holdings for the purpose of determining incomes of agricultural holdings. No. 347, pp. 14-21.
6. EC (2017). Science for Environment Policy. *Agri-environmental schemes: how to enhance the agriculture-environment relationship*. Thematic Issue 57. Issue produced for the European Commission DG Environment by the Science Communication Unit. UWE. Bristol. Retrieved: http://ec.europa.eu/science-environment-policy. Access: 18.01.2019
7. Hammes, V., Eggers, M., Isselstein, J., Kayser, M. (2016). The attitude of grassland farmers towards nature conservation and agri-environment measures – A survey-based analysis. *Land Use Policy*. No. 59, pp. 528-535.
8. Mroczek, J. R., Kostecka, J., Korczynska, M. (2013). Ocena roli programu rolnosrodowiskowego w postrzeganiu przez rolnikow wybranych aspektow problematyki srodowiskowej.(Farmers' perceptions of selected environmental aspects of the agri-environmental program). *Inzynieria ekologiczna.* No 34, pp. 189-197.
9. Woods, B.A., Nielsen, H.Ø., Pedersen, A.B., Kristofersson, D. (2017). Farmers' perceptions of climate change and their likely responses in Danish agriculture. *Land Use Policy*. No. 65, pp. 109-120.

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SUSTAINABLE DEVELOPMENT OF DISADVANTAGED REGIONS BY RENEWABLE ENERGY SOURCES INTEGRATION

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Abstract. The article addresses the concept of sustainable energy development and the need to promote it, particularly in economically disadvantaged regions, to find optimal long-term solutions to conventional energy production. One of the sustainable development solutions of economically disadvantaged regions is the integration of renewable energy sources (RES) into existing energy systems. The proposed integration solutions were based on the analysis of the energy potential of a region in western Romania, a region economically disadvantaged by the closure of the mining and the thermal power plant (CET) existing in the area. The amount of energy required for installation to cover the electricity consumption of the population in the region was the basis for interpretations on the choice of RES solutions. The integration of RES in the context of sustainable development ensures the following: socio-economic development of the regions, access to energy, energy security, reduction of polluting emissions and reduction of negative health effects. The purpose of this article is to bring to the attention of the local government the importance of the energy potential of the area and the opportunity for the economic recovery of the whole region, while reducing GHG emissions

Key words: sustainable development, renewable energy, disadvantages regional, integration.
JEL code: O18, O44, Q42, Q47, Q57, R11

Introduction

Reducing energy use through efficient use of resources is currently one of the main concerns at the global level. At the same time, increasing greenhouse gas (GHG) emissions requires measures that strike a balance between protecting the environment and ensuring energy security (Vasilescu E., 2017; Zafar S., 2013; Bahnareanu C., 2010; Greenhouse Gases…, 2019). On this line, for the period 2020-2029, the EU has set maximum allowable greenhouse gas emissions for the atmosphere, which means that to ensure environmental protection and energy security - as a basic condition for sustainable development - it will be necessary to use the best available technologies, upgrading and efficient use of different renewable energy sources, gradually replacing depleting conventional resources.

For a sustainable and smart EU development, it is necessary to promote a more resource efficient, greener, more competitive economy based on knowledge and innovation and with major investment in less developed regions of the EU. In general, investments were made in Romania in urban areas, and rural localities with few households and especially disadvantaged regions did not come to the attention of the authorities (Foris D., 2018). For this reason, for Romania, the basic objective of regional development should be to reduce existing regional imbalances, by stimulating balanced development, by recovering delays in the development of disadvantaged areas due to various economic and geographical conditions, and by preventing new imbalances.

The integration of RES can contribute to the economic recovery of disadvantaged regions as a result of the industrial decline in Romania. The use of renewable energy potential through the local adoption of small-scale energy systems close to the place of consumption contributes significantly to the reduction of losses in transport networks as a solution for long-term economic recovery. The

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ways of integrating and optimizing solutions open the way to research for many years to come, as the development and integration of small-scale RESs facilitates access to energy for the underprivileged population. Local economies can be configured so that the energy potential is a means of economic recovery and improvement of the quality of life by reducing GES emissions. Access to energy is a key element when talking about the sustainable development of economically disadvantaged areas because they are vulnerable to rising fossil fuel prices. By developing and integrating small-scale RES, investment is encouraged, which has a direct effect on the living conditions of the population while ensuring the region's energy independence. Until recently economic growth could be quantified by increasing energy consumption and the amount of polluting emissions, the economic recovery is based on renewable energy. The model of the three pillars, Economy-Ecology-Society, provides a schematic classification of the sustainable development objectives (Bruckner T., 2014). The use of RES can contribute to sustainable development following the 3 pillar model as RES is the natural environment and the use of these resources does not reduce the possibilities for use.

As arguments for the use of small to large SREs can be retained: the possibility of increasing energy demand for the final consumer and balancing the energy price even as the primary resource wall grows.

Analysise of the local context by assessing the energy potential of the disadvantaged region

Oravita is a small city in western Romania that is part of a mining region with a tradition of exploiting uranium, coal and gold, currently economically disadvantaged.

This paper presents an assessment of the renewable potential in the area to determine whether renewable energy production can cover the entire electricity consumption of the Oravita population and ensure an economic recovery of the region. The method of selecting new technologies and renewable energies was based on the analysis and synthesis of climatic parameters (solar radiation, wind speed, temperature, etc.).

- **Hydro potential**

Upstream of Oravita, on the Oravita Valley, there are two artificial lakes witch is presented in Fig. 1 (The Storage…, 2019).

Source: image based on Google Maps and photos of the authors

Fig. 1. **Oravita Valley**

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Lake "Big", located at an altitude of 315 m, has a length of 230 m, width of 120 m, area of 1,4 ha a reception area of 9km^2 and a volume of 133300 mc. The dam has a height of 13.4 m, and in the rest the maximum depth is 4 m due to the high degree of clogging.

Lake "Small" located at an altitude of 285 m, about 800 m downstream of the lake, has a length of 145 m, width of 70 m, area of 0,2 ha, reception area of 10 km2 and a volume of 43000 mc. The height of the dam is approx. 9.6 m.

The two artificial lakes were set up between 1700 and 1750 for the purpose of watering the city and the local industry, regulating the transit of the floods, ensuring a flow of service to the gullies, ensuring the water flow of a thermal power station, but also for recreation. At present, the role of the large lake is only to regulate the transit of the floods and recreation. The small lake due to the fact that the dam is in an advanced degradation state with significant infiltration and a 99 % lagging of the ladle is inoperative.

- **Solar potential**

Taking into account the EU targets, Romania set a target power of 260MW by 2020 through the implementation of photovoltaic with an installed power of about 6MW each. The implementation of photovoltaic plants can lead to a reduction in CO_2 emissions of about 1.5 % (Iacobescu F., 2012).

For this reason, a simulation of the solar potential for the interpretation of solar radiation was performed for the analysed region. Radiation is the propagation of particles or waves, a distinction has to be made between short wave solar radiation and long-wave terrestrial. The lower the wave length, the higher the energy transported. Visible light is part of short wave radiation.

The radiation is differentiated into:

- Global radiation (shortwave downwards (KW ↓))
- Direct and diffuse (scattered) radiation
- Reflection of shortwave radiation (shortwave upwards (KW ↑))
- Terrestrial Radiation (longwave upwards (LW ↑))
- Atmospheric counter radiation (longwave downwards (LW ↓) - also called greenhouse effect)

The global radiation simulation for Oravita was conducted - for a week (31.01.2019-07.02.2019) using Meteoblue (Meteoblue…, 2019) which uses data from around 200 measuring stations distributed around the world. Meteoblue models are meteorological services that provide graphical predictions on global radiation and wind speed based on NMM technology (Nonhydrostatic Meso-Scale Modeling). Meteoblue provides the hourly solar radiation prognosis and compares the seasonal distribution of PV system yield for different tilt angles, so PV power generation management can be optimized.

In Fig. 2, the outdoor temperature variation [°C] for the year 2018 and information on solar radiation through comparative graphs are represented for Oravita between 2017, 2018 and the first period of 2019 reported at year dd 1985 (Meteoblue…, 2019), information that is needed to establish solutions for the integration of PV systems into the national energy system. The year 1985 was chosen as the reference year because the lowest average temperature (8.4 °C) was recorded this year (The climate..., 2018). The study is limited to the first week of February because during this period there are low temperatures and high relative humidity.

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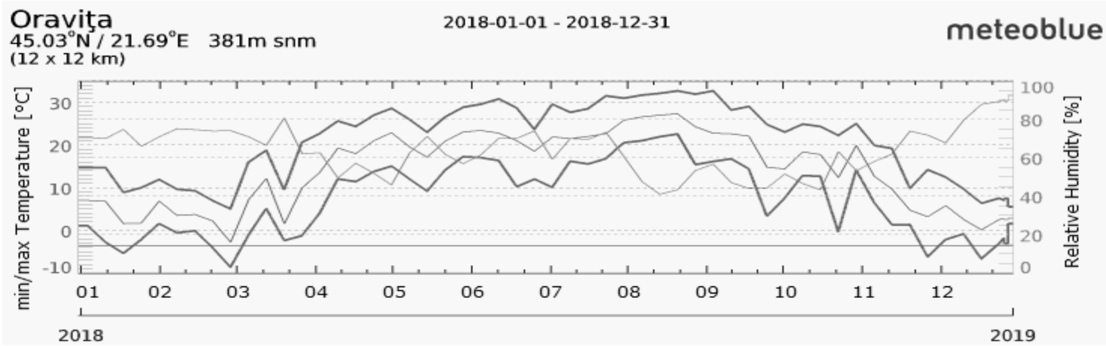
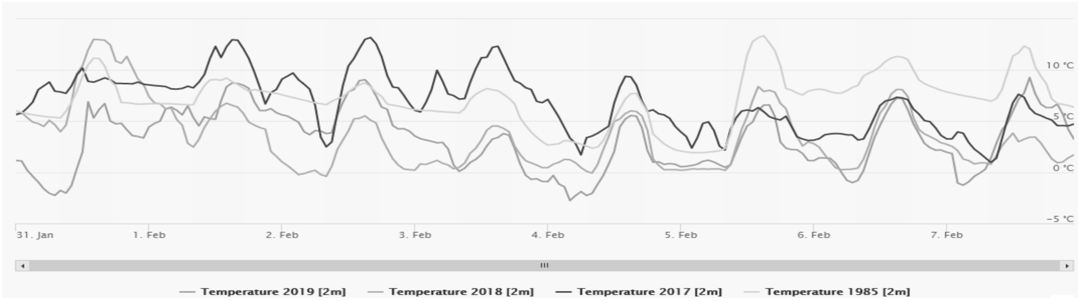


a)



b)

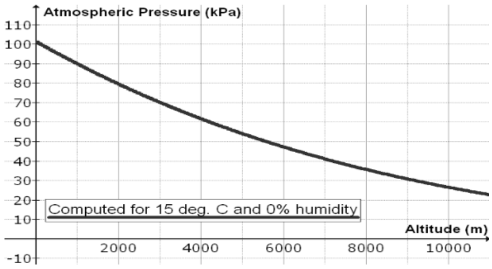
a) The variation of the outdoor temperature in 2018;
b) The comparative variation in outdoor temperature in the first week of February vs. To the year 1985;
Source: simulations of the authors based on Meteoblue weather

Fig. 2. **The variation of outdoor temperature and solar radiation in Oravita**

- **Wind potential**

In order to evaluate the wind potential of Oravita, the wind speed was simulated for the same period because wind energy can compensate for the lack of energy generated by the su- using meteoblue (Meteoblue…, 2019). Thus, with Meteoblue based on seasonal climatic models, the climatic diagrams of Oravita were made. Based on these can be estimated, wind conditions depending on the wind direction, average wind speed, or can be appreciated the risk of freezing the blades of wind farms.

The atmospheric pressure varies with altitude - as the altitude increases - atmospheric pressure decreases. Figure 3 shows the variation of atmospheric pressure with altitude, calculated at 15 ° C and 0 % relative humidity (Portland State..., 2004).



Source: Portland State Aerospace Society, 2004

Fig. 3. **Atmospheric Pressure vs. Altitude**

In order to have a clear picture of the evolution of the wind velocity according to the atmospheric temperature, in Fig. 4 (Meteoblue…, 2019), it was graphically represented the variation of the wind speed and the direction of action.

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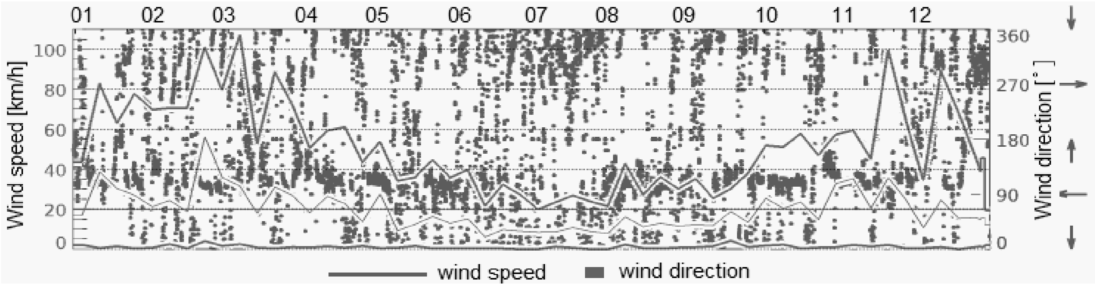

Source: simulations of the authors based on Meteoblue weather

Fig. 4. **The wind speed variation in Oravita during 2018**

From the Fig. 5 analysis , it can be noticed that the greatest variations of the wind speed are recorded during the winter - spring period. This confirms the influence of atmospheric temperature on local winds. Because the normal atmospheric pressure is 1013.25 mb (760mmHg), the simulations were performed at an altitude of 10m and 80m respectively, which were, however supplemented also by bad weather conditions (900 mb) and are rendered in Fig. 5.

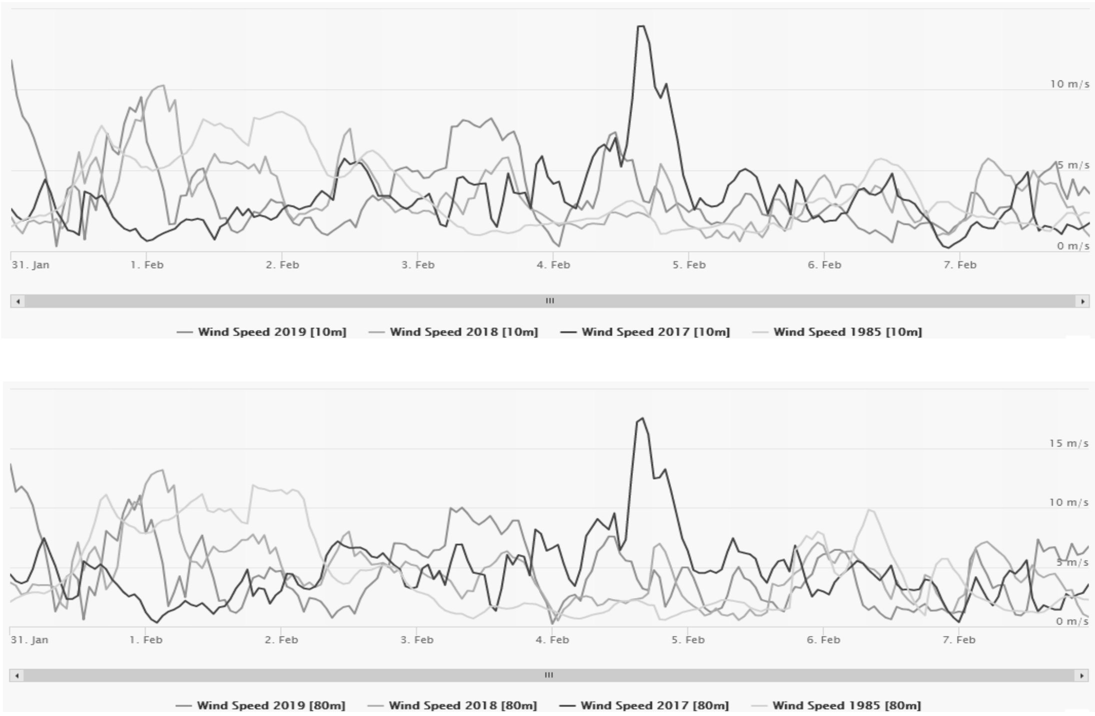

Fig. 5. **The wind speed variation in Oravita at different altitudes**

Solutions to integrate renewable sources: discussion

The predominantly prevalent relief of the analysed region is made up of an alternative of hills and plains, with the town of Oravita being located at the intersection between the land and the hill. The extended areas and the wind and solar potential exemplified in Fig. 3 and Fig. 6 of the region, provide conditions favourable to the development of RES investments. The rich hydrographic network, complemented by the two artificial lakes (Fig. 1), is also worth mentioning. On the other hand, the instability of the renewable energy sources is an essential inconvenient, as illustrated in Fig. 2 and Fig. 5. In times of frost, as in the case of heat, where the demand for energy is very high (heating and air conditioning respectively), the effect of wind / sun is virtually non-existent, which means interconnecting systems with renewable sources in order to achieve a balance in operation, or integration of electrical energy storage systems.

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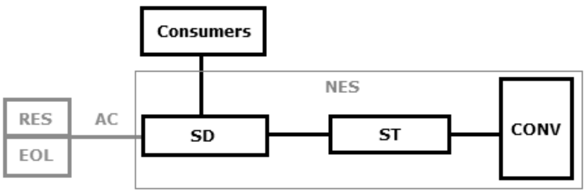
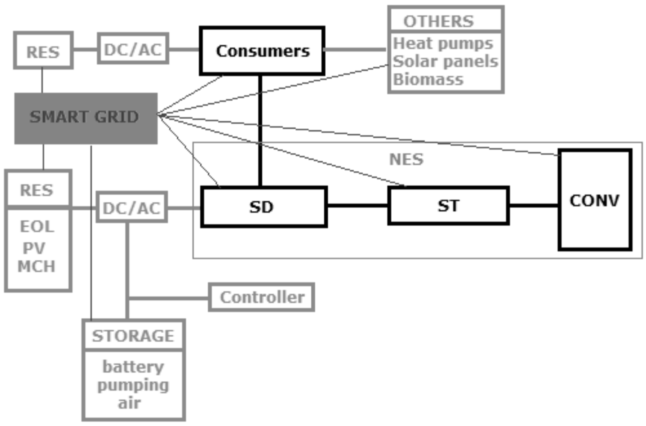
Smart Grid energy grids represent a doubling of the grid by a computer network that connects operators on the electricity market, significantly improving the way the user's power supply process works, while ensuring real-time interaction between operators from the entire production, transport, distribution, supply and use chain.

For the analysed region, given that it has both considerable solar and wind potential, smart grids are not a revolution but a necessity to meet users' needs. There is a wind farm in the region with an installed capacity of 9 MW, but when there is No need to deliver energy to the NPS, there is No energy storage and therefore the park either does not produce energy or produces less capacity. Considering that the electricity cannot be stored directly, it is necessary to convert it into other forms of energy, in Oravita the storage solution can be solved by mechanical storage, namely the storage of energy by pumping water into the two existing lakes, storage in batteries of batteries (at the level of consumers / domestic producers). Considering that there are decommissioned / unused mining galleries in the region, another solution for energy storage could be the use of the potential energy of compressed air injected into the difference between the structure of the classical electric power system (existing in the region) and the structure of the intelligent network proposed for Oravita is illustrated in Fig. 6.



a)



b)

a) Existent; b) Proposed

Fig. 6. **Energy system existing vs. proposed**

RES - Renewable energy sources; EOL - Wind energy; PV - Photovoltaic energy, MCH – Microhydro plants; AC - Alternative current; DC - Continuous current; SD - Distribution system; ST - Transportation system; CONV - Conventional energy source; NES - National energy system

In order to assess the economic recovery of the region, the possibility of covering the energy demand from RES for all consumers was analysed. Thus, the consumption of energy for the existing consumers in Oravita (public institutions, local economic agents and domestic consumers) was registered in 2018.

Tab. 1 shows the values for energy consumption and the possible values recorded from RES (solar, wind and hydro) integrated in a network with mechanical storage (batteries, pumping, compressed air).

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Table 1

Energetic situation existing vs. proposed about RSE

No	**Situation**	**Installed power RSE [MW]**				**Storage [MW]**	**Consumption [MW]**	
		Wind energy	Solar energy		Hydro energy		**Total consumption**	**Public consumption**
			Domestic	Farm				
1.	Existing	9	-	-	-	NO	2.42	0.39
2.	Proposed	24,5	8,89	2	0,5	YES		

Source: author's calculations based on monitoring and simulation

Even if in the existing situation, the power installed in RES represents 372 % of the power consumed by the city, we appreciate that the energy potential can lead to the economic recovery and the improvement of the living conditions of the population.

In 2010, the technical documentation for the expansion of the existing wind farm with 12.5MW was developed, which demonstrates, in addition, the existence of the wind potential in the area (Garbacea A., 2011).

The wind potential can also be exploited by building a wind farm of 12MW on the hill between Oravita and Ciclova. The park can be connected to the LEA 110kV high-voltage power line Oravita-Crivina. In this area, in 2012, the wind speed was monitored by installing monitoring devices on an anemometric pole at a height of 60m. Following the recording of the measured values a wind constant in SE direction was established. Therefore, the wind potential of the area can be redeemed by producing 24.5MW of electricity (12.5MW demonstrated through technical documentation in 2010 and 12MW analysed in the proposed article). Analysing the situation of the existing land in the vicinity of the electric power lines, Oravita has communal land with a surface of more than 5ha suiTable for the construction of a photovoltaic park with an installed power of 2MW that can be connected to the medium voltage line LEA 20kV Oravita 1.

Therefore, the energy that can be produced by exploiting photovoltaic and wind farms is 26.5MW.

Since the city of Oravita is not connected to the natural gas distribution system (SD), space heating is predominantly local (with firewood), which is a major discomfort for the inhabitants of the ''Zona Garii'' where there are 105 blocks of flats with 2100 apartments. The proposed solution to improve living standards involves the rebuilding of district heating systems fueled by RES, redesigning and rehabilitation of district heating systems using liquid fuels As most of the housing blocks have a circular terraced roof, the installation and orientation of the solar panels is affordable. Approximately 0.8MWp can be installed on approximately 23000mp, which at 1500kWh / m^2 / year of radiation can produce approximately 0.97MWh / year the equivalent of 0.083Tep reducing CO_2 emissions by 969kg/an.

Also on the roofs of the 2698 individual buildings that can be rehabilitated through the "Green House" program 2019 (National Environmental..., 2019) can theoretically install 8.09MWp. In fact, for a correct assessment of the applicability of the "Green House 2019" program in Oravita, it is necessary to carry out a study on the orientation, the surface and the structure of the roofs.

The analysis of the region's renewable potential shows that the proposed options are possible and viable for the economic recovery of the region.

Conclusions, proposals, recommendations

1) Large scale RES use contributes to reducing GHG.
2) The general inconvenience of the instability of renewable sources can be eliminated by interconnecting RES systems and storage systems.
3) SmartGrid networks ensure the correct and reasonable integration of RES by integrating the generation, distribution and transmission network. In addition, it can improve the demand management function to achieve the ability to interact effectively with consumers.
4) Efficiency and upgrading of electricity grids to respond to increased demand for energy and changes in energy sources leads to improved economic benefits and is a solution for the economic recovery of disadvantaged regions.
5) In the near future, Electrical Energy Storage (ESS) technologies can facilitate other non-electrical energy uses such as transport and heat generation.
6) As per Renewable Energy Percentages must will continue to grow, smart grid technologies in combination with adequate storage technology, policy support and regulation will essentially be to create network infrastructure to sustain a sustainable future.
7) Energy storage technologies have the ability to add flexibility, control and demonstrate the generation of back-up to the power grid. This is the critical link between supply chains and demand. It is a key element in increasing the role of generating renewable energy in the electricity grid.

Bibliography

1. Bahnareanu, C., (2010). Securitatea energetica a Romaniei in context european, Editura Universitatii Nationale de Aparare „Carol I" Bucuresti, ISBN 978-973-663- 847-3.
2. Bruckner, T., Alexeyevich Bashmakov, I., Mulugetta, Y., (2014). Climate Change 2014 Mitigation of Climate Change, Energy Systems, Chapter 7. Cambridge University Press. pp. 511-599.
3. Foris, D., Tokar, D., Tokar, A., Foris, T., (2018). Sustainable Rural Development through Improving Water Supply in Mountain Huts. Proceedings of the 2018 International Conference „Economic Science for Rural Development", Jelgava, Latvia- LLU ESAF. DOI 10.22616/ESRD.2018.009. ISSN 1691-3078. No.47, pp. 81-88.
4. Garbacea, A., (2011). Wind Force Forced to Produce in Brosteni – Oravita. Engineering Universe, Year XVIII, No. 3, pp. 481.
5. Greenhouse Gases at EPA. Retrieved: https://www.epa.gov/greeningepa/greenhouse-gases-epa. Access: 04.02.2019.
6. Iacobescu, F., Badescu, F. V., (2012). The Potential of the Local Administration as Driving Force for the Implementation of the National PV systems Strategy in Romania. Renewable Energy, Vol. 38, Issue 1. pp. 117-125.
7. Meteoblue weather, (2019). Retrieved: https://www.meteoblue.com. Access: 07.02.2019.
8. National Environmental Fund Administration, (2019). The Program for the Installation of Photovoltaic Panels Systems for the Production of Electricity in Order to Cover the Consumption Needs and Surplus Delivery in the National Network.. Retrieved: https://www.afm.ro/main/programe/sisteme_fotovoltaice/2019/. Access: 29.01.2019.
9. Portland State Aerospace Society, (2004). A Quick Derivation Relating Altitude to Air Pressure. Retrieved: http://archive.psas.pdx.edu/RocketScience/PressureAltitude_Derived.pdf. Accessed: 08.02.2019.
10. Sobor, I., Chiciuc, A., Azarov, A., Rachier, V., (2013).The Daily Variations of the Wind Speed in the Central Plateau of the Republic of Moldova. AGIR Bulletin. No. 1, pp. 139-144.
11. The Climate Change Study - Dangers and Effects of Climate Change in Romania (2018). Retrieved: http://www.anpm.ro/documents/15349/34511758/Studiu+de+schimbari+climatice+2018.pdf. Access: 08.02.2019.
12. The Storage Lakes in Oravita, (2019). Retrieved: https://banatulmontan.wordpress.com/2012/06/29/lacurile-de-acumulare-de-la-oravita/. Access: 20.01.2019.
13. Vasilescu, E., (2017). Energy Sources for Sustainable Development. AGIR Bulletin. No. 1, pp. 121-128.
14. Zafar, S., Nawaz, K., Naqvi, S.A.R., Malik, T.N., (2013). Integration of Renewable Energy Sources in Smart Grid: A Review. The Nucleus. Vol.50, No. 4, pp. 311-327.

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FACTORS FACILITATING BUSINESS SERVICE CENTRE GROWTH IN THE BALTIC REGION IN THE CONTEXT OF THE EUROPEAN UNION

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Abstract. Due to increasing globalization and multinational corporation interest to operate in cost-efficient way, outsourcing and shared service centre creation trend has increased growth of business service centre (BSC) sector globally as well as in the Baltic region. Based on multiple favourable reasons, use of outsourcing and shared service centres have become an operational strategy for many organizations, driven by company's ability to benefit from economies of scale and process transfer to less expensive locations. Baltic States represent one of the most attractive destinations for BSC expansion compared to other European Union (EU) countries. BCS growth in the region can be explained by it's educated, cost-competitive workforce, advantageous geographical location, language proficiency and IT infrastructure as well as attractive economic and business environment. Currently Baltic States demonstrate advantage among other EU Member States in the development of BSC sector, but crucial role is played by institutions in each of the mentioned countries. Institutions in Latvia have identified several priority sectors in terms of foreign investment attraction, while Lithuania has indicated BSC sector as their priority field but Estonia is more focusing on IT and start-up environment development.

Key words: Business Service Centres, Outsourcing, Shared Service Centres.
JEL code: R10; M1; F10

Introduction

In today's dynamic environment, various processes are affected by globalization and technological development, thus changing the structure and organization of different systems, which are mainly influenced by the availability of information and its exchange within a short period of time. As many activities can be done remotely, the need for physical proximity is diminished. Due to mentioned aspects as well as company's interest to operate in cost-efficient way, the use of outsourcing and shared service centres has become a common trend and increased business service centre growth globally as well as in the Baltic region. In this context, term BSC includes three organizational models: shared service centre's (SSC's) business process outsourcing (BPO) and Information Technology Outsourcing (ITO).

The aim of the paper is to describe and evaluate factors contributing to the development of business service centre in Baltic Region in the context of European Union. **Research object:** factors facilitating business service centre growth. Research object includes following factors - average hourly rate, foreign language knowledge, educational attainment level and comparison of countries by business environment attractiveness. To obtain a broader view of the subject matter an expert interview was conducted. Tasks that were set to achieve the goal: 1. reflect on aspects of theoretical framework for Business Service Centres; 2. analyse factors contributing to the development of business service centre in the Baltic States in comparison of European Union countries; 3. learn the business service centre sector development trend within the Baltics States. Following methods were used during the work: compilation and analysis of literature, calculation of statistical indicators, expert interviews for qualitative data.

Research results and discussion

Establishment of business service centres for administrative functions began in America in the mid-1980s. The creation and operation of such service centres is still ongoing. Improvement and

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further development is often associated with the use of innovative solutions for operational functions. Information technologies and increasing globalization contributes to the establishment of business service centres outside the country of parent company. The motivation to outsource non-core activities varies but might include cost reduction, headcount reduction, access to greater expertise and technology, a kenned focus on core activities and better operational flexibility (Rotwell A.T., 2011). The consolidation of processes in BCS allows companies to benefit from economies of scale and process transfer to less expensive locations.

As defined, business process outsourcing is the contracting of non-primary business activities and functions to a third-party provider (Techopedia), however in the context of business service centres, not always it has to be third-party provider. Alternative to outsourcing is shared service centre in which activities previously located in business units or head office are retained within the organization but aggregated into a new central unit which remains in connection with mother company (Rotwell A.T., 2011). Both strategies reduce complexity and thus foster the streamlining of value chains by restructuring administrative functions. However, SSCs add value not merely through simple cost-cutting like outsourcing, but by turning support activities into core-activities as well, results in the development of new competencies (Richter P.C., 2017). Because of the use and deployment of business service centres depends on companies needs and its business in general, there is No single and complete definition that fits all functional centres of both outsourcing and shared services (Furlong S., 2012).

Central and Eastern Europe (CEE) represents one of the most attractive destinations for SSC globally, where it is predicted that business services in CEE will continue to grow at an average of 30 % annually (Koval O., 2016). The reason for the popularity of the region is complex but can be characterized by several factors such as attractive environment, favourable tax regime, available labour advantages due to lower salaries, as well as language proficiency and time zone to cover the part of Europe operations. In addition to the mentioned advantages, NATO and European Union (EU) membership could also play significant role, as starting from this time expansion in CEE as well as in Baltic States significantly increased (Marciniak R., 2014).

BSC growth in specific regions is determined by several factors. Labour cost can be one of the most important indicators at the time of assessing the potential location of a service centre. As defined by Eurostat: *„Labour cost or total labour cost is the total expenditure borne by employers for employing stuff. Total labour cost consists of employee compensation, vocational trainings and other expenditures minus any subsidies received"* (Eurostat, Labour cost, 2018). Hourly labour costs gathered in Figure 1.

According to available statistical information, in 2017 the average labour cost per hour between the European Union countries was € 21.5. Although the average value was € 21.5, there is a significant difference in labour costs between member states, where the average hourly rate varies from as low as € 4.9 in Bulgaria to € 42.5 in Denmark. Comparing the obtained indicators with the situation in the Baltic States, it can be concluded that average labour cost per hour in the Baltic region in 2017 was 2.3 times lower than the EU average, respectively € 9.3. Resulting data reflect the average hourly labour costs in the EU Member States, with significant cost differences between them.

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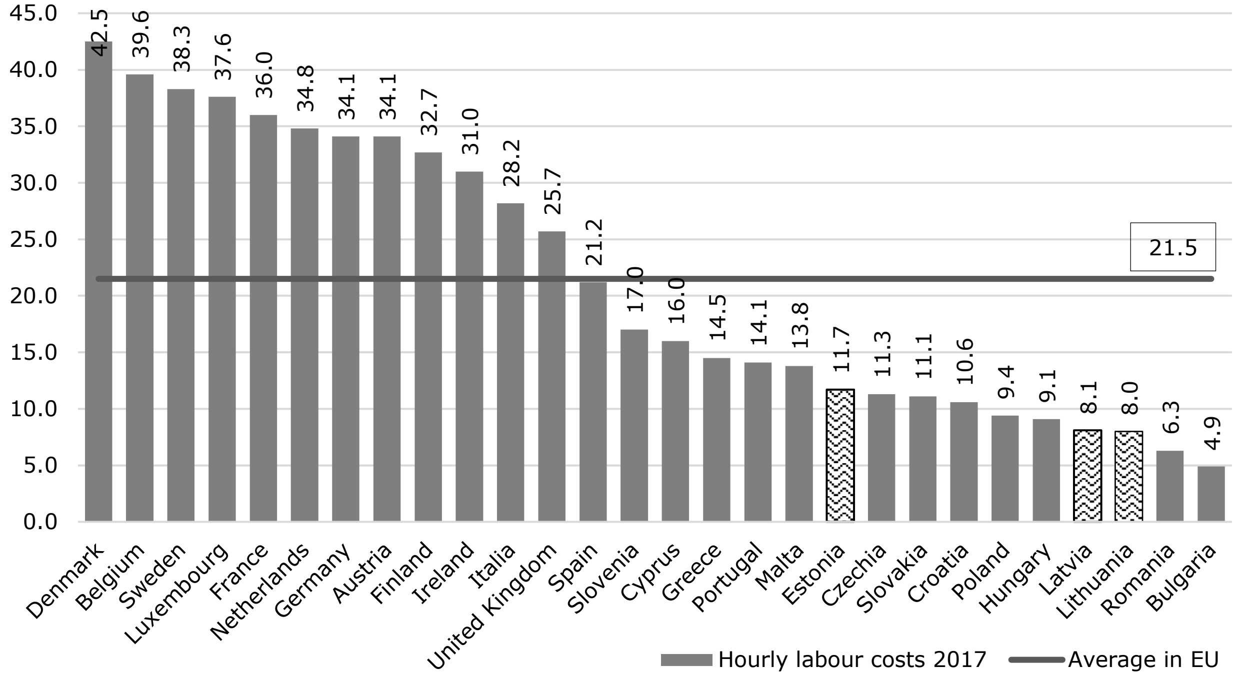
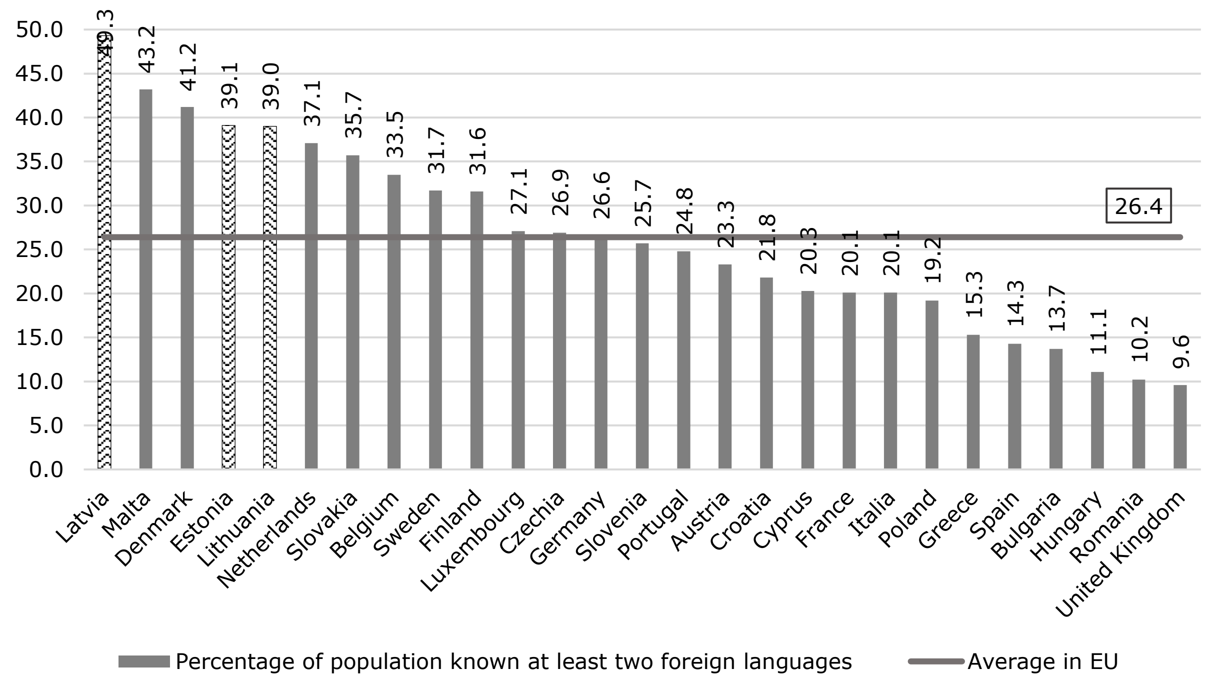


Source: author`s created, using Eurostat data 2018

Fig. 1. **Hourly labour cost in euro for European Union countries, 2017**

Being able to communicate in multiple languages is particularly important when working in an international business environment. Communication with customer or business partner in their native language is one of the first steps to productive and mutually clear cooperation that leads to long lasting and sTable business relationships. Information about foreign language skills in EU countries has been summarized in Figure 2.



Source: author`s created, using Eurostat data 2017

Fig. 2. **Percentage of population with knowledge of at least two foreign languages, 2016**

According to Eurostat data, in average 26.4 % of the population in EU in addition to their native language has knowledge of at least two additional languages. The highest percentages are reported in Latvia, Malta and Denmark, while the lowest results are in Hungary, Romania and United Kingdom.

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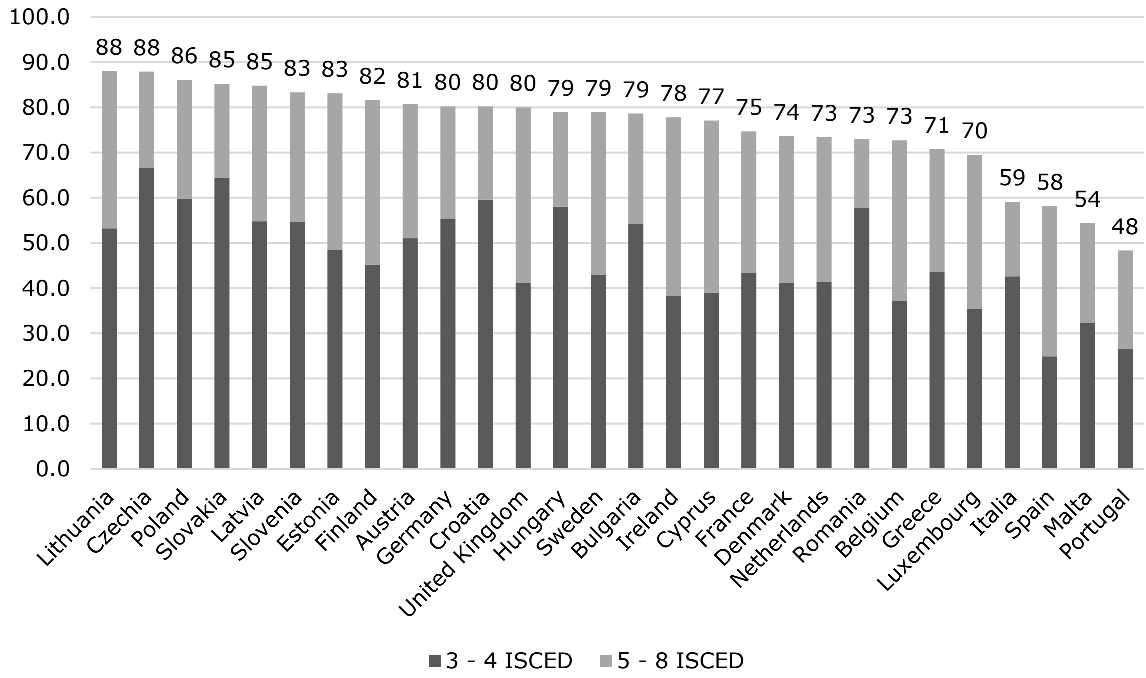
It is necessary to highlight the results in Baltic States as they are significantly higher than the EU average.

In addition to already mentioned factors, also the level of education and available talent pool plays significant role in the process of region evaluation. According to the available information, author concludes that the work in BSC is diverse and covers a wide range of services to be provided, thus the level of qualification of the employed varies depending on the specific nature and complexity of the work. Figure 3 represents the percentage of third to eighth level graduates among EU Member States, using the International Standard Classification of Education (ISCED) level system. Obtained results are grouped into two parts - the percentage of third to fourth level education and fifth to eighth.



Source: author`s created, using Eurostat data 2018

Fig. 3. **Population by educational attainment level, 2017 (%)**

According to presented data in Figure 3, author concludes that Lithuania and the Czech Republic have the highest percentage of people who have obtained education in both groups. With a small percentage difference, they are followed by Poland, Slovakia and Latvia but countries with the lowest rates are Italy, Spain and Portugal.

So far, analysis of the data support potential of the Baltic States for future development in the BSC sector but as attraction of foreign investment is closely related to the business environment, author will also look at the positions of EU member states in the *Doing Business* rank for 2019. The World Bank's annual *Doing Business 2019* report is the sixteenth volume of this study. The data gathered in publication describes ten areas related to the business environment, analysing their contributing and restrictive aspects. This study presents information on the economies of 190 countries worldwide, thus generating a range of 1 to 190. Information on EU Member States in *Doing Business 2019* study has been summarized in Table 1.

Table 1

Obtained ranks in *Doing Business 2019* by EU Member States

Country	Rank	Country	Rank	Country	Rank	Country	Rank
Denmark	3	Latvia	19	France	31	Bulgaria	50
United Kingdom	7	Germany	20	Netherlands	32	Croatia	51
Sweden	9	Austria	22	Slovenia	37	Belgium	52
Estonia	12	Poland	27	Slovakia	39	Cyprus	53
Finland	13	Spain	28	Romania	45	Luxembourg	63
Lithuania	16	Portugal	29	Italy	46	Greece	67
Ireland	17	Czech Republic	30	Hungary	48	Malta	84

Source: Doing Business 2019

The ranking of the countries listed in the Table is based on a comparison of the economies of all 190 countries. Although Denmark ranks third in the overall ranking, its business environment is best rated among EU Member States, followed by Great Britain and Sweden. Positive is the fact that countries in the Baltic region rank among the top 20 of all and among top 10 in the EU. Estonia has the highest ranking among the three neighbouring countries, followed by Lithuania and Latvia.

Work in the BSC sector is closely linked to the use of information technologies, so mobile internet speed is an important factor. According to 2018 study of internet speed measurement service *"OOkla"*, all three Baltic countries ranked among the top twenty countries with the fastest mobile internet in the world. Based on *"Worldwide broadband speed league 2018"* mobile testing in 200 countries, Latvia ranks thirteenth, Estonia fifteenth and Lithuania seventeenth, showing their potential and advantages regarding this aspect (Goya, C., 2018).

Summarizing obtained information, author concludes that Baltic States demonstrate advantage among other EU Member States, emphasizing the availability of both a skilled but cost-competitive workforce and a positive assessment of the business environment.

To gain more insights on BSC sector development in Baltic States, an interview was conducted with Latvia Investment and Development Agency representative Monta Geidane. In this context M.Geidane emphasizes the position of government and responsible institutions in each country: *„Lithuania is now highly praised and also does better, but it is necessary to understand the interconnections. The question is, who is interested in it all. For Latvia Investments and Development Agency, there have been several priority sectors identified, but in the meantime, Lithuania has clearly indicated that this is their priority and therefore developing their marketing with the purpose of attracting new investors. Thus, Estonia is developing in the IT and start-up environment, it has been set as their primary development direction."* According to the information gathered during the interview process, the development of the BPC sector largely depends on the priority of development directions set by the state and other stakeholders, which in turn is closely related to the availability of finance and the potential amount of investment in the sector.

The development of the Baltic State BSC sector is closely related to its geographical proximity to the Scandinavian countries. Following the information gathered during the interview as well as the analysis of available information for largest BCS sector companies in the Baltic region, the author concludes that most of the companies in Baltic Stated are of Scandinavian origin (Finland, Sweden, Norway, Denmark). According to M.Geidane: *„When looking at the parent organizations of Latvian companies, in 2017 about 48 % were from Scandinavian countries, not counting the number of* *people or employees, but exactly the number of companies".* There is a similar situation in Lithuania, where Scandinavian companies in 2017 made up 44 % of all companies in the sector and employing 39 % of the sector's employees. Looking at the lines of activity of Lithuanian-based service centres, the author concludes that most, or 80 %, support services are provided directly to the Scandinavian region. Similarly, the unifying Baltic and Scandinavian countries have a cultural aspect that is reflected in understanding, work ethics and language skills (Invest Lithuania, 2018).

Conclusions, proposals, recommendations

1) Analysed indicators confirm advantage of the Baltic States in the context of other EU member states, by providing a set of necessary prerequisites for the development and operation of international business service centres.
2) In the Baltic States, a cost-competitive and skilled workforce is available, as well as an economically attractive environment and modern infrastructure related to information technology and high-quality internet usage.
3) Currently equal development of the SBPC sector can be observed in all Baltic States, however, each country has set different priority directions for further development.
4) The development of the BSC sector is currently priority for Lithuania, which means that additional funds are invested by government to attract potential investors. In Latvia, this is only one of the priority areas, while Estonia is currently focusing on the development of information services and start-up technologies.
5) The development of Baltic State international business service centres is closely linked to its geographical proximity to Scandinavian countries. Scandinavian companies are among the largest market participants and investors in the Baltic States.

Acknowledgements

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Bibliography

1. Eurostat (2017) *Number of Foreign Languages Known*. Retrieved: https://ec.europa.eu/eurostat/web/education-and-training/data/database Access: 22.10.2018.
2. Eurostat (2018) *Hourly Labour Costs 2017*. Retrieved: https://ec.europa.eu/eurostat/statistics-explained/index.php/Hourly_labour_costs Access: 22.10.2018.
3. Eurostat (2018) *Labour Cost.* Retrieved: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Average_hourly_labour_cost Access: 15.10.2018.
4. Furlong, S. (2012) *Shared Services and Outsourcing.* Retrieved: https://www.ssonetwork.com/business-process-outsourcing/articles/shared-services-and-outsourcing Access: 15.10.2018.
5. Goya, C. (2018) *The 23 Countries in the World with the Fastest Internet Speed.* Retrieved: https://www.businessinsider.com/the-23-countries-in-the-world-with-the-fastest-internet-speeds-2018-7 Access: 05.11.2019.
6. Koval O., Nabareseh S., Klimek P., Chromjakova F. (2016) Demographic Preferences Towars Carees in Shared Service Centers: A factor analysis. Journal of Business Research. No 69 pp. 4798-4803.
7. Lithuania's Business Services Report (2018) Retrieved: https://www.investlithuania.com/gbs-report-2018/wp-content/uploads/2018/09/GBS-report-2018.pdf Access: 20.10.2018.
8. Lithuania's Business Services Report (2018) Retrieved: https://www.investlithuania.com/gbs-report-2018/wp-content/uploads/2018/09/GBS-report-2018.pdf Access: 05.11.2018
9. Marciniak R. (2014) Global Shared Service Trends in the Central and Eastern European Markets. Entrepreneurial Business and Economics Review. No 3.
10. Richter P.C., Bruhl R. (2017) Shared Service Center Research: A Review of the Past, Present, and Future. European Management Journal. No 35 pp. 26-38

11. Rotwell A.T., Herbert I.P., Seal W. (2011) Shared Service Centers and Professional Employability. Journal of Vocational Behaviour. No 79 pp. 214-252
12. Techopedia. Business Process Outsourcing. Retrieved: https://www.techopedia.com/definition/13776/business-process-outsourcing-bpo Access: 10.10.2018.
13. The World Bank (2019) Doing Business 2019. Retrieved: http://www.doingbusiness.org/content/dam/doingBusiness/media/Annual-Reports/English/DB2019-report_web-version.pdf Access: 22.10.2018.

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SELECTED ASPECTS OF DEVELOPING AND PROTECTING THE LANDSCAPE OF SEPOLNO KRAJENSKIE COMMUNE

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Abstract. Landscape development is an essential process for adequate area management. Landscape conservation aims at e.g. preserving its important elements, with areas of outstanding natural beauty, continuing traditions, cultural and historic customs and habits related to a place. The objective of the paper was to evaluate the actions taken and investments made so far by the commune in terms of developing and preserving the landscape space and learning the opinions of the commune residents and visitors. The research material was acquired from the analysis of the commune documents and the survey research made in 2017 in a group of 217 respondents. The documents analysed indicate a high level of EU investment co-funding in communes. The surveys have shown that the respondents appreciate the natural qualities of the commune area, however they also point to the threats posed to the attractiveness of the commune. Most of the respondents claimed that there had been an increase in the number of landscape development and protection actions after the integration with the European Union.

Key words: rural areas, landscape, preservation, natural environment.
JEL code: Q51, Q56, Q59.

Introduction

Landscape development is an important process affecting planning the space and adequate area management (Fjellstad W., 2009, Hamin E.M., 2002, Katsoni V., 2015, Montgomery D.R., 1995, Vinas C.D., 2017) and the evaluation of landscape development has been found in research papers for many years (Majtka K. et. al., 2012). Landscape preservation is the action for conserving the existing essential elements, such as the areas of outstanding natural beauty with rare flora and fauna species or characteristic natural topographical relief and continuing traditions, cultural and historic customs related to a place. The term „preservation" refers to preserving what already exists.

With a big need of bonding between the man and the natural environment in mind, a definition has been given to cover cultural landscape which, as provided in the law on historic monuments and preservation thereof, stands for the space perceived by people which includes nature elements and products of civilisation, historic sites due to the operation of natural factors and human impact (Ustawa …, 2003). The cultural landscape covers not only physical elements but also, interestingly, non-material elements, to include local traditions and elements related to various areas of life, with holiday traditions, local outfits, dishes, customs, views and beliefs as well as the history of a place, characteristic for specific areas (Chi L., 2010, Chiang Y. et. al., 2013, Mantziou L., et. al., 2016, Middleton B.R. 2013, Katsoni V., 2015, Qin K. et. al, 2019).

Another concept is the landscape as a component of social and legal space. It is a set of norms, laws and objectives defined by the community residing in a given area. The laws as well as traditions and customs related to a given space are essential. To define such landscape, one can quote the statement that landscape, as a social and legal term, is a system of norms which regulate the principles of behaviour of the members of a given social group in reference to landscape (Kupidura A., Luczewski M., Kupidura P., 2011).

Another definition of landscape is the so-called mental landscape the psychology specialists are interested in. It is a subjective kind of landscape present inside each individual. It depends on

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individual values, principles, life experience and sensations of each person, it thus refers to the subjective observations and sensations of individuals possible thanks to senses.

In the European Union countries, in the 1990s an important guideline has been formulated by the concept of sustainable development (Adamowicz M., 2018, Bak I., Cheba K., 2018, Jankava A. et. al., 2017, Kalinowski S., Kielbasa B., 2017, Naglis-Liepa K. et. al., 2018), created as a response to a need of change in the the attitudes of people to the landscape surrounding them (Roman M. et. al., 2018), although the concept often faces numerous difficult-to-overcome implementation barriers (Dacko M., Dacko A., 2018). It refers to developing the existing resources of the areas of cities/ towns and villages through an adequate area management. The responsibility for developing the country's landscape should be held both at the national and communal level, as well as by the local communities formed by the residents of specific areas. It is in the local scale that a considerable part of the assumptions of sustainable development are executed (Wojewodzic T., 2005). It is thus important for the residents to be aware of how essential the effect they have on the area they live in. Polish communes should execute the concept of sustainable development also remembering the revitalisation of the degraded areas and places significant for the culture and history of the country (Kalinowski S., Kielbasa B., 2017, Kowalska M., Bogusz M., 2018).

The primary research objective has been to evaluate the commune's actions and investments in terms of developing and protecting the landscape space and learning the opinions of the commune residents and visitors. The aim of the survey study has been to diagnose the opinions of the respondents on identifying the greatest qualities and threats in terms of the development of the commune attractiveness, the occurrence of the structures and areas of preserved landscape and cultural heritage. The secondary research objective has been to learn the opinions of the respondents on increasing the number of actions to develop and to preserve the commune landscape after Poland's joining the European Union.

Material and the research method

The research was performed in August and September 2017. The general population included 16 012 commune residents found in the register at the time of research. The maxim possible error accounted for 7 %, while the confidence level – 95 %. The sample to meet such requirements was made up of 217 respondents. For the survey there were selected 140 respondents living in the area of the towns and the villages in the commune, as well as 77 tourists and the persons visiting the commune on business. The research methods included the documents analysis and surveys carried out among the commune residents and tourists.

The research area covered the SepolNo Krajenskie commune, found in the north-western part of the kujawsko-pomorskie province, in Poland. SepolNo Krajenskie is the seat of the county authorities, it was granted the civic rights in 1360 and it currently covers the area of 22918 ha. The respondents were mostly at the age of 29 (44.0 %), followed by the age group of 30-39 (18.5 %), 50-59 (18.1 %) and at the age of 40-49 (12.5 %), whereas the lowest number of the respondents were at the age of 60 and more (6.9 %). The survey involved more women, who accounted for 58.3 % of the respondents, than men (41.7 %). A great majority of the respondents (64.4 %) were the residents of the commune, and the other 26.9 % – tourists and 8.7 % – the persons on business. A majority of the population was represented by town residents (53.2 %). The residents of the villages located on the outskirts accounted for 24.8 %, while the suburban residents – for 22.0 % of the respondents.

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Research results and discussion

In the SepolNo Krajenskie commune various commune landscape development and preservation investments have been completed (Budownictwo …, 2018, Budzet …, 2018, Finanse …, 2018, Strategia …, 2003). The amounts of investments are paid from the commune budget and various subsidising institutions. In 2006-2013 short-term investment projects were completed (executed within 1 year) at the total amount of PLN 39,539,145.87, of which the amount of the non-budget commune subsidies was PLN 22,338,688.50, which accounted for 56.5 % of the total amount invested. In the commune in 2009-2013 there were also made long-term investments the execution of which was planned for more than 1 year; including the development of tourist and resort services as well as the development of sports and recreation facilities to cover the area of Krajenskie Lakeland, the revitalisation of the centre of SepolNo Krajenskie as well aa the construction and providing equipment to the creche as part of the complex of the Centre for a Small Children and Family in SepolNo Krajenskie. A total cost of the investments amounted to PLN 21,459,270.70, including PLN 13,373,504.60 of co-funding outside the commune budget (62.3 %). As indicated by the results of other studies, the residents of communes related much hope for enhancing infrastructure to using the European funds (Satola L., 2018). The execution of the EU co-funded investment projects facilitates the enhancement of the condition of technical, social and environmental infrastructure (Bieganska J., et. al., 2015, Dziekanski P., 2016, Dziekanski P., 2018, Ionescu H.M., et. al., 2016, Kancs D.A., 2005, Scorza F., 2013, Vujacic J.P., 2014). Currently the SepolNo Krajenskie commune provides many tourist trails (Turystyka, 2017). Some of them are related to the areas of the adjacent communes, which helps joint efforts of coordinating the tourist traffic. The trails go through the areas of outstanding natural beauty and sightseeing value; the commune's big asset are woodlands, lake shores, terrain elevations and river valleys. The trails also run through places with a high cultural and historic value, e.g. the palace in Komierowo or national memorials. The SepolNo Krajenskie commune stands from the crowd of the other communes by as many as 7 tourist trails (Szlaki …, 2017). Despite a high number of trails, the said historic and cultural structures are not adequately displayed and they need revitalising.

According to the data available, the commune does not play a significant role in rendering services to tourists, even though it has numerous such qualities (Turystyka, 2017). During the study period the commune provided 370 beds, including two hotels, 4 leisure centres and 10 agritourism farms (Baza …, 2017), however, a majority of them were not fully used due to a poor tourist traffic. The existing qualities create a potential for the commune development, however most of the commune assets, including the Krajenski Landscape Park (Krajenski …, 2017), are not displayed enough. The commune tourism development potential is not, however, used enough, for example inadequate public management of the shores of numerous water reservoirs. As for the use of solar and wind energy, popular especially in the western countries; the Netherlands or Switzerland, to mention just a few, those resources are hardly used to generate energy in the SepolNo Krajenskie commune, especially due to the geographic location of the sepolenski county. However, thanks to the possibility of co-fundings from the National Fund for Environmental Protection and Water Management, solar structures are growing in number. In 2017 No wind farms emerged, however decisions were taken on the emergence of a few such structures in the upcoming years (Stupalkowski W., 2014).

The persons participating in the survey were aware of the natural qualities found in the commune. Similar results were recorded in other studies (Koreleska E., 2018). The greatest landscape assets of the SepolNo Krajenskie commune reported by most respondents (50.2 %), both the residents of

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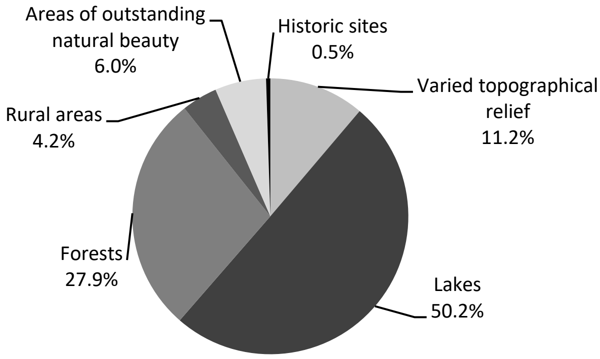
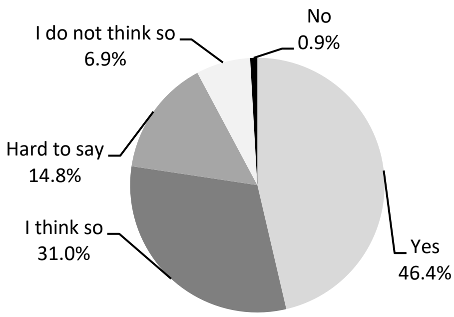
towns and villages, were the lakes. Fewer, 27.9 % of the respondents mentioned the forests. The present study, however, demonstrated that 11.2 % of the persons considered a varied topographical relief as the landscape quality. The lowest number of the respondents (0.5 %), while listing the advantages, mentioned the historic sites in the area (Fig. 1).



Source: author's calculations based on research

Fig. 1. **The greatest advantages of the SepolNo Krajenskie commune landscape in the opinion of the respondents**

Almost half of the respondents (46.4 %) answered that they knew of the existence of preserved landscape and cultural heritage in the commune. Slightly fewer (31.0 %) expressed a less definite opinion by saying „I think so", whereas only 6.9 % said that that they did not think they knew of their existence, and only 0.9 % definitely responded that they did not know of any such areas and structures. Also a group of respondents could hardly say anything about it (14.8 %) (Fig. 2).



Source: author's calculations based on research

Fig. 2. **Structures and areas of preserved landscape and cultural heritage in the commune in the opinion of the respondents**

Among the threats lowering the attractiveness of the SepolNo Krajenskie commune, the highest share of the respondents (23.9 %) pointed to non-refurbished buildings. A similar group (22.0 %) considered the existence of the places which could be the commune's asset and which were neglected. Others pointed to neglecting the historic sites in the commune, which was indicated by 17.6 % of the respondents. In the opinion of others, the biggest threats included rail routes closing down (13.3 %) and the outflow of tourists to more attractive communes (13.3 %). Almost every tenth respondent indicated an insufficient promotion as an essential reason for a lowered commune attractiveness (Fig. 3).

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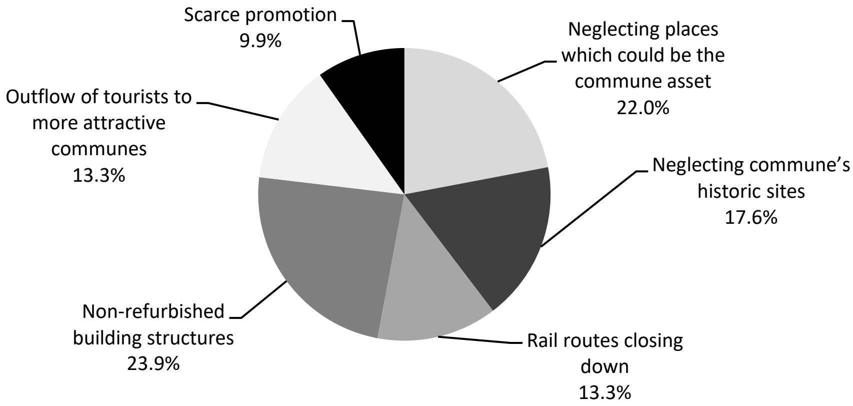
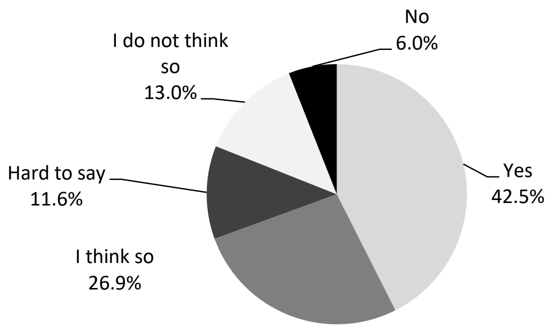


Source: author's calculations based on research

Fig. 3. **Existing threats which, in the opinion of the respondents, decrease the attractiveness of the SepolNo Krajenskie commune most**

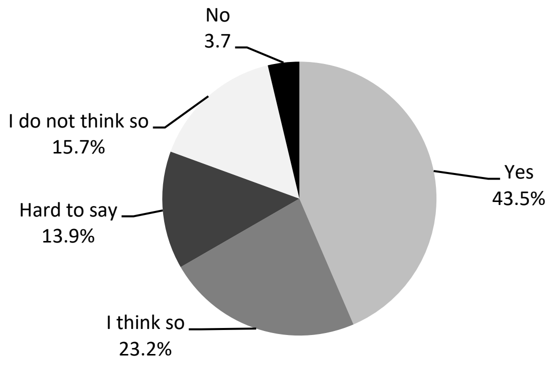
For the way people perceive the landscape attractiveness, the closest surroundings where people live are most essential. Answering the question on the negative impact of much freedom in the building style, including a free selection of facade materials and colours in the commune, a vast majority (69.5 %) confirmed that it had a negative impact on the landscape. A few respondents, only 6.0 %, stated that the free choice in construction decisions had No negative effect on the commune landscape and 13.0 % answered „I do not think so". For 11.6 % of the respondents it was hard to say if the effect was positive or negative for the surroundings.



Source: author's calculations based on research

Fig. 4. **Negative effect of much freedom in the building style, with the selection of any facade materials and colours on the landscape in the opinion of the respondents**

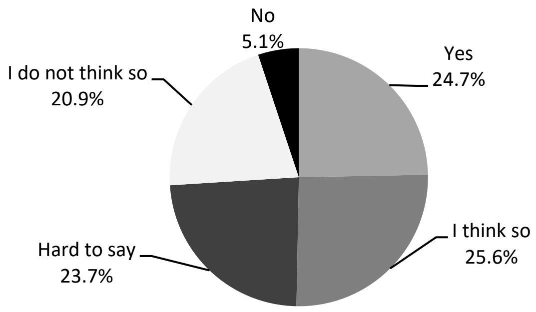
Another question concerned evaluating the effect of a large number of advertisement displays along the roads, in the town and in the rural areas of the SepolNo Krajenskie commune, on the landscape. The highest number of the respondents (43.5 %) claimed that too many displays had a negative effect on the landscape, while 23.2 % responded that they thought they had more of a negative effect. A much smaller part of the respondents (15.7 %) claimed that they did not think it had much of a negative effect on the landscape, whereas 3.7 % of the respondents said that it did not have a negative effect on the surroundings. Of the population researched, 13.9 % of the respondents refrained from giving a definite answer to the question (Fig. 5).



Source: author's calculations based on research

Fig. 5. **Negative effect of a large number of advertisement displays along the roads in the town and in the commune on the landscape in the opinion of the respondents**

To answer the question about the observable number of actions to develop and to protect the commune landscape after Poland's joining the European Union, only 5.1 % did not notice any such actions, while 20.9 % did not think they noticed any. 25.6 % of the respondents thought they noticed their intensity increased, whereas 24.7 % marked a higher number of such actions after 1 May 2004 (Fig. 6).



Source: author's calculations based on research

Fig. 6. **Opinions of the respondents on an increasing number of actions to develop and to protect the commune landscape after Poland joined the European Union**

Conclusions

1) In spatial planning, many countries, both the EU and non-EU member states, follow the principles of sustainable development. It is the concept many countries of today's Europe build their strategies on. One of the principles provides for the respect for the area the man lives in. It advocates the selection of the adequate investments for a given place, considering both the nature factors, including the topographical relief, as well as the history, traditions and culture of the place.
2) For the SepolNo Krajenskie commune, Poland's joining the European Union was essential as it facilitated the acquisition of additional funds for the commune development, also in terms of landscape development and preservation. The documents analysed, provided by the commune authorities, show a high level of co-funding for the investment projects executed in 2006-2013 with the EU funds, accounting for 56.5 % short-term and 62.3 % long-terms investment costs.
3) The respondents taking part in the survey appreciated the nature qualities of the commune, mostly lakes, forests and the topographical relief, with a majority claiming to be knowledgeable about the structures and areas of preserved landscape and cultural heritage.

4) The threats to the commune attractiveness were most frequently considered to be posed by non-refurbished building structures, neglecting the places which could be the commune assets as well as No adequate attentiveness to historic sites. Most of the survey respondents claimed a negative effect of much freedom in the building style, related to a free choice of facade materials and colours as well as a high number of advertisement displays along the roads in the town and in the entire commune.
5) Most of the respondents believed that the number of landscape development and preservation actions as a result of the integration with the European Union would increase.

Bibliography

1. Adamowicz, M. (2018). Normative Aspects of Rural Development Strategy and Policy in the European Union. *Proceedings of the International Conference "Economic Science for Rural Development"*, Jelgava, Latvia, No 47, pp. 17-27.
2. Bak, I., Cheba, K. (2018). The Application of the Dynamic Classifications in Order to Evaluate the Changes of the European Union's Sustainable Development. *Proceedings of the International Conference "Economic Science for Rural Development"*, Jelgava, Latvia, No 48, pp. 36-43.
3. *Baza noclegowa (Accommodation Base)* (2017). Retrieved: https://www.gmina-sepolno.pl/index.php/cos2/12-strona/66-baza-noclegowa Access: 20.12.2018.
4. Bieganska, J., Sroda-Murawska, S., Grzelak-Kostulska, E. (2015). Significance of EU Funds in the Creation of Sport and Recreation Infrastructure in Poland in the Context of the Cohesion Policy. Proceedings of the 17th International Colloquium on Regional Sciences, Hustopece, Czech Republic, pp. 409-416.
5. *Budownictwo i inwestycje (Construction and Investments)* (2018). Retrieved: http://www.bip.gmina-sepolno.pl/?cid=907 Access: 20.12.2018.
6. *Budzet (Budget)* (2018). Retrieved: http://www.bip.gmina-sepolno.pl/?cid=28 Access: 20.12.2018.
7. Chi, L., (2010). Planning and Management of Cultural Heritage Sites and Landscape of Surrounding Cities and Towns-Taking the Zhoukoudian Peking Man Site for Example. *Proceedings of the 47th International Federation of Landscape Architects (IFLA) World Congress*, Zuzhou, China, pp. 1-7.
8. Chiang, Y., Weng, P., Sato, N. (2013). The Preservation of Important Rural Japanese Cultural Landscapes-Considering the WarabiNo Paddy Field as an Example. *Journal of the Faculty of Agriculture, Kyushu University*, *58*(1), 209-218.
9. Dacko, M., Dacko, A., (2018). Studia nad rozwojem obszarow wiejskich - od paradygmatu wzrostu do rezyliencji (Studies on the Development of Rural Areas – from the Growth Paradigm to Resilience). *Wies i Rolnictwo*, 2(179), pp. 49-64.
10. Dziekanski, p. (2016). Spatial Changes and Assessment of the Financial Condition of Local Government Units in the Context of the Income Structure. *Proceedings of the International Conference on Management Trends of Management in the Contemporary Society*, Brno, pp. 153-156.
11. Dziekanski, p. (2018). Territorialisation of Spatial Disproportions of Infrastructure and Development of Rural Areas of the Swietokrzyskie Voivodship. *Proceedings of the International Conference "Economic Science for Rural Development"*, Jelgava, Latvia, No 47, pp. 73-80.
12. *Finanse gminy (Municipal Finance)* (2018). Retrieved: http://www.bip.gmina-sepolno.pl/?cid=330 Access: 20.12.2018.
13. Fjellstad, W., Mittenzwei, K., Dramstad, W., Ovren, E. (2009). Landscape Protection as a Tool for Managing Agricultural Landscapes in Norway. *Environmental Science & Policy*, *12*(8), pp. 1144-1152.
14. Hamin, E. M. (2002). Western European Landscape Protection Western European Approaches to Landscape Protection: A Review of the Literature. *Journal of Planning Literature*, *16*(3), pp. 339-358.
15. Ionescu, H. M., Burduja, S. I., & Burlacu, F. A. (2016). Improved Prioritization Criteria for Road Infrastructure Projects. *Romanian Journal of Transport Infrastructure*, *5*(2), pp. 10-27.
16. Jankava, A., Parsova, V., Berzina, M., Didrihsone, D., Platonova. D., Palabinska, A. (2017). Assessment of Land Degradation for Sustainable Development of Municipality Territories. *Proceedings of the International Conference "Economic Science for Rural Development"*, Jelgava, Latvia, No 44, pp. 69-75.
17. Kalinowski, S., Kielbasa, B. (2017). Risk of Poverty and Social Exclusion in The European Union in The Context of Sustainable Development. *Proceedings of the 8th International Scientific Conference Rural Development 2017*, Kaunas, pp. 1060-1064.
18. Katsoni V. (2015) Application of a Cultural Landscape Tourism Marketing Management Approach in a Mountainous Area. In: Katsoni V. (eds) *Cultural Tourism in a Digital Era*. Springer Proceedings in Business and Economics. Springer, Cham, pp. 121-130.
19. Kancs, D. A. (2005). Efficiency of European Funds in the Accession Countries: the Case of Transport Infrastructure Investments in Latvia. *Transportation Planning and Technology*, *28*(4), pp. 293-313.
20. Koreleska, E. (2018). Ausgewahlte Marketingaspekte von Non-Profit-Organisationen in landlichen Gebieten (Selected Marketing Aspects of Non-Profit Organizations in Rural Areas). *Journal of Research and Applications in Agricultural Engineering*, *63* (2), pp. 120-123.

DOI: 10.22616/ESRD.2019.083

21. Kowalska M., Bogusz M., (2018). Assumptions of Sustainable Tourism in the Context of Ecological Awareness. *Journal of Landscape Management*, 9(1), pp. 22-27.
22. *Krajenski Park Krajobrazowy (Krajenski Landscape Park)* (2017). Retrieved: https://www.gmina-sepolno.pl/index.php/cos2/12-strona/246-krajenski-park-krajobrazowy Access: 20.12.2018.
23. Kupidura, A., Luczewski, M., Kupidura, P., (2011). *Wartosc krajobrazu. Rozwoj przestrzeni obszarow wiejskich (Landscape Value. Development of Rural Areas).* PWN Warszawa.
24. Majtka, K., Bukowski, G., Koreleska, E. (2012). Ocena krajobrazowa i florystyczna wybranych gospodarstw ekologicznych i konwencjonalnych z regionu Pojezierza Brodnickiego i Doliny Dolnej Wisly (Floristic Evaluation of Organic and Conventional Farms from the Region of the Brodnica Lake District and the Valley of the Low Vistula River), *Architektura Krajobrazu*, 3, pp. 44-54.
25. Mantziou, L., Kontopoulou, E., Hatzakis, C. O. (2016). Sustainable Development Protects Sensitive Cultural Landscapes. *Procedia engineering*, *161*, pp. 1785-1790.
26. Middleton, B. R. (2013). „Just Another Hoop to Jump Through?" Using Environmental Laws and Processes to Protect Indigenous Rights. *Environmental Management*, *52*(5), pp. 1057-1070.
27. Montgomery, D. R. (1995). Input-and Output-Oriented Approaches to Implementing Ecosystem Management. *Environmental Management*, 19(2), pp. 183-188.
28. Naglis-Liepa, K., Popluga, D., Lenerts, A., Rivza, P., Kreismane, D. (2018). Integrated Impact Assessment of Agricultural GHG Abatement Measures. *Proceedings of the International Conference "Economic Science for Rural Development"*, Jelgava, Latvia, No 49, pp. 77-83.
29. Qin, K., Li, J., Liu, J., Yan, L., Huang, H. (2019). Setting Conservation Priorities Based on Ecosystem Services-A Case Study of the Guanzhong-Tianshui Economic Region. *Science of The Total Environment*, *650*, pp. 3062-3074.
30. Roman M., Roman M., Roman K. (2018). The Forecast of Economic Processes of Selected Agricultural Products in the Development of Bioenergy and Agritourism Activity in Poland. *Proceedings of the International Scientific Conference Hradec Economic Days*,University of Hradec Kralove, Hradec Kralove, 8 (2), pp. 246-257.
31. Scorza, F. (2013). Improving EU Cohesion Policy: the Spatial Distribution Analysis of Regional Development Investments Funded by EU Structural Funds 2007/2013 in Italy. *Proceedings of the 13th International Conference on Computational Science and Its Applications (ICCSA)*, Ho Chi Minh City, Vietnam, pp. 582-593.
32. Satola, L., (2018). Local Offer of Public Services in the Perception of Municipalities' Residents. *Conference Proceedings of the International Scientific Days 2018 "Towards Productive, Sustainable and Resilient Global Agriculture and Food Systems"*, Nitra, pp. 1403-1412.
33. *Strategia rozwoju Gminy SepolNo Krajenskie (Development Strategy of the SepolNo Krajenskie Commune)* (2003). Retrieved: http://www.bip.gmina-sepolno.pl/?cid=10&bip_id=299 Access: 20.12.2018.
34. Stupalkowski, W., (2014). *Program Ochrony Srodowiska Gminy SepolNo Krajenskie aktualizacja na lata 2014-2017 z perspektywa na lata 2018-2021 (Environmental Protection Program of the SepolNo Krajenskie Commune Update for 2014-2017 with a Perspective for 2018-2021).* UMiG, SepolNo Krajenskie.
35. *Szlaki turystyczne (Tourist Routes)* (2017). Retrieved: https://www.gmina-sepolno.pl/index.php/cos2/12-strona/245-szlaki-turystyczne Access: 20.12.2018.
36. *Turystyka (Tourism)* (2017). Retrieved: https://www.gmina-sepolno.pl/index.php/cos2 Access: 20.12.2018.
37. *Ustawa z dnia 23 lipca 2003 r. o ochronie zabytkow i opiece nad zabytkami (The Act of 23 July 2003 on the Protection of Monuments and the Protection of Monuments).* Dz.U. 2003 nr 162 poz. 1568.
38. Vinas, C.D., (2017). Consideration and Processing of Agricultural Landscapes in the Instruments of Environmental Protection, Land Management And Urban Planning. Cantabria (Spain) As A Case Of Study. *Boletin de la Asociacion de Geografos Espanoles*, 75, pp. 373-405.
39. Vujacic, J. p. (2014). Innovative Financing of Transport Infrastructure and Economic Growth. *Proceedings of the 2nd International Conference on Traffic and Transport Engineering (ICTTE)*. Belgrade, Serbia, pp. 575-582.
40. Wojewodzic, T., (2005). An Attempt at Construction of a Standard of Development Balancing on the Level of Local Government Units. *Proceedings of the 2nd International Scientific Conference on Rural Development: Globalisation and Integration Challenges to Rural Development in Eastern and Central Europe*, Kaunas, Lithuania, Vol 2, Book 1, pp. 184-186.

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OPPORTUNITIES FOR THE FORMATION OF HIGH-QUALITY HUMAN CAPITAL IN THE CONDITIONS OF A „SILVER" SOCIETY

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Abstract. Population aging is one of the main social and economic problems of the 21st century in the developed countries. As a result of the development of medical science and increase the life quality, the potential biological age limit for people has increased rapidly, affecting the overall population's demographic situation and getting older. The general macroeconomic goals of any country are economic growth and sustainable development. In Europe and Latvia, these goals would be achieved by implementing an effective „silver" policy and economy. The authors have concluded that not cutting the value of human capital and finding opportunities to increase its productivity are the most important long-term challenges. The aim of research is identification of factors that affect the possibilities for developing high-quality human capital in a „silver" society. As a result, the authors have offered recommendations to be implemented in order, despite the negative changes to the demographic situation, the value of human capital will not be reduced, its productivity will be increased by implementing the „silver" economy.

Key words: demographic situation, economic development, population aging, „silver" economy, „silver" policy.
JEL code: I21; I25; J11; J14; J18.

Introduction

It is important for any country to achieve macroeconomic goals and ensure the public welfare. The ineviTable trend of the developed countries of Europe and around the world is the population aging, which today should be perceived not as a global problem, frightening statistics, or a threat to the country`s economic development, growth and sustainability, but we should learn to manage the existing „silver" human resources in an effective way to achieve the country`s economic goals. According to UN estimates, the world`s population by 2030, of the age of above 60, will increase by 56 %, i.e. from ~ 901 million to about ~1,4 million, but by 2050 it will reach about~ 2,1 million. Such trend will inevitably affect Latvia. Demographic trends in Latvia are indicative of an aging population and a decline in the number of people. The modern important areas of the „silver" economy and „silver" policy, which are a society`s successful aging policy, include various national policy. Increasing the proportion of the elderly people will inevitably lead to changes to the infrastructure, social system, medicine, and consumption of products, as well as to the common values and attitudes of the society, and to the elimination of age discrimination (European Commission, 2015). The aim of research is identification of factors that affect the possibilities for developing high-quality human capital in a „silver" society. For achieving the aim, the following research tasks were nominated – to identify trends of the population aging in Latvia and opportunities for the formation of high-quality human capital in the conditions of a „silver" society, to stress the problem's topicality. The research object is the human capital in the conditions of a „silver" society. The authors will identify socioeconomic factors that influence opportunities of the development of high-quality human capital in the population aging process that affects employment opportunities and will develop recommendations to be implemented in order, despite the negative changes in the demographic situation, the value of human capital will not be reduced, its productivity will be increased by implementing the „silver" economy. Study methods such as document analysis,

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comparison and statistical analysis were used. The main sources of information: Central Statistical Bureau of the Republic of Latvia, Ministry of Welfare of the Republic of Latvia and Ministry of Education and Science of the Republic of Latvia.

Results and discussion
1. Trends of the population aging in Latvia

Europe and Latvia are faced with a significant process of the population aging, in which the elderly population is a valuable, but often underestimated resource that can make a significant contribution to the society. States should strive to make greater use of the potential contribution of the elderly population to the society. Aging increases the economic and social demands (Central Statistical Bureau, 2012). The age of working ability of the population is reflected by the demographic load indicators, which have been calculated in Latvia since 1990 according to the age of ability to work and of retirement stipulated in legislation of the relevant years (Table 1).

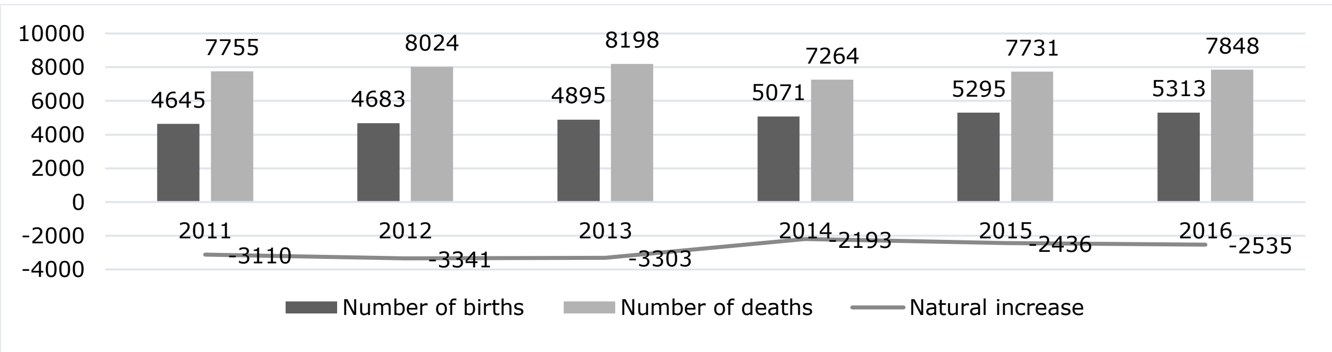
Table 1

Demographic load indicators in Latvia from 1990 to 2017

Year	Age				
	Under the age of ability to work	Ability to work		Above the age of ability to work	
		women	men	women	men
1990 - 1992	0-15	16-54	16-59	55+	60+
1993 - 1998	0-14	15-54	15-59	55+	60+
1999 - 2000	0-14	15-56	15-59	57+	60+
2001 - 2002	0-14	15-57	15-60	58+	61+
2003 - 2004	0-14	15-58	15-61	59+	62+
2005 - 2006	0-14	15-59	15-61	60+	62+
2007 - 2008	0-14	15-60	15-61	61+	62+
2009 - 2016	0-14	15-61	15-61	62+	62+
2017	0-14	15-62	15-62	63+	63+

Source: Central Statistical Bureau

According to Table 1, in the period from 1990 to 2017 the increase in the working age population is particularly affecting women, which has increased during 8 years – from 54 to 62, for men – from 59 to 62. As a result, in 2017, the working age of both women and men is up to 62 years. The age above working ability is 63 years and above. The natural movement of the population of Latvia is unfavourable in last years as well. Authors reflect the main indicators of the natural movement of the population during the period from 2011 to 2016 (Figure 1).



Source: Central Statistical Bureau

Fig. 1. **The main indicators of the natural movement of the population in 2011– 2016, thou**

Since 2011, the number of births in Latvia has slightly increased by each year, but in 2016, compared with the previous year, the increase is No longer observed. Natural growth in Latvia has remained negative since 1991. In 2016, when death rates exceeded birth rate, the population in the

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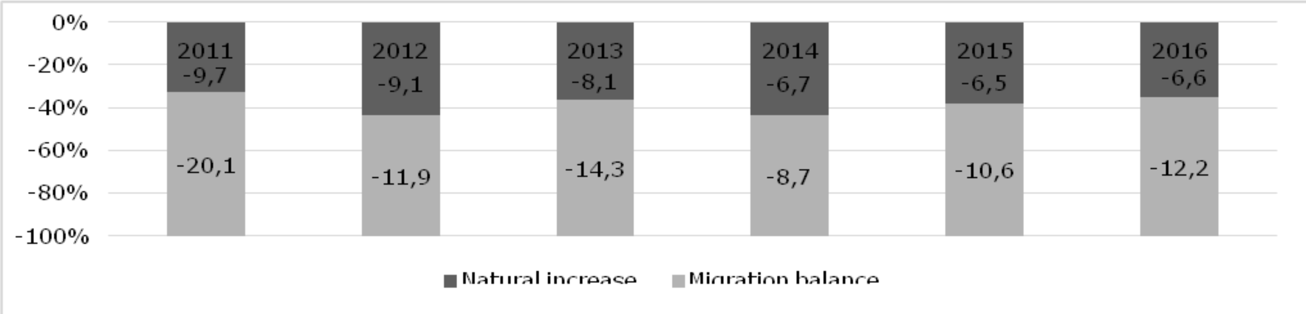
country fell by 2535 persons (Central Statistical Bureau, 2017). The authors reflect the changes in the number of population in Latvia during the period from 2011 to 2016 (Figure 2).



Source: Central Statistical Bureau

Fig. 2. **Changes in the number of population in 2010 – 2016, thou**

Since 2011, the population of Latvia has decreased by 170 thousand or 8 %. Due to migration, Latvia has lost 113 thousand of population, and due to a negative natural increase - 57 thousand. This situation is rather pronounced in the rural regions of Latvia, where the remaining young people are increasingly moving to Riga and Pieriga region (Riga Suburbs), searching for economic opportunities. The result is the general population aging, especially in the rural districts most remote from Riga, as well as the fall in the working age population, which bear the burden of pensions and health and social care, taking into account the growing proportion of the elderly people in Latvia (Auers D., Gubins S., 2017). The authors conclude that Latvia is characterized by a pronounced process of urbanization and population aging, which should be taken into account when forming and implementing the main national policies – employment, health care, social, fiscal and taxation, education, etc. Problems in the country arise when the society is unable to reproduce itself, as a result of which it ages. There is an inadequate amount of elderly people and insufficient number of children in Latvia. Due to the negative demographic situation, the number of economically active population will decrease in the future. This is not a problem only for Latvia but also for the EU as a whole; however, due to depopulation or a decrease in population, this problem is particularly pronounced in Latvia (Central Statistical Bureau, 2012). Due to a decline in birth rates, increase in death rates and as a result of the migration process, the population of the age above 63, namely above the working age, increases in Latvia. The population is aging, as a result of which the „silver" society is created, hence a special resource group should be formed as high-quality and competitive human capital. In Latvia, this problem has not been sufficiently addressed until now and there are stereotypes in society that must be overcome in a given socio-economic situation. Consequently, it is very important to underline and stress the topicality of this problem in Latvia.

2. Opportunities for the formation high-quality human capital in the conditions of a „silver" society

One of the preconditions for economic development of the country is high-quality human resources, the creation of which is diversified and influenced by various factors. Under the circumstances of the „silver" society, when a large population is over 63 years old, this is a special issue, which requires a complex national approach to extend the working life of the population. The availability of high-quality lifelong and creativity-oriented education that responds to the challenges of global competition and demography, and is one of the prerequisites for changing the economic model, is essential (LR Saeima, 2010). At present, vocational training is one of the priorities in the country, which plays an important role in the era of „silver" society, particularly in the context of

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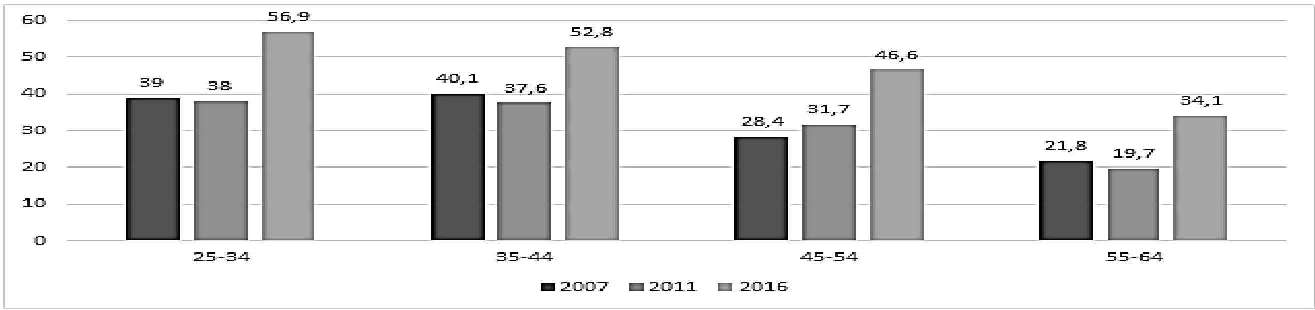
adult education. Adult vocational education, defined as education in which people are 25 years old, must be flexible and competitive as it forms the primary means of providing economic development and labour resources, in an ageing population. The involvement of adults in formal and/or non-formal education in Latvia, from 2007 to 2016 (Figure 3).



Source: Central Statistical Bureau

Fig. 3. **Participation of adult population in formal and/or non-formal education in Latvia, 2007-2016, %**

In general adult education, up to 57 % in 2017, the population is participating in the old age from 25-44. From 45 years onwards, training activities will be reduced to 34 %, leading to a situation where human resources who have been returning for many years have little to do with their knowledge and skills, which, despite the age stage, have to meet the requirements of a particular profession and the labour market. Often, the adult audience has a lack of personal motivation to learn without seeing links between learning, knowledge-building and higher quality of life (Stasane J., 2017) and, unfortunately, the ageing population, this problem exacerbates, which can be mitigated by positive changes in different national policies, including through competitive education. As a result of competitive education in the country, in the long-term, the adequate, high-quality, and competitive human resources that contribute to an increase in the productivity and competitiveness of enterprises are prepared in the country. As a result, companies increase the ability to sell goods and services in the local, EU and global markets. GDP increases over a period of time and the country`s economic growth will be achieved. Population ageing in the states of the European Union is a contemporary phenomenon which results from both longer life expectancy and declining fertility rates. The EU response to the challenge of population ageing is the 'active ageing' policy, which aims at increasing the employment rate of elderly workers and increasing the retirement age, and also refers to their participation in social, economic, cultural, spiritual and civic affairs. Population ageing will have an impact on the development of entrepreneurship and the rise of 'silver economy' which promotes the development and marketing of innovative products and services aimed at elderly consumers (Kurek S., Rachwal T., 2011). „Silver economy" is a part of the economy that concerns Europe's older citizens. It includes all the economic activities relevant to the needs of older adults, and the impact on many sectors. For example, health and nutrition, leisure and wellbeing, finance and transport, housing, education and employment. The „silver economy" is closely linked to current trends in Europe's demographics and the effects on older adults' quality of life. The „silver economy" appeared as a result of substantial changes in demographic situation that increasingly affected the 21st century European society. „Silver economy" members also have particular needs, which will evolve with the current rapid rate of technological and demographic change. Thus, by extending the retirement age, „the work life" of a person increases as a result of which the state has to find solutions for provision new jobs for the elderly people and to change approaches in the implementation of various policies. The increment in the number of old people imposes an ineviTable challenge for the politicians and strategies in health for the sake of to satisfy its necessities and to offer them the possibility to live its last years with excellent quality of life (Cruz R.V., Ones D.G., Pena M.C., 2015). In the view of authors, an effective health care policy should be initiated mush earlier before a person reaches retirement age. The attitude of employers and the implementation of measures at the workplace is essential. The gradual rapprochement of the Latvian economy to the most prosperous countries of the EU in the medium term will allow Latvia`s demography to stabilize. The demographic situation of Latvia looks more promising in the near future than in the recent past, however, the society and policy makers have to accept the reality of the future – a smaller total population, a more urbanized society, a larger proportion of the elderly people - and take actions accordingly (Auers D., Gubins S. 2017). So, in Latvia, two major problems are emerging: the population aging and the pronounced urbanization, as a result of which the state regions are becoming less populated and economically more lagging, which contradicts the position of the EU that none of the regions in the country should be particularly economically underdeveloped. It follows that the „silver" policy covers different, but not interrelated areas, which, through their complex implementation, can improve the quality of life of the „silver" population and its inclusion in the society. Increasing the proportion of the elderly people will inevitably lead to changes to the infrastructure, social system, medicine, and consumption of products, as well as to the common values and attitudes of the society, and to the elimination of age discrimination (European Commission, 2015).

The urbanization process, interacting with the aging population, reveals a completely different vision and requires new solutions. The realization of the silver policy and economy in the regions of the country is becoming acute. As the number of people decreases and society ages, it is important to not reduce the value of human capital base and increase its productivity. Investing in human capital is a priority in the long term, in order to ensure the participation of all potential human resources, in particular those at risk of poverty and social exclusion, in the labour market, to improve the health, social care and social security and lifelong learning system services and efficiency. In order to mitigate the negative aspects of aging, it is necessary to find suiTable solutions for the situation in Latvia for longer and better working life at the national and public level. Two potential variants of the Ministry of Welfare of the Republic of Latvia that could contribute to extending the working life of residents of Latvia are compiled (Table 2).

Table 2

Steps for extending the working life of residents of Latvia

Variant I – a new approach	**Variant II – the current approach**
Development of cognitive skills, involvement in entrepreneurship and creating savings – increasing the participation of the elderly people in the labour market by offering new solutions in various fields	Continuing the current policy – engaging in training and support for job search
• Supporting entrepreneurship can contribute to the employment of the elderly population; • Development of social entrepreneurship; • Implementing a favourable tax policy for making savings; • Develop cognitive and socio-emotional skills from an early age; • Improve adult education system and acquisition opportunities; • Provide appropriate adult education opportunities; • Promote more active involvement of older people in various health promotion and prevention activities; • Implement support measures for workers, the unemployed and seniors, which include both public comprehension forming activities and various consultations and training.	• Support for the elderly population in the search for job implemented by the SEA; • Support for the elderly population by engaging them in training activities implemented by the State Employment Agency.

Source: Ministry of Welfare of the Republic of Latvia, 2016

Implementing the current policy – engaging in training and supporting job search is ineffective and does not reduce the negative impact of current demographic trends on the labour market. The current measures do not solve the individual barriers of the elderly people for engaging in the labour market, which is also often the basis for long-term unemployment. Consequently, while continuing the current labour market policy, there is a risk that the elderly people will not be given adequate support for longer working life, which will have a negative impact on the labour market supply, especially as the labour market structure changes, where the elderly people make up a growing proportion of the working population (LR Ministry of Welfare, 2016). The Ministry of Welfare assumes that the implementation of Option I will promote working life of the elderly people as well as compliance with changing labour market requirements. In general, such approach will contribute to longer and healthier working life of the residents of Latvia for the improvement of the population and overall economic situation, which is an essential aspect in the current demographic conditions. In the vision of the authors, for longer and better working life, in order to achieve the country`s macroeconomic goals, Option I of the LR MW would need to be complemented with age anti-discrimination measures and the continuation of work after reaching the retirement age, which is very important for the effective implementation of the „silver" economy. In order to reduce the negative aspects of aging in the regions of the country, a separate measure must be developed. The investment policy becomes of great importance in the development of regions that can be effectively implemented if the necessary resources are available, of which high-quality and sufficient human resources are essential.

Conclusions, proposals, recommendations

Analysing the opportunities for the human capital building in the „silver" society, the main conclusions are as follows.

1) There is a pronounced process of society aging in Latvia. People over working age would be interested in working, for economic reasons, but often face a discrimination of employers and society. The situation could change if unemployment continues to fall and there is No decision to actively attract employment from other countries.
2) The population above the working age will increase in Latvia, thus a special resource group should be formed as high-quality and competitive human capital.
3) Higher levels of education increase competitiveness and are one of the factors behind the worker's potential productivity. Creating a differentiated vocational education model could effectively involve a „silver" society and make it an efficient labour resource that meets labour market requirements.
4) The „silver" society must have a resource that could ensure the development of national economy branches. To ensure this, it is necessary to introduce, in a timely manner, solutions for a longer and better working life of the population such as appropriate working time as well as tax incentive.

As a result of the research certain socioeconomic factors affecting the development of the high-quality human capital and employment opportunities in the process of population aging were revealed: competitive education opportunities, retraining opportunities in the short term, savings opportunities, favourable tax policy, development of entrepreneurship in the country, health care level, housing conditions, material security, arrangement of the work environment.

Recommendations to be introduced in order to not reduce the values of human capital despite the negative demographic and economic changes could be following.

- Implementing a favourable tax policy for employers, which will improve the business environment and enable the creation of new jobs that are geared towards the implementation of the „silver" economy.
- The acquisition of education, qualifications or retraining in line with national economy needs must be carried out efficiently and in a short period of time in order to be able to quickly respond to labour market changes. Particular attention should be paid to the education of the elderly people through the effective implementation of the Operational Program „Growth and Employment", which aims „To prolong the ability to work and employment of the employed elderly people".
- The state employment policy should be improved in order to stimulate the acquisition of education in specialities, which have insufficient human resources, thus reducing unemployment among the elderly people.
- Companies should be set up in which people above working age could apply their craft skills. Goods would be able to be exported to other countries as a „handmade" gaining ever greater value society.
- It is necessary to change employers` view that elderly workers miss their work due to health problems, have lower productivity, without motivation, with reluctance to engage in training and change according to labour market requirements. These stereotypes in society must be overcome in a given socio-economic situation.

Bibliography

1. Auers, D., Gubins, S. (2017). *Latvian Demographic Portrait Today… and Tomorrow*. Demographic Portrait of Latvia Today.... and Tomorrow. Riga: House CERTUS, June 2017. ISBN 978-9934-8679-6-5. Retrieved: http://certusdomnica.lv/wp-content/uploads/2017/05/Certus_LatvijasDemografiskaisPortrets_2017_LV-1.pdfi. Access: 21.12.2018.
2. Cruz, R.V., Ones, D.G., Pena, M.C. (2015). *Population Aging as Challenge of the science, the technique and society*. Cuba: Universidadde Ciencias Medicasde La Habana, 2017. E-ISSN: 1729-519X. Retrieved: https://www-scopus-com.resursi.rtu.lv/record/display.uri?eid=2-s2.0-85025667473&origin=resultslist&sort=plf-f&src=s&st1=Population+aging+is+one+of+the+social+and+economic+problems+&nlo=&nlr=&nls=&sid=ad2526f10337576dceffc2ca78b6f547&sot=b&sdt=b&sl=75&s=TITLE-ABS-KEY %28Population+aging+is+one+of+the+social+and+economic+problems+ %29&relpos=24&citeCnt=0&searchTerm. Access: 21.11.2018.
3. Central Statistical Bureau of the Republic of Latvia. *The Elderly People in Latvia*. Elderly people in Latvia. 2012. ISBN 978-9984-06-431-4. Retrieved: http://www.csb.gov.lv/sites/default/files/nr_15_vecaka_gadagajuma_iedzivotaji_latvija_2012_12_00_lv.pdf. Access: 05.12.2018.
4. Central Statistical Bureau of the Republic of Latvia. (2017). *Population in Latvia is decreasing; the growth in Riga is observed*. Population continues to decline in Latvia, increasing in Riga. Retrieved: http://www.csb.gov.lv/notikumi/iedzivotaju-skaits-latvija-turpina-samazinaties-riga-verojams-pieaugums-45899.html. Access: 05.11.2018.
5. Central Statistical Bureau of the Republic of Latvia. (2017). *In the 1st quarter of 2017, the number of children born in Latvia was less by 6.9 % than a year ago*. Retrieved: http://www.csb.gov.lv/notikumi/2017-gada-1-ceturksni-latvija-piedzima-par-69-mazak-bernu-neka-pirms-gada-44564.html. Access: 05.12.2018.
6. Kurek, S., Rachwal, T. (2011) *Development of entrepreneurship in ageing populations of The European Union*. Science Direct: Procedia Social and Behavioral Sciences p 397–405. Retrieved: www.sciencedirect.com. Access: 05.11.2018.
7. Ministry of Welfare of the Republic of Latvia. (2016). Conceptual Report. *„Active Aging Strategy for Longer and Better Working Life in Latvia*". Retrieved: http://www.lm.gov.lv/upload/lmdokumentuprojekti/1/lmzino_080416_aktnovec.pdf. Access: 11.08.2018.
8. Latvian Republic Saeima. (2010). *Latvian Sustainable Development Strategy for 2030*. Retrieved: http://polsis.mk.gov.lv/documents/3323. Access: 05.09.2018.

Stasane, J. (2017). *Diversification as an opportunity for developing adult education*. Ministry of Education and Science. International Scientific Conference „Challenges for high quality of adult education", Conference Proceedings. Riga, 2017 ISBN 978-9934-8148-9-1

MARKETING AND SUSTAINABLE CONSUMPTION

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END CONSUMERS' BUYING HABITS IN BEER MARKET: CASE OF LATVIA

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Abstract. Beer is the most consumed alcoholic beverage in Latvia (SRS, Excise goods movement statistics and results, 2016), nevertheless, beer consumption trends and consumer behaviour is not often studied subject in this field.

Aim of the research is to explore end-consumer beer buying habits in Latvia. The research involves surveying Riga's end consumers (age 25 — 40) with income exceeding the average wage in Latvia (EUR 1000 gross). The research results can be applied to the same target groups in other Latvia's regions. The research results will be beneficial for further promoting beer production in the market and finding the right target audience.

The study raised the following questions: 1)What factors influence consumers beer choice and what role plays gender in it? 2)What are the beer consumption particularities and trends among consumers? To answer the questions, theoretical analysis was accompanied with Riga's inhabitants' survey. Research methods involve calculation of reliability of Cronbach's alpha; Kolmogorov Smirnov Z criterion; Descriptive Statistics — Central Trend Indicators; Concluding statistics — T significance indicator were used. The research object: beer market end-consumers. The research concentrates only on the consumers having consumed beer.

Findings show that gender has an impact on beer consumption habits. Research results prove that target audience of beer are male (55 % of the males and 18 % of the females report to consume beer every week), males are more open minded towards new beer product trial, and more often pay attention on informative articles about beer in media, they orientate better in beer industry. Beer has expressively seasonal character, it is more consumed during summer – this aspect is especially characterised among women and is expressively associated as a thirst refreshing beverage. Beer is often bought as a gift. Quality and price relation becomes more important in the group surveyed – people start paying more attention to quality, cheaper price or discounts reporting as not the most significant aspect when buying beer.

Key words: beer, consumption, gender differences, cognitive, behavioural trends.
JEL code: Q13.

Introduction

Beer is the most consumed alcohol in Latvia (statistics and results of the SRS Excise Movement Section, 2018), but despite this, beer consumption trends are a little studied issue, especially consumer behaviour in this field and factors influencing purchase choices. There is also a limited amount of available information about the market in beer in Latvia and the current situation.

The aim of the research is to explore end-consumer beer buying habits in Latvia.

Research tasks: basing on the analysis of the literature on consumers' behaviour, to conduct research on consumer buying habits and factors influencing choice of beer products. The following research questions are addressed: 1)What factors influence consumers beer choice and what role plays gender in it; 2)What are the beer consumption particularities and trends among consumers.

Research methodology: a survey of Riga's inhabitants was carried out with a quasi-experimental design, since the variables are not affected. A descriptive study of the relationship research, which seeks to differentiate beer consumption patterns between male and female sample groups was performed. Limitation – Respondents were aged 25 – 40, they live in or around Riga, gross income - EUR 1000 or more. The group was chosen, taken into account the gross average salary in Riga – EUR 1085 (Central Statistical Bureau, 2018).

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The total number of respondents is 154 with an average age of 34 years, among which 89 men with an average age of 34.3 years and 65 women with an average age of 34.5 years.

Calculation of reliability of Cronbach's alpha; Kolmogorov Smirnov Z criterion was performed; Descriptive Statistics - Central Trend Indicators; Concluding statistics - T significance indicator were used.

Research results and discussion

1. Beer consumption trends – previous research works

The data on the existence of beer is very old, first fixed around the year 1800, when the anthem of the Sumerian Beer goddess was engraved on the plate, having the first signs of brewing beer to appear (CraftBeer, 2018). In the last decade the brewing style like craft beer brewed has developed, regarded as beer produced by small breweries. Unfortunately, this designation does not have a clear definition except for the United States - craft beer is a small, independent and traditional beer brewery, in the small sense, producing less than 6 mill. barrel (~ 117 L / barrel, ie 72 ml L) beer per year, independent - 25 % of the brewery is owned or controlled by a person who is not alder himself (Dredge, 2013). This definition it is difficult to apply to the Latvian market, as the consumption of beer in Latvia during the whole year is only about twice as big as the above-mentioned example, e.g., in 2015 it was ~ 152 million (Statistics and results of the SRS Excise List of goods division, 2018).

Next, it's possible to divide both lager and ale style beer into even more detailed categories, such as beer styles, which can often be found on labels on beer bottles on store shelves (Beer Cartel.com, 2018). Factors influencing consumer choice and consumption patterns can be divided into two categories: beer properties and factors associated with the shopping process (Aquilani, Laureti, Poponi, Secondi, 2014). More than 50 years ago, Alison and Uhl (Allison and Uhl, 1964, cited by Aquilani, Lauret, Poponi, and Secondi, 2014) found that consumers were not able to recognize the taste of a particular beer brand, despite the information they received about this brand. In contrast, Sester, Dacremont, Deroy, and Valentine (Sester, Dacremont, Deroy, Valentin, 2013, quoted by Aquilani, Lauret, Poponi, and Second, 2014) determined that past consumer experience has a bearing on today's choice of motivation, which in turn depends on the brand's influence, received stimuli, psychological expectations. Consumers often have very clear expectations about taste and they expect certain aromas, such as bitterness, texture characteristics such as bubbles, or psychological quality - thirst-quenching. A beer can be rejected if it does not meet this expectation.

Today's consumer choice for beer is largely determined by the discovery of new flavors, quality searches, as well as product mastery. These factors gradually transform consumer habits and shopping behavior (Aquilani, Lauret, Poponi, Secondi, 2014). In the case of packaging, 16.2 % of respondents preferred beer in a glass bottle, while 17.4 % in the beer jar. Commercial beer consumers recognized quality as the most important factor with an average arithmetic score of 4.13 (of 6) and an aroma of 3.92 points (Aquilani, Lauret, Poponi, Secondi, 2014).

Deconinks and Swinnen (Deconinck, Swinnen, 2013) have examined people’s' role in increasing beer consumption in Russia, where it has tripled between 1996 and 2007, becoming the most important alcoholic beverage and making Russia the third largest beer market in the world, ranking behind China and the United States (Deconinck, Swinnen, 2013). In 2007, beer consumption per capita in Russia grew to 80L - a comparison, in Latvia in 2015 it was almost 77L per 1 resident (Statistics and results of the SRS Excise List of goods division, 2016). As one of the reasons the

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authors of the study mention a significant increase in the quality of beer as well as active marketing activities and advertising beer. The study uses Russian Longitudinal Monitoring Survey data, a survey conducted in Russia each year and includes an average of 8,000 respondents from 400 Russian districts, covering 8 of its regions. As a result, the authors of the study found that peers played a significant role as a "transition mechanism", persuading consumers to start consuming beer (switching from vodka to it). Conversely, changes in prices and revenues from respondents have played a minor role (Deconinck, Swinnen, 2013).

In October 2015, the Trial Panel (2015), specializing in rapid commodity research, carried out a fraud trial in France using the Lovemark method to identify and measure emotional interactions between brands and consumers. The study, basing on 300 interviewed respondents, found that the French market is complex and fragmented, with 3 brand divisions, which stirred up completely different emotional ties to consumers. First, a group of brands (Desperados, Leffe and 1664) showed an intense, strong emotional connection with the consumer. There was a group of brands that raised respect and dignity in consumers even in the long run, but at the same time there was a weak emotional link between the brands (Heineken, Pelforth and Grimbergen). Finally, there was a large group of consumer brands, where No one had a differentiated emotional connection with the consumer (TrialPanel, 2015). The study also found that the French market is most likely to have a low emotional differentiation between the brands offered on the market, thus leaving a certain margin of growth and development, which currently has only some brands (TrialPanel, 2015). Taking into account the previous research results, a research on the beer consumption trends in Riga has been performed.

2. Beer consumption trends in Riga

Based on the analysis of scientific literature carried out in the previous sections, a survey of Riga inhabitants was carried out with a quasi-experimental design. In the survey, the consumption patterns of beer were calculated for consumers. A descriptive study of the relationship research, which seeks to differentiate beer consumption patterns between male and female sample groups. Respondents live in or around Riga, gross income - EUR 1,000 and more. A quantitative research strategy was selected for conducting the research, aggregating and analysing both primary and secondary data. The authors of the primary data collection used a survey based on the critical analysis of social psychology and marketing theory as well as the analysis of secondary data and information obtained from the organization's research. The survey as a whole consists of 33 questions, 27 of them formulated in the form of an assertion, grouped into 3 scales – affirmative, behavioral and cognitive, 5 questions with a choice of answers and 2 open-ended questions, where the respondent has the opportunity to write his or her answer. The current paper presents the behavioral and cognitive research results. The questionnaire was elaborated, studying number of information sources (Aldaris.lv, 2018, Anandan, 2009, Brasini and Tassinari, 2003, Cesualus.lv, 2018, Craft Beer.com, *2018,* Dzeru alu, 2009, Gosa, 2003, Hajdu, 2013, Martin and Schouten, 2012, TrialPanel, 2015, Weinstein, 2014, World Drinks Awards, 2016). The total number of respondents was 154 with an average age of 34 years, among which 89 men with an average age of 34.3 years and 65 women with an average age of 34.5 years. All the respondents were Latvian speaking. For the apparent validity check, two independent evaluators were used, who were asked to consult the survey and give an assessment of whether the questionnaire questions are clearly clear and understandable. Two experts were also asked to provide an opinion on content validity. The

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evaluators acknowledged that the content matched the given topic. The questionnaire was elaborated in Latvian using the Likert scale, coded as follows: 1 - agree, 2 - rather agree, 3 - rather disagree, 4 - disagree. The survey questions are based on scales that measure certain factors.'

Table 1

Characterisation of the questionnaire

Scale		Description
Scale	Behavioral	Relates to the behavioral component of attitudes or the influence of respondent attitudes on their behavior towards beer products
Scale	Cognitive	Refers to the cognitive component of the attitude, i.e. the knowledge and attitudes of respondents regarding the beer industry

The data obtained in the surveys were analysed using quantitative statistical research methods as well as mathematical statistical methods, calculating the reliability of the data, or the Cronbach ɑ coefficient, data adequacy to the normal distribution, determining the data of the central trend indicators. At most, the Cronbach's ɑ coefficient is above 0.6, which indicates that the data is reliable.

Table 2

Characterisation of the internal consistency

Scales	Cronbach ɑ	Number of scales
Total	0.64	26
Total females	0.70	26
Total - males	0.62	26

Source: author's calculations based on the survey, n=154

The Kolmogorov-Smirnov Z criterion calculation was made to determine the correspondence of the survey data to the normal distribution. This calculation uses the start data table. Significance is one of the criteria for determining the normal distribution of data.

Table 3

Characterisation of the internal consistency

Measure	Behavioral (males)	Cognitive (males)	Behavioral (females)	Cognitive (females)
N	89	89	65	65
Kolmogoroff-Smirnoff Z criteria	1.193	1.017	.964	.914
Significance	.116	.252	.311	.373

Source: author's calculations based on the survey, n=154

Analysing the K-Smirnov Z index, it is concluded that the significance of all scales is greater than 0.05, thus, it corresponds to the normal distribution and is representative. The central trend indicators for the male group - the arithmetic average, the median, the mode are close to their values, so the sample size is sufficient to measure the results. The asymmetry coefficient for the cognitive scale is positive, hence the results tend to be lower values. In contrast, the behavioral scale is negative, hence the results tend to be higher values.

Table 4

Overall characteristics of the survey results

Measure	Behavioral (males)	Cognitive (males)	Behavioral (females)	Cognitive (females)
Mean	12.11	13.85	12.03	15.23
Median	13.00	13.00	12.00	15.00
Mode	13.00	13.00	12.00	17.00
Standard deviation	2.89	3.30	2.30	3.72
Skewness	-.16	.32	.08	.17
Kurtosis	-.35	-.16	.36	-.03

Source: author's calculations based on the survey, n=154

Analysing the results of the women's group (Table 4), the central trend indicators (arithmetical mean, median, mode) are comparatively similar. The skewness for all scales is positive, so the results tend to be lower values. Behavioral scales are positive, the results tend to group around the arithmetic mean. In contrast, the cognitive scale is negative. When examining whether there are differences between groups of women and men in the two scales in the independent t-test, it is evident from the obtained indicators that they exist on the cognitive scale, since the signification rate is lower than 0.05.

Table 5

Sig. (2-tailed) results

Scales	t	Sig. (2-tailed)	Males - mean	Feales - mean
Behavioral	.17	.86	12.11	12.03
Cognitive	**-2.4**	**.02**	13.85	15.23

Source: author's calculations based on the survey, n=154

Also, looking at the differences between the tendencies in the central trends of men's and women's groups, it is seen that they are higher in the group of women in both of these scales - in cognitive terms. It points to the fact that women have a more emotional approach to decision-making, and this group is more reliant on greetings, more evaluation of different criteria before making a decision. The behavioral scale examines the consumer's attitude to beer, its peculiarities of consumption, the new beer position, its visual appearance and the impact on future behavior, the impact on the acquisition process. The main research results are presented in the table.

Table 6

Descriptive statistics of the survey results

	Gender	Fully agree (%)	More agree (%)	More disagree (%)	Fully disagree (%)
I purchase the beer having a discount	F	6	23	22	49
	M	6	19	30	45
I am attracted by the etiquette or special design of the bottle	F	38	31	23	8
	M	20	36	26	18
I am searching for information before buying beer	F	2	28	40	31
	M	8	24	35	34
I have read articles or other information about beer	F	42	31	15	12
	M	61	28	7	4
I know the ingredients used for producing beer	F	25	48	17	11
	M	42	38	12	8
I like buying and using new, not known beer	F	28	32	34	6
	M	38	39	19	3
I consume beer every week	F	12	17	23	48
	M	55	18	12	15

Source: author's calculations based on the survey, n=154

The impact of the price action on the purchase is uneven and unobtrusive, as can be seen in the results of the survey, where 71 % of women and 75 % of men note that they partially disagree or disagree with the statement that they only buy the beer that is currently being discounted.

Researching the importance of beer etiquette and bottle design as a whole, as it affects the perception of the consumer as a whole, among respondents the role of aesthetics is more pronounced among women, since more than a third is 39 % strongly agrees with the statement that a special visual beer design attracts more of them, while men only agree with the statement of only 20 %.

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However, the majority of respondents agreed to the statement as a whole, so it can be concluded that the visual and aesthetic presentation of the product has a significant impact on the choice of beer in both sexes, more pronounced among women.

When looking at whether respondents tend to read articles about beer, a convincing majority agrees with this statement. The respondents of the men's group have responded more clearly and convincingly, but according to the author, this is due to the fact that the beer and related issues for men are nevertheless closer to the male audience, as evidenced by the results of the 3rd issue of beer consumption.

Conclusions from the results of the questionnaire on the behavioral scales - the prevalence of men consumes beer every week, while women do so less often. A preliminary study of the supply of beer products does not take place practically, especially among the group of men. The price oat the time of purchase of beer is not determinative, the primary role plays the purchase choice. For the visual aesthetic beer presentation women play a more important role, yet it is also not too insignificant for men. Men also recognize that they are learning about new beer products from friends, relatives who point to "mouth-to-mouth" ads.

Cognitive scale examines the knowledge of the respondents, the experience of the beer, as well as the views and opinions of the beer, along with how this knowledge influences the opinions of these respondents. When researching whether before the purchase of beer respondents tend to collect additional information about the chosen or current brand, respondents from both groups answered very similarly – they mostly do not agree with this statement. A relatively small proportion, only about 30 % of whom have indicated that they agree. This suggests that respondents rely on existing information that is available to them and known when choosing to choose one or another brand of beer. When it comes to knowing the knowledge about the composition of beer, most respondents note that they agree they are familiar with the ingredients used in beer. However, looking deeper into the responses and results of respondents, it is observed that men are much more confident about this knowledge, as 42 % of them strongly agree with this statement, while full confidence among female respondents is only 25. By studying how much the respondents are trying to test new and unknown beers, a greater proportion of men, 77 % said they are happy to do so, which is 17 % more than that of women. Here, according to the author, parallels can be drawn with more pronounced beer consumption and the general interest in beer among men, so they are more open to novelty trials and experiments. Since women are less likely to use beer, they may prefer proven values.

Conclusions about the results of the cognitive scale questionnaire: before the purchase of beer, most respondents do not collect information about the chosen brand; men are more confident in their knowledge of the composition of beer as women; Men are more likely to know what craft beer is, while women do not label this sign; a greater predominance of men as women has at least once visited a brewery; men are more open to testing new beers than women, however, in both groups the proportion is large enough for experiments; expressed dominance among respondents for the purchase of beer as a gift, as well as for the purpose of treating someone; the reliability of Latvian beers is higher than that of foreign ones; 3 cups of 0.5 litres of beer and more than men are considered acceptable, most women are inclined to think so.

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Conclusions, proposals, recommendations

1) Product quality plays an increasingly important role in consumer purchasing choices, leaving the importance of discounts in the secondary plane. Both women and men are quite aware of the price they are willing to pay for beer production.
2) The visual design of the product is more important for women, if compared to males.
3) Respondents in the men's group prefer to know the beer industry better, both in terms of beer production processes and the essence of craft beer.
4) Men are more open to trying new beers than women, but in both groups the proportion is large enough for experiments.

Bibliography

1. Aldaris.lv. (2018). *Par alus daritavu – Carlsberg grupa*. Retrieved: http://www.aldaris.lv/lv/par-alus-daritavu/carlsberg-grupa. Access: 01.02.2019.
2. Anandan C. (2009). *Product Management, 2nd edition*. [e-book] New Delhi: Tata McGraw-Hill Education Private Limited. Retrieved: https://books.google.lv. Access: 01.12.2019.
3. Aquilani B., Laureti T., Poponi S., Secondi L. (2014). Beer Choice and Consumption Determinants When Craft Beers Are Tasted. *Food Quality and Preference*.
4. Beer Cartel.com. (2018). *Difference Between Ale and Lager Beer Styles*. Retrieved: http://www.beercartel.com.au/blog/the-difference-between-ales-vs-lagers-explained/. Access: 01.02.2019.
5. Brasini S., Tassinari G. (2003). *The Impact of Brand Loyalty and Promotions on Consumer Behaviour*. Retrieved: http://sa-ijas.stat.unipd.it/sites/sa-ijas.stat.unipd.it/files/433-453.pdf. Access: 01.12.2018.
6. Brewers Association.org . (2016). *Craft Beer History*. Retrieved: https://www.brewersassociation.org/brewers-association/history/history-of-craft-brewing/. Access: 01.12.2018.
7. Central Statistical Bureau. (2018). *The Average Wage in Latvia*. Retrieved: http://data.csb.gov.lv/pxweb/lv/Sociala/Sociala__ikgad__dsamaksa/DS0010_euro.px/table/tableViewLayout1/?rxid=89fa53c2-5ff7-456f-aae4-c4274cf3b2aa. Access: 01.12.2018.
8. Cesualus.lv. (2018). Retrieved: http://www.cesualus.lv/par-mums/olvi-grupa/. Access: 01.12.2018.
9. Craft Beer.com. (2018). *History of Beer*. Retriewed: http://www.craftbeer.com/the-beverage/history-of-beer/timeline. Access: 01.12.2018.
10. Deconinck K., Swinnen J. (2013). Peer Effects and the Rise of Beer in Russia. *Food policy* [e-journal].
11. Dredge M. (2013). *Craft Beer World: A Guide to Over 350 of the Finest Beers Known to Man. New York*: Ryland Peters & Small Ltd.
12. Dzeru alu. (2009). Labs alus blogs. *Alus tradicijas Latvija*. Retrieved: http://labsalus.lv/alus-tradicijas-latvija. Access: 01.12.2018.
13. Goša Z. (2003). *Statistika*. Riga: Izdevejs „Izglitibas soli", iespiests „Jumis", (c) Latvijas Universitate.
14. Hajdu N. (2013). Strategic and Operative Marketing Controlling. *Club of Economics in Miscolc*. Retrieved: https://www.google.lv/url?sa=t&rct=j&q=&esrc=s&source=web&cd=6&cad=rja&uact=8&ved=0ahUKEwix1a2zsdrQAhXDdCwKHQSDCagQFgg0MAU&url=http %3A %2F %2Ftmp.gtk.uni-miskolc.hu %2Fvolumes %2F2013 %2F01 %2FTMP_2013_01_03_Hajdu_N.pdf&usg=AFQjCNEFAI7GgKLKFsQhRa9DCumBQM5Q8A&sig2=cqHCmIrfWFRAf-QHDoddVQ&bvm=bv.139782543,d.bGg. Access: 01.12.2018.
15. Martin D., Schouten J. (2012). *Sustainable Marketing*. USA, New Jersey: Pearson Education, Inc., publishing as Prentice Hal.
16. State Revenue Service of the Republic of Latvia, Excise Data. Retrieved: https://www.vid.gov.lv/default.aspx?tabid=11&id=402&hl=1&lIzveleId=1551&periodsId=7692. Access: 01.12.2018.
17. TrialPanel, 2015. *Desperados and Leffe the Beer Brands That Have the Strongest Emotional Connection With the Consumer*. Retrieved: http://trialpanel.com/desperados-and-leffe-the-beer-brands-that-have-the-strongest-emotional-connection-with-the-consumer/?lang=en. Access: 10.12.2018.
18. Weinstein A. (2014). *Defining Your Market*. [e-book]. New York: Routledge. Google books. Retrieved: http://booksgoogle.com. Access: 14.12.2018.
19. World Drinks Awards. (2016). *Search For the World's Best Drinks*: Leffe. Retrieved: http://www.worlddrinksawards.com/search/?q=leffe&w=be. Access: 15.12.2018.

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WINE MARKET IN FRANCE: CHALLENGES FOR A WINE PRODUCER

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Abstract. The research is devoted to analysing wine market in France — its overall situation and consumers' habits. French wine market is based on product values and quality of the wine that the country produces. The aim of the study is to analyse the current market situation in the wine sector in France and to draw conclusions about the future development possibilities of a particular company, located in Southern France.

Study raised the following questions: 1. How the current situation in the wine market can be characterised? 2. Which are the most important challenges for the wine producers?

Findings show that the number of regular wine consumers in France is declining, while the numbers of rare users are increasing. The most common type of wine consumed by men is the age group 50 and above. According to the theory and the analysis of the French wine sector and the results of the survey conducted, the main determinants of the choice of purchase — namely the region and the year of production of the wine, as well as the award—winning medals were classified. The popularity and reputation of the region is an important condition for customers' choice. At the point of sale, customers believe that the label plays a crucial role in making purchases.

Key words: wine, consumption, gender differences, French market.
JEL code: Q13.

Introduction

The current situation in the French wine market is similar to that of 1973, when the supply of wine was much higher than the demand of buyers in a rapidly changing and growing market. Marketing in the wine sector, both in France and across Europe, is still in its infancy, so it is important for industry to focus not only on product production but also on sales methods.

The aim of the study is to analyse the current market situation in the wine sector in France and to draw conclusions about the future development possibilities of a particular company. This company mainly sells products in southern Aude, France, where the winery is located. Conquering the market at national level seems to be an achievable task for the company, but at the same time there are various obstacles that are mostly related to limited resources over a given period.

The tasks of the research are: 1. Analyse the wine and wine market. 2. Conduct a survey of the French people's habits of buying wine; 3. Develop solutions to strengthen and improve the company's business. The subject of the study is the wine sector in France, while the subject of the study is a particular winery in the Aude region, France.

Research questions: 1. How the current situation in the wine market can be characterised? 2. Which are the most important challenges for the wine producers?

The research involves both qualitative and quantitative methods. Theoretical analysis is accompanied by surveys, conducted at Monoprix stores, France, where 151 buyers were surveyed – they responded to questions about their shopping habits and factors affecting the choice of product. The data are analysed, by using central trends. For measuring the internal consistency of the sample, Cronbach's alpha coefficient is calculated.

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Research results and discussion

1. Marketing specifics in wine industry

The wine market consists of the retail sale of wines, champagne, fortified wine and sparkling wine. The market is valued at the retail price and includes all applicable taxes. The market volume reflects the total amount consumed and expressed in millions of litres of wine. Any currency conversion used to form a market report uses the average exchange rate for that year (Marketline, 2015).

The wine market requires new communication and marketing skills to promote winery, "wine tourism" used as one of them. However, the tourist area is interesting for visitors from May to October – a comparatively short period for the wineries to create new jobs (Faivre, 2009). Region plays a comparatively big role in the wine marketing. For example, selling a Cote de Province wine sells the image of the region, as well as a combination of quality grapes. Consequently, the tourism industry and wine makers are closely linked (Faivre, 2009).

When a company decides to look for the most appropriate customer group to sell, they choose a particular market segment and then adjust the marketing mix. Market segmentation in the wine sector helps to group products at their price rather than choosing a target market or marketing strategy to develop (Castaing, 2013). Wine knowledge types are a significant predictor of variety seeking purchasing behaviour of wine. Wine consumers who think they know a lot about wine, tend to engage in more variety seeking behaviour in their wine purchasing. This suggests that marketers should adapt their segmentation, targeting and channel strategies to individual knowledge types to be more successful (Debbie, Frauke, 2018).

For a better understanding of buyers and their requirements, the authors Rouzet and Seguin offer to divide buyers into several categories: 1. Non—consignee: 25 %, mostly women under 25, buyers with medium to low income that choose other drinks. Representatives of this category often say they don't like or don't like wine for some specific reason (France Agri Mer, 2014); 2. Rare users (fr: occasionnems peu impliqués): 20 %, most often women under the age of 45 who love the taste of wine, but still prefer other drinks. Representatives come from the highest social category, choose wine for festive occasions, but the product is not interesting to them. Consumers acknowledge not to have in—depth knowledge of wine but use it for festive occasions (France Agri Mer, 2014); 3. Rare users of tradition (fr: occasionnels for tradition): 18 %, the members of this group pay little attention to the product, the group is represented by men from the age of 56 who enjoy wine, they represent a lower social level. These consumers consume wine because they are traditionally cultivated, cultivated with wine, but at the same time have No in—depth knowledge of the products (Rouzet, Seguin, 2012); 4. Daily users (inconditionnels quotidiens): 16 %, this category mostly consists of men aged 45 and over. Wine is an integral part of their diet, it is perceived as a meal at a meal rather than as an enjoyable, tasty drink. This category is represented by the lower level of society (France Agri Mer, 2014); 5. Interested users (occassionnels hédonistes impliques): 21 %, category strongly represented by men aged 36—55. Regular wine users interested in products and culture, traditions that enjoy product offerings. The category is mostly represented by the highest level of society, which often makes a personal collection (Rouzet, Seguin, 2012). McGarry, Lindsey, et.al. through statistical tests and a binary probit model, results suggest significant differences between generations and an apparent need for distinctly different marketing strategies when targeting one generation compared to the other. Heavy spenders tend to be male, Baby Boomers, use magazines for information about wine and are wine enthusiast (McGarry, Lindsey, et.al., 2018). The realization of wine products and the conceptual approach to selecting products to market products and attracting

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customers are becoming increasingly complex. For customers, wine marketing is mostly related to the characteristics of packaging and the services offered. On a general level, wine is considered to be a beverage in a bottle coming from a variety of grape varieties, and depending on the technique used in the ripening process, which has certain characteristics such as aromas, degree strength, age and taste. Each buyer has its own individual perception of colour, taste and aroma, so the opinion of the same product may differ, which will allow it to decide whether the product is pleasant and whether it will be purchased (Westling, 2001). Apart from the hidden wisdom of local technology, the great considerations are on the quality control of the local production. The safety becomes a very big issue and this is also a legal issue in quality control (Wiwanitkit, 2019).

Product: 80 % of the wine purchased in supermarkets is directly determined by the visual aspect of the bottle, without regarding the label. Customers have different bottle shapes, colours and designs associated with a particular region of France and their wines (Westling, 2001). At the same time, wine bottles have become a common use. For example, in the Bordeaux wine bottle (fr: bordolaise) you can also find wines from other regions, which creates a relatively important recognition problem for customers. Choosing a bottle is an important condition, even more in supermarkets where there are No specialists to advise and recommend wines to their customers. Most often the winery chooses bottles, taking into account traditions rather than marketing strategies. For example, the finer and longer it will be, the client will find it more elegant, modern and dynamic - this type is more suited to women's choice (Rouzet, Seguin, 2012). Wine labels in France are strictly regulated. Label layouts are controlled by the DDCCRF (a directorate that controls potential competition and consumer protection, eliminates the risk of fraud). Wine etiquette is an important mean of communication and must contain mandatory information. The wineries are free to choose the shape, colour and quality of the paper according to their target market. The quality of the paper is very important, for example, how well it fits or fades from the bottle, which indicates the quality of the product. Also used is a printing technique that increases the level of the product, whether the text is written with power (gives a metallic effect) rather than a simple ink (Rouzet, Seguin, 2012).

Price: Following the fact that wine is not a basic product, pricing the product is an important process. The three most important factors for pricing are demand, competition and revenue from sales. Price sensitivity depends on the price a customer is willing to pay for a particular product. Given that wine is not a primary product, buyers associate higher—priced products with better quality. The price of wine products depends on the distribution channel (Rouzet, Seguin, 2012).

Promotion: Communication in the wine sector is the most important element of the marketing mix. Communication at a global level creates a product image that promotes further demand. Product promotion takes place through a variety of networks where different marketing operations are carried out: direct contact with customers; Internet; media; direct marketing, advertising, public relations, sponsorship; participation in various events; distribution channels (Jitareanu, 2012).

A relatively new and potential wine distribution channel is offering products on websites. Wineries (or a group of multi—breweries) create their own website offering the products at a higher price. Online stores allow customers to provide complete product information, tasting advice, and information on the winery (Curbertafond, 2015).

Brand: The brand makes it possible for the customer to recognize the particular product and manufacturer. It includes various symbols and contains information to encourage buyers. The brand must be easy to remember and internationally recognizable. In the wine sector, the brand is not changed frequently (at least 10 years), as its promotion is a long—term measure. In wine sector the brand is most often associated with the name of the wine—maker or their ancestors, the name of the vineyard or the name of the brewery. All brands must be protected in France, so they are registered by the INPI Institute. When choosing a brand of wine products, one has to take into account the fact that it has to be in line with the target market and the desired position in it, according to the marketing strategy (Thomas, Painbeni, Barton, 2013).

Services: The availability of different services in the winery, as visits to the brewery tourists, tastings, etc. are at the core of the brand differentiation strategy and are used in communication (Vinotrip, 2017).

Rouzet and Seguin in their study explain this with: a new category of buyers buying wine with a view to tasting it during festive or special events; professional buyers who are familiar with the products and their specific features, strengths and weaknesses; an increasing supply of wines, which is not clear to buyers, so wine experts are forced to provide more complete product information (Rouzet, Seguin, 2012). In wineries, customers are admitted to a specially designed room for product presentation and tasting. The wine sales process consists of 6 phases: 1) reception, 2) winery presentation, 3) customer needs determination; 4) argumentation, presentation and tasting of different wines, 5) answers to customer questions, comments, criticism, 6) conclusion (Rouzet, Seguin, 2012).

In study, C.Hall and R.Mitchell distinguish the following groups of tourists participating in wine tastings: - wine lovers, who are very interested in products, often go to wineries, wine is a kind of hobby;

- wine interested, who have great interest in wines, sometimes visit the winery; - curious tourists interested in seeing the region, getting to know the culture, regardless of wineries, are a form of entertainment. Representatives of this group have No in—depth knowledge of wines. (Hall, Mitchell, 2008)

Cafes, Restaurants, Hotels: In collaboration with independent restaurants and hotels, wine producers are interested in long—term cooperation. These market segments are attractive due to distance and logistics organization, as well as the desire of restaurants to offer their customers local products. Unlike the "chain" companies, independent business representatives who decide on a product are a chef, a restaurant vineyard or a company director (Rouzet, Seguin, 2012).

Corporate Committees: It is the responsibility of the Business Committees to develop social activities and support companies with more than 50 employees. The Committee can be seen as an intermediary that allows service providers to offer their products - wine with "discount" (advantage) prices. The sales process for this channel is atypical, as the process begins with contact creation, product presentation, tasting, and later an agreement on a particular "service" - that the company is interested in cooperating with the manufacturer, such as participating in open days, cataloging, gift sets, etc. If the manufacturer wants to cooperate with the company's committees, bargaining the price will take time and (Rouzet, Seguin, 2012).

Wholesaling in wine purchases takes place through 'central' vineyards, with the aim of eliminating large numbers of intermediaries and reducing costs. "Centers" collaborate with manufacturers and accordingly negotiate purchase prices. Collaboration with wholesale hubs consists of the following stages: wholesale network selection (national, regional or local); product tests; price agreement, bargaining; contract signing; receiving a supplier code (Curbertafond, 2015).

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Exhibitions: Participation in various exhibitions has become an integral part of winery communication. Before registering, the company has to evaluate the region, the potential market and the interest of the customers depending on the exhibition in which it wants to participate, as the one—off participation will not provide feedback in the long term (Curbertafond, 2015).

Opinion leaders are important to the wine marketer, for their influence on other wine consumers, which is considerable. As part of their marketing strategies, wine marketers might want to give careful attention to the identification of opinion leaders–and the scales employed here might be useful in these efforts–in order to persuade them to lead other consumers to their target wine brands (Vigar-Ellisa, Pittcand, Caruanad, 2015). The pairing of wine with music goes back a long way, starting out with commentators at first merely just using musical metaphors in order to describe the wines they were writing about. In recent years, however, this area of interest has morphed into a growing range of multisensory tasting events in which wine and music are paired deliberately in order to assess, or increasingly to illustrate, the impact of the latter on people's experience of the former. Initial isolated small—scale and often anecdotal reports of music supposedly changing the taste of wine have since evolved into large—scale experiential, experimental, events (Spence, 2019).

Taylor and Barber suggest that in addition to product characteristics, the customers' purchasing decisions may be driven by less obvious factors such as their perceptions of how others will view them and the information selected during a wine purchase situation (Taylor, Barber, 2016).

2. Wine consumption trends in France

In several countries, the wine sector has a relevant role in terms of employment and companies' revenues, attracting the interests of many scholars (Giacosa, 2019).

France is the largest wine producer in the world and a leader in the industry, which is characterized by the following data compiled by France Agri Mer: The total area of vineyards reaches almost 813,000 ha, producing about 41 million hectolitres of wine per year; 95 % of the total production by crop is divided into 30 departments and 16 regions. 95 000 farms with active activity are listed, the average size of each farm is 8 hectares. There are 250,000 jobs directly linked to wine making. More broadly, indirect jobs (bottle, packaging, etc.) in the industry and trade account for up to 800,000 employees (France Agri Mer, 2014). France is one of the world's leading wine producers, accounting for around 87,400 winemakers. In 2014, domestic production grew by 12 % compared to 2013, reaching 4.6 billion litres, mainly due to the higher consumption of AOP (Appellation d'Origine Protegee) from the following regions: Cotes du Rhone, Bordeaux and Burgundy. France is also the leader in wine exports - exports to € 7.8 billion in 2013, while the country is less important as an importer (Marketline, 2015).

The total revenue of the French wine market in 2014 was about $ 31.2 million. Market consumption in France declined by -1.5 % between 2010 and 2014, reaching 2.8 million litres in 2014 as a whole. Taking into account the market analysis of recent years, industry analysts expect the market to drop - by the end of 2019 the amount of wine consumed will drop to 2.5 million litres (Marketline, 2015). Decreasing consumption is a long-term process. One of the reasons is the decline in the number of regular wine consumers. Comparing the data with the 1980s, when half of the population regularly consumed wine, in 2014 less than one fifth of the population consumes wine. Soft drinks such as water and fruit juices, etc. are becoming more and more popular during meals (Marketline, 2015).

French wines are an integral part of the total land area, and the wines of each region represent the features and characteristics of the region. These wine names have gained and developed their reputation with the incredible varieties offered by wine makers and regions. Each area of the area differs with the fertility of the soil and, therefore, with the uniqueness of the wines. French wines come from the following areas: Alsace, Beaujolais, Bordeaux, Champagne, Charentes, Corse, Jura, Languedoc, Provence, Roussillon, Savoie, Sud-ouest, Val de Loire, Vallee du Rhone (Vignevin, 2012).

The French wine culture dates back two centuries ago and has allowed different wines to be found in all regions of France. Over the years, several generations of winemakers have created and enriched their products and are still working on new wine tastes. The position of the French wines on the world markets is based on the supply of quality and unique products (Barbulescu, 2016).

Along with annual research, every 5 years since 1980, France Agrimer collects data on wine consumption in France. The latest study was conducted in October 2015. Since 1980, the proportion of regular wine consumers (using wine every day or almost every day) has decreased and this trend is continuing in 2015: half of wine consumers under the age of 35 consume wine every day, which is 16 % less than the previous period. Also, the tendency of regular "casual consumption" (using wine 1-2 times a week) is decreasing, and in 2015 the average consumption of wine among the surveyed population is one or two times a week (France Agrimer, 2015).

At the same time, the new wine scenario, a consequence of the globalization of the world's wine market, has resulted in a new geographical map for wine where the number of wine consumers is constantly increasing (Bonaria, 2019). On the wine market, the purchasing behaviour derives from a certain satisfaction that corresponds to a certain motivation (Ignat, Costuleanu, Timofte, Acostachioaie, 2017).

When regular consumption of wine accounts for only 16 % of consumers, the number of 'casual' consumers has increased significantly, to 51 %. These changes in behaviour can be explained by significant sociological changes, such as the transition from rural to urban residents. If, in the past, wine was a drink to relieve thirst for heavy agricultural work, today's consumers prefer to enjoy it outside their meals (France Agrimer, 2015). The total drop in consumption is assessed by type of wine. This mainly affects Table wines and IGP products, but at the same time the AOC category also falls slightly (Inao, 2014).

The survey conducted by France Agrimer also highlights various consumption patterns depending on the age and gender of the consumer. Survey surveys show that when comparing wine consumption between women and men, most regular wine users are men (50 % more). To a large extent, this phenomenon is associated with specific consumption habits, for example, in France, men prefer to drink red wine during meals, while women prefer wine tasting outside meals (France Agrimer, 2015). The France Agrimer study also found that the proportion of regular users increases with age. 38 % of wine is used by people over 65 (regular consumers), less than 10 % - under 50 (France Agrimer, 2015).

Wine sales in the French wine market were more profiTable in 2014, with a total revenue of $ 21 million, representing 65.8 % of the total market value. Compared to champagne sales, its revenue was $ 6.1 million in 2014, representing 18.8 % of total market revenue (Marketline, 2015). Taking into account the current market performance, the volume is expected to decline even faster - by 1.6 % over the five-year period 2014-2019, with a market value of $ 28.9 million by the end of 2019 (Marketline, 2015) . Market Value Forecast until 2019 The French wine sector will amount to $ 28.8

million, up 7.5 % on the 2014 figure. The annual rate of change in the market is forecast at 1.6 % (Marketline, 2015).

In order to get a better understanding of wine consumption, a survey was conducted in the Paris region, Monoprix stores in December. The Quick Tap Survey application was used for the survey. The total number of respondents was 151. The categories of buyers can be found in Table 1.

Table 1

The groups of respondents (number of respondents – 151)

Age groups	Males	Females
-30	16	11
31-40	28	25
41-50	18	23
51-60	15	6
61+	7	2

Source: author's calculations based on the survey, n=151

Gender groups were surveyed by gender: 84 men and 67 women. Of the total number of buyers surveyed, 45 customers found themselves to be wine connoisseurs. Given the demographic situation in France, the percentage of data results corresponds to the age group of the survey results.

Table 2

Demographic situation in France

Age groups	Males	Females
Less than 20	25.7 %	23 %
20 – 64	57.6 %	55.8 %
More than 65	16.7 %	21.2 %

Source: author's calculations based on the survey, n=151

For the purpose of verifying the reliability of the internal content of the survey, the calculation of the Cronbach α coefficient for male and female groups was applied to a total of 3 different scales.

Table 3

Cronbach's Alpha

The scales	Cronbach's Alpha
The role of the label in the product	0.98
Relationship between wine types and product connectors	0.54

Source: author's calculations based on the survey, n=151

The 'label scale' confirms the reliability of the survey, given that the Cronbach's alpha indicator exceeds 0.6. Below the assumed confidence factor is the 'Scale of his types and products' (Cronbach α = 0.54), which indicates a reduced data reliability factor. However, these values are relatively close to the confidence factor of 0.6. The purpose of the survey was to find out what the buyers' habits are and what aspects determine their choices.

Table 4

Aspects influencing the purchase (number of respondents – 151)

Regions	97
Year	82
Etiquette	52
Prizes	55
Grape combinations	40
The visibility of the dairy	26
Price	73

Source: author's calculations based on the survey, n=151

From the data obtained it can be concluded that the most important factor for buyers in wine selection is the region from which the wine comes, as well as the year and price of the product. There are several reasons for choosing a region for buyers: The habit of buying wines from a particular region; grape combinations that determine how light / heavy the wine will be; prestige of the region, visibility; how well the particular wine will be in accordance with the intended meal. 50 % of the surveyed buyers confirm that the discounts and special offers that apply to the wines are of interest to them, as well as the decisive factor in making the choice. In turn, 25 % of the surveyed buyers said that discounts will not always be an important factor in their choice. For example, if wine is of high quality, a rare product, or otherwise "special", the price will not be the determining factor.

Conclusions

1) The marketing of the wine sector is a relatively new industry with different characteristics that must be taken into account when marketing the product, in particular the packaging of a product consisting of a large number of components, different sales channels and the potential of tourism in the wine sector competitiveness.
2) The number of regular wine consumers declined in 2015, while the number of rare users increased. The most common type of wine consumed by men is the age group 50 and above.
3) According to the theory and the analysis of the French wine sector and the results of the survey conducted, the determinants of the choice of purchase, namely the region and the year of production of the wine, as well as the award-winning medals were classified.
4) The popularity and reputation of the region is an important condition for customers' choice. For example, the Bordeaux region is very popular and offers a large number of different products that are not comparable to the Corbieres region, so it is necessary to promote and familiarize customers with the region and its products.
5) At the point of sale, customers believe that the label plays a crucial role in making purchases.
6) A large number of participants meet in the wine market, so loyalty is a crucial rule, which is the key to long-term cooperation.
7) The development of the wine sector and tourism is a new direction in wine marketing, which allows not only the marketing of wine, but also the knowledge of the region and culture, thus the promotion and involvement of tourism activities is an additional means of communication for the company. The concept of guest houses, as well as the rental of event space in wineries, has become popular with many companies.

Bibliography

1. Barbulescu, O. (2016). Industry Report. International Expansion, Market Maintenance Strategy Used by French Winemaking Industry. [article] *Annals of Constantin Brancusi Univerity of Targu Jiu.*
2. Bonaria Lai, M. (2019). Consumer Behavior Toward Wine Products. Case Studies in the Wine Industry. *A Volume in the Consumer Science and Strategic Marketing Series*. Woodhead Publishing Series in Food Science, Technology and Nutrition, pp. 33-46.
3. Bouchez, A., Pihier, S., Bernadet, J.P. (2014). *Precis De Marketing.* Paris: Nathan.
4. Castaing, Y. (2013). *Strategies et Marketing du Vin.* Paris: Dunod.
5. Curbertafond, M. (2015). *Entreprendre Dans le Vin.* Paris: Eyrolles.
6. Debbie, E., Frauke, M. T. (2018). The Effect of Wine Knowledge Type on Variety Seeking Behavior in Wine Purchasing. *Journal of Wine Research.* Vol. 29 Issue 2, pp. 71-86.
7. Faivre, G. (2009). *Le Marketing Identitaire du Vin.* Bordeaux: Editions Féret.
8. Giacosa, R. (2019). Wine Consumption in a Certain Territory. Which Factors May Have Impact on It? *Production and Management of Beverages*. Volume 1: The Science of Beverages, pp. 361-380.

9. France Agri Mer (2016). *Bilan des Marches a la Production 2015/2016*. [pdf] Retrieved: http://www.franceagrimer.fr/Stockage-Actualites/Archives/2016/Synthese-du-bilan-2015-2016-des-marches-a-la-production-vin/(filiere)/739/(nodeActu)/745. Access: 15.06.2018.
10. Hachette Livre (2016). *Le Guide Hachette des Vins 2017*. Paris: Hachette.
11. Ignat, G., Costuleanu, C.L., Timofte, A-A., Acostachioaie, F. (2017). Aspects Concerning the Identity of Female Wine Buyers. *Agronomy Series of Scientific Research / Lucrari Stiintifice Seria Agronomie*. Vol.60 Issue 2, pp. 77-80.
12. Jitareanu, A.F. (2012). Studies on Global Trends in Wine Marketing. *Agronomy Series of Scientific Research / Lucrari Stiintifice Seria Agronomie*. Vol. 57 Issue 1, pp. 201-206.
13. Rouzet, E., Seguin, G. (2012). *Le Marketing du Vin.* Paris: Dunod.
14. Spence, C. (2019). Multisensory Experiential Wine Marketing. *Food Quality & Preference.* Vol. 71, pp. 106-116.
15. Taylora, C., Barber, N. A. (2016). How Will My Wine Purchase Decision Be Viewed by Others? *Journal of Wine Research.* Sep2016, Vol. 27 Issue 3, pp. 202-225
16. Thomas, P (2013). Entrepreneurial Marketing Within the French Wine Industry. *International Journal of Entrepreneurial Behaviour & Research* 19(2).
17. Vigar-Ellis, D; Pitt, L; Caruana, A. (2015). Does Objective and Subjective Knowledge Vary Between Opinion Leaders and Opinion Seekers? Implications for Wine Marketing. Journal of Wine Research. Vol. 26 Issue 4
18. Westling, B. (2001). Wine Marketing. Retrieved: http://www.marketingwine.com/pdfs/winemarketing101.pdf. Access: 20.02.2018.
19. Wiwanitkit, V. (2019). Alcoholic Beverage Production in Indochina: Local Wisdom, Safety, Quality, and Legal Control. *Production and Management of Beverages.* Volume 1: The Science of Beverages, pp. 381-407.
20. Wolf, M. McGarry; Higgins, L. M.; Wolf, M. J.; Qenani, E. (2018). Do Generations Matter for Wine Segmentation? Journal of Wine Research. Vol. 29 Issue 3, pp. 177-189.

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LOCAL TOURIST SATISFACTION WITH THEIR HOLIDAY IN LITHUANIA

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Abstract. As the importance of tourism is growing worldwide, every country is putting effort to encourage people visiting it. Local municipalities as well as state governments are trying to attract visitors in various ways; however, the emphasis is often put on attracting foreign tourist. This paper contributes to an existing tourism literature by analysing determinants of local tourism satisfaction. The problem that is solved in the manuscript is: what are the factors that influence local tourist satisfaction with their holiday in a country? Hence the paper aims to determine the factors influencing local tourist satisfaction with their holiday in Lithuania. In order to reach the aim, questionnaire survey was provided. After performing structural equation modelling, the general model of local tourist satisfaction with their holiday in Lithuania was composed.

Key words: tourist satisfaction, tourist loyalty, local tourism, structural equation modelling.
JEL code: L83, M31.

Introduction

The significance of tourism is undeniable in a contemporary world. Wang L. and Yotsumoto Y. (2019) emphasize that tourism has a positive effects on such areas as economy, society, culture, and environment, because it contributes to GDP, stimulates improvements to infrastructure, the protection and renaissance of culture, and increases in environmental awareness. According to Jian H. et al. (2017), based on the statistics of The World Tourism Organization (UNWTO), it is obvious that the tourism industry can affect the development of the 110 related industries; moreover, a $1 increase in value of tourism can lead to a $4.3 wealth for the community; afterwards, tourism industry increase in 10 per cent, is promoting the growth of GDP in 0.8 per cent. Moreover, tourism provides numerous benefits for local communities facing affluence of visitors and feeling tourism's effect on their quality of life (Kapera I., 2018).

Despite the growing number of tourists worldwide, starting with 2015 the amount of domestic tourists in Lithuania is decreasing (Statistics Lithuania, 2019). Moreover, the focus on domestic destinations in terms of satisfying demand for holidays is paid less than on the research considering the challenges associated with inbound travel (Davison L. & Ryley T., 2016). Therefore, this paper contributes to an existing tourism literature by analysing determinants of local tourism satisfaction and solving a scientific problem: what factors affect local tourist satisfaction with their holiday in a country? The aim of this research is to determine the factors affecting local tourist satisfaction with their holiday in Lithuania.

To reach the aim outlined above, four research tasks were set:

1) based on the theoretical model of Lithuanian Tourist Satisfaction Index, to elaborate a questionnaire which enables to assess satisfaction of local tourists' spending their holiday in Lithuania;
2) to provide a questionnaire research with local tourists spending their holiday in Lithuania;
3) to determine main variables having impact on local tourist satisfaction with their holiday in Lithuania;
4) to compose a general model of local tourist satisfaction with their holiday in Lithuania.

Following the set tasks, questionnaire survey was provided. Structural equation modelling (SEM) using partial least squares (PLS) path modelling methodology was performed to analyse the research

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results. The provided analysis enabled composing the general model of local tourist satisfaction with their holiday in Lithuania.

Research results and discussion

1. Methodology of the research

In order to accomplish the tasks set, the formerly developed theoretical model of Lithuanian Tourist Satisfaction Index (Pileliene L. and Grigaliunaite V., 2014), which was used as a foundation for creation of The Index of Tourist Satisfaction with Lithuania regarding inbound tourists (Pilelienė L. and Grigaliunaitė V., 2016), is now applied as a background for creation of the model of local tourist satisfaction with their holiday in Lithuania as well.

As the chosen model is only theoretical in the case of local tourist satisfaction with their holiday in Lithuania, empirical research is necessary to validate its usage in a context of local tourist satisfaction with their holiday in the country. Thus, factors theoretically affecting tourist satisfaction (and loyalty) are: accommodation and catering in destination, activities in destination, natural features, destination aesthetics, environmental preservation, and destination marketing; the main consequence of tourist satisfaction is considered to be loyalty to the destination. The measurement model is a reflective one; 2–4 manifest variables reflect each latent variable. All of the manifest variables as well as questions regarding respondents' demographic characteristics composed the questionnaire. The modified 10-point Likert scale was applied in the questionnaire for statement evaluation. Random sampling method was used (however, only those who indicated that have recently spent their holiday in Lithuania were asked to participate in further research) and 192 respondents formed the research sample. The survey was accomplished on the June, January, and August, 2018. Structural equation modelling with SmartPLS V.3 software by Ringle et al. (2014) was used to provide a statistical analysis.

2. Research results

When assessing a reflective measurement model, internal consistency, indicator reliability, convergent validity, and discriminant validity are evaluated. For the evaluation of internal consistency reliability, composite reliability values are estimated. As it can be seen in Table 1, latter values are above 0.7; therefore, internal consistency reliability is verified. The values of average variance extracted (AVE) measure are above 0.5. Thus, convergent validity of the reflective measurement model is verified as well. All of the indicators' loadings are above 0.7, thus indicator reliability is supported.

Table 1

Values of composite reliability and average variance extracted

No	Variable*	Composite Reliability	Average Variance Extracted
1.	A&C	0.947	0.899
2.	Activities	0.906	0.762
3.	Aesthetics	0.919	0.850
4.	DM	0.926	0.808
5.	EP	0.876	0.780
6.	Loyalty	0.768	0.637
7.	NF	0.938	0.834
8.	Satisfaction	0.890	0.729

** A&C: accommodation and catering, Activities: activities in destination, NF: natural features, Aesthetics: destination aesthetics, EP: environmental preservation, DM: destination marketing.*
Source: author's elaboration

The criteria of Cross Loadings and Fornell-Larcker criterion allow evaluation of the discriminant validity. Based on the criterion of Cross Loadings, discriminant validity ir verified. Fornell-Larcker criterion (see Table 2) allows verifying the same. Consequently, it could be stated that model exhibits discriminant validity. Thus, the questionnaire is judged to be reliable and valid.

Table 2

Fornell-Larcker criterion

Variable*	A&C	Activities	Aesthetics	DM	EP	Loyalty	NF	Satisfaction
A&C	0.948							
Activities	0.758	0.873						
Aesthetics	0.763	0.810	0.922					
DM	0.794	0.855	0.808	0.899				
EP	0.722	0.646	0.602	0.667	0.883			
Loyalty	0.635	0.623	0.613	0.642	0.559	0.798		
NF	0.568	0.569	0.586	0.646	0.408	0.475	0.913	
Satisfaction	0.742	0.665	0.736	0.754	0.668	0.644	0.547	0.854

**A&C: accommodation and catering, Activities: activities in destination, NF: natural features, Aesthetics: destination aesthetics, EP: environmental preservation, DM: destination marketing.*
Source: author's elaboration

The values of the coefficient of determination (R^2) of the variables' satisfaction and loyalty are respectively 67.3 and 50.2 percent; thus, large to moderate. Endogenous latent variables' Stone-Geissers' Q^2 values are exceeding zero, hence, model displays predictive relevance. Additionally, VIF values are below 5 proving No existence of multicollinearity.

The values of the path coefficients in the structural model are provided in Table 3 below. Results show that accommodation and catering has directly positively and statistically significantly impact tourist satisfaction. Nevertheless, the influence of accommodation and catering on loyalty is non-significant. Activities in destination has No statistically significant influence neither on tourist satisfaction nor on tourist loyalty. Destination aesthetics statistically significantly impacts tourist satisfaction. Despite this, the influence of destination aesthetics on tourist loyalty is non-significant. Destination marketing has significant effect on tourist satisfaction, but the effect of destination marketing on tourist loyalty is non-significant. Likewise, environmental preservation has direct positive and statistically significant effect on tourist satisfaction, but the influence of environmental preservation on tourist loyalty is non-significant. Natural features have No significant influence neither on tourist satisfaction nor on tourist loyalty. Finally, tourist satisfaction makes a significant impact on tourist loyalty.

Hence, activities in destination and natural features do not affect local tourist satisfaction with their holiday in Lithuania or loyalty to the holiday in Lithuania. Accommodation and catering, destination aesthetics, destination marketing, and environmental preservation affect local tourist satisfaction with their holiday in Lithuania, but do not impact local tourist loyalty to spend holiday in Lithuania. Local tourist loyalty to their holiday in Lithuania is influenced only by their satisfaction with their holiday in Lithuania. Nevertheless, as local tourist satisfaction with their holiday in Lithuania is influenced by accommodation and catering, destination aesthetics, destination marketing, and environmental preservation and tourist loyalty is influenced by tourist satisfaction, the assumption can be made that accommodation and catering, destination aesthetics, destination marketing, and environmental preservation influence tourist loyalty indirectly, with satisfaction as a mediator variable.

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Table 3

Path coefficients and their statistical significances

Variables*	Path Coefficient	S.D.	C.I. Low	C.I. Up	T Statistics	p Values
A&C -> Loyalty	0.135	0.123	-0.095	0.365	1.097	0.273
A&C -> Satisfaction	0.202	0.092	0.038	0.392	2.200	0.028
Activities -> Loyalty	0.168	0.119	-0.058	0.394	1.408	0.160
Activities -> Satisfaction	-0.184	0.103	-0.366	0.025	1.787	0.075
Aesthetics -> Loyalty	0.044	0.146	-0.223	0.343	0.299	0.765
Aesthetics -> Satisfaction	0.305	0.113	0.094	0.540	2.714	0.007
DM -> Loyalty	0.064	0.173	-0.249	0.458	0.371	0.711
DM -> Satisfaction	0.316	0.128	0.076	0.540	2.477	0.014
EP -> Loyalty	0.084	0.114	-0.141	0.316	0.737	0.462
EP -> Satisfaction	0.221	0.076	0.076	0.367	2.917	0.004
NF -> Loyalty	0.057	0.087	-0.126	0.232	0.658	0.511
NF -> Satisfaction	0.064	0.066	-0.051	0.205	0.966	0.335
Satisfaction -> Loyalty	0.265	0.124	0.024	0.478	2.129	0.034

**A&C: accommodation and catering, Activities: activities in destination, NF: natural features, Aesthetics: destination aesthetics, EP: environmental preservation, DM: destination marketing.*
Source: author's elaboration

Despite this, path coefficients that are non-significant do not support a hypothesized relationship, thus should be omitted from the final model (Hair et al., 2011). Consequently, after the elimination of the non-significant path coefficients and the verification of the model's reliability and validity, final model is elaborated. The values of the coefficient of determination (R^2) of the variables' satisfaction and loyalty in the final model are respectively 66.3 and 41.3 percent; thus, the amount of explained variance of latter variables is still large to moderate. Final model is expressed with structural equations:

Satisfaction = 0.199 Accommodation and catering + 0.260 Destination aesthetics + 0.198 Environmental preservation + 0.254 Destination marketing (1)

Loyalty = 0.642 Satisfaction (2)

As it can be seen from the equations, destination aesthetics and destination marketing have the highest influence on local tourist satisfaction with their holiday in Lithuania. Moreover, accommodation and catering and environmental preservation have very similar impact on local tourist satisfaction with their holiday in Lithuania. Finally, improving local tourist satisfaction with their holiday in Lithuania give rise to enhanced tourist loyalty.

To assess the performance of determinants of tourist satisfaction, an importance – performance map is provided in Figure 1 below. The importance of the variable to satisfaction is revealed by variable's total effect (in this case total effect is equal to path coefficient) and the performance of the variables is provided on a scale of 0 to 100, where zero means the lowest and kindred – the highest performance.

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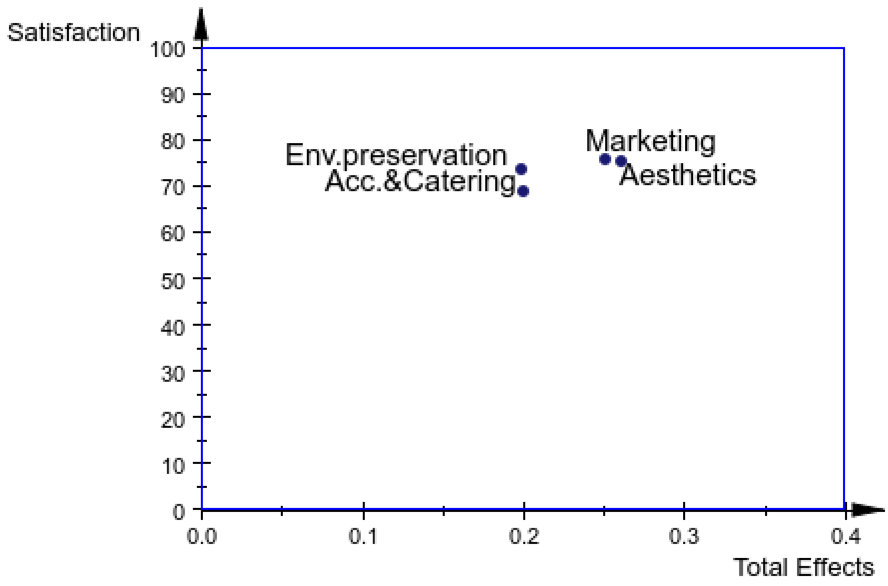


Source: author's elaboration

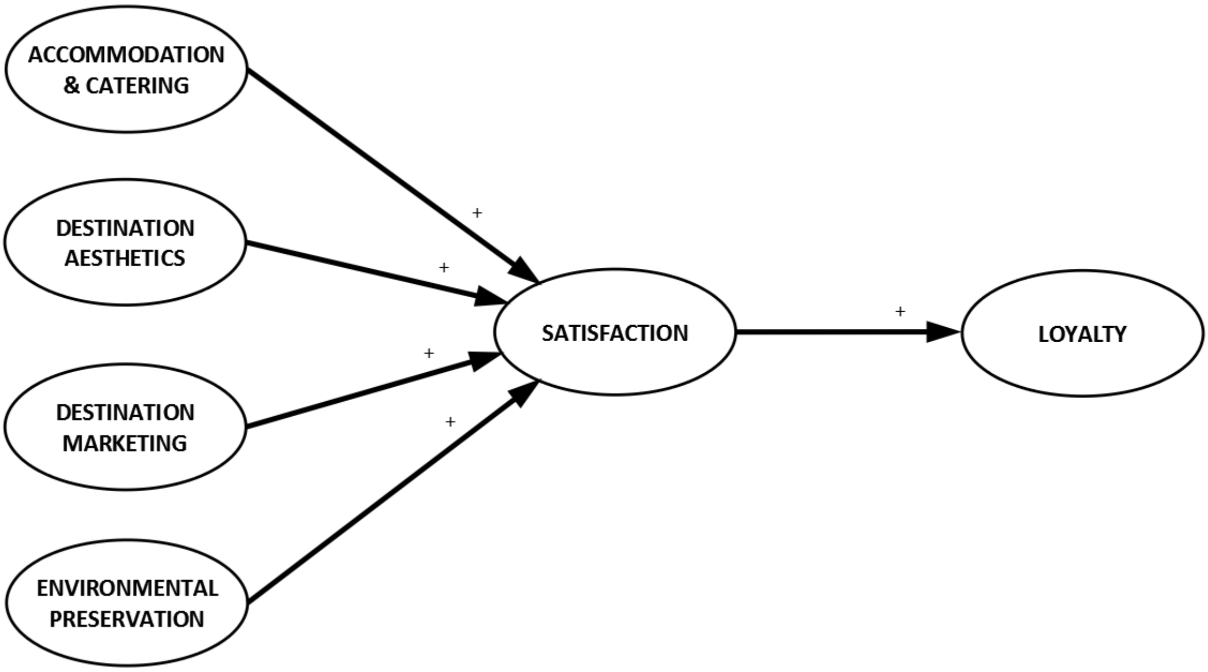
Fig. 1. **Importance – performance map**

As it can be seen, the performance of accommodation and catering is the lowest (69.287 points). The performance of environmental preservation is 74.068 points. The two variables, namely destination aesthetics and destination marketing, that have the highest influence on local tourist satisfaction with their holiday in Lithuania have the highest performance points as well, respectively 75.813 and 76.168 points. Hence, it could be stated that accommodation and catering should be improved in order to enhance tourist satisfaction with their holiday in Lithuania.

3. Discussion

The analysis of the research results lead to the determination of the core variables impacting local tourist satisfaction with their holiday in Lithuania. Latter variables are determined to be: accommodation and catering, destination aesthetics, environmental preservation, and destination marketing. Moreover, local tourist satisfaction with their holiday in Lithuania influences their loyalty to Lithuania in terms of the intention to recommend and / or spend holiday in this country. Considering these results, the model of local tourist satisfaction with their holiday in Lithuania is constructed and presented in Figure 2.

As the elaborated model reveals, for the local tourists to be satisfied with their holiday in Lithuania, their expectations have to be met or exceeded regarding the variables that influence tourist satisfaction. Nevertheless, the performance of accommodation and catering is evaluated the lowest, hence the assumption could be made that tourist expectations are not met regarding accommodation and catering during holidays in Lithuania. Thus, this variable should be improved. Moreover, destination aesthetics and destination marketing have the highest influence on local tourist satisfaction with their holiday in Lithuania. Despite the fact that the performance of latter variables is relatively good, the assumption could be made that improvement of latter variables could result in competitive advantage as these variables make the biggest impact on satisfaction, which in turn influences loyalty.



Source: author's elaboration

Fig. 2. **The model of local tourist satisfaction with their holiday in Lithuania**

The elaborated model of local tourist satisfaction with their holiday in Lithuania and evaluation of the performance of model's variables enabled the elaboration of guidelines for the enhancement of local tourist satisfaction with their holiday in Lithuania, which in turn can influence local tourist loyalty to Lithuania as their holiday destination.

Conclusions, proposals, recommendations

1) The research results contribute to an existing theory on tourist satisfaction. After analysing the respondents' evaluations of factors that are supposed to affect tourism satisfaction with their holiday and tourist loyalty to a destination, strong divergences from theory were observed. Based on the determined structural relations, the general model of local tourist satisfaction with their holiday in Lithuania was composed.
2) The analysis of research results indicated the absence of impact of activities in destination and natural features on local tourist satisfaction with their holiday in Lithuania. The factors that have to be considered while achieving to increase local tourist satisfaction with their holiday in their homeland were found to be accommodation and catering, destination aesthetics, destination marketing, and environmental preservation. Latter factors have to be monitored and managed in order to increase the local tourist satisfaction.
3) Based on the analysis of the research results the conclusion is made that tourist expectations are not met regarding accommodation and catering during holidays in Lithuania. Thus, this variable should be improved as much as possible. Additionally, despite the fact that the performance of destination aesthetics and destination marketing is relatively good, the conclusion is made that improvement of latter variables could result in competitive advantage as these variables make the biggest impact on satisfaction.
4) None of analysed factors had an impact on local tourist loyalty in terms of spending their holiday in Lithuania. Results indicated that tourist loyalty could be affected only by increasing their satisfaction. Considering the contradiction with theory, further research has to be provided in

order to determine more determinants of tourist loyalty in terms of spending holiday in their home country.

Bibliography

1. Davison, L., Ryley, T. (2016). An examination of the role of domestic destinations in satisfying holiday demands. *Journal of Transport Geography*. Volume 51, February, pp. 77-84.
2. Hair, J.F., Ringle, C.M., Sarstedt, M. (2011). PLS-SEM: Indeed a Silver Bullet. *Journal of Marketing Theory and Practice*. Volume 19, Issue 2. pp. 139-152.
3. Jian, H., Pan, H., Xiong, G., & Lin, X. (2017). The Impacts of Civil Airport layout to Yunnan Local Tourism Industry. Transportation Research Procedia. Volume 25, 2017, pp. 77-91.
4. Kapera, I. (2018). Sustainable Tourism development efforts by local governments in Poland. *Sustainable Cities and Society.* Volume 40, July, pp. 581-588.
5. Pileliene, L., Grigaliunaite, V. (2014). Lietuvos turistu pasitenkinimo indekso modelis: teorines izvalgos. (Lithuanian tourist satisfaction index model: theoretical aspects). *Organizacijų vadyba: sisteminiai tyrimai*. No. 69. pp. 107-118.
6. Pileliene, L., Grigaliunaite, V. (2016). The index of tourist satisfaction with Lithuania. *European Journal of Tourism, Hospitality and Recreation*. Volume 7, Issue 1. pp. 30-39.
7. Ringle, Ch. M., Wende, S., Becker, J.-M. (2014). *Smartpls 3*. Hamburg: SmartPLS. Retrieved: http://www.smartpls.com.
8. Statistics Lithuania (2019). *Domestic Tourism Statistics*. Retrieved: https://osp.stat.gov.lt/statistiniu-rodikliu-analize?hash=91fa411f-af8c-43cf-b99f-3e8cf23ef630#/. Access: 15.01.2019.
9. Wang, L., Yotsumoto, Y. (2019). Conflict in tourism development in rural China. *Tourism Management*. Volume 70, February, pp. 188-200.

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IDENTIFICATION OF LEADING CONSUMER TRENDS ON THE FOOD MARKET

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Abstract. The article identifies and characterizes selected consumer trends that occur on the food market. These are, inter alia, consumerism, greening of consumption, smart shopping, presumption, etc. These trends can occur in parallel, and some of them like consumerism and greening of consumption are counterposed to each other. The review of domestic and foreign literature related to the subject of the considerations has been carried out. The empirical part of the article contains the results of research conducted among 244 respondents on the knowledge of selected trends and participation in them. Not all trends are well known to respondents, although they often undertake activities in their field. Participation of respondents in prosumer activities consisting in co-creating the offer of the company, addressed at consumers is surprisingly low.

Key words: consumer trends, food market, eco-consumption, smart shopping, prosumption, home-centrism.
JEL code: E21, M31, D12

Introduction

Intensive development of the modern world, in addition to positive aspects, also provides many problems related to the consumption of food. We live in times when access to products is very easy and their offer is very rich. Consumption overwhelms the actual needs of buyers, is carried out in an excessive and unbalanced manner. On the other hand, resources on our planet are limited, and their excessive exploitation destroys the environment. The response to this is the emergence of new consumer trends such as prosumption, deconsumption, greening of consumption, smart shopping, ethnocentrism, home-centrism and others. It is important to emphasize that the growing consumer awareness is manifested in the increasingly rational purchase of products and budget management.

The main goal of this article is to identify contemporary consumer trends on the food market. Detailed goals come down to:

- characteristics of selected consumer trends on the food market,
- examining the level of knowledge and level of consumer participation in selected consumer trends on the food market.

The research part of the article focused in particular on the trend of greening of consumption, smart shopping and prosumption. The literature review also includes other trends identified on the food market. The empirical part of the article was written on the basis of surveys carried out among consumers. The survey involved 244 people who voluntarily completed the questionnaire posted on the social networking site. The research is of an illustrative nature, and the conclusions drawn based on it refer only to the surveyed group of people.

Characteristics of selected trends on the food market

A trend is a widely known concept that accompanies many areas of life, referring to both products and consumer behaviour. Most often under this term, a general trend, a direction of events or a current style, etc. is understood. Kotler (2005) defines a trend as a direction or series of events characterized by a certain momentum and durability. It can also be defined as a visible change prevailing at least one season, which has a specific direction, is perpetuated by repetition, and the measure of its prevalence is the extent of penetration into society (Polanska K., 2016). A trend may be short or long-term and its range may be global or local. Characteristic features of trends are coexistence (penetration of trends) and divergence (the emergence of counter-trends at the same

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time) (Tkaczyk J., 2012). Many authors describing the issue of a trend are inspired by one of the major experts on the subject matter, Henrik Vejlgaard. In his book he describes both the phenomenon of a trend and its analysis in great detail (Vejlgaard H., 2008). Characteristics of selected consumer trends occurring on the food market are presented below.

Deconsumption, greening of consumption *versus* consumerism

Contemporary changes in consumption do not have a unified direction and tend to have opposite tendencies. At the same time, there are completely different trends, such as consumerism, which has been growing for many years and is a legacy of the modern era, and greening of consumption and deconsumption, in turn being concepts of sustainable consumption (Sodhi K., 2011; Black I., 2010). Consumerism is excessive consumption, within which social, ecological and individual costs do not count. Negative consequences of consumerism are the cause of waste of natural resources, human labour and wealth. Contemporary consumerism can be described through its three basic elements: a materialistic approach to life, a willingness to consume to show off and an increasingly common dependence on compulsive buying (Kacprzak-Choinska A., 2007).

In developed market economies, changes in consumer behaviour, referred to as deconsumption, have been observed for several years. Deconsumption is a trend opposite to consumerism. It is characterized by rejection of behaviour that focus on buying for rational, conscious, ethical and responsible purchasing decisions related to satisfying important and actual needs, rather than those that are created by marketers (Kiezel E., 2010). Global brands, especially exclusive ones, are not only symbols of high quality, but also belonging to a specific social class, and attaching a high importance to their possession and assessing people through the prism of their possessions is a symptom of consumerism (Janos-Kresło M. and Mróz B., 2006; De Lanuaze G.S. and Siadou-Martin B., 2013). On the other hand, rejection of brands or their marginal importance when making purchasing decisions are characteristic features of the deconsumption phenomenon (Cova B., 1997, Albinsson P.A. et al., 2010). Such behaviour arise from the fact that some consumers are clearly tired of massive consumption, unreasonable in biological and socio-cultural terms. Ecological considerations are also important here. The trend of greening of consumption is very often included in the trend of deconsumption (Black I., 2010; Freestone O.M., McGoldrick P.J., 2008). Greening of consumption is associated with a reasonable use of resources without environmental degradation, selection of environmentally friendly products, and avoiding any activities devastating the environment. It is the result of increasing awareness of the negative effects of human activities on the environment and health. Eco-consumption is based on the economical use of durable products and thus the avoidance of one-off products, and above all on the selection of those that are produced in accordance with the idea of clean production (Witek L., 2017). Acquisition and consumption of organic products made without the use of artificial fertilizers and using methods that respect the natural environment are of significant importance in the trend of eco-consumption.

Smart shopping

Another trend is smart shopping, expressed in the consumers' tendency to invest considerable time and effort in finding and using information about promotions in order to save money (MaNo H., Elliot M.T., 1997). The term smart shopping developed in the United States in the first decade of the 21st century, from where it spread to Europe. It is recognized that the global economic crisis of 2008 directly contributed to the creation and subsequent development of this trend. Consumers, not wanting to give up the current level of consumption, sought other ways to reduce spending. They began to approach the issue of shopping in a more economical way. To achieve the greatest benefits, modern technologies, and above all the Internet, proved to be helpful. It is believed that the Internet is the father of clever shopping, while economic crisis is the mother (Reformat B., 2013). Smart consumers are mostly better educated people. They use their own knowledge to verify quality, so they make informed purchasing decisions. They pay attention to the composition and functionality of the product, as well as whether it is actually needed. In addition, an important aspect is the adequacy of the product or service price to their quality.

Home-centrism

The basis of the occurrence of the next trend called home-centrism is the change of lifestyle and forms of meeting needs. Home-centrism is understood as the transfer of consumption from outside of home to home, which becomes a place to satisfy not only the needs related to running family life, but also cultural, educational or recreational needs (Kozłowska W., Rutkowska A., 2018). This trend results from the change in the consumers' lifestyle. The main idea is to extend the function of home. It is No longer just a place where family life happens and everything that is associated with it. Home-centrism is closely related to the phenomenon of privatization of consumption, which is explained as a transformation of consumption from the public to the private sphere (Lebiejko A., 2010). Since 1974, Faith Popcorn has been forecasting how people will think, work and live. She predicted the well-known trend and called it "Cocooning" (the stay-at-home syndrome) (Popcorn F., 1992). Several factors influence the development of home-centrism. It is important to individualize lifestyles and improve economic conditions. Another one is technological progress, with particular emphasis on the development of the Internet and its tools, as well as the development of telecommunications services. Consumers can shop or work remotely from home. The deepening need for privacy is also important, paradoxically being a reaction to its disappearance. The interpenetration of professional and private life and transferring it to the home ground saves a lot of time. Consumers No longer have to spend a long time in stores to shop. They can make purchases or deal with official matters online without leaving home (Tkaczyk S., Koluda J., 2013).

Consumers are looking for a balance between private and professional life. Once these two worlds were separated by clear boundaries; now they intermingle strongly. The consequence of this is the creation of a prosumer, for whom the time of consumption evolved into the time of prosumption (Rachock J., 2003)

Prosumption

Prosumption is the crossing of elements, processes related to production and consumption, until the boundaries between them disappear (Bywalec Cz., Rudnicki L., 2002). The term was created from the combination of two words: production and consumption. It is defined as a form of buyers' activity in the active creation of an enterprise's offer, so it is every consumer activity initiated in order to co-create new or modified products with the offeror.

In the traditional approach to the consumer goods market, there was a clear tendency to separate the production and consumption spheres from one another. The consequence of this was a categorical division of roles between consumers and producers and the allocation of a specific scope of market activity to them. Producers manufactured goods, so they made them available, while consumers used them, so they were recipients. The changes noticeable for several years have disturbed this division and a clear increase in the activity of buyers has been observed (Baruk A., 2017).

A prosumer is a very conscious and active consumer who does not want to be just a passive recipient, but also a co-creator. They are people who have a lot of knowledge about their rights and their position on the market. That is why companies must treat consumers as equals and create a

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positive relationship with them. Taking into account the degree of prosumer's involvement, three groups can be distinguished (Szulc E., 2013):

- the most active innovators - they willingly take part in the activities of producers themselves
- those actively participating in actions organized by producers
- those least engaged - they only express their opinion and opinion on existing products and the activities of producers.

In the food industry, there are many campaigns that encourage prosumer activities. An example is Pepsico, which encouraged consumers to invent a new taste of Lay's chips, and in return they offered a share in profits from the sales of this product. Another example is Dr. Oetker, which asked consumers to vote for one of Giuseppe's two pizza flavours, which would be introduced into sales permanently. Another example is the campaign of „Reds", which consisted of encouraging consumers to design their own beer cans. Many companies also use the ingenuity of consumers when designing food packaging.

Summing up, it should be emphasized that prosumption is a dynamically developing trend that affects building positive relations between the producer and the consumer. By taking into consideration the individual needs of consumers and by engaging them in the creation and production processes, producers gain consumers' confidence and strengthens their position on the market.

The above characteristics have not exhausted the subject of leading trends on the food market, but they have pointed out those that are very important. Characteristics of other trends exceed the requirements for the volume of this article and therefore they will be the subject of other scientific articles. It should only be mentioned that today we also observe trends such as ethnic consumerism, freeganism, foodsharing, etc.

Research results

In order to test the knowledge of selected trends by consumers and the level of participation in them, a survey was conducted among 244 consumers (74.6 % women, 25.4 % men). They were mainly young people aged 18-25 (63.1 %) and 26-36 (28.7 %). The remaining 8.2 % were people over 35 years old.

Among all respondents, 45.9 % of people declared that they buy organic food, of which 71.4 % were women. Considering the reasons that determine consumers' choice of organic food, respondents most often indicated concern for health - 64.2 %, the composition of products - 51.7 %, as well as taste values - 50 %. Such a large percentage of indications for health care may result from the growing awareness of people about the impact of food on the human body. Over 1/3 (39.2 %) of respondents chose a higher quality of products as compared to conventional products as an argument for buying organic food. Respondents were also people for whom good environmental status is important and as a factor influencing the choice of food they chose care for the environment (28.5 %). The least frequently chosen response was currently prevailing fashion for this type of food (3.5 % of respondents). Among organic products, products most often bought by respondents were: vegetables 82.1 %, fruit 76.7 %, meat and its products 51.7 %, bread 35.7 %. Among responses, 14.2 % of respondents chose the „other" option, in which products such as dairy products, eggs and cereals were provided.

Another smart trend was smart shopping. It is characterized by rational behaviour of consumers during shopping, unemotional buying, as well as preparation for shopping (e.g., comparison of product prices, search for promotions, etc.). Respondents were asked about what they understand

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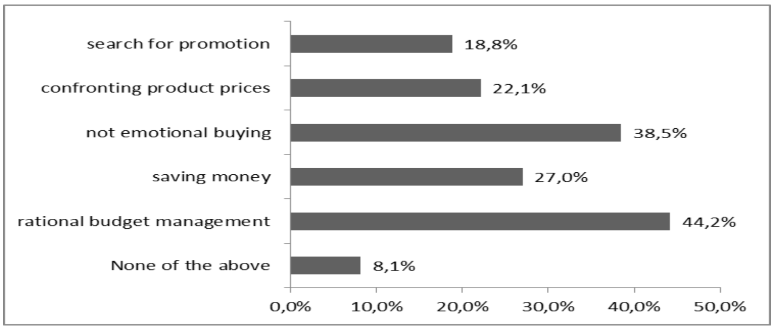
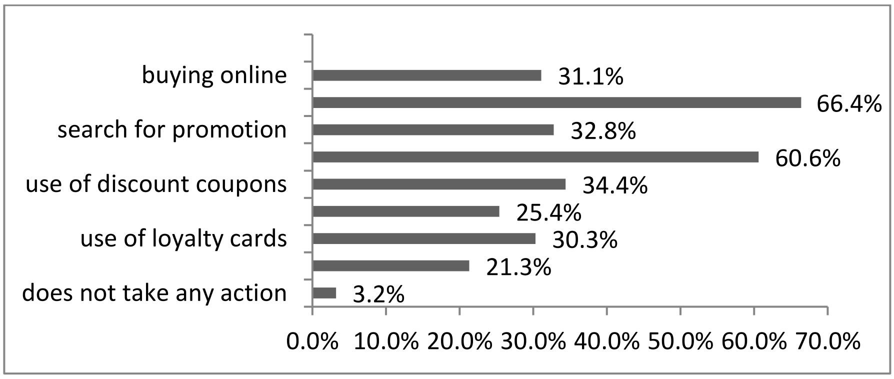
as the concept of smart shopping (Figure 1). They had several suggestions to choose from and they could provide their own, but none of the respondents did. Most respondents chose that it is rational budget management - 44.2 %, a large part of people understand this concept as the confronting product prices with quality – 22.1 %. For many, this is unemotional buying - 38.5 % or saving money - 27 %.



Source: Authors' research

Fig. 1. **Respondents' understanding of „smart shopping" concept**

Respondents were also asked to choose activities they undertake on the food market from among the smart shopping activities mentioned above. The most popular activities were the preparation of shopping lists and the use of promotions (66.4 % and 60.6 % respectively). A significant number of respondents use discount coupons (34.4 %), search for promotions for goods (32.8 %) and use loyalty cards (30.3 %). Only 2.5 % of respondents do not undertake smart shopping activities on the food market (Figure 2).



Source: Authors research

Fig. 2. **Actions taken by respondents in the field of smart shopping**

In the survey, respondents were asked if they succumb to emotions when shopping for groceries, which translates into purchases of unplanned products. 52 % of the respondents said that they succumb to emotions when shopping, and therefore buy unplanned products, 44 % of whom stated that they often succumb to emotions when shopping, and therefore buy unplanned products, and 8 % always buy unplanned products. 32 % of respondents do not succumb to their emotions, of whom 27 % stated that they usually stick to shopping lists, and 5 % that they always do so.

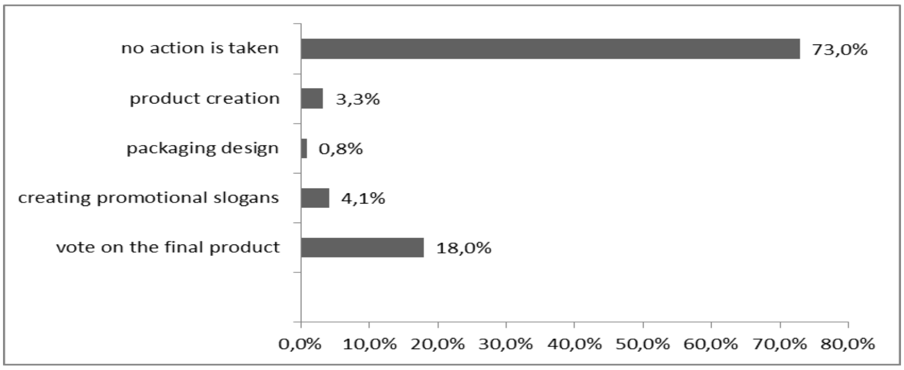
Another trend that was the subject of the survey was prosumption. As we know, prosumer activities are important for enterprises and we observe that companies are increasingly encouraging consumers to prosumer activities. Respondents were asked three questions.

1) What do you understand as prosumption?
2) What activities in the field of prosumption they undertake?
3) How often do they undertake such activities?

When it comes to understanding the concept of prosumption, respondents were given four options of answers.

1) It is active participation of consumers in creating a company's offer.
2) It is an activity of consumers in creating new products.
3) It is consumers sharing their knowledge and ideas with producers.
4) None of the above statements refers to prosumption.

The results obtained indicate that consumers do not fully know this concept. The first response was chosen by 37.7 % of respondents, the second by 48.4 %, the third by 35.2 %, and the fourth by 12.3 %. It should be noted that all correct answers (i.e. 1,2,3) were chosen by only 12.3 % of respondents. Respondents were also asked about which activities in the field of prosumption are most often undertaken. Answers to this question are quite surprising, as 73 % of respondents said they were not involved in any prosumer activities addressed to them by food producers (Figure 3). Other respondents chose such activities as: voting for the final product, e.g. its taste (18 %), creating promotional slogans for companies (4.1 %), participation in creating new products (3.3 %), participation in packaging design (0.8 %).



Source: Authors' research

Fig. 3. **Prosumer activities undertaken by the surveyed consumers**

These results are surprising for the author of the research, because it would seem that young people, and such mainly participated in the survey, are willing to undertake various activities in the field of prosumption. On the other hand, we observe a high level of activity of enterprises, which encourage consumers to participate in such activities, in particular by organizing various competitions, lotteries, often awarding consumers' ingenuity with valuable prizes.

Conclusions, proposals, recommendations

1) We observe the co-existence of various consumer trends on the food market. Completely different trends function on the market at the same time, e.g. consumerism, which has been growing for many years, which means excessive consumption, as well as greening of consumption and deconsumption, being part of the concept of sustainable consumption.
2) Increasing consumers' awareness is manifested in an increasingly rational purchase of products. Care for health, as well as paying attention to the composition of products and their quality contribute to the development of the trend called greening of consumption.
3) Rational budget management, comparison of product prices with their quality, unemotional buying, buying only necessary items, etc. constitute consumer behaviour that are part of the smart shopping trend.
4) Prosumers constitute an innovative potential of enterprises, which is why it is important to encourage them to cooperate. The phenomenon of prosumption is the next stage in shaping the

producer-customer relationship. Although this phenomenon is beneficial for both producers and consumers, the results of the conducted research do not confirm high engagement of respondents in prosumer activities.

5) According to the author, producers should actively encourage consumers to undertake activities in the field of prosumption, offering them more attractive forms of remuneration, e.g. participation in profits from sales of a new product, which was created thanks to consumers' engagement.

Bibliography

1. Albinsson, P.A., Wolf, M., Kopf, D. (2010). Anti-consumption in East Germany: Consumer Resistance to Hyperconsumption. Journal of Consumer Behaviour, No 9, 412–425.
2. Baruk, A.I. (2017). Prosument jako aktywny uczestnik działań marketingowych (Prosumer as the Active Participant of Marketing Activities). Zeszyty Naukowe Szkoły Głównej Gospodarstwa Wiejskiego. Ekonomika i Organizacja Gospodarki Żywnościowej, No 117, pp. 123 – 136.
3. Black, I. (2010). Sustainability through Anti-Consumption. Journal of Consumer Behaviour, No 9, 403–411.
4. Bywalec, C., Rudnicki L. (2002). Konsumpcja (Consumption). PWE, Warsaw
5. Cova, B. (1997). Community and Consumption Towards a Definition of the „Linking value" of Product and Services. European Journal of Marketing, Vol. 31 Issue: 3/4, pp.297-316.
6. De Lanauze, G.S., Siadou-Martin, B. (2013). Pratiques et motivations de deconsommation: Une approche par la theorie de la valeur. Rev. Fr. Gest., Jan/Feb, 55–73.
7. Freeestone, O.M., McGoldrick, P.J. (2008). Motivations of the Ethical Consumer. Journal of Business Ethics, Volume 79, Issue 4, pp 445–467 .
8. Janos-Kresło, M., Mróz, B. (2006). Konsument i konsumpcja we współczesnym świecie (Consumer and Consumption in the Modern World). Wyd. SGH. Warsaw. pp.296.
9. Kacprzak-Choinska, A. (2007). Konsument ponowoczesny. Nowe trendy w zachowaniach nabywczych i ich konsekwencje dla marketingu (A Post-modern Consumer. New Trends in Purchasing Behaviors and their Consequences for Marketing). Studia i Materiały Wydział Zarządzania UW, 15, pp.14-20.
10. Kiezel, E. (2010). Konsument i jego zachowania na rynku europejskim (The Consumer and his Behaviour on the European Market). PWE, Warsaw, pp. 308.
11. Kozlowski, W., Rutkowska A. (2018). Megatrendy w konsumpcji żywności a marketing społecznie zaangażowany (Megatrends in Food Consumption and Social Cause Marketing), Handel Wewnętrzny, No 2, pp. 261-269.
12. Lebiejko, A. (2010). Domocentryzm a wirtualizacja zachowań konsumentów na runku usług (Home Consumption vs Virtualization of Consumer Behavior on the Service Market). Zeszyty Naukowe Uniwersytetu Szczecińskiego. Problemy Zarządzania, Finansów i Marketingu, No 15, pp. 387 – 396
13. Mano, H., Elliott, M.T. (1997). Smart shopping: the origins and consequences of price saving. Advance in Consumer Research, Vol.24, pp. 504-510.
14. Polanska, K. (2016). Upowszechnienie się trendów w gospodarce cyfrowej (Dissemination of Trends in the Digital Economy). Roczniki Kolegium Analiz Ekonomicznych, Szkoła Główna Handlowa, No 40, 155 – 165.
15. Popcorn, F. (1992). The Popcorn Report : Faith Popcorn on the Future of Your Company, Your World, Your Life. HarperCollins Publishers Inc. New York, pp. 267.
16. Rachocka, J. (2003). Dekonsumpcja, domocentryzm, ekologizacja życia - nowe tendencje konsumenckie w rozwiniętych gospodarkach rynkowych (Dekonsumption, Domocentrism, Ecologization of Life - New Consumer Trends in Developed Market Economy). http://mikroekonomia.net/system/publication_files/1313/original/15.pdf pp. 185-191. Access: 02.02.2019.
17. Reformat, B. (2013). The Idea of Smart Shopping – The Generation of Smart Consumers, Studia Ekonomiczne, No 149, pp. 166-175.
18. Sodhi, K. (2011). Has Marketing Come Full Circle? Demarketing for Sustainability, Business Strategy Series, 12.4, pp. 177-185.
19. Szulc, E. (2013). Prosumpcja jako aktywność współczesnych konsumentów - uwarunkowania i przejawy (Prosumption as the Activity of Modern Consumers – Conditions and Symptoms). Nierówności Społeczne a Wzrost Gospodarczy, No 31, pp. 347-358.
20. Tkaczyk, J. (2012). Trendy konsumenckie i ich implikacje marketingowe (New Rules of the Game – the Future Consumer). Handel Wewnętrzny. Konsumpcja i konsument – nowe trendy, No 3, pp.126–134.
21. Tkaczyk, S., Koluda J. (2013). Nowe trendy konsumenckie a sukces organizacji (New Consumer Trends and the Success of the Organization). Zeszyty Naukowe Uniwersytetu Przyrodniczego w Siedlcach. Series: Administration and Management, No 97, pp. 23–41.
22. Vejlgaard, H. (2008). Anatomia trendu (Trend Anatomy). Wolters Kluwer Poland, pp.266.
23. Witek, L. (2017). Idea konsumpcji ekologicznej wśród kobiet (The Idea of Ecological Consumption Among Women). Studia Ekonomiczne. Zeszyty Naukowe Uniwersytetu Ekonomicznego w Katowicach, No 337, pp.194-203.

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PRICE DISCOUNTS AS A GOODS PROMOTION FACTOR IN LATVIAN RETAIL TRADE

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Abstract. Retail trade plays a significant role in the economy of any state. In business, a relationship between the company and the consumer is formed and both sides have their own certain benefits they wish to acquire from this relationship. For the company the main goals are to increase the turnover and gain profit, however, for the consumer aims may vary. In order to attain their goals, being the increased turnover and incoming profit, the companies can use different tools to stimulate the consumer's choice of the product. Sales promotion is exactly what ensures the opportunity for the retailer to attract customers and motivates that particular choice of the purchase, what furthermore ensures competitive advantages over other competitors. The globalization of the market also affects the retailing companies more and more and, therefore, pushes them to find new solutions to ensure their competitiveness and development. To identify the factors that guarantee the competitiveness, the authors have established *the research of price discounts as a tool for sales promotion and its effect upon the activity of the retail companies* as their research focus. Furthermore, the authors will research the form of sales promotion — theoretical basis of usage of price discounts as a part of marketing communication. Moreover, they will also analyse tendencies of development of retail trade in Latvia, as well as, clarify the consumers' attitudes towards the price discounts and the impact of them on making purchases at retail outlets in Latvia by conducting a consumer survey. This research will offer an understanding about the impact of commodity price rebates on consumer behaviour and point to the specificities of this process in retail to the retail companies. From the scientific point of view in this work the authors have collected the analysed theoretical aspects and have defined a united approach for building up the discount policy for retail businesses. As a result of the research, the authors conclude that by examining consumer attitudes towards the commodity price discounts and their use, companies can manage this process and perhaps it may become one of their tools for maintaining competitiveness.

Key words: customer, retail trade, product promotion, discounts.
JEL code: F1; F6; M1; M3.

Introduction

Market globalization affects retail companies more and more and causes them to search for new solutions that ensure competitiveness and supports development. In circumstances of more intense competition, it continuously becomes harder to ensure competitiveness. One of the ways to become more competitive is to focus on customer satisfaction and loyalty. Customer satisfaction and loyalty building is based upon receiving the necessary information, attitude and the requested commodity at the right place, amount and a price that is suiTable the customer. The product price discount as a way of sales promotion can possibly increase the turnover yet decrease the profit. In a retail company it is significant to understand consumer attitude towards the discounts and to develop a targeted approach supported by this attitude. This approach can be developed in many ways, however, it has one certain focus- to support a competitive and sustainable development of a trading company. Latvian retail companies are very intensively using commodity price discounts as an incentive to make a purchase, however, this process is chaotic and not always reaches the goal. This research is looking at the habits of application of discounts in Latvian retail companies as well as at the consumer behaviour when shopping. By understanding decisions customers make when shopping, a retail company can create a more targeted commodity price discount process with more effort, as well as, increase the competitiveness. To identify factors that are ensuring the competitiveness the authors have focused their research on studying the shopping habits of Latvian residents, that furthermore

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will allow the retail companies to develop a commodity price discount policy and, therefore, apply that as a factor influencing the choice of purchase and improve their performance and competitiveness.

To attain the goal following tasks were put forward:

- To analyse theoretical aspects of the use of the discount as a factor affecting the purchase.
- To define the Latvian retail trade field and its tendencies of development.
- To determine the habits of consumer shopping and attitude towards commodity price discounts and their effect on the customers' choice.

To determine customer shopping habits and commodity price discount's influence on the purchase, Latvian residents were surveyed, and limitations were set such as: the problem is studied mostly from the methodological point of view and the nationality, place of residence or income level of the respondents of the survey were not considered. The period of the research: from 1st July 2018 to 1st January 2019.

Following methods of research are used: the logically- constructive method to compare the theoretical material with the empirical results; the graphical method for visualization and analysis of the visual information and customer survey. The methodological basis of the study is foreign (Blattberg& Neslin, Kotler&Keller, Cummins, Chernev, Blythe, Goodluck, Wineaster, Stiving, Ruskin-Brown *etc.*) works and publications that provide insight into the latest information on consumer shopping habits and attitudes towards commodity prices at a discount.

Research results and discussion

1. Sales promotion and discounts

At the beginning we want to provide insight into the essence of sales promotion and to emphasize the opinions of different authors about the use of such promotion tool as price discount.

Blattberg & Neslin considers that sales promotion, a key ingredient in marketing campaigns, consist of a collection of incetive tools, mostly short term, designed to stimulate quicker or grater purchase of certain products or services (Blattberg, Neslin, 1990). However, Kotler&Keller notes that if advertising offers a reason to buy, then sales promotion offers an incentive to buy. Promotion induces consumers to try new products and lead to more varied retail formats, such as everyday low pricing and promotional pricing. For retailers, promotions may increase sales of complementary categories as well as induce store switching. They promote greater consumer awareness of prices. Service marketers also use sales promotions to attract new customers and establish loyalty (Kotler, Keller, 2009). Cummins considers that promotions are primarily tactical in nature but can be a part of a long – term strategy. They must be understood in the context of the functional, economic and psychological benefits with which firms seek to meet customer needs. Promotions are a tool to influence the behaviour and alter every part of the marketing mix to do so. The core of sales promotion is the attempt to influence behaviour here and now. It is the range of price and value techniques designed within a strategic framework to achieve specific goals by changing any part of the marketing mix, normally for a defined period (Cummins, 2010).

It is indicated that promotions work in three ways: economic value, the value resulting from the discounts; information content: the message implied by discount; and affective appeal, feeling aroused by the discount (Davis, 2017). Goodluck& Wineaster emphasizes that sales promotion could be a vital tool when introducting a product internationally (Goodluck, Wineaster, 2016).

Kotler & Keller notes that sales promotion includes different tools for consumer promotion; the ones directly price-oriented are: coupons and prices off (Kotler, Keller, 2009). Chernev characterizing management of incentives mentions that incentives offer solutions, typically short – term. Incentives can be either monetary – such as volume discounts, price reductions, coupons or rebates or nonmonetary. All incentives can be divided into three categories: incentives given to customers (customers monetary incentives: coupons, rebates, price reductions, volume discounts), incentives given to the partners and incentives given to the employees (Chernev, 2012). Blythe describing price promotion, points to two discount categories - immediate and delayed discounts, and five immediate discount forms: seasonal discounts, multibuys, banded packs, reduced shelf price and extra- fill packs (Blythe, 2006).

Stirving thinks that segmenting prices through customer behaviour is fascinating. Their behaviours indicate their willingness to pay. Coupons are a common way to implement segmentation pricing, however, rebates are similar to coupons, only better. Sales events, end- aisle displays, purchase ahead and loyalty clubs are also mentioned. (Stiving, 2011)

Norton analysing sales promotion techniques points to the price pack advantages: moves merchandise and keeps up visibility and disadvantages: not selective and may cheapen brand image (Norton, 2005). However, it is important to use these incentives wisely. Cummins notes that deciding on the optimal mix of incentives (or sales promotion instruments), price promotion is playing with fire. All the surveys show that consumers prefer price promotion to any other form of promotion. They also show that it devalues brand and leads to an expectation of even higher price promotion. Promoters are most likely to use price promotion effectively if they think in terms of segment pricing, look for concrete benefits from each discount they put and use price promotion intermittently. Price promotion continues inevitably by trade pressures and competition (Cummins, 2010). It can be facilitated by using a systematic approach (Chernev, 2012).

It also points to the risks arising by the use of discounts. Davis considers that the main risk of using price discounts is that competitors can easily retaliate in kind, leading to a price war that is damaging to both parties and ultimately weakens the industry, leaving it open to an attack from less immediate competitors (Blythe, 2006). Discounts may make sale today, but what are the long-run costs? Customers may have been bluffing, may be willing to buy at a compromise discounts, or may return after realizing a product's relative value over the new entrant. Additionally, profits will drop if others byer's find out about and start demanding a similar discount (Mohammed, 2010). Kotler & Keller notes that discount pricing has become the modus operandi of a surprising number of companies offering both products and services. Some product categories tend to self-destruct by always being on sale. Sales persons are quick to give discounts in order to close a sale, discounting becomes the norm, but the discounts undermine the value perceptions of the offering, but at the same time discounting can be a useful tool (Kotler, Keller, 2009). Promotions should generate additional sales volume, but the greater challenge is doing so profitably (Davis, 2017). Therefore, it is important to understand the purpose of the discounts, to develop a system or specific program and to evaluate the results.

Ruskin- Brown has defined rules for discounting that if adopted will help to reduce the otherwise erosion of profits: don't publish discounts; negotiate discounts individually; vary the terms a lot; put a limit on every deal; renegotiate every lapsed deal; never let discounts become rooted in your price list/structure; if in any doubt- set prices high and give large discounts; keep the situation flexible for yourself as long as possible (Ruskin- Brown, 2008).

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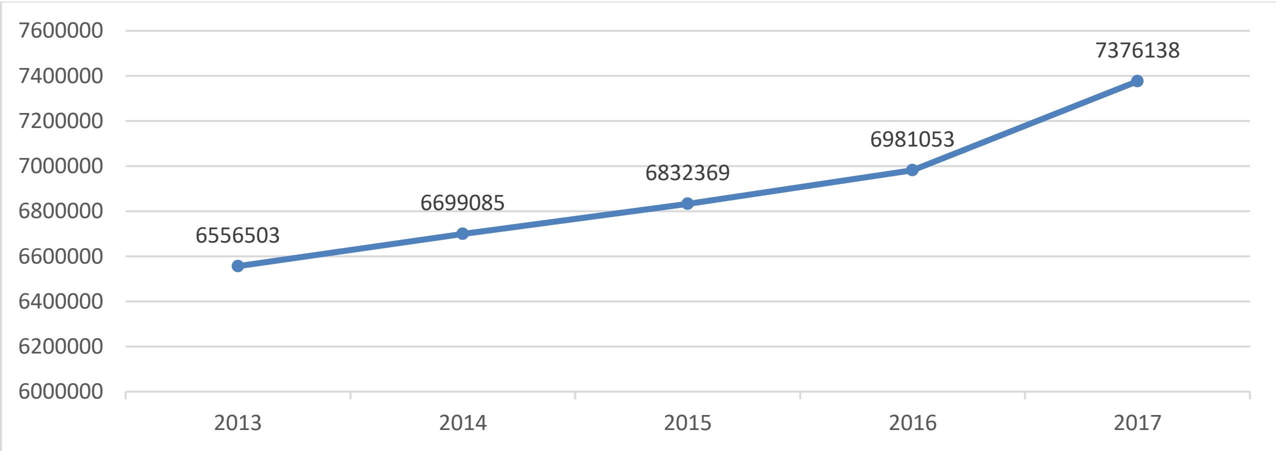
We want to point out that price promotion, discounting and the impact of the discounts has been studied by various authors (Carlson&Kukar-Kinney, 2018, Liu, Chiu, 2015, Graciola, De Toni, 2018), the use and impact of discounts in different areas has been analyzed in other studies (Jadidi et.al. , 2017, Balut et. al., 2018, Xu et. Al, 2019, Miettinen, Stenbacka, 2018), and consumer reaction (Mao, 2016, Shirai, 2017).

2. Retail sales and discounts in Latvia

The subject of the research is the retail sector. Retail is an intermediary in the product distribution channel (PIK). PIK is a set of interconnected companies that participate and perform all of the functions in the process of transferring, distributing, promoting and selling products and related values from manufacturer to consumer (Kotler, et al., 2011). The development of retail companies in recent years has shown that retail is generally a profiTable business in Latvia, as evidenced by the dynamic increase of turnover every year since the end of the global economic crisis.



Source: Designed by the authors using LR CSB data

Fig. 1. **Retail sales in Latvia (thousand euro)**

Compared to 2013, the total retail trade turnover of Latvian retail companies has increased by 13 % in 2017 (Figure 1). At the same time, it has to be taken into account that there are different market players in the trading sector and, like in other countries, there is a tendency in Latvia that it is more and more difficult for the small retailers to stay in the market when the strong retail networks develop and strengthen. In order for retail businesses to be competitive and to increase turnover, demand must be stimulated. Demand can be stimulated by various marketing activities, including one of the sales incentives - commodity price discounts.

In order to successfully apply this method of demand stimulation - commodity price rebates, it is essential to study consumer attitudes towards them.

A population survey was conveyed to study consumer attitudes and buying behaviour. Taking into account the purpose of the survey, the authors of the work chose a standardized open questionnaire. This means that all respondents were asked the same questions with the same order, which ensures an objective comparison of the answers. The questions were selected with one answer according to Likert's 5-point scale and other answers in the system. The questionnaire was created on the Google Forms website and with the non-probabilistic Snowball method (Kristapsone, et.al, 2011). Through the personal contacts of the authors, it was sent to the respondents via e-mail who further shared the link. For the purpose of the study, 1004 respondents filled in questionnaires that were accepted as valid, which at the 95 % confidence level and 5 % error limit sample is sufficient to ensure the representativeness of the study (Arhipova, Balina, 2006)

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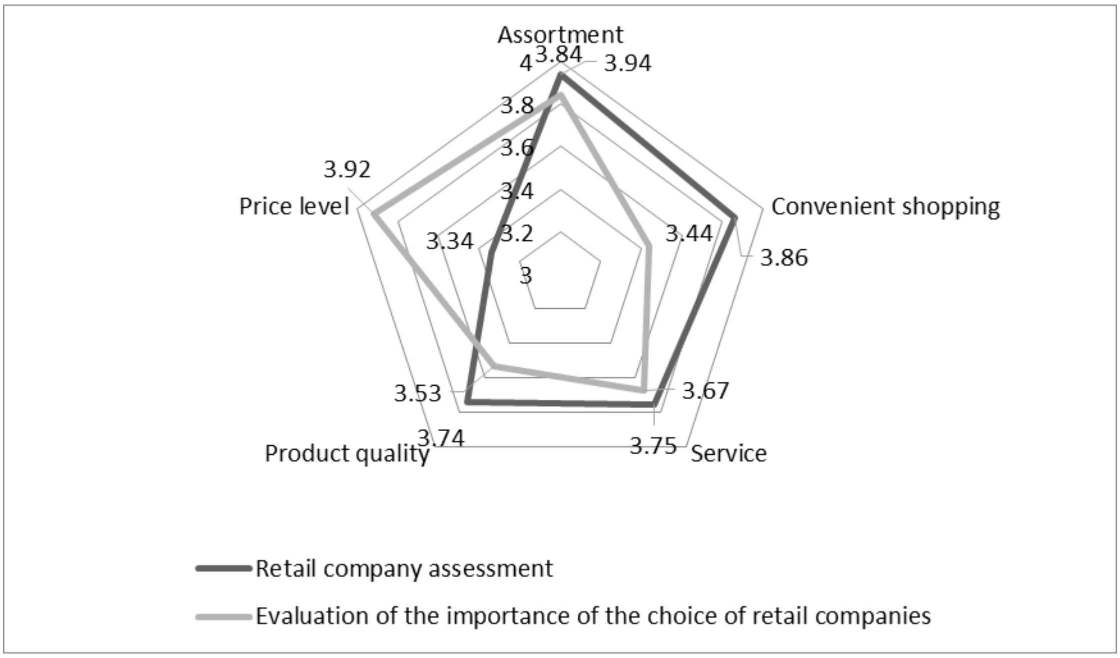
Within the framework of the research, the criteria affecting the selection of the consumer retail company were ranked according to their importance and their real evaluation. These two indicators were compared, and it can be concluded that the price level (3.92) is the most important criterion for choosing a retail company, but the convenience of shopping is the least important. However, when assessing the real situation in retail companies, the price level (3.33) is the least appreciated factor pointing at the negative attitude of consumers towards the pricing policy in retail (Figure 2).



Source: Designed by the authors

Fig. 2. **Comparison of the importance of the choice of a retail company with the actual situation assessment**

The main objective of the study is to find out consumer perception on pricing in retail businesses. As it can be seen in Table 1, ratings are lower than the pricing-rating score of 3.92 (Figure 2).

Table 1

Indicators of consumer reviews about the pricing in Supermarkets

Pricing	Arithmetic mean	Arithmetic mean standart error	Median	Mode	Standard deviation	Dispersion	Range of variation	Min	Max	Sum
For most goods, the prices are appropriate to their value	3.31	0.04	3.00	3.00	0.85	0.72	0.06	1	5	1462
Most prices of the goods are appropriate to their quality	3.21	0.04	3.00	3.00	0.89	0.80	0.06	1	5	1418
Frequently purchased goods have regular discounts	3.45	0.04	3.00	3.00	0.89	0.79	0.06	1	5	1525
Price discounts are essential	3.51	0.05	3.00	3.00	1.02	1.03	0.07	1	5	1553
Price discounts are fair (old and new prices are indicated)	3.35	0.05	3.00	3.00	1.05	1.1	0.07	1	5	1481

Source: Designed by the authors

There are also doubts that the price discounts are fair ($\bar{X}$ = 3,35; Me = 3,00; Mo = 4,00). A slightly higher rating was given to discounts on regular purchases ($\bar{X}$ = 3,45; Me = 3,00; Mo = 3,00). Respondents rated two indicators - commodity price for its value and quality the lowest ($\bar{X}$ = 3,21;

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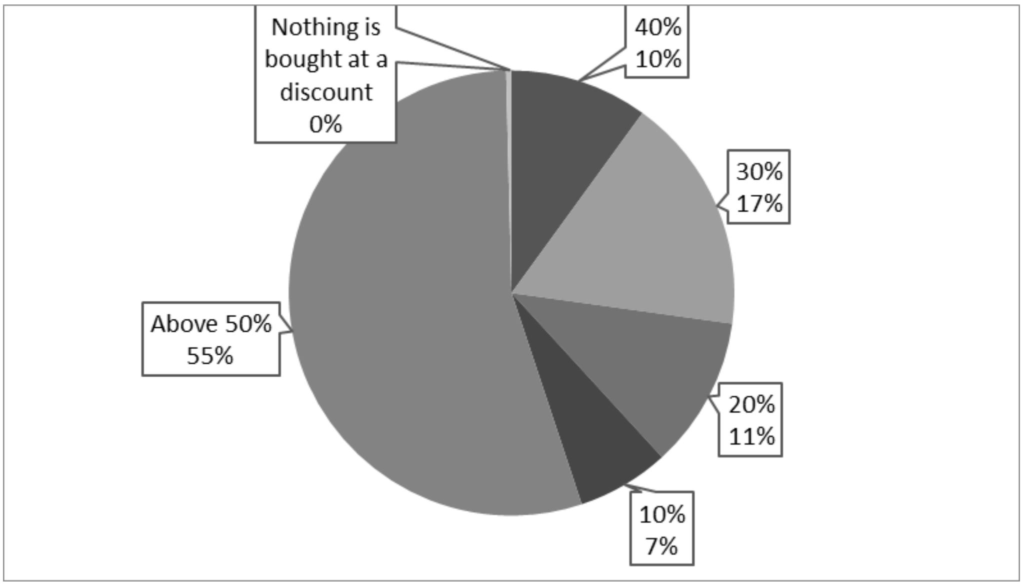
Me = 3,00; Mo = 4,00). Obviously, the pricing process associated with working with suppliers and other partners needs to be improved. At the same time, the supply-demand ratio for each product and the demand elasticity should be taken into account.

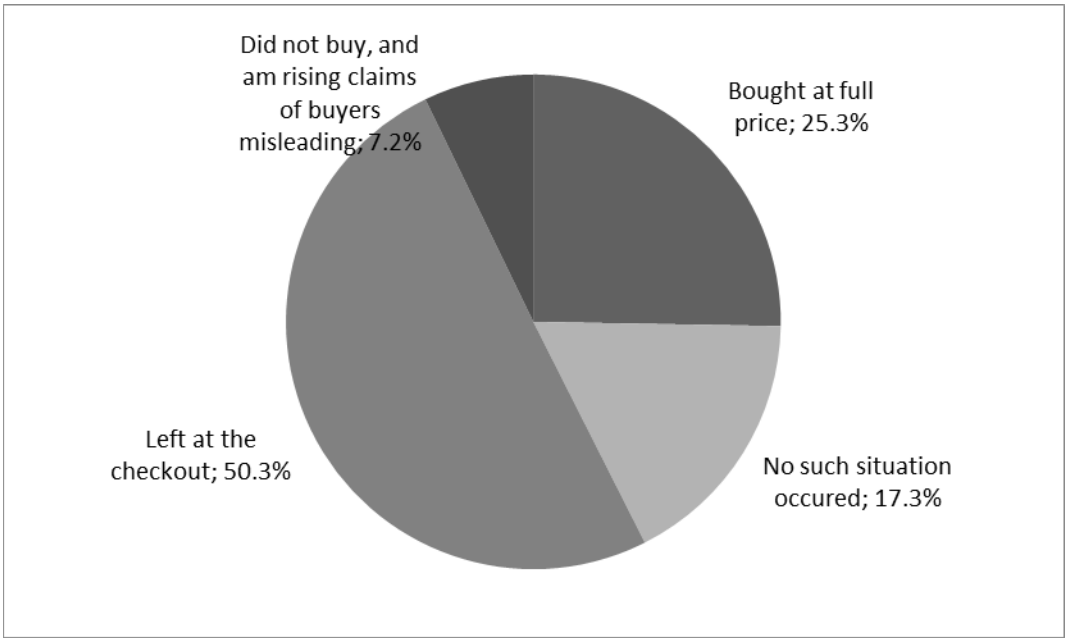
A question was asked about the proportion of discount goods in the shopping cart, where one can clearly conclude that consumers choose goods with discounts (see Figure 3).



Source: Designed by the authors using Maxima KOMPASS data

Fig. 3. **Share of discounts in the shopping cart**

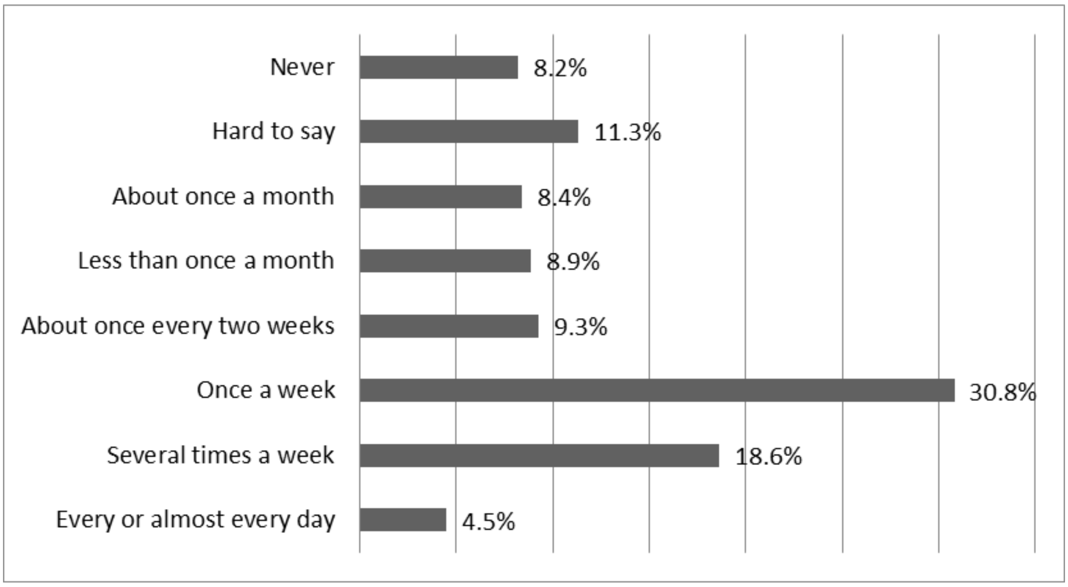
More than half of respondents (55 %) replied that more than half of all purchases (over 50 %) are discounted and there are No consumers with No discounted items in their shopping cart. In addition, buyers perceive discounts very seriously, and refuse to buy finding that there are No discounts (50.3 %) and even complain about buyers misleading (Figure 4).



Source: Designed by the authors using Maxima KOMPASS data

Fig. 4. **Residents' actions, if it turns out that the product has No discount**

A very important factor for retail businesses is changing the place of purchase of the consumer by choosing the most advantageous offer (Figure 5).



Source: Designed by the authors using Maxima KOMPASS data

Fig. 5. **Changing shopping location by choosing the best deal**

The majority (80.5 %) of respondents are willing to change their shopping place more often or less to get the most advantageous offer and only 8.2 % doesn't do that, but 11.3 % find it difficult to answer this question. A third (30.8 %) of respondents even go once a week to look for a better offer. It is this issue that makes retail companies in Latvia seriously consider pricing and be more dedicated and responsible when discounting.

Conclusions, proposals, recommendations

1) Various authors have studied the use of price rebates and their impact on customer behaviour, both in terms of benefits and risks
2) In order to mitigate the risks of using discounts, it is essential to set the purpose of applying discounts and evaluate the results.
3) Retailing in Latvia is a very fast-growing economic sphere, but it is dominated by the big trading networks, which squeezes out the small businesses from the market.
4) One of the main criteria for consumer when choosing the place to shop is the company's price level, but the assessment of the real situation for the companies' price offer is low.
5) Retailers need to improve their pricing processes, as consumers have rated the price quality ratio of commodity prices very low, what furthermore requests more work with the suppliers and other partners. At the same time, the supply-demand ratio for each product and demand elasticity should be taken into account as well.
6) The fairness of the discount on the price of the goods was also assessed very low. In the perception of consumers, discounts are not fair, which an essential factor is in corporate's social responsibility and is at the heart of the company's image.
7) All the buyers surveyed have one or even more than half of the goods with a discount in their shopping cart, which indicates the importance of this incentive on the purchase.
8) The policy of pricing and discounting of retail goods is a factor in competitiveness, as more than 90 % of respondents in a survey once a day or at least once a month change their shopping location to choose the most advantageous offer.
9) It is important to continue the research about the consumer's perception of the price and the price discounts, as well as the changes of the perception in the context of a sustainable economy.

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Bibliography

1. Arhipova, I., Baliņa, S. (2006). *Statistika ekonomikā un biznesā*. Riga: Datorzinību centrs. pp. 98 –233.
2. Blattberg, R.C. Neslin, S.A. (1990). *Sales Promotion: Concepts, Methods, and Strategies*. New York:. Prenctice Hall. p 513.
3. Blut, M.,Teller, C.,Floh, A. (2018). Testing Retail Marketing-Mix Effects on Patronage: A Meta-Analysis. *Journal of Retailing,* Volume 94, Issue 2, pp. 113-135.
4. Blythe, J. (2006). *Essential of Marketing Communications*. UK: Ashford Colour Press Ltd. p.332.
5. Carlson, J.R., Kukar-Kinney, M. (2018). Investigating Discounting of Discounts in an online context: The mediating effect of discount credibility and moderating effect of online daily deal promotions. *Journal of Retailing and Consumer Services*, Volume 41, pp. 153-160
6. Chernev, A. (2012). *Strategic Marketing management*. USA: Cerebellum Press. P.246.
7. Cummins, J. (2010). *Sales Promotion; How to Create and Implement Campaigns that Really Work*. London: Kogan Page, p. 280.
8. Davis, J. (2017) *Measuring Marketing : The 100+ Essential Metrics Every Marketer Needs, Third Edition*. Berlin : De|G Press., p. 376.
9. Goodluck, C. Wineaster. A,(2016). *International Marketing : Theory and Practice From Developing Countries*. Newcastle: Cambridge Scholars Publishing, p.235.
10. Graciola, A. P., De Toni, D. (2018). Does price sensitivity and price level influence store price Image and repurchase intention in retail markets? *Journal of Retailing and Consumer Services*, Volume 44,pp. 201-213.
11. Jadidi, O., Jaber, M. Y., Zolfaghari, S. (2017). Joint pricing and inventory problem with price dependent stochastic demand and price discounts. *Computers & Industrial Engineering,* Volume 114, pp.45-53
12. Kotler, P., Armstrong, G., Wong, V., Saunders, J. (2011). *Principles of Marketing.* 5th Europe an Edition, London. Pentice Hall. p. 1056
13. Kotler, P., Keller, K.L. (2009). *Marketing Managment.* Pearson. p. 832.
14. Kristapsone, S., Kamerāde, D.u.c. (2011). *Ievads pētniecībā: stratēģijas, dizaini, metode*. RaKa, Rīga, 284 lpp.
15. Latvijas mazumtirdzniecības apgrozījums 2013.–2017.g. tūkst.eiro. Iegūts 13.02.2019. No http://www.csb.gov.lv/lv/stats_table_metadata/68/ TARGET=_blank>Metadati</A>
16. Liu, H-H., Chiu, Y-Y. (2015). Sales framing, mental accounting, and discount assignments. *Asia Pacific Management Review*. Volume 20, Issue 4, December, pp.201-209.
17. Mao, W.(2016). Sometimes „Fee" Is Better Than „Free": Token Promotional Pricing and Consumer Reactions to Price Promotion Offering Product Upgrades. *Journal of Retailing*, Volume 92, Issue 2, pp. 173-184.
18. Mazumtirdzniecības nozares tendences 2017. gadā un 2018. gada sākumā.(Maxima mazumtirdzniecības KOMPASS) (2018). Retrieved: https://www.maxima.lv/fileman/Uploads/2018/Maxima-13-03-2018-RGB.pdf. Access: 04.01.2019
19. Miettinen,T., Stenbacka, R. (2018). Strategic short-termism: Implications for the management and acquisition of customer relationships. *Journal of Economic Behavior & Organization*. Volume 153, pp. 200-222.
20. Mohamed R. (2010). *The 1 % windfall. How successful companies use price to profit and grow*. New York: HarperCollins Publisher, p. 224
21. Norton, p. (2005). *The Manager's Guide to Competitive Marketing Strategies*. London : Thorogood, p.414.
22. Ruskin-Brown, I. (2008). Practical pricing for results. London: Thorogood Publishing Ltd, p. 371.
23. Shirai, M. (2017). Effects of price reframing tactics on consumer perceptions. *Journal of Retailing and Consumer Services*. Volume 34, pp. 82-87.
24. Stiving, M. (2011). *Impact Pricing: Your Blueprint for Driving Profits*. Wisconsin: Entrepreneur Press, p.194.
25. Xu, X., Chen, R., Zhang, J.(2019) Effectiveness of trade-ins and price discounts: A moderating role of substitutability. *Journal of Economic Psychology*. Volume 70, Pages 80-89.

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RECOGNITION AND PERCEPTION OF LATVIA AS A TOURISM DESTINATION IN DIFFERENT SEGMENTS

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Abstract: Recognition and perception as well as the image of a destination plays a significant role in choosing a specific destination for a potential journey. The destination image includes different attributes — tangible and verifiable destination attributes, as well as more intangible aspects as perceptions of a more psychological nature and emotions related to particular destination. The aim of the research was to study differences in the recognition and perception of Latvia as a tourism destination in different segments of potential European travellers in Latvia's target markets and how they affect their intentions to visit Latvia.

The research involved data of three face-to-face surveys conducted in different places of Germany, Switzerland and Austria in 2015, 2016 and 2017. The questionnaire was conducted to evaluate the recognition and the perception of Latvia as tourism destination as well as to find out the respondents' intentions to visit Latvia within the next three years.

As tool for data analyses SPSS software was used by applying descriptive statistics, data correlation and crosstabulations. Main results and findings are intended for organisations that are responsible for tourism image development in Latvia, to optimize marketing communication with different tourist segments in countries mentioned above.

Key words: destination, image, recognition, perception, destination attributes.
JEL code: M31, L83.

Introduction

Several authors (Holloway, 1986; Shih, 1986 etc.) have tried to investigate the features of the destination tourism product. The reason is that tourists usually have incomplete knowledge about a destination that they have not visited, and they often make their choice on the basis of symbolic information from the media or from social networks (Ragavan, Subramoniana, Sharif, 2014).

Pre-purchase behavioural studies identify tourists' motivations, destination images, and tourists' decision-making behaviours that provide critical insights into future product development and promotional schemes (Chen, 2003). Particular destination can only match certain types of demand. Thus, destinations need to know and understand the needs and aspirations of potential tourists to manage destination resources and attract the right customer groups. Segmentation is usually used to get a better position compared to competitors, because it provides valuable information on customers and allows the destination to tailor its offer to better meet customer needs (Pesonen, Laukkanen, Komppula, 2011).

The aim of the study was to find out the differences in the recognition and perception of Latvia as a tourism destination in different segments of potential travellers in Latvia's target markets in Europe and how they affect their intentions to visit Latvia.

1. Destination image and positioning

According to Fakeye and Crompton (1991), destination image is an individual's mental representation of knowledge, feelings and overall perception of a particular destination. Positioning is the process of creating a distinctive place for a destination in the minds of the potential visitors in the targeted markets. Comparative images of tourist destinations can be identified by comparing several competing destinations. In this process, the strengths and weaknesses of the destinations,

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the competitive advantages and the different competencies for each destination in relation to other potential destinations are determined. The development of a positioning strategy involves several stages: firstly, identifying existing destination images in target market segments, secondly, comparing these images with competitor images, and thirdly, selecting destination features that meet the needs and wishes of travellers and distinguishing a destination from competitors (Baloglu, McCleary, 1999). As destinations usually consist of diverse range of features and not all can be included in the positioning, decisions should be made about which attributes are important (Pike, 2012). If the destination is not differentiated from competing destinations, then the likelihood that it will be considered as a possible destination will be reduced and that it will indeed be chosen as the final destination in the travel decision-making process. One of the specific interests of the destination image research is to identify the strengths and weaknesses of tourist destinations compared to other destinations based on perceived destination features and / or perceived similarities between destinations without reference to specific destination features. Other studies have looked at the differences between travellers who visited the destination (visitors) and those who did not (non-visitors) (Fridgen 1987; Chon 1990; Ahmed 1991; Fakeye and Crompton, 1991; Hu and Ritchie, 1993; Milman and Pizam, 1995; Baloglu, McCleary, 1999). Destination marketing organizations should develop different destination image and positioning strategies in the target markets, taking into account that both these groups may need different positioning and communication strategies. The destination image, perceived by its actual and potential visitors, plays an important role in determining its competitiveness as a tourist destination.

2. Segmentation specifics in tourism industry

Ragavan, Subramoniana, Sharif (2014) indicated that better understanding of the needs and motives of tourists and adjusting conditions accordingly can lead to more successful destination marketing.

According to Heung and Quf (2000) and Ragavan, Subramoniana, Sharif (2014), an understanding of the preferences and travel related behaviour of tourists is vital for tourism marketing in terms of market segmentation and the design of effective promotional campaign (Ragavan, Subramoniana, Sharif, 2014).

Market segmentation in tourism can be defined as a process of dividing a common tourist market into distinct groups of tourists who could demand distinctive experiences or particular marketing service mixes. In tourism studies segmentation generally includes diverse tourist characteristics such as demographics, socio-economic factors, country of origin as geographical criteria, and particular tourism product related behavioural characteristics for instance purchasing and consumption behaviour aspects, tourism attraction preferences and attitudes towards them, need for particular experiences and services (Kotler, 2003; Bloom, 2004). To effectively meet the needs of certain tourist segments, many studies have been carried out to explore and identify the specific characteristics of particular segments of tourists or tourist similarities in a particular segment (Hudson, 2000; Shoemaker, 1994). For segmenting tourists, researchers have used prior (Hudson, 2000) and post hoc analyses (Koca, Altinay, 2007).

Tourists are heterogeneous in the perception of their travel elements and features. Travel elements and features may be perceived differently by tourists from particular cultures and different countries (Chen & Kerstetter, 1999). As stated by Baloglu and McCleary (1999), perception of tourist destination image can differentiate for various individual‘s age groups. The same can be true from gender perspective – as indicated in one study the on destination image of Pennsylvania by Chen and Kerstetter (1999) where rural tourism destination analyses demonstrated significant tourist gender influence on the destination perceived image. Women could perceive more intensively intrapersonal constraints and could be short on skills and knowledge about opportunities, the research of Jackson and Henderson (1995) indicated that women scored higher on the interpersonal and intrapersonal constraint dimensions (Hudson, 2000).

As reported by wide range of marketing scholars socio-demographic factors such as gender, age and marital status could play significant role in consumer behaviour (Ragavan, Subramoniana, Sharif, 2014). On overall, market segmentation in tourism marketing is considered by scholars as crucial research and therefore repeatedly investigated both by academic researchers and also practitioners (Chen, 2003). Determination of the strength of relationship for particular tourist segment in relation with certain criterion of interest can be used by marketers for efficient work for particular target market development. As example can be mentioned intention to buy as a dependent variable, then the aim could be to find particular segment that has the highest probability to buy indicating the most valuable tourist segment for destination (Chen, 2003).

Destination Marketing Organisation representatives when developing marketing strategy frequently face a challenge to select the most suiTable methodology for tourism destination market segmentation. Market segmentation has been extensively used to understand the distinct characteristics of tourists and for developing marketing strategies.

Customer segmentation can be declared as a very significant data mining methodologies used in marketing and also in customer relationship management as behavioural clustering and segmentation help drive strategic marketing initiatives, while particular sociodemographic segmentation could be applied in tactical destination marketing (Bloom, 2004). As indicated by Luna-Cortés (2018), recent research is directed to analyse the influence of the internet marketing, especially online content marketing, on the image of a country. It should be indicated that there are two different approaches how we conduct market segmentation process – it can be done a priori as common sense segmentation and a posteriori as a data-driven segmentation (Dolnicar and Grun, 2008). As stated by Dolnicar and Grun (2008), in the case of priori or common sense segmentation it is important to start with choice of the segmentation criteria, while in a posteriori segmentation this burden of responsibility rests with the research approach of the data-driven segmentation study undertaken. Particularly in tourism marketing research, segments have often been identified according to prior knowledge (Dolnicar, 2004). Both prior and posteriori segmentation approaches have been used in several market segmentation studies in tourism, still use of age, income, or country of origin, geographic location and stage in the family life cycle, nationality or visitors' participation in certain activities as criteria is more common for tourism market segmentation, nevertheless in each particular research choice has to be validated (Pesonen, Laukkanen, Komppula, 2011).

The tourism marketing research indicates that the tourism market has a very heterogeneous nature and thus different activities at the tourism destination will appeal to different types of tourists. Therefore, Destination Marketing Organisation representatives need to be aware of different tourists' needs, wants, and preferences by developing a wide variety of facilities, tailored packages and diverse services for tourists. Market segmentation technique can be applied in heterogeneous markets and each tourist segment can be seen as smaller homogeneous groups distinguished by abovementioned criteria - geographic, sociodemographic, psychographic, behavioural aspects, still needs to be mentioned that each segment needs not only to be enough substantial and accessible, but also quantitatively measurable, so that Destination Marketing Organisation representatives can efficiently targeted them through specific marketing campaigns (Tkaczynski, Rundle-Thiele, Prebensen, 2015).

After the segmentation, next step that follows is targeting particular tourist markets. Target marketing mainly is defined as a strategy that aims at grouping a major market into segments with the aim to target one or more most profiTable segments or to develop products and marketing programmes adjusted to each distinctive segment (Kotler, 2003; Bloom, 2004).

Thus summarising, in the consumer segmentation studies tourism marketing scholars divide consumers into groups which are homogeneous within the group but substantially different from other groups, assuming a heterogeneous overall tourism market, often working with quantitative research methods by using surveys for data collection offering significant practical relevance to marketers, enabling tourism organisations and companies to target chosen market segments and then position their own product in accordance (Lutz, Newlands, 2018).

3. Methodology

In overall marketing literature as well as in tourism marketing studies it has been discussed on the techniques applied for segmentation (D'Urso, Disegna, Massari, Osti, 2016). Tourism marketing literature related to segmentation issues indicates domination in use of psychographic variables such as tourist motivation for travel, personal opinions and judgements about destination and offered services. Quite often these psychographic variables are gathered by using qualitative scales, usually Likert scale or similar because of the easiness of application when developing and administering the data. Still some allow to obtain only an imprecise measurement of the subjective perception of the respondent. Nevertheless, the scale approach gives possibility to gather quite imprecise data because of the subjective scale perception of the traveller, few segmentation studies on tourism have taken into consideration the uncertainty and vagueness that generally characterize qualitative scales (D'Urso, Disegna, Massari, Osti, 2016).

In era of global competition when tourists have hundreds of destinations as choices for their travel, for the developing destinations it is important to target different market segments including wide range of potential tourists who have not yet visited the country. In order to have successful marketing communication for new potential tourist attraction the work with destination perception in each market segment is crucial.

The research question of the study investigates what are the differences in the perception of Latvia as a destination between genders and age groups, and whether the perception of the destination influences the decision to travel to Latvia.

Quantitative research analyses method was applied using data of three face-to-face surveys conducted in 2015, 2016 and 2017. The questionnaire was developed to investigate the recognition and the perception of tourism destination Latvia as well as to find out the respondents' intentions to visit Latvia within the next three years. The survey was conducted in three European countries - Germany, Switzerland and Austria. Interview comprised 1260 inhabitants, 1183 or 94 % of which have never been in Latvia. The detailed respondents profile is indicated in the Table 1.

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Table 1

Respondent's profile (%, n=1183)

Indicator		**Share in the total number of respondents**
Gender	male	44 %
	female	56 %
Age	18 - 24	52 %
	25 - 44	37 %
	45 - 64	8 %
	65+	3 %
Education	professional	18 %
	high school	25 %
	university/ high school degree	48 %
	other	9 %
Income level in comparison with average income in the country of origin	below average	29 %
	average	49 %
	above average/ high	22 %

Source: calculations made by authors based on 2015, 2016, 2017 year survey data

For further analyses data on respondents who have not been in Latvia, will be analysed. For the segmentation used in research was gender and four age groups: from 18 to 24 old, 25 – 44, 45 – 64 and 65 and older. For the date analyses, SPSS software tools were used by applying descriptive statistics, data correlation as well as crosstabulation. Main research results and findings are addressed towards Destination Marketing Organisations whose reasonability is tourism image development in Latvia, to optimize marketing communication with different tourist segments in countries mentioned above.

4. Research result analysis and findings

In order to reach the aim of the study, questions about the perception of Latvia as a destination and travel intentions in the next three years were asked: 'How well do you know Latvia?', 'What are your thoughts about Latvia as a tourist destination as a whole?', 'Do you plan to travel to Latvia in the next 3 years?' It was given the opportunity to respond, using the 7-point Likert scale. The research results were analysed by dividing the genders and 4 age groups (Table 2).

Table 2

European respondent's perception of Latvia as a destination and travel intentions in the next three years (mean)

	Total	**Gender**		**Age groups**			
		Female	**Male**	**18 – 24**	**25 – 44**	**45 – 64**	**65+**
Familiarity with destination (in the scale from 1–not at all to 7–very well)	1.83	1.74	1.95	1.89	1.84	1.60	1.40
Attitude towards Latvia as a tourism destination (in the scale from 1–very negative to 7–very positive)	4.61	4.65	4.57	4.53	4.64	4.92	5.26
Do you plan to travel to Latvia in the next 3 years? (in the scale from 1–definitely not to 7–definitely yes)	3.27	3.26	3.27	3.07	3.41	3.85	3.76

Source: calculations made by authors based on 2015, 2016, 2017 year survey data

Although respondents indicated knowledge about Latvia was different in different age groups – the older were respondents, the lower they indicated their knowledge about Latvia, the attitude towards Latvia as destination and plans to travel were increasing by age.

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Correlation between familiarity with destination, attitude towards Latvia as a tourism destination and intentions to travel to Latvia was applied using Spearmen correlation calculation (Table 3).

Table 3

Correlation between familiarity with destination, attitude towards Latvia as a tourism destination and intentions to travel to Latvia (Spearman)

	Total	Gender		Age groups			
		Female	Male	18 – 24	25 – 44	45 – 64	65+
Familiarity with destination	.192**	.198**	.188**	.213**	.187**	.324**	-.113
Attitude towards Latvia as a tourism destination	.441**	.459**	.411**	.438**	.421**	.452**	.196

*** Correlation is significant at the 0.01 level (2-tailed)*
Source: calculations made by authors based on 2015, 2016, 2017 year survey data

Analyses indicated that there is positive correlation between attitude towards Latvia as tourism destination and intention to travel for all segments except age group 65 and older. Slightly closer correlation between attitude and intention to travel was for female segment and 45-64 years old travellers. Regarding the familiarity with destination and intention to travel did not indicated significant level of correlation.

The opinion about Latvia from a potential tourist point of view was analysed using question „please give your opinion about Latvia from a tourist point of view" where neutral evaluation was indicated by 4, and positive opinion can be described from 5 to 7. To indicate certain segment positive opinion – segments with positive opinion and mean higher than for all respondents were highlighted (Table 4).

Positive opinion in overall perception is green country with unspoiled nature (higher mean is for female and age groups over 45 years old), country with rich cultural heritage (female and age groups 25-64), beautiful cities and villages (female and age groups 25-64), good recreation facilities (female and age groups 18-24), relaxing atmosphere (female and age groups 18-24), friendly and hospiTable locals (female and age groups 18-24, 45-64), Interesting cultural attractions (female and age groups 25 and older), interesting historical attractions (female and age groups 25 and older), high personal safety (female and age groups 18-24), appealing local food local cuisine (female and age groups 18-24), good value for money (man and age groups 25 and older). For few segments opinion about Latvia as tourism destination differs from average perception (that was below 5) – long seashore, beautiful beaches (higher result is for 45 and older), good entertainment and nightlife (higher result is for 45 and older), high cleanliness (men and 18-24, 65 and older), high service quality (45-64), low prices of tourism services (men and 25-64).

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Table 4

Opinions about Latvia from a potential tourist point of view (mean in the scale from 1 – fully disagree to 7 – completely agree)

Characteristics	Total	Gender		Age groups			
		Female	Male	18 – 24	25 – 44	45 – 64	65+
Green country with unspoiled nature	5.43	**5.52**	5.33	5.42	5.42	**5.51**	**6.00**
Long seashore, beautiful beaches	4.68	4.77	4.55	4.50	4.79	**5.30**	**5.31**
Country with rich cultural heritage	5.11	**5.21**	4.98	5.00	**5.21**	**5.39**	5.11
Beautiful cities and villages	5.39	**5.49**	5.26	5.38	**5.40**	**5.45**	5.21
Good entertainment, nightlife	4.67	4.62	4.73	4.48	4.87	**5.04**	**5.13**
Good recreation facilities	5.24	**5.32**	5.15	**5.32**	5.19	5.02	4.78
Well suited for family holidays	4.95	4.98	4.89	4.98	4.92	4.86	4.46
Relaxing atmosphere	5.45	**5.47**	5.43	**5.51**	5.45	5.09	5.07
Exciting atmosphere	4.56	4.54	4.57	4.44	4.68	4.92	4.08
Friendly, hospiTable locals	5.60	**5.64**	**5.57**	**5.61**	**5.56**	**5.82**	5.38
Good opportunities for shopping	4.27	4.27	4.27	4.20	4.35	4.71	3.45
Interesting cultural attractions	5.16	**5.18**	5.13	5.03	**5.31**	**5.38**	**5.42**
Interesting historical attractions	5.20	**5.27**	5.10	5.10	**5.30**	**5.38**	**5.38**
High quality of accommodation	4.70	4.66	4.74	4.73	4.76	4.53	4.38
High quality of infrastructure	4.51	4.49	4.53	4.54	4.45	4.67	4.11
High cleanliness	4.95	4.87	**5.07**	**5.08**	4.77	4.88	**5.00**
High personal safety	5.05	**5.11**	4.97	**5.17**	4.93	4.85	4.64
Appealing local food, local cuisine	5.16	**5.21**	5.10	**5.20**	5.12	5.12	4.75
High service quality	4.89	4.97	4.80	4.96	4.76	**5.12**	4.78
Good value for money	5.20	5.10	**5.34**	5.10	**5.32**	**5.35**	**5.25**
Low prices of tourism services	4.98	4.90	**5.09**	4.89	**5.10**	**5.11**	4.91

Source: calculations made by authors based on 2015, 2016, 2017 year survey data

Correlation between opinions about Latvia from a tourist point of view and intentions to travel to Latvia in the next 3 years was carried out (Table 5).

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Table 5

Correlation between opinions about Latvia from a tourist point of view and intentions to travel to Latvia (Spearman)

Characteristics	Total	Gender		Age groups			
		Female	Male	18 – 24	25 – 44	45 – 64	65+
Green country with unspoiled nature	.136**	.144**	.104*	.129**	.129*	.148	.179
Long seashore, beautiful beaches	.192**	.152**	.234**	.138**	.231**	.294*	-.096
Country with rich cultural heritage	.113**	.121**	.094	.056	.186**	.043	.063
Beautiful cities and villages	.128**	.112**	.137**	.111*	.080	**.415****	.328
Good entertainment, nightlife	.076*	.060	.088	.054	.046	.319*	.217
Good recreation facilities	.132**	.101*	.159**	.142**	.124*	.142	**.649**
Well suited for family holidays	.098**	.102*	.086	.136**	.057	-.047	.557*
Relaxing atmosphere	.114**	.094*	.112*	.146**	.148**	-.231	.060
Exciting atmosphere	.177**	.162**	.186**	.155**	.203**	.195	.227
Friendly, hospiTable locals	.116**	.117**	.089	.148**	.075	.056	-.004
Good opportunities for shopping	.158**	.156**	.153**	.136**	.148*	**.340***	-.132
Interesting cultural attractions	.119**	.154**	.053	.100*	.127*	-.033	-.007
Interesting historical attractions	.157**	.145**	.164**	.125**	.197**	.064	-.094
High quality of accommodation	.151**	.098*	.227**	.160**	.175**	.146	-.237
High quality of infrastructure	.147**	.124*	.169**	.106*	.178**	**.354***	-.190
High cleanliness	.088*	.104*	.053	.096*	.065	.248	.191
High personal safety	.046	.000	.073	.032	.064	.242	.098
Appealing local food, local cuisine	.105**	.132**	.048	.113*	.102	.062	.390
High service quality	.065	.038	.071	.087	-.037	.243	**.752***
Good value for money	.099**	.084	.128*	.093	.085	.044	**.592**
Low prices of tourism services	.042	.022	.078	.064	-.001	-.210	**.740****

** Correlation is significant at the 0.05 level (2-tailed)*
*** Correlation is significant at the 0.01 level (2-tailed)*
Source: calculations made by authors based on 2015, 2016, 2017 year survey data

Results indicate that the highest intention to travel to Latvia was for age group 45-64, and in this particular segment correlation between opinions about Latvia and intentions to travel was for following aspects beautiful cities and villages, good opportunities for shopping, high quality of infrastructure.

As the highest correlation between opinions about Latvia and intentions to travel to Latvia is in segment of 65 years and older in the aspects of quality and price ratio - high service quality, good value for money spent, low prices of tourism services and good recreation facilities.

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Conclusions, proposals, recommendations

The study concludes that different segments of potential tourists may have different perceptions of Latvia as a travel destination. By promoting Latvia in the European tourism market, it is purposeful to choose different accents for different segments: for seniors – service quality and low prices of tourism services (good value for money), good recreation possibilities; for middle-aged tourists – beautiful cities and villages, high quality of infrastructure; for younger tourists - long seashore, beautiful beaches, exciting atmosphere.

Bibliography

1. Ahmed, Z.U., 1991. The Influence of the Components of a State's Tourist Image on Product Positioning Strategy. *Tourism Management*, 12(4), pp.331–340.
2. Baloglu, S., McCleary K.W., 1999. U.S. International Pleasure Travellers' Images of Four Mediterranean Destinations: A Comparison of Visitors and Nonvisitors. *Journal of Travel Research*, 38(11), pp.144-152.
3. Bloom, J.Z., 2004. Tourist Market Segmentation with Linear and Non-linear Techniques. *Tourism Management*, 25, pp.723–733.
4. Chen, J.S. 2003. Market Segmentation by Tourists Sentiments, *Annals of Tourism Research*, 30(1), pp.178–193.
5. Chen, p. J., Kerstetter, D. L., 1999. International Student's Image of Rural Pennsylvania as a Travel Destination. *Journal of Travel Research*, 37(3), pp.256-266.
6. Chon, K.S., 1990. The Role of Destination Image in Tourism: A Review and Discussion. *The Tourist Review*, 45(2), pp.2-9.
7. Dolnicar, S., 2004. Beyond „Common Sense Segmentation" – A Systematics of Segmentation Approaches in Tourism. *Journal of Travel Research*, 42(3), pp.244-250.
8. Dolnicar, S., Grun, B., 2008. Challenging 'Factor Cluster Segmentation'. *Journal of Travel Research,* 47(1), pp.63–71.
9. D'Urso, P., Disegna, M., Massari, R., Osti, L., 2016. Fuzzy Segmentation of Postmodern Tourists. *Tourism Management,* 55, pp.297-308.
10. Fakeye, p. C., Crompton, J. L., 1991. Image Differences between Prospective, First-time, and Repeat Visitors to the Lower Rio Grande Valley. *Journal of Travel Research*, 30, pp.10-16.
11. Fridgen, J.D., 1987. Use of Cognitive Maps to Determine Perceived Tourism Regions, Leisure Sciences, 9 (2), pp.101-117.
12. Heung, V. C. S., Quf, H., 2000. Hong Kong as a Travel Destination: An Analysis of Japanese Tourists' Satisfaction Levels, and the Likelihood of them Recommending Hong Kong to Others. *Journal of Travel and Tourism Marketing*, 9(1/2), pp.57-80.
13. Holloway, J. C., 1986. *The Business of Tourism*. London: Longman Publishing Ltd.
14. Hudson, S., 2000. The Segmentation of Potential Tourists: Constraint Differences between Men and Women. *Journal of Travel Research*, 38(5), pp.363-368.
15. Koca, E., Altinay, G., 2007. An Analysis of Seasonality in Monthly per Person Tourist Spending in Turkish Inbound Tourism from a Market Segmentation Perspective. *Tourism Management* 28, pp.227–237.
16. Kotler, P., 2003. *Marketing Management*. 11th Edition, Prentice-Hall, Upper Saddle River, 738 p.
17. Luna-Cortés, G., 2018. Differences among Generations of USA Tourists Regarding the Positive Content Created about Colombia in Social Media. *Journal of Hospitality and Tourism Management*, 36, pp.31–39.
18. Lutz, C., Newlands, G., 2018. Consumer Segmentation within the Sharing Economy: The Case of Airbnb, *Journal of Business Research,* 88, pp.187–196.
19. Pesonen, J., Laukkanen, T., Komppula, R., 2011. Benefit Segmentation of Potential Wellbeing Tourists, *Journal of Vacation Marketing* 17(4), pp.303–314.
20. Pike, S., 2012. Destination Positioning Opportunities using Personal Values: Elicited through the Repertory Test with Laddering Analysis, *Tourism Management* 33 (1), pp.100-107
21. Ragavan, N.A., Subramoniana, H., Sharif, S.P., 2014. *Procedia - Social and Behavioral Sciences* 144, pp. 403–411.
22. Shoemaker, S., 1994. Segmenting the U.S. Travel Market According to Benefits Realized. *Journal of Travel Research,* 32(3), pp.8–21
23. Tkaczynski, A., Rundle-Thiele, S.R., Prebensen, N.K., 2015. Segmenting Potential Nature-Based Tourists Based on Temporal Factors: The Case of Norway, *Journal of Travel Research*, 54(2), pp.251–265.

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MARKETING OF AGRICULTURAL PRODUCTS AND AN INNOVATIVE METHOD OF "BLUE OCEAN"

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Abstract. In the article an attempt was made to consider the possibility of applying marketing methods to agricultural products. Marketing methods have been reviewed, starting with 4P and 4C methods, reaching to the „Blue Ocean" strategy. The specific of the market of agricultural products was also described, indicating the difference between this market and industrial goods markets. Then the tools used in the „Blue Ocean" method were specified, bringing closer the notions, which for many people are still unknown. They introduce the concept of strategy canvas, Eliminate-Reduce-Raise-Create Grid or Buyer Utility Map. It turns out that the learned methods can and are used in traditional markets. The following sections describe the differences in the operation of enterprises as a function of their size and specialization. Studies show that the marketing of the agricultural products is underdeveloped because of the specific conditions of the agricultural market, which have resulted in long-established patterns of action. However, there is also a room in this market for a wider introduction of marketing principles. Analysis of the methods used in the Blue Ocean Strategy shows that these methods can also be applied in the marketing of agricultural products. On the basis of the observation made, it can be assumed that farm activities may become more effective if even the simplest analyses are carried out and decisions are made on their basis.

Key words: marketing of agricultural products, Blue Ocean strategy, 4P and 4C methods.
JEL code: M310, Q130.

Introduction

The market for agricultural products is a market which functions differently to the known traditional markets. There are a number of regulations that do not encourage his release. (Blaik 1996). Farmers receive subsidies, but also production limits. How should marketing tools function in such a market?

The pioneering marketing principles introduced by Philip Kotler and developed in new concepts can be useful in conducting business in the agricultural products market.

In 2005, W. Chan Kim and Renee Mauborgne published their ground-breaking book „Blue Ocean Strategy" (Kim W.Ch., Mauborgne R., 2005). This book redefined the ways in which many companies operate, its tools and examples turned out to be not so easy to implement in a specific business environment. Searching for „Blue Oceans" is a process, its creation and maintenance also.

The aim of this article is to diagnose the possibilities of using marketing methods in relation to agricultural products, including 4P and 4C methods, as well as the "Blue Ocean" rules (Dussel 2009). The article also attempts to indicate answers to research questions: does the market for agricultural products give the possibility of introducing this concept? The article assumes that marketing activities can be used on the market of agricultural products taking into account the concept of "Blue Ocean". The market for agricultural products has been characterized on the basis of a literature review, and an expert interview was conducted with a representative of a consulting company.

Market for agricultural products

The market of agricultural products is a specific and very complex market, and its functioning is based on a number of regulations resulting from European law. In addition, this is the reason why it cannot be seen in the same way as other more competitive markets (Ermer 2015). To this end, market research has been narrowed down to the micro area without analysing the market at international and national level.

The agricultural holding considered in the research process as a specific type of enterprise was adopted as a unit (Garbarski, Rutkowski, Wrzosek, 2000) However, the farm is very different from a typical enterprise. Apart from business-related aspects, such as the multiplicity of jobs and the reliance on self-employment and family work to a large extent (Dietl J. 2018), the flexibility of an agricultural enterprise is very low. The production cycle is at least one season, and decisions on the choice of such rather than other types of agricultural production must often be taken annually in advance. As Dietl shows, farmers' decisions are not based on calculations, but often are made on the basis om impulses, examples of their own positive or negative experience.

The current conditions allow us to obtain information from many sources, in an almost instantaneous time. However, for the farmer's decision making this has a definitely limited impact (Kaden 2008). A farmer may refrain from buying or selling certain products by observing price of fluctuations in different markets. (Bejer, Rutkowski, 1995). However, once a decision has been made concerning, for example, the sowing of an area with a particular type of cereal, or the commencement of liquidation of a flock of a given species is already a process that is spread over time.

Competition is an integral part of a company's operations. Wojcik (Wojcik G., 2019) defines the term competitiveness as a competition in pursuit of similar goals. He says that in order for farmers to be able to compete successfully, they need to act at many levels. Wojcik lists here the following activities (Wojcik G., 2019), which should be carried out by a farmer:

1) Launch new products on the market;
2) Upgrade production techniques (technology);
3) Open up new markets;
4) Acquire new, alternative sources of income;
5) Rapidly react to changing market economy conditions;
6) Continuously improve their knowledge in the field of production and promotion agricultural products;
7) Implement quality standards in line with European requirements.

Wojcik believes that competitiveness means the ability to compete. Comparing with the concept of Kim's and Mauborgne's „Blue Ocean", we can see clear differences in approach.

1. Classic marketing tools

Among classic marketing tools, the most universal and common is the 4P Kotler method (Kotler P., 1994), however, this method does not take too much account of the customer's needs. Therefore, the 4C method has been introduced, which already takes a bit more elements into account to a greater extent. Below is a description of these commonly used methods, applying them to the agri-food industry.

Product – on the basis of market research, various focus meetings, product proposal are created, which should find buyers. At present, it is not enough to meet the needs of the market alone. They should be actively created and the so-called „suckling" effect should be developed all the time, which causes the willingness to own a given product . On the B2B market /business to business/ this phenomenon does not occur on such a scale yet. This is where customer relations are more important. It may look similar on the agricultural market, where the holding may be treated as an enterprise. The acquisition of information on customer needs has moved to the Internet.

Price – Price is an element that is often used to gain a competitive advantage. In this day and age, when production takes place in countries with low production costs, a company wishing to gain a greater share of the market cake must bear this element in mind. On the other hand, the product is worth as much as the customer is able to pay for it. In industrial production, it is much more difficult to compare products and their parameters than in production for consumers. Therefore, price setting should be balanced so as not to lose income while at the same time maintaining adequate sales volumes. The agricultural sector is governed by other laws, on the one hand there are subsidies and on the other hand there are laws on supply and demand. Setting the right price is still a matter of regulating, introducing minimum or maximum prices. Dictatorship of recipients, e.g. collection points in a given are

Place – distribution is another element of the marketing jigsaw, the company should make a decision on how to sell its products. It can therefore sell itself, for example via an online shop, whether it will have a network of its own representatives and a sales office, or it will have sale sold intermediaries. Each of these sales methods has its advantages and disadvantages. For different products, it is possible to use different distribution channels. It should be noted that in the agricultural sector, distribution has another aspect – the need to ensure freshness of products or their good quality in the case of, for example, cereals or meat.

Promotion– on the B2B market is not as important as on the consumer market (Berkowitz E., 1994). Other channels of reaching customers are also used here, because these are different groups. If, in the case of B2C, television advertising or social media coverage may be the most effective. It is in the business market that only detailed information about product parameters, but also technical information, applied solutions, etc. is still important. That is why specialist press trade fairs and industry exhibitions are more appropriate ways of advertising. There is a noticeable increase in the position of the Internet, the use of both Facebook media and the ability to present technical solutions in the form of sheets with technical data. The agricultural sector benefits more than other fairs, exhibitions, because of the possibility of direct contact in such a traditional industry is very important.

A further development of the 4P method concept is the 4C method (Lauterborn R., 1990), in which more attention is paid to the customer, his needs and activities.

Customer value – instead of the product there is a value for the customer. This is important not only because the company owns and offers a product, but also because the product is important for the customer and represents the value of the customer. This can be considered an important change of understanding. Companies are looking for values that can be important for the customer. This means that the product or message has to be matched as values can be different for different groups. They must be recognized, created or guessed. And this is a task for the marketing department. What is then the value for recipient of agricultural products? This question must be answered by the agricultural entrepreneur himself. It will be important for the recipient of grain, intended for fodder or flour, it will be different for the owner of the restaurant, and it will be different for the recipient who buys products for his own needs.

Cost – instead of prices there is an accounting term. It doesn’t matter how much the customer pays, but how much the product costs. The less, of course, the greater the profit for a company. This must not be done in such a way that the customer is convinced that he is buying cheaply or that the company is saving on it. It is again the task of marketing and appropriate construction of the message allowing for highlighting some elements and hiding others. It is also an element in ERRC grid of the

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„Blue Ocean" concept, where the product is deprived of what is expensive and irrelevant for the majority of customers.

Convenience – means convenience in purchasing a product. The client cannot be condemned to a long and ineffective search. Waiting time cannot be counted in weeks, Today, days are important, and for some customers and products even hours. Specialized companies are able to deliver shipments from other end of Europe to the next day. This is an element that is gaining in importance in the current reality. On the shop shelves you can buy Italian herbs, which were collected the day before and delivered to the place.

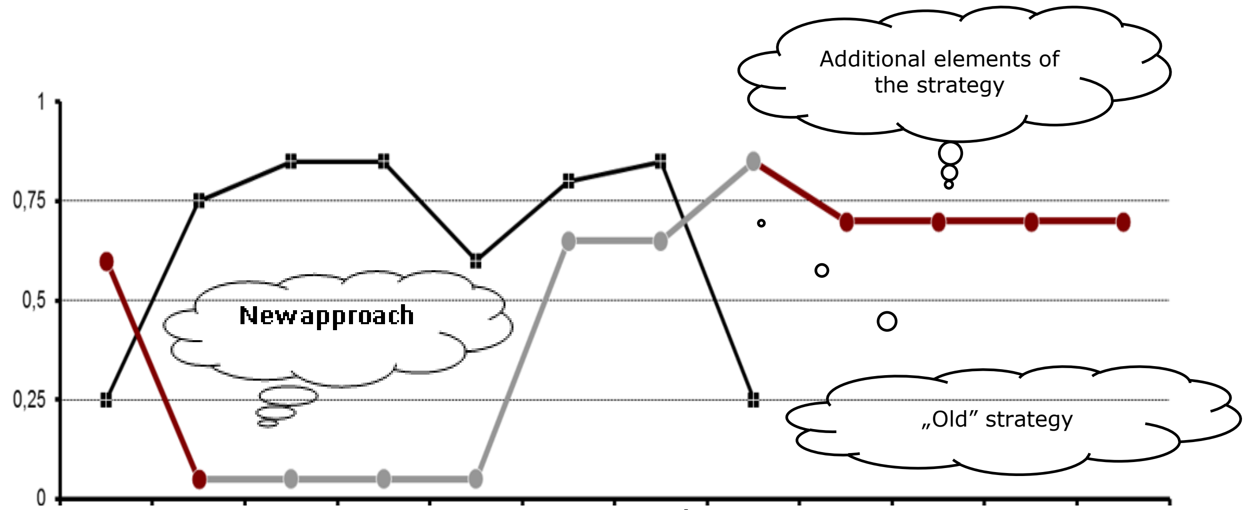
Communication – instead of promotion we talk about communication with the customer. The company communicates with the customer through its one-way communication, but this does not exhaust and does not close the whole communication. Today, the manufacturer should listen to what the customer has to say. It must listen to the needs that can be isolated, without statistical significance, they can be today, and in the near future this ability may turn into a major competitive advantage.

2. The Blue Ocean concept

In their ground-breaking book „Blue Ocean Strategy", Chan Kim and Rene Mauborgne (Kim W. Chan, Mauborgne R., 2010) prove that competitiveness is not only the parameter determining success, and it is much more important, according to the authors, to distinguish oneself from the competition. This distinction does not mean a „simple" differentiation, but an advantage based on new tools that make competition irrelevant.

The elements that make up the „Blue Ocean" tools are as follows.

- The Canvas of Strategy is an innovative tool to compare its activities with the competition, but also to introduce new aspects that the competition does not have and which allow it to stand out drastically from the others. It is important that the distinction is not limited to one element only, as the competition can then easily copy it. If they are, for example, three elements, then you can count on success (Fig. 1).

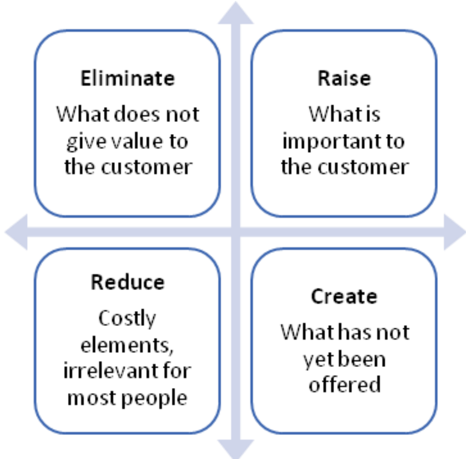


Source: Author's study on the basis of: W. Chan, Mauborgne Renée, Strategia błękitnego oceanu, Wydawnictwo MT Biznes, 2010

Fig. 1. **Chart of the strategy canvas before and after the change**

- The concept of non-customers, i.e. a group to which a product has not been directed so far, whether it is based on price or on assumptions that turned out not to be true. In „traditional" markets, such breakthrough was, for example the introduction of low-cost airlines, which revolutionized the availability of a products such as flight. On the agricultural marked, before the introduction of subsidies, nobody would try to sell a tractor worth several hundred thousand zlotys to Polish farmers, while with the emergence of subsidies, the definition of customers for manufacturers of expensive agricultural machinery has changed.

- ERRC Grid is a tool for creating new values for the customer, communicating them in a different way or reducing producing costs. They can be tried and combined (Fig. 2).



Source: Kim W. Chan, Mauborgne Renée, Strategia błękitnego oceanu, Wydawnictwo MT Biznes, 2010

Fig. 2. **ERRC Grid**

- UVP – Unique Value proposition – are features of a product or service, which are to distinguish a given product from the products of competition. This raises the question of whether the UVP should matter to the customer. The practice of „traditional markets shows that it is much more important than the UVP issue to communicate and convince customers of the uniqueness of a given product. It turns out that it does not matter to the customer what is true, but what counts is habit, comfort and even reflexes. Categorization of customers and creation of market segments is characteristic of classical marketing. Here customers sometimes prefer to spend more to provide a product that meets their requirements in a very wide range; whether it's user-friendliness, safety, savings, and ending with the brand and prestige that comes from using specific, more expensive product. In the „blue ocean" strategy however it is the UVP or rather several elements of it, that are important to distinguish oneself from the competition when one is able to offer the customer an innovative product that gives the customer certain value.
- The Buyer Utility Map - This is another very interesting tool that allows you to look at the whole complex purchasing process that occurs at the customer. The supplier's task is to make the customer aware of the benefits that can occur not only in the use phase of the product, but also sooner and later.

Chan and Mauborgne have created a matrix in which six phases of the buyer experience cycle can be distinguished in terms of six levers of usability (Table 1)

The result is 36 areas where it is possible to act in order to gain competitive edge and differentiate oneself from the competition. There are not many companies that are able to cope efficiently with filling in the whole matrix, thanks to which they could influence the customer through various aspects and in each phase of the buyer's experience cycle.

Table 1

The buyer utility map

		The Six Stages of Buyers Experience Cycle					
		Purchase	Delivery	Use	Supplements	Maintenance	Disposal
The Six Utility Levers	Customer Productivity						
	Simplicity						
	Convenience						
	Risk						
	Fun and Image						
	Environmental Friendliness						

Source: Kim W. Chan, Mauborgne Renée, Strategia błękitnego oceanu, Wydawnictwo MT Biznes, 2010

Six roads opening up new value-added and cost-oriented borders.

- Look at alternative industries instead of focusing on competitors.
- Look at strategic groups within your industry instead of focusing on your own competitive position.
- Look at the purchasing chain and redefine the purchasing groups in the industry instead of focusing on a better service to the current purchasing group.
- Look at a comprehensive solution sought by the buyer instead of focusing on maximizing the value of the product offer.
- Think about a new functional-emotional orientation of your industry instead of focusing on improving the price and efficiency of the offered solution.
- Participate in shaping external trends that fundamentally affect the industry instead of focusing on adapting to external trends.

Research results and discussion

Research show that the agricultural market for a single enterprise can vary considerable depending on the type of agricultural production, the size of the holding itself and, finally, the existing economic conditions (Dietl J., 2018).

In existing market for agricultural products, there is a dominant diktat of consumer who are trying to take advantage of their position. If there is competition in the intermediary segment, then the farmer has much greater opportunities No to be subject to the conditions offered by intermediaries and their position weakens. However, these are typically external conditions, which seemingly are beyond the farmer’s control. Analysing this situation through the prism of classical marketing, i.e. 4P, one can clearly see the leading role of price, and in marketing 4C costs. Price is a major concern for intermediaries and farmers who are prevented from selling elsewhere are subject to this pressure. (Market Research Analysis, 2018).

Is the classic approach to marketing able to influence the competitive position and, in general, take over the market position of the agricultural producer?

However, how can the tools provided by the Blue Ocean Strategy be used, is this possible for the agricultural industries at all?

Analysing these two questions we can state that in agricultural production there is as much room as possible for marketing activities.

If a single holding is to be considered as an enterprise, its competitive position must be analyzed. Define who is the recipient, to which customer the message should be directed and what it should be.

Large-scales producers, be they cattle, pigs, roots crops or cereals, do not have much scope for searching for customers. As a rule, these are specialized intermediary companies, processing plants,

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mills, etc. for which the only determinant of the attractiveness of the product is its price. In addition, the goods must meet certain quality requirements. The situation may change in the case of crop failures, in theory farmers should be in a better position and be affected by price increases. In practice, the intermediary often overestimates selling prices to producers at slightly higher prices than under normal conditions. There are known practices of buying raw materials outside the country if prices in the country were to reduce the profit of intermediaries. To sum up, in the case of large-capacity farms, the scale effect counts for the farmer-producer, the more products of a given type he sells and the more of them he sells when the price is lower than the competition. The competitive market of the so-called "red ocean" is clearly visible here. Producers who have specialized in a particular production can only try to reduce costs by increasing the scale of specialization. For their audiences the issues of communication or value propositions do not matter.

A certain solution for them is to create their own intermediary links, functioning on the basis of cooperatives or companies. The acquisition of this position may constitute a significant change, inter alia, in obtaining a better bargaining position for a group of large agricultural producers.

Smaller producers, on the other hand, may seek to target their production in such a way as to find buyers directly. They can specialize in the production of unique products, difficult to access, rare, difficult to cultivate or breed, providing specific health benefits or in line with existing trends in bio and eco-food. There are farms producing, for example, selected beef varieties, where slaughter is carried out as stress-free as possible for the animals. Prices for such beef may reach ceilings not available for large scale products.

Another emerging trend that can be used by farms of different sizes is the production of lawns in rolls. Here, in principle, there is direct sales between the manufacturer and the contractor. On the one hand, the price aspect is very important, while on the other hand, the end user and consumer can look for a specific product that is specialized, disease-resistant and provides specific benefits.

The current fashion for bio and eco products, and even now it is more of a lifestyle than fashion allows to sell products that were grown without artificial fertilizers, pesticides, medicines, enriched feeds, etc., but also to sell products that have been grown without artificial fertilizers, pesticides medicines, etc. There are retail chains that only sell 'healthy food' and practically every retail chain offers 'healthy products. This trend can be successfully exploited by manufacturers, provided that they are able to ensure the production of their products in a specific way, in compliance with the requirements set by the customers.

Smaller farms should focus on direct sales as far as possible, without intermediaries to whom there is virtually No non-price argument.

Here is a place to use marketing methods based on the principles of the Blue Ocean". Due to the smaller size of the farms, they therefore have more flexibility. Applying these methods in practice requires specific knowledge. However, its acquisition is not unattainable, the tools provided by the creators of the method are simple and understandable. It may be beneficial for farmers to create various types of "clusters", ensuring the exchange of experience, as well as the creation of groups allowing the use of synergy effects and strengthening the impact. There is also room for the creation of new specialized marketing departments in agricultural advisory centers. Expanding the activities to include consulting in the field of marketing activities would be an interesting point of opportunity for both parties to develop. The "Blue Ocean" tool presented by the authors can be used to increase farmers chances, improve their competitive position and increase the profitability of their operations However, even "classic" marketing activities can bring about an improvement in performance. Any action that requires an in-depth analysis, whether it is the customer's needs or the behaviour of the customer, can contribute to more informed decisions that will influence the specific actions taken on the farm

Conclusion

The study assumed that the market for agricultural products is a market in which marketing activities can operate, taking into account new concepts such as the "Blue Ocean".

The analysis, reviews and observations allow us to state that the agricultural market is a market which, admittedly, functions on different principles. Existing regulations at the European level have an obvious and significant impact on the functioning of almost every agricultural holding. However, due to the fact that all operate under the same conditions, other factors may decide about success.

Depending on the volume of production and the degree of specialization of individual farms, the application of marketing rules has a greater or lesser effect. The more flexible the farm is, i.e. the smaller, the more varied it can apply the rules of classical marketing more effectively. For large specialized farms there are other opportunities for development. Applying the rules of the "Blue Ocean methodology, having an appropriate farm size, they are able to either deal with the issue of buying their own products or act in a cluster in such a way as to increase the profitability of their production.

Smaller farms can specialize in increasingly popular products such as eco and bio and focus on shortening distribution or direct sales channels. Another form may be own companies or sales cooperatives.

Conducting marketing activities must be preceded by detailed analyses. Their implementation, albeit related to effort and costs, makes it possible to make much more rational decisions concerning the direction of development, the type of crop or breeding, the degree of specialization or the level of prices. It can be stated that marketing activities have a positive impact on the efficiency of a particular agricultural holding.

Bibliography

1. Bejer F.J., Rutkowski I. (1995). Logistyka (Logistics), Szkoła Główna Handlowa, Warszawa, p.29 6
2. Berkowitz E. (1994). Marketing (Marketing), Irwin, Boston
3. Blaik p. (1996). Logistyka (Logistics). PWE, Warszawa, p.53
4. Dietl J. (2018); Elementy rynku produktów rolnych (Elements of the Agricultural Products Market), https://repozytorium.amu.edu.pl/bitstream/10593/15345/1/011 %20JERZY %20DIETL.pdf
5. Dussel M. (2009). Marketing w praktyce (Marketing in Practice), Warszawa, p.14 5
6. Ermer B. (2015). Internationales Marketing, Publicis Kommunikationsag, 2015.
7. Garbarski L., Rutkowski I., Wrzosek W. (2000). Marketing. Punkt zwrotny nowoczesnej firmy (Marketing. A Turning Point of a Modern Company), wydanie II PWE, p. 136
8. Kaden R.J. (2008). Badania marketingowe (Marketing Research), Polskie Wydawnictwo Ekonomiczne, Warszawa
9. Kim W. Chan, Mauborgne R. (2010). Strategia błękitnego oceanu (Strategy of the Blue Ocean), Wydawnictwo MT Biznes,
10. Kim. W.Ch., Mauborgne R. (2005). Blue Ocean Strategy, Boston, Mass.: Harvard Business School Press,
11. Kotler p. (1994). Marketing. Analiza Planowanie Wdrażanie i Kontrola (Marketing. Analysis Planning Implementation and Control), Warszawa, Wydawnictwo Gebethner i Ska,
12. Lauterborn R. (1990), New Marketing Litany: 4P's Passe, C-Words Take Over, „Advertising Age,
13. Market Research Analysis (2018), https://www.ams.usda.gov/services/market-research,
14. Wojcik G. (2012). Kreowanie konkurencyjności produktów rolnych na rynku krajowym i międzynarodowym (Creating Competitiveness of Agricultural Products on the Domestic and International Market); Wiadomości Zootechniczne, R. L., 2: 29–36 http://www.izoo.krakow.pl/czasopisma/wiadzoot/2012/2/art04_WZ_2012_2.pdf

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RESEARCH OF FACTORS INFLUENCING DIFFERENT GENERATIONS' CUSTOMERS SWITCHING BEHAVIOUR IN FARMERS' MARKETS IN LITHUANIA

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Abstract. Farmers' markets are gaining popularity in Lithuania by encouraging people to choose locally produced, healthier, and more authentic products than in conventional shops or shopping centres. However, the competition is intensifying and consumer attraction and retention becomes a priority task for many vendors in the markets. Considering market as non-homogenous, different marketing measures have to be applied for every market segment in order to meet customer needs and expectations. One of the ways for segmenting consumer markets is dividing them by generations. The scientific discussion about the factors influencing different generations' customers switching behaviour is still scarce; therefore, the scientific problem solved in the manuscript is: what factors influence different generations' customers switching behaviour in farmers' markets in Lithuania? To solve the problem, the aim of the research is to assess the factors influencing different generations' customers switching behaviour in farmers' markets in Lithuania. Questionnaire survey is provided to determine the factors affecting different generations' customer switching behaviour. Research results enabled naming common factors supporting and repressing customer switching behaviour; also, generation-specific factors were determined. Based on research results, vendors in farmers' markets in Lithuania can plan and implement marketing activities better corresponding to their customer profile.

Key words: farmers' markets, generations, Lithuania, switching behaviour.
JEL code: M31, Q13, Q18.

Introduction

Recent years have witnessed a marked acceleration in the tempo of globalization (Reddy, 2007). In the context of globalization, customers have more purchasing choices than even before, customers' buying behaviour changes (Kyguoliene A. et al., 2017). As a consequence, local agriculture and alternative food systems met with new challenges – how to cope with growing competition and keep local consumers loyal. From the other hand, despite growing buying alternatives, increasing consumer demand for local food at farmers' markets (and in some places even maintaining demand) may now require additional marketing effort. According to Gunderson M. A. et al. (2009), farmers' markets are a fundamental part of the urban–rural interface; they have continued to grow in popularity, mostly due to the growing consumer interest in obtaining fresh products, especially produced directly from the farm. Farmers' markets are often considered as a way to healthier life-style (Pileliene L., 2014). Farmers' markets allow consumers to have access to locally grown, farm-fresh produce, enable farmers to develop personal relationships with their customers, and cultivate consumer loyalty with the farmers who grow the produce (Gunderson M. A. et al., 2009). Being a space for direct marketing, farmers' markets provide agricultural producers with an access to customers without supply-chain intermediaries (Sullivan p. et al., 2013). Despite all advantages and opportunities, farmers' markets face many challenges – they must not only withstand the challenges of globalization but also compete with conventional shops and groceries, compete among each other for the same customers and, at the same time, cope with changing consumers' behaviour. According to Byker C. et al. (2012), the decision to shop (or not to shop) at farmers' market is just one of the choices consumer make; the choice of the vendor is also very important (Zikiene K. & Pileliene L., 2016). Therefore, attracting customers and gaining their loyalty becomes one of the success factors for many vendors.

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Customer behaviour, customer loyalty has been much analysed between scholars during recent years, because of the belief that customer loyalty is essential to sustain the business. Loyal customers buy more, more regularly, and the cost of selling to them is low and they will recommend that product to others (Reinart W. & Kumar V., 2002). Consumer loyalty is particularly important in the face of market saturation, with limited growth opportunities. Despite the benefits of customer loyalty and the efforts made to achieve the loyalty, vendors observe significant changes in consumer behaviour, which are often influenced by the age of buyers. Academics notice, that customer purchasing and consumption behaviour, their perceptions and attitudes very often are influenced by the period they were born or generational characteristics (Howe N. & Strauss W., 2000). According to Kyguoliene A. et al. (2017), generational marketing has emerged as a mean of segmenting the population based on various demographic and psychographic factors and the application of the most appropriate marketing solutions for each of the generation. As claimed by Howe N. & Strauss W. (2000), changes in macro environment influence the profile of people born in specific time of period, decisive a specific and common purchasing and consumption behaviour. According to generational differences, it is seen that different groups of customers have their unique reactions to vendors' marketing efforts. Decisions for buying or not alimentary from local farmers' markets can differ among different generations too. In the context of many circumstances, such as globalization challenges, growing competition with foreign and local alimentary suppliers and groceries, consumers�much generational purchasing differences, gaining customers' loyalty becomes more and more problematic. Yu Ch. M. et al. (2005) argue that as the features, quality, and appearance of products and services become increasingly similar, customers more and more exhibit fickle and non-loyal purchasing behaviours – they switch (Zikiene K. & Pileliene L., 2016). Moreover, studies show that customer switching behaviour depends on many different factors which can be classified into attitudinal, behavioural, and demographic variables (Keaveney S. M. & Parthasarathy M., 2001).

Despite the body of literature analysed, the scientific discussion in the area of customer loyalty to the vendor at farmers‛ markets and factors influencing different generations' customers switching behaviour is still scarce. Latter insights lead to the consideration of **scientific problem** formulated by a question: what factors influence different generations' customers switching behaviour in farmers‛ markets in Lithuania? To solve the problem of the research, the **aim** of the paper is to assess the factors influencing different generations‛ customers switching behaviour in farmers‛ markets in Lithuania.

In order to reach the aim of the article, a questionnaire survey is provided. The factors affecting different generations' customers switching behaviour were determined by performing linear regression and comparative analysis.

Research results and discussion

To reach the aim of the article, the main part is organized into three chapters: substantiation of the topic; methodology of the research; and research results. The empirical research provides guidelines for farmers' markets vendors how to keep different generations‛ customers loyal and minimize their switching rates.

1. Substantiation of the topic

The significance of the differences between the various generations is provided by extensive scientific literature addressing this issue in the context of market behaviour (Kyguoliene A. et al., 2017; Howe N. & Strauss W., 2000; Lipowski M., 2017). According to Scott J. & Marshall G. (2005), a generation is a form of age-group consisting of those members of a society who were born at approximately the same time. People's age and the generation to which they belong can offer a lot of insight about their attitude, outlook, and experiences. It also says a lot about their buying behaviour.

Scientific literature provides there are five active generations at the moment, but their distribution may vary according to different sources. The most common generational classification is presented by Howe N. & Strauss W. (2007) and it is as follows: Veterans (1925-1942), Baby Boomers (1943-1960), Gen X (1961-1981), Gen Y (Millennials) (1982-2005) and Gen Z (2006 – 2025). Different generations' behaviour differs from each other, they have different values and characteristics (Kyguoliene A. et al., 2017); generation is not just a chronological age, but a way of looking at the world (Wallace, 2015). According to consumers' age and activity in the market place, activity in the labour market, and purchasing power, nowadays scholars and practitioners focus mostly on two generations – Gen X and Gen Y (Millennials). According to Wallace S. (2015), Gen Xers are known for researching anything and everything in order to make informed choices on a number of levels, including purchases, activities, etc. Not only is this generation highly educated but they are also highly sceptical. Before Gen Xers pay you their hard earned money, they want to know everything they can about what they are buying. Xers are open to trying different distribution channels. Xers are looking for a pleasurable shopping experience where they can go to a store in a convenient location; find what they need with value attached, and at an affordable price (Wallace S., 2015). Buying behaviour of Gen Y differs in many ways. According to Ordun G. (2015), Gen Y consumers are more aware of their purchasing power and are likely to spend their cash as quickly as they acquire it, usually on consumer goods and personal services (Der Hovanesian M., 1999). Gen Yers demand an authentic relationship based on a deep knowledge of who they are and what makes them buy (Ordun G., 2015; Yarrow K. & O'Donnell J., 2009). When compared with Gen Y, Gen X is most likely to look for the lowest cost item or discount rather than thinking of the investment value of purchases (Ordun G., 2015).

Differences in purchasing behaviour between different generations' consumers leads to the differences in gaining their loyalty and differences in their switching behaviour. Customer switching behaviour refers to the level of propensity of customers to switch from one product or service provider to another in a given industry or purchase situation. Depending on the effect, the factors that affect customer switching behaviour are divided into two main categories: those supporting (loyalty repressing factors) and repressing switching behaviour (loyalty supporting factors). In the scientific literature, 11 factors supporting customer switching behaviour and 10 factors repressing customer switching behaviour are distinguished (Zikiene, 2012). Deeper theoretical insights and investigation of factors affecting customer switching behaviour in farmers' markets is presented in former authors' research (see Zikiene K. & Pileliene L., 2016), so it would not be repeated.

However, an assumption might be done that differences between generations and differences in their consumption behaviour lead to a specific switching behaviour too. Different factors might affect Gen Xers and Gen Y consumers switching behaviour; latter factors can also be specific in farmers markets. Knowing the most important and specific factors affecting different generations' customers switching behaviour in farmers' markets can help farmers' markets vendors to ensure their customer loyalty and to minimize their switching rates.

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2. Methodology of the research

Previous research (Zikiene K. & Pileliene L., 2016) enabled determination of factors affecting customer switching behaviour in farmers' markets in Lithuania. After a precise expert evaluation, eight factors supporting switching behaviour (Price issues; Inconveniences; Core service failures; Dissatisfactory quality; Service encounter failures; Variety seeking; Change of the place of residence of the customer; and New value) and six repressing factors (Economic costs; Search and evaluation costs; Perceived risk and uncertainty costs; Lack of perceived available or attractive alternatives; Social costs; and Psychological costs) were named. However, after providing the questionnaire survey, not all of the analysed factors were approved as having impact on customer switching behaviour. Such factors as: 'Change of the place of residence', 'Lack of alternatives', and 'Social costs' were found to have No significant influence. As a limitation of previous research, a possibility of market heterogeneity was stressed.

Therefore, the replication of the research with regard to different generation customers' valuation was planned. Current research uses the same questionnaire: 28 statements reflecting customer switching behaviour supporting or repressing factors were provided for respondent evaluation. A standard 10-point Likert-type scale (where 1 meant total disagreement and 10 meant total agreement with the statement) was used. The research was provided on summer of 2018, habitants of six major cities of Lithuania (Vilnius, Kaunas, Klaipeda, Siauliai, Panevezys, and Alytus) were chosen as a research population. The research sample size was 300 respondents: 150 Gen Xers (born before 1982) and 150 Gen Yers (born 1982 and after). Other demographic characteristics were considered as unimportant in a framework of current research (however, such customer characteristics as gender, income, social status or educational level can have impact on consumer behaviour and might be considered as important factors in further researches).

After gathering the data, its suitability for further analysis was tested with Kolmogorov-Smirnov Test of normality. The results of Kolmogorov-Smirnov Test indicated that the data deviate from normal distribution (all p values were below 0.05; therefore, the null hypothesis that data were distributed normally was rejected). Achieving to assess the proportion of the variance in the dependent variable (predicted switching behaviour) that is predicTable from the independent variables (in this case factors supporting customer switching behaviour and factors repressing customer switching behaviour), the determination coefficients (R^2) were calculated. Accordingly, when factors supporting switching behaviour were selected as independent variable the determination coefficient was obtained to 0.751, and when factors repressing switching behaviour were selected as independent variable the determination coefficient was equal to 0.804. Therefore, it can be argued that coefficients of determination are high enough to provide linear regression analysis.

3. Research results

In order to determine the existing differences in factors supporting and repressing different generations' customers' switching behaviour, linear regression was provided. Regression coefficients for factors supporting customer switching behaviour are provided in Table 1.

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Table 1

Coefficients of factors supporting switching behaviour

Factors	Generation X		Generation Y	
	R^2	Sig.	R^2	Sig.
Price issues	**0.313**	**0.000**	**0.317**	**0.007**
Inconveniences	0.039	0.413	0.306	0.000
Core service failures	-0.014	0.747	0.212	0.002
Dissatisfactory quality	**0.137**	**0.000**	**0.342**	**0.000**
Service encounter failures	**0.316**	**0.000**	**-0.338**	**0.001**
Variety seeking	0.097	0.013	0.039	0.483
Change of the place of residence	0.006	0.907	-0.060	0.589
New value	**0.354**	**0.000**	**0.315**	**0.000**

Source: author's calculations based on research results

As it can be seen in Table 1, depending on customers' generation factors supporting switching behaviour slightly differ. Supporting factors that were determined as having No significant impact on switching behaviour are marked in italic. The research results approved the finding from previous research (Zikiene K. & Pileliene L., 2016), that change in a place of residence is not considered as important in a framework of customer switching behaviour. Moreover, latter factor was the only one unimportant factor for both samples.

Analysing the evaluations of other factors, four factors appeared to significantly affect the switching behaviour of both generations (marked in bold in Table 1), namely: 'Price issues'; 'Dissatisfactory quality'; 'New value'; and 'Services encounter failures'. The results obtained for the factor 'Service encounter failures' were controversial. While analysing the data provided by respondents belonging to generation X, latter factor has a direct positive impact on customer switching behaviour. Such result approves that existing theory in the field. However, analysing the evaluations provided by respondents belonging to the generation Y, service encounter failures appear to affect customer switching behaviour negatively. Analysing the situation, such research result might be explained by a higher tolerance and indifference to a rude behaviour expressed by Gen Yers.

Considering differences between samples, generation X customers can be characterised by variety seeking behaviour; and in case of generation Y, such factors as 'Inconveniences' and 'Core service failures' were found to statistically significantly affect their switching behaviour. Summarising the results, achieving to retain Gen Yers, it is not necessary to invest into variety of products or vendors' expertise. Convenient and smooth shopping has to be ensured for latter customers to stay loyal.

Further analysing the research results, regression coefficients for factors repressing customer switching behaviour were calculated and provided in Table 2.

Analysing the research results for the factors repressing customer switching behaviour, four factors appeared to be common for both generations (provided in Bold in Table 2): 'Economic costs'; 'Search and evaluation costs'; 'Perceived risk and uncertainty costs'; and 'Psychological costs'. The same for factors were obtained previously (see Zikiene K. & Pileliene L., 2016) analysing the entire unsegmented market. However, research results indicated that the factor 'Psychological costs' serves as a factor supporting customers' switching behaviour, not repressing it when it comes to Gen Yers'.

A direct explanation of such result is that when psychological costs are growing, customers' intention to switch is also increasing. Latter results contradict an argument of Nordman Ch. (2004), who emphasizes that psychological costs like apathy, passiveness, and inertia can even be considered as characteristic features of loyal customers. In case of generation Y, an opposite reaction occurs. For the vendors in farmers' markets it might be recommended to overcome Gen Yers' psychological costs by applying sales promotion in a form of small gifts, product samples and free offerings.

Table 2

Coefficients of factors repressing switching behaviour

Factors	Generation X		Generation Y	
	R^2	Sig.	R^2	Sig.
Economic costs	**0.452**	**0.000**	**0.316**	**0.000**
Search and evaluation costs	**0.121**	**0.011**	**0.296**	**0.000**
Perceived risk and uncertainty costs	**0.342**	**0.000**	**0.410**	**0.000**
Lack of alternatives	0.055	0.227	0.220	0.020
Social costs	-0.111	0.107	-0.072	0.277
Psychological costs	**0.374**	**0.000**	**-0.172**	**0.043**

Source: author's calculations based on research results

Considering the results by generation X, only these four factors were found to have a significant direct positive influence on customer non-switching behaviour. The factor 'Lack of alternative' was found to have No significant influence on latter samples' choice to stay loyal. However, considering the Gen Yers' behaviour, lack of alternatives serves as a switching behaviour repressing factor. Such result also approves the previous result about a variety seeking behaviour. It might be concluded that generation Y does not express a variety seeking behaviour by demanding a larger choice of alternatives; moreover, the narrower choice enables to keep latter customers. However, if vendors' target group is generation X, a variety seeking behaviour is evident. Achieving to attract representatives of this generation, constant improvement of assortment is recommended.

Conclusions, proposals, recommendations

1) The research results enable to support the existing body of literature on customer loyalty and customer switching behaviour. After performing the analysis of research results, the existence of differences between factors supporting and repressing different generations' customers switching behaviour was substantiated. The research results emphasize the changes in customer culture induced by customer age or generation.
2) It can be argued that classical factors, e.g. price related issues, economic costs of changing the vendor, or perceived risk of change and uncertainty costs remain important despite the age of consumer. However, research results indicated that Gen Xers are more variety seeking generation and Gen Yers are more passive convenience seekers. Another clear difference between the two generations was detected in evaluation of vendors' expertise and communication. As for Gen Xers service encounter failures is one of the most important factors that would affect them to switch, representatives of generation Y more value convenient and smooth communication with vendor than his /her product-related knowledge.
3) Knowing the factors supporting or repressing different generations' customer switching behaviour, vendors of the farmers' markets can implement their marketing activities better corresponding customer needs. Such marketing mistakes as offering consumer something that would encourage

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switching behaviour can be minimizes. However, despite the general suggestions provided in the manuscript, purposive observation of every single case is necessary.

Bibliography

1. Byker, C., Shanks, J., Misyak, S., Serrano, E. (2012). Characterizing Farmers' Market Shoppers: A Literature Review. *Journal of Hunger & Environmental Nutrition*, Volume 7, Issue 1, pp. 38-52.
2. Der Hovanesian, M. (1999). Spending It, Investing It - Coming on Strong: The Children of the Baby Boomers are Affecting Spending and Investing as Their Parents Did; The Similarity Ends There. *Wall Street Journal*, November 29, Eastern Edition, 12.
3. Gunderson, M. A., Wysocki, A. F., Sterns, J.A. (2009). A Functional Evaluation of Business Models in Fresh Produce in the United States. Postharvest Handling. (Second Edition). A Systems Approach. Food Science and Technology. pp. 129-152.
4. Howe, N., Strauss, W. (2000). *Millennials Rising*. New York: Vintage Books.
5. Keaveney, S.M., Parthasarathy, M. (2001). Customer Switching Behavior in Online Services: An Exploratory Study of the Role of Selected Attitudinal, Behavioral, and Demographic Factors. *Journal of the Academy of Marketing Science*, 29(4), pp.374-390.
6. Kyguoliene, A., Zikiene, K., Kamanduliene, A. (2017). Global Loyalty Challenge: Generational Perceptions of the Influence of Perceived Benefits on Satisfaction with Loyalty Programs. Globalization and its Socio-Economic Consequences: 17th International Scientific Conference, 4th – 5th October 2017, Rajecke Teplice, Slovak Republic: proceedings (part III). Zilina: University of Zilina, 2017, ISBN 9788081542121. pp. 1267-1274.
7. Lipowski, M. (2017). The Differences between Generations in Consumer Behavior in the Service Sales Channel. Pobrane z czasopisma Annales H - Oeconomia Retrieved: http://oeconomia.annales.umcs.pl. Access: 16.01.2019.
8. Nordman, Ch. (2004). Understanding Customer Loyalty And Disloyalty – The Effect Of Loyalty – Supporting - And Repressing Factors. Doctoral Dissertation, Swedish Shool of Economics and Business Administration, Helsingfors.
9. Ordun. G. (2015). Millennial (Gen Y) Consumer Behavior, Their Shopping Preferences and Perceptual Maps Associated With Brand Loyalty. *Canadian Social Science*, 11(4), pp. 40-55. Retrieved: http://www.cscanada.net/index.php/css/article/view/6697. Accsess: 16.01.2019
10. Pileliene, L. (2014). Farmers' Markets' Customer Loyalty Structure in Lithuania. *Economie şi Sociologie*, No. 3. pp. 104-108.
11. Pileliene, L., Zikiene, K.(2016). Customer Loyalty to a Grocery Retailer: Differences between Urban and Rural Areas of Lithuania. Research for rural development 2017: annual 23rd international scientific conference proceedings. Jelgava: Latvia University of Agriculture. ISSN 1691-4031. Vol. 2, pp. 203-209.
12. Reinartz, W., Kumar, V. (2002). The Mismanagement of Customer Loyalty. Retrieved: https://hbr.org/2002/07/the-mismanagement-of-customer-loyalty. Access: 15.01.2019
13. Scott, J., Marshall, G. (2005). Oxford Dictionary of Sociology. Oxford: Oxford University Press.
14. Sullivan, P., Chan-Halbrendt, C., Krishnakumar, J. (2013). Are Farmers' Market Shoppers Different From Cross-Shoppers? The Case of Hawaiian Avocado Purchasers. *Journal of Food Products Marketing*, 19(5), pp. 363-375.
15. Wallace, S. (2015). State of Retail: 2015. Retrieved: http://www.timetrade.com/files/content_resource/TimeTrade_State_of_Retail_Generation_X_Report_final.pdf. Access: 15.01.19.
16. Yarrow, K., O'Donnell, J. (2009). Gen Buy: How Tweens, Teens and Twenty-Somethings Are Revolutionizing Retail. John Wiley and Sons.
17. Yu, Ch.-M. J., Wu, L.-Y., Chiao, Y.-Ch., Tai, H.-Sh. (2005). Perceived Quality, Customer Satisfaction, and Customer Loyalty: The Case of Lexus in Taiwan. Total Quality Management & Business Excellence, 16(6), pp. 707-719.

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THE DETERMINANTS OF ONLINE SHOPPING: BUILDING COMMUNICATION WITH CUSTOMERS IN AN ONLINE DIMENSION

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Abstract. Nowadays customers increase using the Internet environment to make their purchases. It helps them not only to save time and money, but makes the whole process more efficient. However, marketing on the Internet and outside it has some similarities, and it interacts with customers.

The authors of this article analyse communication with the customers on the Internet. The result is analysed and the key trends are highlighted that are currently outlined in communication with customers. In addition, the authors of the article look at the marketing communication on the Internet as part of their overall marketing strategy.

The aim of the paper – to find out and analyse determinants of online shopping in order to increase marketing communication effectiveness on the Internet.

Methods — theoretical analysis of literature, conducting customers' surveys and statistical analysis.

The results showed the strong influence of social networks for marketing communications in the Internet environment, this is explained by the fact that in the Internet there is No traditional personal service. The results have theoretical as well as practical significance.

Key words: marketing communication, online shopping, customer behaviour, marketing strategy.
JEL code: M31.

Introduction

Being all the time in a competitive market, companies have to adapt to their customers, their needs and desires. Selling goods in the traditional market, the trader is accustomed to the use well-known and proven marketing communication to be able to reach consumers and guide them to buy a product, as well as to return and become regular customers. Since the first advertising on the Internet on 1994 (Cook, 2016), the Internet has changed very rapidly and dynamically, thus significantly affecting the marketing communication. For example, today particularly important among researchers is marketing communication in social networks, which have currently a large impact on how consumers could be encouraged.

In the Internet environment, the consumer has a unique opportunity to move quickly between offers and shops, to look for alternatives and the best options that can satisfy one's wishes as good as possible. However, it is assumed that the consumer needs to evaluate the product only on the information provided by the trader on the website, namely, image, description, another consumer feedback, etc. It should be noted that the overall appearance of the website and how easy it is to navigate the website when searching for the product and its specification is also important for the consumer when making the purchase decision. In essence, the consumer sees only a picture with a description, from which consumer has to draw conclusions and make a decision on making a purchase. Perhaps the consumer will look for some feedback, ask for help from relatives and friends, but the first impression on the website is the first impression on consumer. Of course, it is not at all to say that if at the end the consumer receives a product that is not suiTable for the image and description, one will not only be dissatisfied, but also the trust of the particular Internet marketer will be low and there is No desire to buy something again.

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This is important not only for selling products, but also for online services such as hotel reservations, airline tickets, bank services. In this case, the interaction will also be with the device itself and the home page. The better the website design and the more convenient navigation, the more satisfied the consumer will be in the purchasing process. The authors fully agree that it is necessary for the consumer to feel comforTable and free on the website so that the interaction on the Internet is as easy as possible and the consumer would not only want to return to this Internet merchant and make repeated purchases, but also recommend this site to one’s relatives and friends.

Consumers are searching on the Internet for two different types of activities - hedonic and utilitarian shopping. Hedonic shopping is focused on the entertainment process from the use of the website, such as virtual tours, pictures etc. In turn, utilitarian shopping is geared towards the end result - a purchase that was made to achieve a specific goal, such as price comparison, finding a better service location etc. The main difference between these directions is that with hedonic shopping, the consumer gets entertainment, satisfaction and pleasure through the use of the Internet, but in a utilitarian case one has a specific goal to be achieved in the purchasing process. Hence, website owners need to adapt their site to both categories of consumers, both those looking for entertainment and those who have a specific goal to find everything they need there.

The main utilitarian features can be the availability, the ability to effectively search for the necessary information, the provision of full product or service information. For consumers looking for utilitarian features, site designers need to provide informative design with ease and ease of use. In contrast, hedonic peculiarities are such as joy, entertainment, fantasy, advancement to the purchase. Therefore, creators need to use moving (animated) images, pay close attention to colour selection, sound, social component and aesthetic appearance. Hedonic features also include game features to motivate the consumer to visit the website several times because of gambling.

The authors emphasize that the need to understand what type of consumer is in front of vendor, because it is consumer's knowledge to be able to communicate successfully with the vendor. Without a doubt, you can make your website so comforTable and enjoyable to have both categories, but sometimes entertaining content is difficult to fit in the specific nature of the industry websites, so it is necessary for some type of consumer orientation.

The aim of the paper – to find out and analyse determinants of online shopping in order to increase marketing communication effectiveness on the Internet.

Main tasks of the research are to analyse theoretical literature and the data from statistical sources and data received from the survey. Survey was compiled for the next study as a pilot survey, so the interim results are currently collected. The survey is created and distributed by authors using the Internet facilities - social networks. The first phase of the survey took place between December 2018 and January 2019. Authors received 312 responses, which are valid for analysis.

Methods - theoretical analysis of literature, conducting customers’ surveys and statistical analysis.

The results showed the strong influence of social networks for marketing communications in the Internet environment, this is explained by the fact that in the Internet there is No traditional personal service, which is an important factor in the traditional trade. The results have theoretical as well as practical significance.

Research results and discussion

In Ab Hamid and McGrath study (Ab Hamid, McGrath, 2005), 12 dimensions of Internet communication have been identified, those dimensions affect the effectiveness of online marketing

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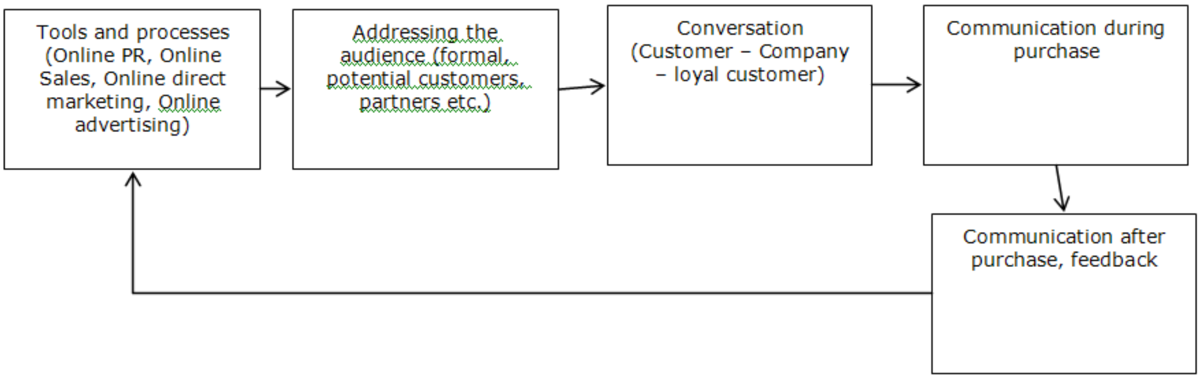
strategy: information quality, design, customer service, transaction execution conditions, integrated marketing channels, online communities, bonuses, personalization levels, website security, added customer value, reliability and price advantage. However, Mekkamol, Piewdang, and Untachai (Mekkamol et al., 2013) developed and tested the validity and reliability of four factors. They found a positive link between shopping convenience, the nature of the website, the dimensions of care and services, and the interactivity of website contacts. The authors agree that all these factors are important, but want to highlight the personalization that is available in online stores. Considering that there are many other influencing factors in the literature such as alternatives and time-saving (Lee et al., 2017), website design and its characteristic (Hasan, 2016), previous experience and trust during the whole purchase process (Kawaf, Tagg, 2017), the authors of the paper would like to emphasize that it is important to understand what exactly their consumers need when designing communication companies. Therefore, a model is presented below (Fig. 1), which shows the communication cycle on the Internet.



Source: authors created based on Semeradova, Vavrova, 2016

Fig. 1. **Internet communication cycle**

In the first audience process, the inputs are divided into four marketing communication categories: online public relations, online marketing, online sales promotion, online advertising. Using online tools such as websites, social networks and networks, portals, advertising and search marketing tools, enterprises share business and marketing data with their target audience (Semeradova, Vavrova, 2016). The authors of the paper point out that they chose this model because they believe that communication at each stage and through different channels is important in the Internet shopping process. In turn, choosing the most appropriate communication is possible when it is understood what exactly the customer wants.

1. European online shopping tendencies

According to Eurostat data in 2018, there were 69 % of European citizens that ordered goods or services online. The higher tendency for online shopping is in the United Kingdom (87 %), Denmark (86 %), Sweden (84 %), the Netherlands (84 %) and Germany (82 %). In the Baltic States, the results are: 54 % in Lithuania, 53 % in Latvia and 68 % in Estonia. The results show that most people make purchases on the Internet. Therefore, the authors want to find out how these purchases are made. Fig. 2 shows the specifics of consumer behaviour before making a purchase online in the EU (28 countries) and the three Baltic States.

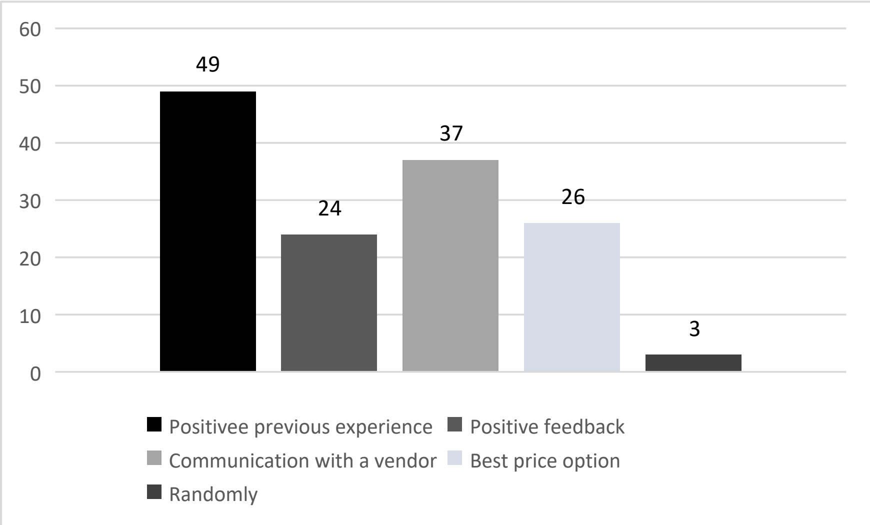
Source: Eurostat (online code: isoc_ec_ibhv)

Fig. 2. **Consumers' behaviour related to online purchases (%)**

Fig. 2 shows that before making a purchase on a website, the consumer uses the information available on the websites of different merchants, or uses the recommendations of friends or follows the recommendations of other buyers. This indicates that when there are so many different options, it is difficult for the consumer to choose right away. That's why it's important to talk to consumers and build a dialogue with them. Next, the authors of the paper propose to review the most important data obtained from the survey.

2. Collected data review

Authors made a pilot survey, so the interim results are currently collected. The survey is created and distributed by authors using the Internet facilities - social networks, random selection took place. The first phase of the survey took place between December 2018 and January 2019. Authors received 312 responses, which are valid for analysis. According to Gemius research data, more than 70 % of Internet users do online shopping. However, in 2018 there were 86 % of Latvian population that used Internet at least once per year.



Source: authors' construction based on survey data

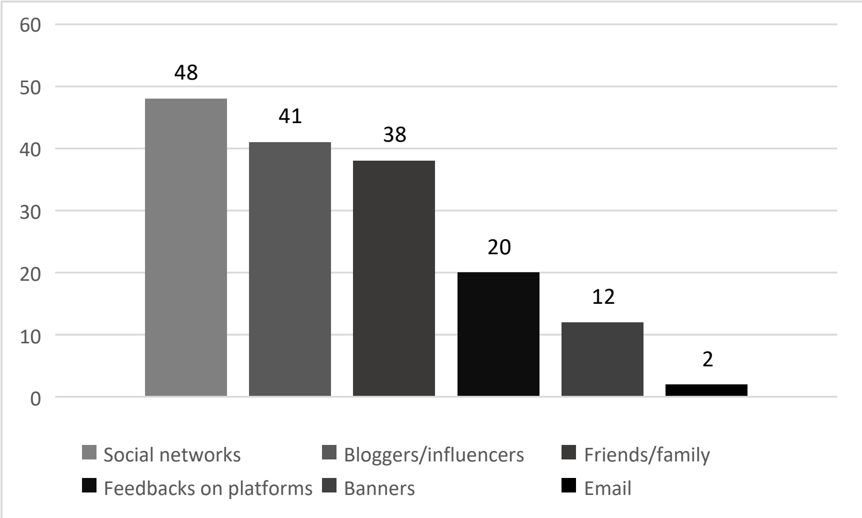
Fig. 3. **Criteria for Internet merchant selection (% of respondents)**

In turn, as it can be seen in Fig. 3, an important factor in shopping at a particular merchant is a positive previous experience (49 % of respondents). Further, respondents point out communication with the vendor, which should be positive and easy (37 %). And in third place consumers have placed positive feedback (24 % of respondents) pointing to the link with social media.

Source: authors' construction based on survey data

Fig. 4. **Criteria to recommend a vendor to friends and acquaintances (% of respondents)**

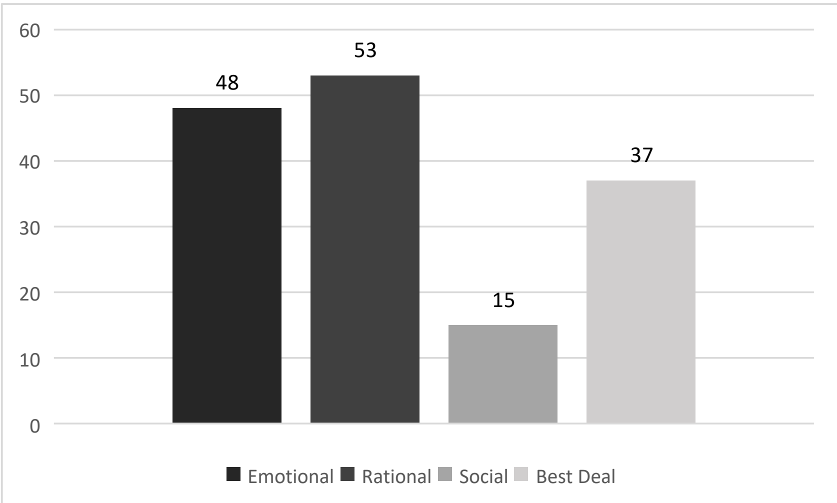
Authors point out that consumers are ready to recommend an online store if they benefit from it - bonus points, loyalty points etc. (51 %). But communication with the merchant and the quality of this communication (48 %) are also important, in addition to quality of the product (48 %). So, this indicates that communication that is well-targeted and personalized really improves the consumer's interest and thoughts on the company.



Source: authors' construction based on survey data

Fig. 5. **How customers are attracted to the online shop (% of respondents)**

One of the questions was how the consumer is attracted to a particular online store. The authors wanted to find out what kind of communication better addresses the consumer and directs to the store. As it can be seen from Fig. 5, customers are more likely to visit particular online store through social networks (48 %) and that's not a secret that a lot of vendors communicate with their audience there in their social web-pages or in specially made groups. Also, bloggers and influencers (41 %) can promote an online shop to customers and after their videos, posts or vlogs (video blogs) customers visit promoted shop or platform. And, of course, it should be posted out that friends (38 %) as well can be like a promoter, because there is a connection and trust. Authors found out an interesting thing that neither banners, nor emails stimulate customers to attend a particular online shop.



Source: authors' construction based on survey data

Fig. 6. **Online shopping types (% of respondents)**

Authors point out that consumers do mostly rational shopping (53 %), which means that consumers search for alternatives and feedback before making a purchase online. That type is utilitarian shopping. But there is a very slight difference between rational and emotion online shopping (48 %). After reviewing the answers, authors found out that emotional shopping type (hedonic) are mostly common between women aged from 25 to 45 while men do mostly rational shopping. Also, a lot of customers do online shopping when there are the best deal options such as Black Friday, Cyber Monday, Christmas Sales etc.

Summarizing the results of the survey and the data available to the public, the authors of the paper reiterate that factors such as security, delivery options, quality-price relationship, special programmes, and communication itself are important for consumers when shopping online. When building marketing communication on the Internet it should be taken into account, that social networks and influencers have a deep control and can promote an online shop in a good way. Businesses need to remember that when it comes to communicating on the Internet, it must be timely planned. Because there is a high chance that the consumer will make a purchase with another merchant without waiting for an answer to question.

Conclusions, proposals, recommendations

1) According to the authors research communication with the consumer is important factor, moreover communication that is well-targeted and personalized really improves the consumer's interest and thoughts on the company.
2) Concluding the results of the survey and the data available to the public such factors as security, delivery options, quality-price relationship, special programmes, and communication itself are important for consumers when shopping online. That points are recommended to take into account while preparing message to consumers.
3) There can be mentioned a lot of determinants of online shopping such as information quality, design, customer service, transaction execution conditions, integrated marketing channels, online communities, bonuses, personalization levels, website security, added customer value, reliability and price advantage. It is therefore necessary to take these factors into account when drafting the message.
4) Authors research showed that customers are more likely to visit particular online store through social networks (48 %) and bloggers and influencers (41 %) can promote an online shop to customers and after their videos, posts or vlogs (video blogs) customers visit promoted shop or platform. So, social networks and influencers can be used as promoters to stimulate customers do shopping in a particular online store. Authors recommend to use influencers with different communication tools taking into account customer needs and feedback remembering that there are utilitarian and hedonic shopping styles.
5) The company's focus on personalized customer service is the cornerstone of its success for targeted customer interaction. This means, firstly, the use of a narrowly focused communication strategy and, second, the adaptation of the products and services developed to the needs and expectations of customers on the Internet.
6) In order to reach company’s consumer in an online environment, it is necessary to use a variety of channels and tools to reach out to company’s audience and to establish a dialogue with them. By not setting up such a link with the consumer in a timely manner, the Internet merchant runs into the risk that the consumer will find another alternative.

Bibliography

1. Ab Hamid, N.R., McGrath G.M., (2005). The Diffusion of Internet Interactivity on Retail Web Sites: A customer relationship model. *Communications of the IIMA*, No. 5 (2), pp. 35-46
2. Bilgihana, A., Bujisic, M. (2015). The Effect Of Website Features In Online Relationship Marketing: A Case Of Online Hotel Booking. *Electronic Commerce Research and Applications*, Volume 14, Issue 4, July–August, Pages 222–232

3. Childers, T.L., Carr, C.L., Peck, J., Carson, S. (2001). Hedonic And Utilitarian Motivations For Online Retail Shopping Behaviour. *Journal of Retailing*, No. 774, pp. 511–535
4. Chiu, C.M., Wang, E.T., Fang Y.H., Huang H.Y. (2014). Understanding Customers' Repeat Purchase Intentions In B2C E-Commerce: The Roles Of Utilitarian Value, Hedonic Value And Perceived Risk. *Information Systems Journal*, No. 241, pp. 85–114
5. Cook, K. (2016). A Brief History of Online Advertising. Retrieved: https://blog.hubspot.com/marketing/history-of-online-advertising
6. Eurostat (2018). Retrieved: https://ec.europa.eu/eurostat
7. Floh, A., Madlberger, M. (2013). The Role Of Atmospheric Cues In Online Impulse-Buying Behaviour. *Electronic Commerce Research and Applications*, No. 126, pp. 425–439
8. Griffith, D.A., Krampf, R.F., Palmer, J.W. (2001). The Role Of Interface In Electronic Commerce: Consumer Involvement With Print Versus On-Line Catalogs. *International Journal of Electronic Commerce*, No. 5, pp. 135–154
9. Hamari, J., Koivisto, J., Sarsa, H., (2014). Does Gamification Work? – A Literature Review Of Empirical Studies On Gamification. *Proceedings of the 47th Hawaii International Conference on System Sciences*, Hawaii, USA, January p. 6–9.
10. Hasan, B. (2016). Perceived Irritation In Online Shopping: The Impact Of Website Design Characteristics. *Computers in Human Behavior.* Volume 54, pp. 224-230
11. Hong, W., Thong, J.Y.L., Tam, K.Y. (2004). The Effects Of Information Format And Shopping Task On Consumers' Online Shopping Behavior: A Cognitive Fit Perspective. *Journal of Management Information Systems*, No. 213, pp. 149–184
12. Kawaf, F., Tagg S. (2017). The Construction Of Online Shopping Experience: A Repertory Grid Approach. *Computers in Human Behavior.* Volume 72, pp. 222-232
13. Kolesar, M.B., Galbraith, R.W. (2000). A Services-Marketing Perspective On E-Retailing: Implications For E-Retailers And Directions For Further Research. *Internet Research*, No. 105, pp. 424–438
14. Lee, R., Sener, I., Mokhtarian, P., Handy, S. (2017). Relationships Between The Online And In-Store Shopping Frequency Of Davis, California Residents. *Transportation Research Part A: Policy and Practice*. Volume 100, pp. 40-52
15. Mekkamol, P., Piewdang, S., Untachai, S. (2013). Modeling E-CRM For Community Tourism In Upper Northeastern Thailand. *Procedia - Social and Behavioral Sciences*, No. 88, pp. 108-117
16. O'Brien, H.L. (2010). The influence of hedonic and utilitarian motivations on user engagement: the case of online shopping experiences. *Interacting with Computers*, No. 225, pp. 344–352
17. Semeradova, T., Vavrova, J. (2016). Using A Systemic Approach To Assess Internet Marketing Communication Within Hospitality Industry. Tourism Management Perspectives. Volume 20, October, pp 276-289
18. Wolfinbarger, M., Gilly, M.C. (2003). Etailq: Dimensionalizing, Measuring And Predicting Etail Quality. *Journal of Retailing*, No. 79, pp. 183–198

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MILK PRODUCT PACKAGING FEATURES AS THE KEY FACTOR OF SUCCESSFUL CANVASSING TECHNIQUES

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Abstract. The perception and final choice of selected milk products depends on various factors. Presented paper deals with the research of potential packages of selected milk products to find out possible associations that consumers have with these products. Associations of consumers with packaging features play an important role in the overall perception of these food products. Packages, also known as the „silent sellers" can attract consumers very quickly. The research sample consists of 320 young adults, aged 20—45. All respondents belong to the segment of „Generation Y" or „Millennials". Participants aged 20—45 were chosen intentionally because they represent the target sample for milk products. They are likely to have conscious patterns for milk products consumption gained during childhood; they are mostly independent and take care of their own families or prepare for their future family or career. They have the power to influence the choices of next generations. From our study we can conclude that features and visual cues that create the strongest associations in the mind of a consumer can significantly influence the overall perception of the product. When a consumer can find an association (a sound, a picture, a memory etc.) inside his subconscious mind, we can assume that there is an emotional connection present. It was also found out that consumers prefer traditional packages connected with Slovak customs and traditions to more modern packages. Packages with traditional Slovak motives are strongly associated with nature, farming, home production and high quality.

Key words: milk product, milk, packaging, consumer choice, consumer behaviour.
JEL code: M31, M37, M39.

Introduction

Milk and milk products have long been associated with good health, making them one of the most consumed products throughout the countries in the world. Milk has long been seen as a healthy beverage, because it is high in a range of nutrients (Ware and Wilson, 2017). It is a rich source of quality protein that contains all nine essential amiNo acids that may help reduce age-related muscle loss and promote muscle repair. Milk also contains a variety of nutrients that benefit bone health, such as calcium, vitamin D, phosphorus and magnesium (Kubala, 2018). In Slovak Republic, the consumption of milk is closely connected with the culture and history of the Slovak nation. For years, the milk of different kinds and products made of milk have been the precious source of energy and proteins and in many cases the only obtainable food. Cheeses have very often replaced meat, mainly during less happy periods of our history when the significant part of Slovak population struggled with the poverty, but also nowadays.

In our country, milk and milk products represent the considerable part of consumer's diet. The production of milk and milk products have been increasing since 2012 (Fig. 1). However, the consumption of milk and milk products is quite irregular and represents only a half of the recommended dose. The estimated average consumption of milk in 2017 in Slovakia was about 176 kg per capita. The estimated average consumption of cheeses in 2017 was about 13,7 kg per capita (Masar, 2018). The consumption of sheep and goat milk is much lower than the consumption of cow milk. It is mainly because the livestock production in Slovak Republic is mainly focused on beef cattle. The irregularity in consumption of milk can be caused by changes in life-style trends. Currently, mainly plant milks are promoted because many experts believe that the livestock production harms the environment, and thus the health of people.

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Source: authors' elaboration according to Masar (2018)

Fig. 1. **Production of milk and milk products in Slovak Republic**

Culture, traditions, agriculture and nature represent factors that are strongly connected with observed and investigated milk products. Previous research has demonstrated that the way in which information is presented affects the process of evaluation and the final consumer choice (Levin, 1987). Consumer choice is traditionally considered to be a rational, well-judged cognitive process. Increasingly however, research has shown that a significant part of consumer decision-making is unconscious (Fitzsimons et al., 2002). Clegg (2000), Dijksterhuis et al. (2005), Dhar (2012), Krishna et al. (2014) and others found that only limited number of consumer choices are based on conscious information-processing strategies. A significant part of consumer choices is unconscious and results from different cues present in the environment of individuals. Many experimental studies in consumer behaviour research and social psychology have confirmed that environmental cues together with various factors strongly influence the final consumer choice (Jacob et al., 2011). Food packaging plays an important role in attracting consumers' attention and generating expectations in the consumer that in turn affect their product perception and buying behaviour (Gelici-Zeko et al., 2012).

The presented paper investigates the persuading power of visual aspects and associations that consumers have with selected milk products, specifically sheep and cow cheeses. It explores modern and classical graphical designs including designs related to historical features of agriculture, milk production, countryside, livestock or any other symbols associated with traditional way of farming on the land. Our goal is to find out how these packages are perceived by selected category of consumers.

The research sample consists of 320 young adults (200 women and 120 men), aged 20 - 45. All respondents, according to their age structure, belong to the segment of „Generation Y" or „Millennials". Participants aged 20 - 45 were chosen intentionally because they represent the target sample for milk products. They are likely to have conscious patterns for milk products consumption gained during childhood, they are mostly independent and take care of their own families or prepare for their future family or career. They have the power to influence the choices of next generations, that is why we consider them to be the most important segment on the market of milk products. All respondents have completed a minimum of secondary education and they live in Slovak Republic. Further characteristics of participants are stated in following Table (Table 1).

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Table 1

Participants according to gender and residence

		Residence		Total
		Town	**Village**	
Gender	**Male**	70	50	120
	Female	102	98	200
	Total	**172**	**148**	**320**

Source: authors' elaboration

The representativeness of the sample was verified by a Pearson´s Chi-square test. It was found out that the sample of respondents is representative according to gender and residence.

The research consists of several phases. At first, the association experiment was conducted. Respondents were asked to write down at least 3 words that they have associated with the word „cheese". Then they were presented 3 different types of cheese (Fig. 4). They were not given any other information about cheeses, they could only see the pictures. They were again asked to write down at least 3 associations for every picture. Selected cheeses are well-known for Slovak consumers. The first one is typical sheep milk product called „Parenica", which can be smoked or fresh and is very popular among Slovak consumers. It can be bought in the most of stores and farms. The second one is also made from sheep milk, it is a very typical chalet product called „Korbaciky". It is basically a sheep cheese strings weaved into the shape of a whip and it is possible to buy it everywhere, but it is generally considered to be a farm-to-Table product in the country. The last one is a typical cheese made of cow milk (Emmental type).

Source: authors' elaboration

Fig. 2. **Cheeses used in the association experiment**

On the basis of results of the association experiment 2 logos for every type of cheese were designed (Fig. 5, Fig. 6 and Fig. 7). One that contains one or more associated features (according to the results of experiment) and one that contains also other features. Designed logos were subsequently evaluated by the research sample (a week later). Respondents were divided into two groups. The first group of respondents (100 women and 60 men) was not given any information, they were told to choose the logo that they prefer. The second group of respondents (100 women and 60 men) were told that they are going to choose the logo for the farm-to-Table products. Consumers evaluated designed logos on the scales of semantic differential.

1 **2**

Source: authors' elaboration

Fig. 3. **Designed logos for the „Parenica" sheep cheese**

DOI: 10.22616/ESRD.2019.094

Source: authors' elaboration

Fig. 4. **Designed logos for the „Korbaciky sheep cheese**

Source: own elaboration

Fig. 5. **Designed logos for the cow cheese**

Research results and discussion

Results of the association experiment are showed in the following Table (Table 2). For every item we chose the most important and the most often associated words that were stated by the respondents. We took into consideration only positive or neutral associated words.

Table 2

Results of the association experiment

Words (Pictures)	Associations
Cheese	sheep, nature, health, Liptov, yummy, eidam, gouda, mozarella, string cheese
„Parenica" cheese (Fig. 3)	sheep, tradition, mountains, Liptov, smoked, yummy, nature
„Korbaciky" cheese (Fig. 4)	sheep, farm, chalet, Tatras, mountains, shepherd, salty, yummy, nature, culture
Cow cheese (Fig. 5)	Tom&Jerry, cow, milk, yummy, Emmental, Switzerland, holes, health, strength

Source: authors' elaboration

Word „cheese" is mostly associated with words nature, health and sheep. Despite the fact that only a little number of produced cheeses are sheep, when the word cheese is presented, consumers probably see typical Slovak farm-to-Table products as parenica or korbaciky. Another important association is Liptov. It is the mountain region in the north of Slovakia, typical for sheep farming, shepherds and chalets. From these associations we can conclude that sheep cheeses are very popular in the country. Other associations concern the most favourite types of cheese among consumers. Above mentioned types are very common in supermarkets and other stores and are easily available. Parenica and korbaciky are typical as farm-to-Table products in mountain regions of High Tatras and Liptov. They are typical Slovak products and are very popular among consumers. Surprisingly, cow cheese (emmental type) is mostly associated with cartoon characters Tom and Jerry. Other associations are connected with health and strength (like other milk products) and also with mountains, but not in Slovakia but in Switzerland. The cow cheese from the picture with big holes inside is typical for Switzerland and is very often presented in television (in cartoons and movies).

Differences in evaluation of logos for each product were found between two groups of respondents. Results are showed in following Figures (Fig. 6 – Fig. 11).

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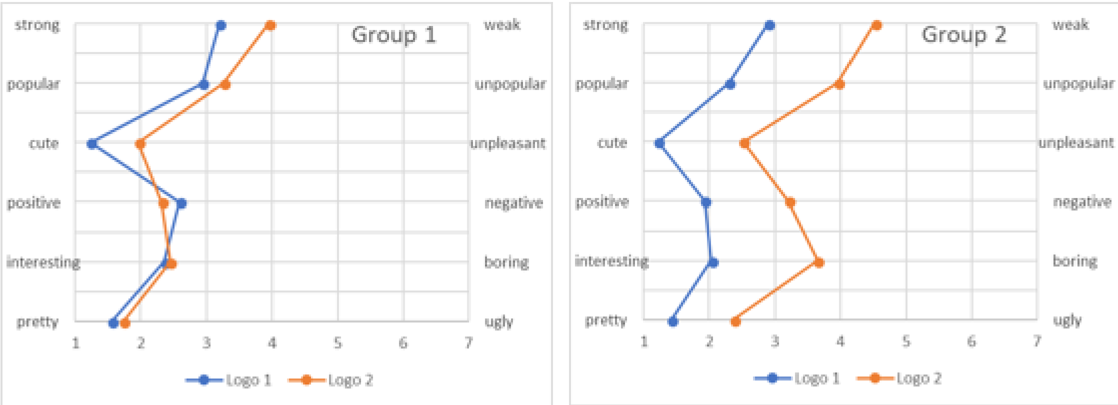
Source: authors' elaboration

Fig. 6. **Evaluation of „Parenica" logos on the scale of semantic differential by two groups of respondents**

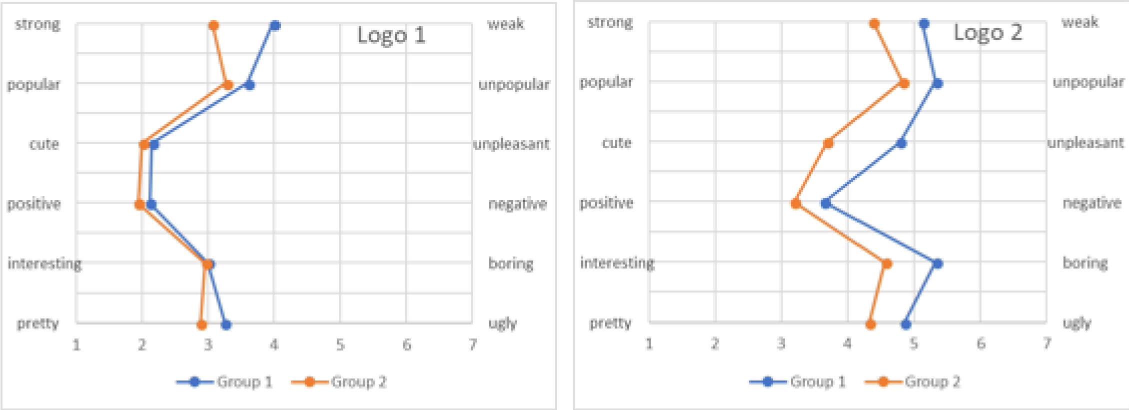


Source: authors' elaboration

Fig. 7. **Comparison of evaluations for each „Parenica" logo**

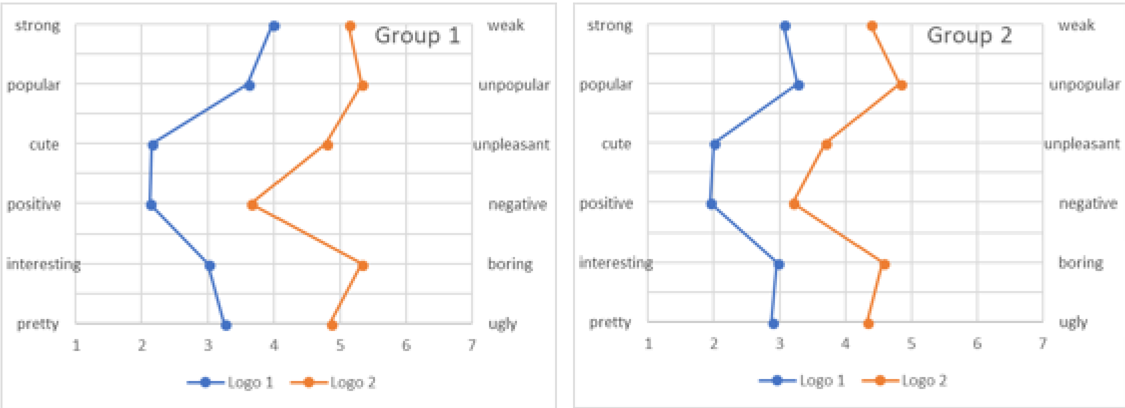
The first evaluated logos were logos for „Parenica" sheep cheese. The first designed logo (with sheep) was more positively evaluated by respondents who were told to choose the logo for the farm-to-Table product. The second logo (with a mouse, which is holding a parenica cheese) was more positively evaluated by respondents who were not given any information about the product. We can assume that the group without any information about the product was not influenced by associations connected with farm-to-Table products, that is why they evaluated also other visual cues than explicit associations. The first logo was in general evaluated as more pretty (by both groups of respondents), but in the group of respondents who thought that the logo is for the farm-to-Table product the difference in evaluations is more obvious.

DOI: 10.22616/ESRD.2019.094



Source: authors' elaboration

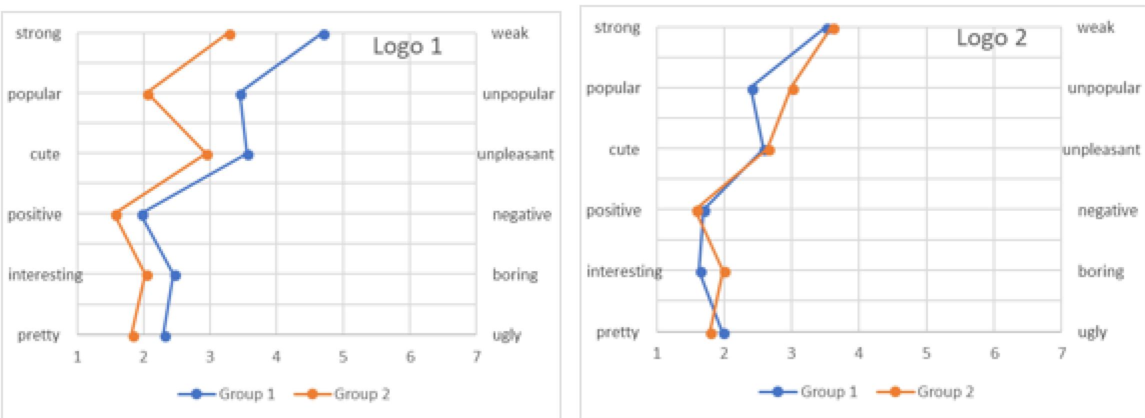
Fig. 8. **Evaluation of „Korbaciky" logos on the scale of semantic differential by two groups of respondents**



Source: authors' elaboration

Fig. 9. **Comparison of evaluations for each „Korbaciky" logo**

The logos for „Korbaciky" sheep cheese both contain associated features, but the first one contains also traditional national ornaments. Because both logos contain most popular associations, they are evaluated very similarly. There are not significant differences in evaluation of the first logo between groups. The second logo is more positively evaluated by the group of respondents who were told to choose a logo for the farm-to-Table product. The logo with traditional ornaments is more popular in both groups. We can assume that the more associated features we place on the packaging, the more positively is this packaging perceived by consumers.



Source: authors' elaboration

Fig. 10. **Evaluation of „cow cheese" logos on the scale of semantic differential by two groups of respondents**

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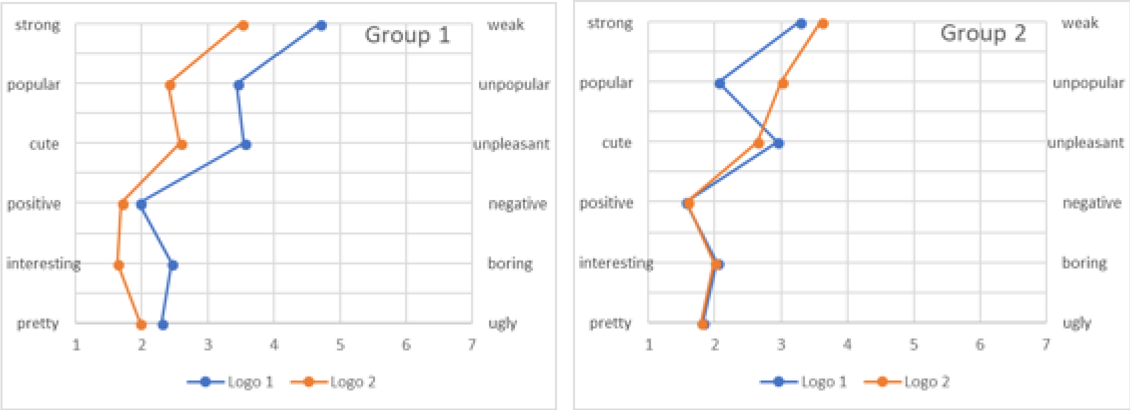

Source: authors' elaboration

Fig. 11. **Comparison of evaluations for each „cow cheese" logo**

The last evaluated logos were designed for the cow cheese. The first one represents traditions, nature and natural motives. The second one contains Jerry the mouse from the cartoon Tom&Jerry. The first logo was more positively evaluated by the respondents who were told to choose the logo for the farm-to-Table product. The second one, with Jerry, was positively evaluated by both groups of respondents (most probably because of the strong association). The group of respondents who were not given any other information about the product evaluated more positively the logo with Jerry. We can assume that without additional information, the association is stronger than national and natural motive. The second group of respondents is ambivalent. On the one side, the farm-to-Table product is associated with nature and culture, on the other hand the association with Jerry is strong enough.

Conclusions, proposals, recommendations

1) There is little doubt that the impact of packaging on the consumer behaviour is considerable. If we want to get the right product to the right consumer, the right packaging can help a lot. This is even more important when we talk about the support for little producers and farmers who are very often not able to sell their production and they do not have resources for expensive marketing campaigns.
2) Similar research about the influence of the packaging on the consumer behaviour have been conducted many times. Many authors, e.g. Fazio et al. (1982), Higgins (1996), Fazio and Olson (2003), Jain and Posavac (2004), Gelici-Zeko et al. (2012) Singh and Verma (2017), Jaeger et al. (2018), Rybanska et al. (2018) etc., found out that associations and provided information significantly influence consumers´ perception and decision-making process. Previous experiences are important as well, mainly for the creation of associations with selected products or brands.
3) From our study we can conclude that features and visual cues that create the strongest associations in the mind of a consumer can significantly influence the overall perception of the product. When a consumer can find an association (a sound, a picture, a memory etc.) inside his subconscious mind, we can assume that there is an emotional connection present.
4) Because milk and milk products are most commonly associated with traditional, cultural and natural motives, these features can help to sell them the most. We recommend conducting brief association experiments in focus groups before the development of particular packages. These experiments are not financially demanding and can in many cases replace also expensive marketing research.

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Bibliography

1. Clegg, B. (2000). Capturing Customers´ *Hearts: Leave Your Competition to Chase Their Pockets*. New York: Prentice Hall.
2. Dhar, R. (2012). The Irrational Consumer: Four Secrets to Engaging Shoppers. Retrieved: https://www.huffingtonpost.com/ravi-dhar/psychology-shopping_b_1280341.html
3. Dijksterhuis, A., Smith, p. K., Van Baaren, R. B., Wigboldus, D. H. (2005). The Unconscious Consumer: Effects of Environment on Consumer Behavior. *Journal of Consumer Psychology*, 15(3), pp. 193-202.
4. Fazio, R. H., Chen, J., McDonel, E. C., Sherman, S. J. (1982), Attitude Accessibility, Attitude-Behaviour Consistency, and the Strenght of the Object-Evaluation Association. *Journal of Experimental Social Psychology*, 10(1), pp. 139-148.
5. Fazio, R. H., Olson, M. A. (2003). Implicit Measures in Social Cognition Research. Their Meaning and Use. *Annual Review of Psychology*, 54, pp. 297-327.
6. Fitzsimons, G. J., Hutchinson, J. W., Alba, J. W., Chartrand, T. L., Huber, J., Kardes, F. R., Menon, G., Raghubir, P., Russo, J. E., Shiv, B., Tavassoli, N. T., Williams, p. (2002). Non-conscious Influences of Consumer Choice. *Marketing Letters*, 13, pp. 269-279.
7. Gelici-Zeko, M. M., Lutters, D., Klooster, R., Weijzen, p. L. G. (2012). Studying the Influence of Packaging Design on Consumer Perceptions (of Dairy Products) Using Categorizing and Perceptual Mapping. *Packaging Technology and Science*.
8. Higgins, E. T. (1996). *Knowledge Activation: Accessibility, Applicability, and Silence*. In E. T. Higgins, A. Kruglanski (Eds.), Social Psychology: Handbook of Basic Principles. New York: Guilford.
9. Jacob, C., Guéguen, N., Boulbry, G. (2011). Presence of Various Figurative Cues on a Restaurant Table and Consumer Choice: Evidence for an Associative Link. *Journal of Foodservice Business Research*, 14(1), pp. 47-52.
10. Jaeger, S. R., Lee, P., Ares, G. (2018). Product Involvement and Consumer Food-Elicited Emotional Associations: Insights from Emoji Questionnaires. *Food Research International*, 106, pp. 999- 1011.
11. Jain, S. P., Posavac, S. S. (2004). Valenced Comparisons. *Journal of Marketing Research*, 41(1), pp. 46-58.
12. Krishna, A., Morrin, M., Sayin, E. (2014). Smellizing Cookies and Salivating: A Focus on Olfactory Imagery. *Journal of Consumer Research*, 41(1), pp. 18-34.
13. Kubala, J. (2018). 5 Ways that Drinking Milk Can Improve Your Health. Retrieved: https://www.healthline.com/nutrition/milk-benefits
14. Levin, I. p. (1987). Associative Effects of Information Framing. *Bulletin of the Psychonomic Society*, 25(2), pp. 85-86.
15. Masar, I. (2018). Mlieko [Milk]. Retrieved: http://www.vuepp.sk/dokumenty/komodity/2018/Mlieko06_18.pdf [in Slovak].
16. Rybanska, J., Nagyova, L., Horska, E. (2018). Conventions and Stereotypes as Key Perception Factors Influencing the Choice of Selected Farm-to-Table Products. 8th International Scientific Conference of Business Faculty, Durres, Albania [in press].
17. Singh, A., Verma, p. (2017). Factors Influencing Indian Consumers´ Actual Buying Behaviour Towards Organic Food Products. *Journal of Cleaner Production*, 167, pp. 473-483.
18. Ware, M., Wilson, D. R. (2017). All About Milk. Retrieved: https://www.medicalnewstoday.com/articles/273451.php

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BENEFITS OF VIDEOS IN JOB ADVERTISMENTS FOR POTENTIAL CANDIDATES

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Abstract. This paper investigates the use of videos in job advertisements. This is very important for companies to differentiate their job advertisement from other companies and to attract potential candidates to apply. Organizations need new opportunities to attract individuals to join their organisation. The member of the organization influences the value of the organization. That means organizations are interested to have the most suitable member to be successful and to have a competitive advantage with the new member. Trends of online video watching prove video to be the most preferred way of content consumption. The paper identifies the values of videos in job advertisement for employment seeking individuals. The research asked up to 319 individuals about the usefulness of videos in job advertisements and benefit for potential candidates with the content of videos in job advertisement. The advantage of videos is the content and to provide additional information. The authenticity of the videos provides a realistic job preview. The result of the paper is that job advertisements with videos are more beneficial for potential candidates. The results support companies to optimize their job advertisements.

Key words: recruiting, job advertisement, video, signalling theory, social media.
JEL code: M54.

Introduction

Many companies have started to improve the job advertisements with videos. The changes in the marketing tools and marketing related technologies provides new opportunities for companies (Li & Bernoff, 2011). Online usage of video content is becoming everyday habit. ComScore reports shows that in March 2016 alone 233 898 000 people were watching video content in US, from desktop computers comparing to 191 482 000 people in August 2015 (ComScore U.S. Desktop Online Video Rankings). Adding up the numbers, more than half of all video viewing is happening on mobile (Ooyala's 2017 Global Video Index). Video proves to be one of the most preferred ways of consuming content. The data (The Animoto Online and Social Video Marketing Study, 2015) shows that businesses with video marketing strategies have an elevated brand perception as a result: respondents say that they want more video marketing on web, social networks and email: one in four consumers lose interest in company, if it does not have video. Four times as many consumers would rather watch a video than read about a product or service, 84 % of respondents say they have liked a company video on their newsfeed. These findings show that people are taking action after watching video advertising. Accordingly, spending on online video advertising is increasing. eMarketer expects US digital video ad spending will see double-digit growth annually through 2020. Brands are spending more than half of their digital budgets on video: 56 % will be allocated to digital video in 2017, US marketers have confirmed in the survey (Digital Content Newfronts: Video Ad Spend Study", 2017).

The research investigates the use of videos in job advertisements in the internet and asked individuals about the advantages for potential applicants. The power of information and access to information is critical for business success. The knowledge economy need access and maintenance of knowledge, development of resources with knowledge and the transfer of information is beneficial

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for organizations (Marjanovic & Rothenhoefer, 2014). Individuals acquire information in job advertisements which they need to be successful. Social media provide channels and structure to provide access to knowledge and information. Companies can use this channel to maintain their resources to be successful and to present their resources to individuals (Li & Bernoff, 2011) (Pentland, 2014). Those organizations can use the advantages of social media for the job advertisements. That supports potential candidates to get access to beneficial and trustful information (Sander, Teh, & Sloka, 2017). The wrong content in videos can have a negative reaction of the target group and destroy the reputation of companies.

Companies need suiTable employees to be successful and to attract potential candidates to apply to have a future. Videos increase the value of job adds for companies and candidates (Hussain & Lasage, 2014). This paper concentrates on the opinion of individuals about the benefits of videos in job advertisements. The power of picture and additional content, which can be transferred with videos, is an advantage for the job advertisement. The additional information support the decision of individuals to apply or not to apply (Breaugh, 2008). The amount of information transferred by the video content provides addition emotions. That is only possible with videos and influence individuals. That provides further impressions about the job and organization. The potential candidates get a good overview about potential employer. The video bonds individuals for a longer time on the job advertisement compared with job advertisements without videos. That individuals receive a realistic job preview. That guides to a deeper concentration on the job advertisement and content (Khatri et al., 2015). Individuals provide more attention to job advertisements with videos. However, companies should take into account that 85 % of Facebook video is watched without sound (AmericanPress Institute, 2016). For companies it means the importance of creating videos that can be understood without sound, using captions or text that narrate what is happening on the screen. Also deciding on length of video is important: study of more than 500 thousand videos shows that marketers should keep video ad up to 2 min long. Due to short attention spans and distraction that particularly happens online, people lose engagement if the video is too long („How long your video should be", Wistia, 2016). Marketing needs to reach the target group and new technologies provide new opportunities. The new opportunities affect the market. Online advertisement is the future and companies use online job advertisements to reach a large audience and target group. The cost of online advertisements and success is an important factor for companies. The efficiency and effectivity of online job advertisements are important for companies to identify interesting candidates (Ragunathan et al., 2015). The analysis of this communication channel is easily possible and provides new opportunities to companies. The research has been done with a survey and the data have been analysed with descriptive statistics, t-tests, LSD ANOVA and Spearman correlation. The paper presents only the statistically significant results and only the t-test to compare significant results that exist in the two genders. But the descriptive statistic provides a clear tendency and result to provide recommendations for companies to create successful job advertisements and explain the advantages of videos in job advertisements. Employer branding is important for organizations. Videos in job advertisements are a visible signal for potential candidates that companies are very innovative and on the latest technological level. The employer branding is very important to motivate individuals to apply for a position and to keep employees on board. Human resources management needs new channels and tools to be competitive or to have an advantage on the labour market, to be successful in the war for talent (Geffen, 2010; Sivertzen, Ragnhild, Olafsen, & Olafsen, 2013). The transfer of positive signals is important for the success of the job advertisement to provide a positive image to individuals, to be valuable for the company e.g. improving the employer's branding of the company. The companies can present unique selling point to potential candidates to be an attractive employer for the best candidates.

Research results and discussion
Online advertisements for recruiting issues

Online advertisement is an important channel to reach a large audience. The importance of online advertisement is increasing and the technological changes provide new opportunities. The internet is an important communication channel. Social media are daily used by individuals and the user behaviour is an interesting research field (Walker, Feild, Giles, & Bernerth, 2008). The access to millions of people fast and easily is possible with the internet. Further is it possible to customize information and to provide important information with different media, e.g. videos or audio formats. Online job advertisement is interactive and provides a new kind of communication opportunities to companies to advertise. The tailored information increases the value for the recipients and increases the return of investment for the companies (Colliander & Dahlen, 2011). The investment in advertisement is more specific. The effectiveness and efficiency of advertisement are increasing with the support of web based solutions. The video content is more easily to understand and the amount of information in a video is more comparable to other mediums. The signal theory is the theoretical background for this research. The signal needs to be clear that the recipient understand the same like the sender. The video can avoid misunderstandings because the information is more precise and detailed, the content and information in videos is more interesting for potential candidates and fulfil their desired kind of medium (Gregory, Meade, & Thompson, 2013; Spence, 1973). These are important advantages that companies can communicate in their message to attract interest of individuals more successful. The future of online advertisements is different medium with interactive parts. The strength of online job boards is the combination of different kinds of presentation of the information, e.g. audio or visual. That support the advertisement to present the information with different tools and in different types (Howardson & Behrend, 2014). This increases the attention of individuals. The image of companies is influenced by their advertisement. The use of attractive trendy videos is a clear signal for potential candidates or customer that the company is innovative. Especially young individuals are interested in innovative advertisements and activated with videos in job advertisements (Acarlar & Bilgiç, 2013). Therefore, the companies use the latest technologies and it increases the reputation and attractiveness for potential candidates and employees of companies and thus is a competitive advantage in the war of talents.

Videos in job advertisements

The difficulty to identify candidates and to motivate them to apply is very important for companies. They need the best suiTable candidates for their open positions. The demographic change and economic situation influence the labour market. The number of potential candidates is decreasing. The technological development provides new opportunities for companies to present their open positions to a large audience (Sander, 2013; Cober, Brown, Blumental, & Levy, 2000). Social media is an important tool for advertisement and marketing issues. Job advertisements need to transfer information about the tasks and skills for the position and to inform about the organization. The candidates can find a decision to apply or not to apply. The companies use the job advertisement to attract individuals to apply or use the job advertisements to select candidates (Acarlar & Bilgiç, 2013). Some companies advertise their positions in English so that only individuals can apply who

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can communicate in English. The job advertisements transfer the image of a company and are an important factor to present the company to a large audience. The interactivities of online job boards can be a positive effect for job advertisements. The agility of job advertisements is a great chance to get more attention for open positions. Job advertisements have different kind of presentations in the internet e.g. printed, audio and video. These new presentation forms provide additional information for the recipient of the advertisements (Sivabalan, Yazdanifard, & Ismail, 2014). That is a great chance to transfer new kind of information to potential candidates, to present different presentation styles and to transfer more than information. The transfer of emotions is possible with videos. Advertisements include videos as a technical innovation. The videos in advertisements influence the image of companies and present the company as an innovative technical company. Thus, the company is on the latest technical level and of interest for young people. Young people use media in a new way and they are more attracted by videos in online advertisement. Job advertisements are more attractive with videos.

The selection of videos and advertisements can be individualized. The individual get customized information. This information is more of interest for individuals (Baum & Kabst, 2014). It is possible to provide specialized information to different user with the help of internet tools. The video is very attractive for internet user and can improve the power of the advertisements. The realistic job preview and realistic presentation of companies is possible with videos. Videos can provide realistic information about the company and job descriptions (Backhaus, Backhaus, & Tikoo, 2014). The content is more detailed and the emotional power of videos has a positive effect on the job advertisements. The video is visible thus enabling audio-visual perception with different sensory organs. The impression of videos is deeper. The mass of content is increasing compared with other tools to advertise open positions. Special effects are possible to attract internet user and to differentiate companies from each other.

Unlike the forced exposure of consumers to traditional TV and radio advertisements where people lack control over presentation of the message, people can choose to view the online video ads with video playback controls when they want and also control the presentation of video ads. According to Lee & Lee, (2011), viewing of video ads requires active participation by viewers which is triggered by factors such as intention to perform the behaviour, attitude towards performing a behaviour, subjective norm and past behaviour. The content and presentation of video in job advertisement can have negative results. The user and recipients of videos can recognize the content and presentation as infantile or disproportionate. The quality of the videos and technical effects can be perceived as cheap (Relling, Schnittka, Sattler, & Johnen, 2016). Employees can be embarrassed with the content. That means the content and videos for job advertisements need to be used carefully and responsible.

Research questions to investigate videos in job advertisements

The statement is that the use of video in job advertisements improves the recruiting process, as this job advertisement transfers more information and thus the content is more authentic. That provides a more realistic job preview for potential candidates (Stone, Deadrick, Lukaszewski, & Johnson, 2015). The question to the participants in the survey was „What is the value of videos in job advertisements?”. There are five answer options. The first option is „I get an improved picture about the company”. This item investigates the importance and value of the video in online job advertisements. „The estimation to be suiTable for a company is easier” is the next item. This item proves if the video supports the decision to apply. Thus the candidate has a realistic idea about the

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estimation of the company for candidate’s personality. The problem whether candidates get more detailed information about the required skills is investigated within the item „I can image the required skills more superior”. But not only the required skills are of interest. The environment of the working place is an important factor for applicants and is tested with the answer item „I get an improved impression about the working place”. The answer items provide a good overview about the benefits of videos in job advertisements. Thus, the video is a part of the job advertisement.

Method and demographic factors

The investigation of online job advertisements with video content attracts? participants who are able to use the internet and the participants should have experience with employment seeking situation. The online survey was provided in April - May 2017 to 990 potential participants and the paper used up to 316 responses for the evaluation of the research questions. The online survey is suiTable for this research because individuals have to have access to the internet to use the internet to identify job advertisements with videos (Evans and Mathur, 2005; Wright, 2005). The research project was supported by University of Ludwigshafen. The a six-point Likert scale from one for „full agreement” to six for „full disagreement” was used in the survey. The demographic data are presented in Table 1.

Table 1

Demographic data of the respondents, share in %, n = 275

Social status	Share (in %)	Age distribution	Share (in %)	Education	Share (in %)
Employed	48.9	Under 18 years	0.4	School degree	25.7
Unemployed	0.7	18 - 20 years	9.1		
Student	40.9	21 - 25 years	40	Apprenticeship - practical training	42.6
School student	7.7	26 - 30 years	20.4		
Retired	1.8	31 - 36 years	9.5	University degree - three year program	19.9
n = 274	100	36 - 40 years	2.2		
		41 - 45 years	1.1	University degree - more than three year program	9.6
Gender		46 - 50 years	4.3		
Men	33.3	51 - 55 years	6.8	PhD or higher degree	2.2
Women	66.7	Over 56	6.2		
n = 273	100	n = 275	100	n = 272	100

Source: author’s calculations based on Tom Sander’s conducted survey

There are 69.5 % of the survey participants 30 years old or younger. Young individuals are trained and experienced with online forms and most of them need to investigate job opportunities in the near future or have searched employment in the near history. Young individuals are trained and experienced with online videos. Their consumer behaviour is supported by video content and they believe that online videos are available to collect further information.

Research results for videos in job advertisements

The results of the items for the questions are very similar. The best result with a median of two is the item „I get an improved picture about the company”. All other items have the median three. That is weak tendency to completely correctly. That means videos in job advertisements in general have a positive influence and beneficial issue for employment seeking individuals. This result is supported by the mode three for the item „The estimation to be suiTable for a company is more easily” and mode two for all other items. The results in detail are presented in Table 2.

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Table 2

Main statistical indicators of answers for the question „What is the value of videos in job advertisements?"

	I get an improved picture about the company	The estimation to be suiTable for a company is more easily	I can image the required skills more superior	I get an improved impression about the working place
n	319	316	319	319
Mean	2.81	3.17	3.07	2.87
Median	2	3	3	3
Mode	2	3	2	2
Standard deviation	1.426	1.404	1.498	1.420

Evaluation scale 1-6, where 1 – full agreement; 6-full disagreement
Source: author's calculations based on Tom Sander's conducted survey

All items have over 63 % on the first three stages on the evaluation scale. The most consent on the first three stages with 72.4 % has the item „I get an improved impression about the working place". On the second place with 69.9 % is the item „I get an improved picture about the company". The third place with 64.7 % on the first three stages has the item „I can image the required skills more superior". The item „The estimation to be suiTable for a company is more easily" is on the first three stages is 63.7 %. The distribution of the selection provides a clear tendency to „completely correctly" and supports the statement that videos are a beneficial asset for job advertisements. The items „get an improved picture about the company" and „the estimation to be suiTable for a company is more easily" have significant differences between male and female. That is the only demographic factor which has a significant difference in evaluations by male and female respondents. All other demographic factors do not have a significant result or significant correlation coefficient. The results of the t-test are presented in Table 3.

Table 3

Main statistical indicators of t-test for the differencies in answers of men and women

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean difference	Std. Error Dif.
I get an improved picture about the company	Equal variances assumed	0.555	0.457	2.373	270	0.018	0.435	0.183
	Equal variances not assumed			2.335	170	0.021	0.435	0.186
The estimation to be suiTable for a company is more easily	Equal variances assumed	0.371	0.543	2.276	268	0.024	0.417	0.183
	Equal variances not assumed			2.284	179.8	0.024	0.417	0.182

Evaluation scale 1-6, where 1 – full agreement; 6-full disagreement, n=319
Source: author's calculations based on Tom Sander's conducted survey

The differences in evaluations between men and women are visible in the diagrams below. Men have 60 % on the first three steps and women have 74 % on the first three stages for the item „I get an improved picture about the company". That means women have a stronger tendency to „completely correctly". The second item is the „estimation to be suiTable for a company is easier" with 55 % for men on the first three stages and women in 66 % of answers on the first three stages.

Women have for both items the majority on the first three stages. It is important to point out that men and women have different user behaviour and benefits. But all other demographic factors do not have any influence on the benefits of videos in job advertisements with a significant result. The research tested the demographic factors with cross tables, LSD ANOVA and Spearman correlation.

Conclusions, proposals, recommendations

1) Videos are recognized as a valuable source for realistic information about employer and jobs. This support the realistic job preview. The videos improve the return of investment of the job advertisements for companies and potential candidates. The companies get only well informed applicants and prepared employees with a realistic impression about the company. That improves the retention rate and satisfaction of the future employees.
2) The general tendency of the participants is that videos are beneficial with their additional information about jobs and employer. Potential candidates can use this information to decide to apply or not to apply. That is an important advantage for companies to receive suiTable applications and to attract the right candidate. The videos provide a realistic job preview and are an attractive medium for young individuals.
3) The difference between demographic groups exists only for two items for the gender. All other demographic factors do not influence the advantage of videos in job advertisements. That means videos and their content is beneficial for anybody. Independent from the researched demographic factors is the interest in videos in job advertisements. That means the results are valid for all groups without any differences between demographic groups.
4) The importance of information and suiTable channels is researched within this paper. Individuals need information to find a decision and videos can provide information that is needed to find a decision for a job and employer. Thus companies can use this medium to be attractive for potential candidates and motivate candidates to apply for a job.
5) Further research needs to investigate the kind of content which is required to successfully attract applicants to be interested in the employer. The research needs to investigate the influence of videos in job advertisements in detail to decide to apply or not to apply.

Bibliography

1. Acarlar, G., Bilgiç, R. (2013). Factors Influencing Applicant Willingness to Apply for the Advertised Job Opening: the Mediational Role of Credibility, Satisfaction and Attraction. *The International Journal of Human Resource Management*, Volume 24, Issue 1, pp. 50–77.
2. Animoto Online and Social Video Marketing Study (2015). Retrieved: https://animoto.com/blog/business/video-marketing-cheat-sheet-infographic/ Access: 15.11.2018.
3. Backhaus, K., Backhaus, K., Tikoo, S. (2014). Conceptualizing and researching employer branding. *Career Development International*, Volume 9, Issue 5, pp. 501–517.
4. Baum, M., Kabst, R. (2014). The Effectiveness of Recruitment Advertisements and Recruitment Websites: Indirect and Interactive Effects on Applicant Attraction. *Human Resource Management*, Volume 53, Issue 3, pp. 353–378.
5. Breaugh, J.A. (2008). Employee recruitment: Current knowledge and important areas for future research. *Human Resource Management Review*, Volume 18, Issue 3, pp. 103–118.
6. Cober, B.R.T., Brown, D.J., Blumental, A.J., Levy, P.E. (2000). The Guest for the Qualified Job Surfer: it's Time the Public Sector Catches the Wave. *Public Personnel Management*, Volume 29, Issue 4, pp. 479–496.
7. Colliander, J., Dahlen, M. (2011). Following the Fashionable Friend: The Power of Social Media - Weighing the Publicity Effectiveness of Blogs Versus Online Magazines. *Journal of Advertising Research*, Volume 51, Issue 1, pp. 313 - 320.
8. Digital Content Newfronts: Video Ad Spend Study (2017). *Interactive Advertising Bureau*, Retrieved: https://www.iab.com/wp-content/uploads/2017/05/2017-IAB-NewFronts-Video-Ad-Spend-Report.pdf Access: 15.11.2018.
9. Evans, J.R., Mathur, A. (2005). The value of online surveys. *Internet Research*, Volume 15, Issue 2, pp. 195–219.

10. Fishman E. (2016) How Long Your Video Should be. *Wistia.* Retrieved: https://wistia.com/blog/optimal-video-length Access: 12.10.2018.
11. Geffen, C. Van. (2010). The Meaning of Employer Branding. In *12th Twente Student Conference on IT*.
12. Global Video Index (2017). Retrieved: www.ooyala.com Access: 12.12.2018.
13. Gregory, C.K., Meade, A.W., Thompson, L.F. (2013). Understanding Internet Recruitment via Signalling Theory and the Elaboration Likelihood Model. *Computers in Human Behavior*, Volume 29, Issue 5, pp. 1949–1959.
14. Howardson, G.N., Behrend, T.S. (2014). Using the internet to recruit employees: Comparing the Effects of Usability Expectations and Objective Technological Characteristics on Internet Recruitment Outcomes. *Computers in Human Behavior*, Volume 31*,* Issue 1, pp. 334–342.
15. How Long Your Video Should Be (2016). *Wistia.* https://wistia.com/blog/optimal-video-length Access: 10.10.2018.
16. Hussain, D., Lasage, H. (2014). Online Video Advertisement Avoidance: Can Interactivity Help? *Journal of Applied Business Research*, Volume 30, Issue 1, pp. 43–49.
17. Khatri, C., Chapman, S.J., Glasbey, J., Kelly, M., Nepogodiev, D., Bhangu, A., Fitzgerald, J.E. (2015). Social Media and Internet Driven Study Recruitment: Evaluating a New Model for Promoting Collaborator Engagement and Participation. *PLoS ONE*, Volume 10, Issue 3, pp. 1–11.
18. Li, C., Bernoff, J. (2011). *Groundswell, Winning in a World Transformed by Social Technologies*. Boston: Harvard Business Review Press.
19. Lee, J., Lee, M. (2011). Factors Influencing the Intention to Watch Online Video Advertising. *Cyberpsychology, Behavior, and Social Networking*, Volume 14, Issue 10, pp. 619-624.
20. Marjanovic, O., Rothenhoefer, M. (2014). Improving Knowledge-Intensive Business Processes through Social Media. In *Twentieth Americas Conference on Information Systems* (pp. 1–11).
21. Measure of Video Ad Spending (2017). Retrieved: https://www.emarketer.com/Article/Measure-of-Video-Ad-Spending-Shows-Sharp-Increase/1015793 Access: 23.10.2018.
22. Pentland. (2014). *Social Physics*. New York, New York, USA: Penguin Books.
23. Ragunathan, T., Battula, S. K., Jorika, V., Mounika, C., Sruthi, A.U., Vani, M.D. (2015). Advertisement Posting Based on Consumer Behavior. *Procedia Computer Science*, Volume 50, pp. 329–334.
24. Relling, M., Schnittka, O., Sattler, H., Johnen, M. (2016). Each Can Help or Hurt : Negative and Positive Word of Mouth in Social Network Brand Communities. *International Journal of Research in Marketing*, Volume 33, Issue 1, pp. 42–58.
25. Sander, T. (2013). New Circumstances for the Labor Market under the Consideration of Social Media. *Communications of Global Information Technology*, Volume 5, pp. 41–52.
26. Sander, T., Teh, P.L., Sloka, B. (2017). Your Social Network Profile Reveals You. *International Journal of Web Information Systems*, Volume 13, Issue 1, pp. 14–24.
27. Sivabalan, L., Yazdanifard, R., Ismail, N.H. (2014). How to Transform the Traditional Way of Recruitment into Online System. *International Business Research*, Volume 7, Issue 3, pp. 178–186.
28. Sivertzen, A.-M., Ragnhild, E., Olafsen, N., Olafsen, A. H. (2013). Employer Branding: Employer Attractiveness and the use of Social Media. *Journal of Product & Brand Management*, Volume 22, Issue 7, pp. 473–483.
29. Spence, M. (1973). Job Market Signalling. *The Quarterly Journal of Economics*, Volume 87, Issue 3, pp. 355–374.
30. Stone, D.L., Deadrick, D.L., Lukaszewski, K.M., Johnson, R. (2015). The Influence of Technology on the Future of Human Resource Management. *Human Resource Management Review*, Volume 25, Issue 2, pp. 216–231.
31. U.S. Desktop Online Video Rankings (2015-2016). Retrieved: www.comscore.com Access: 27.11.2018.
32. Walker, H.J., Feild, H.S., Giles, W.F., Bernerth, J.B. (2008). The Interactive Effects of Job Advertisement Characteristics and Applicant Experience on Reactions to Recruitment Messages. *Journal of Occupational and Organizational Psychology*, Volume 81, Issue 4, pp. 619–638.
33. Wright, K. B. (2005). Research in Internet-Based Populations: Advantages and Disadvantages of Online Survey Research, Online Questionnaire Authoring Software Packages, and Web Survey Services. *Journal of Computer-Mediated Communication*, Volume 10, Issue 3, pp. 1–15.

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ANALYSIS OF AFFORDABILITY OF MEAT, CHICKEN, FISH OR VEGETARIAN EQUIVALENT EVERY SECOND DAY IN HOUSEHOLDS IN LATVIA

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Abstract. In recent years, there are growing research and policy discussions on assessment and analysis of poverty and measurement of material conditions. Researchers and policy makers develop different set of indicators that describes material deprivation. Material deprivation that is usually defined as the extent of functioning failures in the dimension of material well-being is based on set of different items that refer to affordability of basic needs. Affordability of meat, chicken, fish or vegetarian equivalent every second day is one of main indicators that characterizes meeting the basic needs of the households.

In case of Latvia, macroeconomic indicators show that through recent years country is going on economic recovery path, however there are discussions on growing income inequality and poverty in regions.

Taking into account before mentioned, the aim of the paper is to analyse the material deprivation and food poverty by assessing the affordability of meat, chicken, fish or vegetarian equivalent every second day in households in Latvia.

The tasks are formulated as follows:

1) To review theoretical background on measuring the material deprivation and food poverty in households;

2) To assess empirical research on measuring the material deprivation and food poverty in households;

3) To analyse statistical data on households' affordability in Latvia.

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

Main results and conclusions of the paper: there is wide range of indicators and indexes that measure food poverty and material deprivation. Based on these measures policy makers develop framework for social inclusion and inclusive society. In case of Latvia, analysis of affordability of on measuring the material deprivation and food poverty in households showed that there is positive trend over the years in regards to the share of people that cannot afford to meet their basic needs. However, the situation is rather critical in some regions of Latvia.

Key words: inclusive society, food poverty, material deprivation.
JEL code: I31, I32.

Introduction

Poverty is a complex issue, and a variety of approaches are required for its measurement and analysis. While monetary measures of income poverty are widespread, a long-standing tradition relies on non-monetary measures, based on either the respondent's self-assessment of their own conditions or on measures of ownership of consumer goods and living standards. Measures of material deprivation fall into this latter category. These measures rest on shared judgments about which items are more important to provide a "decent" living standard, irrespective of people's preferences and of their capacity to afford these items. Material deprivation is typically the outcome of income poverty when this persists over time, or when individuals experience repeated spells of it. Because of this, measures of material deprivation add important information to that provided by conventional income measures, permitting an assessment of poverty from a longer-run perspective and furthering understanding of the causal mechanisms at work (Boarini and d'Ercole, 2006).

Food poverty is one way how to research poverty and deprivation. Food poverty has emerged as a social policy concern in many countries in the last decade (Purdy et al., 2006; Carney and Maitre, 2012).

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In case of Latvia, there are discussions on growing income inequality and poverty in regions despite the positive trends of macroeconomic indicators. Thereby, the assessment of material deprivation and food poverty is needed.

The hypothesis of the research: despite that overall share of households in Latvia experiencing severe material deprivation decreases, it is significant in some regions in Latvia.

The aim of the paper is to analyse the material deprivation and food poverty by assessing the affordability of meat, chicken, fish or vegetarian equivalent every second day in households in Latvia.

The tasks are formulated as follows:

1) To review theoretical background on measuring the material deprivation and food poverty in households;
2) To assess empirical research on measuring the material deprivation and food poverty in households;
3) To analyse statistical data on households' affordability in Latvia.

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

Novelty and topicality of the research: measurement of material deprivation and food poverty is topical issue in context of policy making for overall poverty reduction. Affordability of meat, chicken, fish or vegetarian equivalent every second day is one of fundamental indicators to assess material deprivation. In case of Latvia, it is important to analyse material deprivation in context of demographic and socio-economic profile of households in order to provide policy recommendations.

Problematic questions of the conducted research:

1) According to the latest research developments, what is the best practice to measure material deprivation and food poverty?
2) What is the demographic and socio-economic profile of poor households in Latvia?
3) What is the situation in regions of Latvia in context of material deprivation and food poverty?

During the research, following **information sources** were used: scientific literature, published empirical studies, statistical data.

Delimitations of research subjects: taking into account that there are different measures on the material deprivation and food poverty, main focus will be on indicator „Affordability of meat, chicken, fish or vegetarian equivalent every second day in households" in Latvia.

Theoretical discussion

Food poverty is defined as the inability to have an adequate and nutritious diet due to issues of affordability or accessibility (Dowler, 1998). Several researchers (Friel and Conlon, 2004; Hjelm et al., 2016) for measuring poverty for food security analysis are using consumption - versus asset-based approaches expand this definition to include the social and cultural participatory aspect of food poverty. According to the latest research (Carney and Maitre, 2012), aspects of poverty effects of food price escalation and mitigation options (Solaymani et al., 2017), the elements of food poverty definition encompass affordability, access and social participation.

There are different approaches how to research food poverty. The Vincentian Partnership for Social Justice (VPSJ) (Collins et al., 2012) found, in its 2012 study on a minimum income standard, that the weekly cost of food is the most expensive area of expenditure for most of the nine household types examined. It was particularly expensive for households with children, and pensioners, and for lone parent households, the cost of food was only exceeded by childcare costs. Additionally, in their study on minimum essential budgets for households in rural areas, the VPSJ also found that there

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were considerable differences in the costs of food between urban and rural locations (Mac Mahon et al., 2010). Davis et al. (2012) found that the income of households in the UK who were benefits recipients, and minimum wage earners, did not meet the minimum income standard required by these households. The minimum income standard was based on the costs of food, clothing, housing as well as participating in society in Britain.

Other approaches to researching food poverty have focused on the nutritional consumption of low income and deprived groups, and the relationship of this with health, e.g. Friel and Conlon (2004) found that people in lower social classes (semi-skilled and unskilled) consumed unhealthier food products. Research by Dowler and O'Connor (2012) highlighted the relationship between poverty, food and health inequalities. They discuss the prevalence of cheap unhealthy foods consumed by lower socio-economic groups contributing to poor nutritional outcomes and the failure of anti-poverty policies to include food and nutritional needs.

Researchers have defined different indicators that measure food poverty. E.g. Review of the National Taskforce on Obesity (DOHC, 2009) defined four indicators:

1) Inability to afford a meal with meat or vegetarian equivalent every second day;
2) Inability to afford a roast or vegetarian equivalent once a week;
3) Whether during the last fortnight, there was at least one day (i.e. from getting up to going to bed) when the respondent did not have a substantial meal due to lack of money;
4) Inability to have family or friends for a meal or drink once a month.

Several studies (Bellani, 2013; Bossert et al., 2013, Borsh-Supan et al., 2015) assess deprivation relying on the recognition that deprivation is a multifaceted state that can be properly described by taking into account several aspects of individuals' quality of life, including but not limited to financial outcomes. Borsh-Supan et al. (2015) offer to measure material deprivation covering different aspects of economic circumstances by asking respondents question on affordability to cover costs for meat, fruit, groceries, holiday, unexpected expenses, clothing, shoes, heating, glasses, dentist and doctor. Questions are formulated as follows:

- Can your household afford to regularly buy necessary groceries and household supplies?
- You do not eat meat, fish of chicken more often [than three times per week] because: you cannot afford to eat it more often;
- Could your household afford to pay an unexpected expense without borrowing any money?

Researchers also indicated strong correlation between subjective assessment of material conditions (additional information provided by the households apart from the questions) and the deprivation items (Borsh-Supan et al., 2015), some countries have several approaches in this aspect (Healy, 2019).

Research results and discussion

Since 2014, Eurostat disseminates early results for severe material deprivation rates. According to Eurostat, the severe material deprivation rate represents the proportion of people living in households that cannot afford at least four of the following nine items:

- mortgage or rent payments, utility bills, hire purchase instalments or other loan payments;
- one week's holiday away from home;
- a meal with meat, chicken, fish or vegetarian equivalent every second day;
- unexpected financial expenses;
- a telephone (including mobile telephone);

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- a colour TV;
- a washing machine;
- a car; and
- heating to keep the home adequately warm (Eurostat, 2018).

Since 2013, the rate of severe material deprivation in the EU-28 decreased from 9.6 % to 6.7 %, i.e. by 2.9 percentage points (pp). One of largest decrease in the proportion of persons lacking resources was Latvia (-12.7 pp between 2013 and 2017), reflecting the improving material living conditions in those countries (Eurostat, 2018).

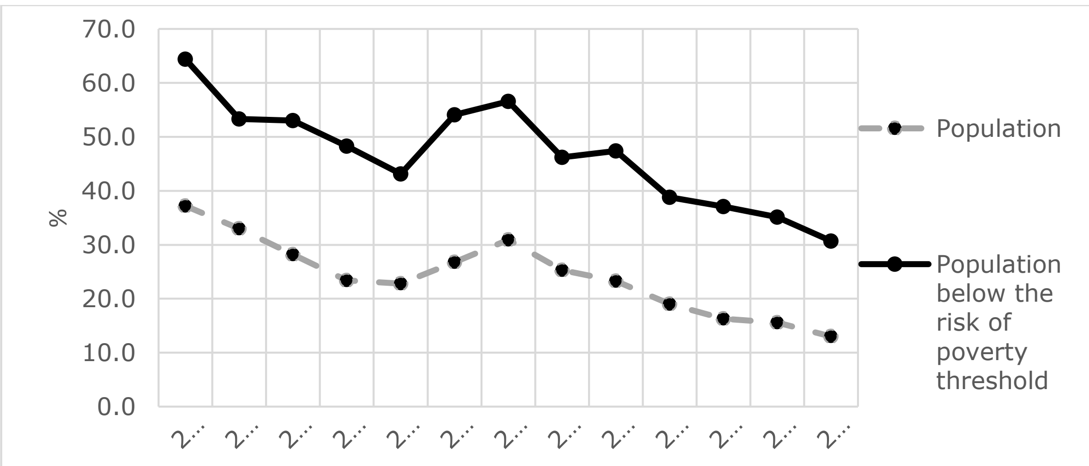
Eurostat analysts concluded that the early data for 2017 show that severe material deprivation rates are determined mainly by changes in the ability to afford:

- unexpected financial expenses;
- a meal with meat, chicken or fish (or vegetarian equivalent) every second day; and
- one week's holiday away from home (Eurostat, 2018).

In case of Latvia, the percentage of people who said they were unable to face unexpected expenses fell, compared with the 2014 data, decreased by 7.5 pp. The early data for 2017 show that the percentage of the population that cannot afford to go on a week's annual holiday slightly increased in Latvia (+0.2 pp). The percentage of people in Latvia who said in 2017 they could not afford a meal with meat, fish, chicken or a vegetarian equivalent every second day decreased year on year (in 2014 – 18 %, in 2017 – 13 %). In comparison, the average level of this indicator in EU is 7.9 %, while in Lithuania it is 16.5 %, Estonia – 5.3 %, Sweden – 1.8 % (Eurostat, 2018).

Further analysis will be on indicator „Affordability of meal with meat, chicken or fish (or vegetarian equivalent) every second day" in Latvia.

Data show that overall tendency on population ability to afford a meal with meat, chicken of fish (or vegetarian) equivalent every second day is increasing (Fig. 1). The economic crises (2009-2011) affected affordability of households – in 2011 30.9 % of all population or 56.6 % of population below the risk of poverty threshold could not afford a meal with meat, chicken or fish (or vegetarian equivalent) every second day.

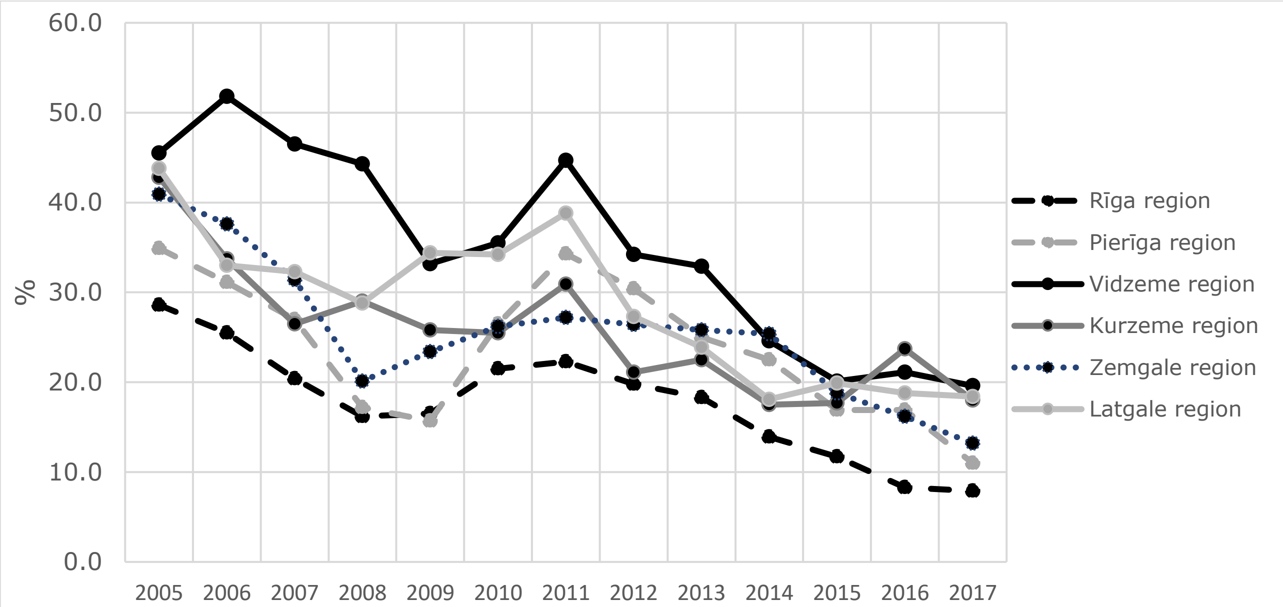


Source: authors' construction based on data in databases of Central Statistical Bureau of Latvia, SILC

Fig. 1. **Population unable to afford a meal with meat, fish, chicken or a vegetarian equivalent every second day, 2005-2017, %**

As it was mentioned before, the discussions over material deprivation in regions is topical. Also, in this case data show negative tendency. In 2017, the lowest share of population unable to afford meat, fish or chicken (or vegetarian equivalent) is in Riga – 7.9 %; in Pieriga region – 11 % and in

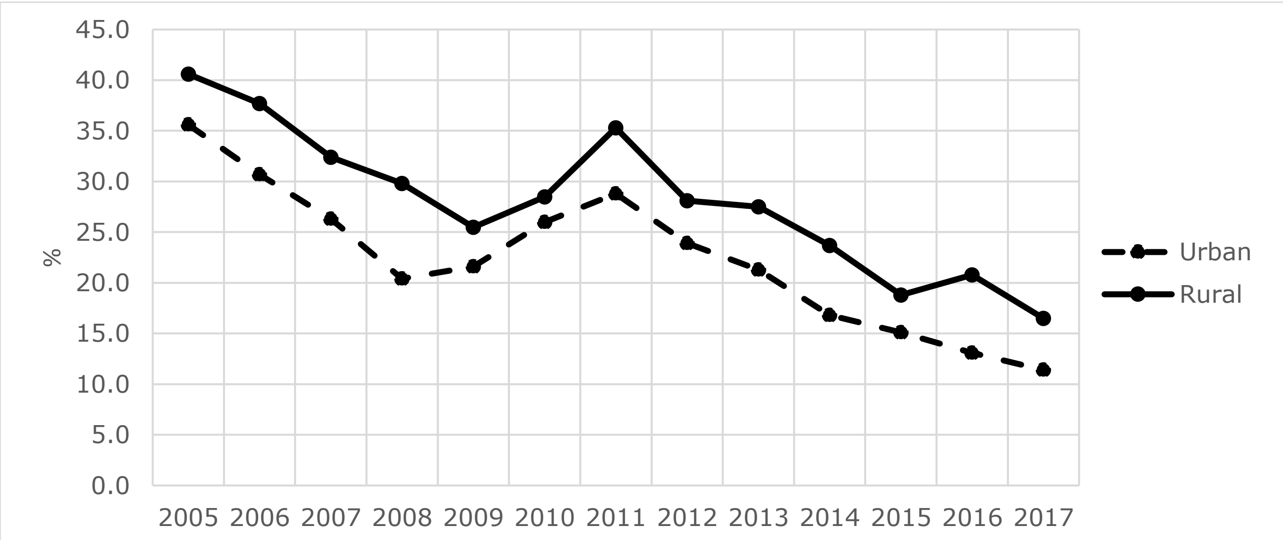
Zemgale region – 13.2 %, while in Vidzeme region it is 19.6 %, alike in Latgale region it is 18.4 % and Kurzeme region – 18 %. Statistics show that there are significant disparities between Riga & Pieriga region and other regions (except Zemgale region).



Source: authors' construction based on data in databases of Central Statistical Bureau of Latvia, SILC

Fig. 2. **Population unable to afford a meal with meat, fish, chicken or a vegetarian equivalent every second day – regional dimension, 2005-2017, %**

In case of disparities in affordability of meal with meat, fish or chicken (or vegetarian equivalent) between urban and rural territories (Fig. 3), they are rather insignificant – in 2017, 11.4 % of urban households admitted difficulties with affordability, while 16.5 % of rural households.



Source: authors' construction based on data in databases of Central Statistical Bureau of Latvia, SILC

Fig. 3. **Population unable to afford a meal with meat, fish, chicken or a vegetarian equivalent every second day – urban and rural dimension, 2005-2017, %**

In addition, the analysis of households' structure was provided in context of affordability of a meal with meat, fish or chicken (or vegetarian equivalent) every second day (Fig. 4). Single person households aged 65+ face with the greatest affordability difficulties – 43.4 % of all households cannot afford proper meal. In the most favourable positions are couples with one child (15.3 %) and couples with two children (16.2 %).

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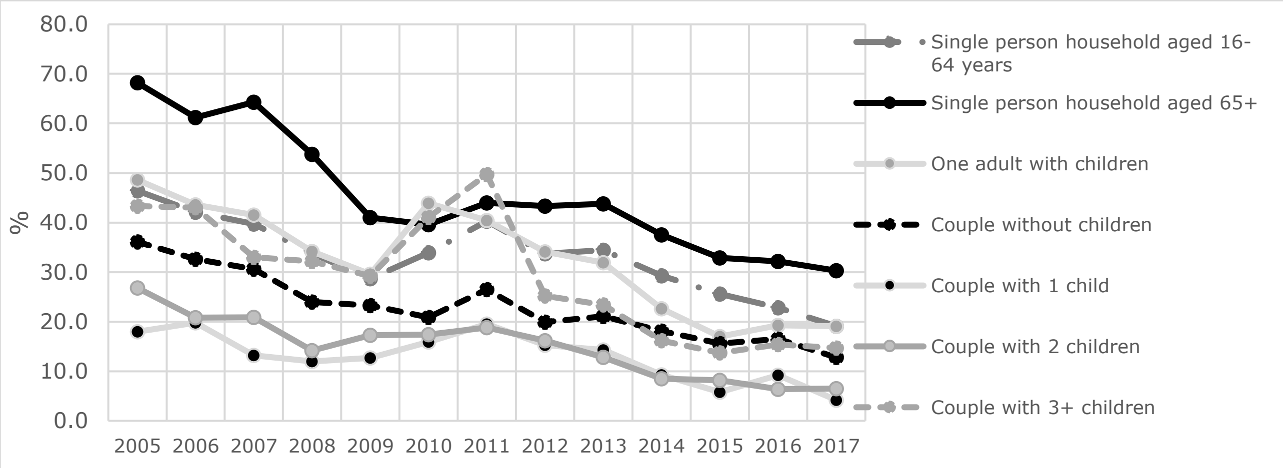
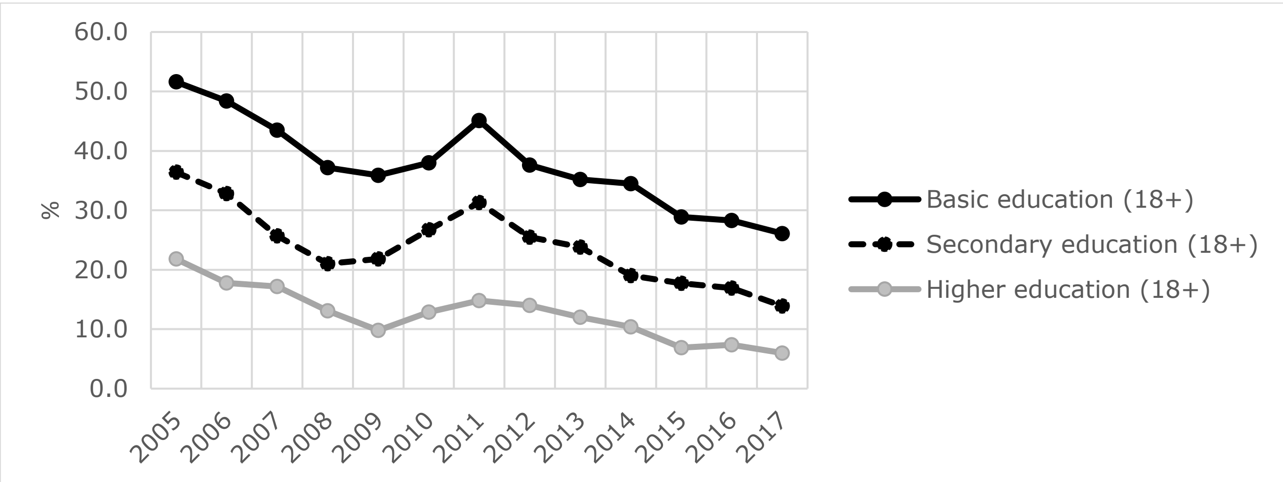


Source: authors' construction based on data in databases of Central Statistical Bureau of Latvia, SILC

Fig. 4. **Population unable to afford a meal with meat, fish, chicken or a vegetarian equivalent every second day – household type, 2005-2017, %**

In context of education level, persons with higher education experiences less difficulties with affordability of proper meal – in 2017, 6 % of persons admitted that they are unable to afford a meal with meat, fish or chicken (or vegetarian equivalent) every second day. While, this indicator for persons with secondary education is 13.9 % and for persons with basic education – 26.1 % (Fig. 5). It proves that education level strongly correlates with the affordability of proper meal.



Source: authors' construction based on data in databases of Central Statistical Bureau of Latvia, SILC

Fig. 5. **Population unable to afford a meal with meat, fish, chicken or a vegetarian equivalent every second day – education level, 2005-2017, %**

The research of material deprivation of households in Latvia by analysing indicator „Affordability of meal with meat, chicken or fish (or vegetarian equivalent) every second day" showed that over last years the overall level of affordability has increased. In addition, the regional perspective showed that there are significant disparities between Riga & Pieriga region and other regions. However, there are No significant differences between urban and rural territories. Data demonstrated that single person households aged 65+ are the most at the risk of the food poverty, while couples with one child or two children are the least at risk. Analysis of educational level proved that education level strongly correlates with the affordability of proper meal.

Conclusions, proposals, recommendations

1) There are different approaches how to measure poverty. One of the research directions focuses on evaluation of material deprivation and food poverty. Indicator „Affordability of meal with meat,

chicken or fish (or vegetarian equivalent) every second day" is one of the fundamental measures how to assess material deprivation and food poverty.

2) In case of Latvia, there is a positive tendency regarding affordability of households a meal with meat, chicken or fish (or vegetarian equivalent) – in 2017, 13 % of population suffer from food poverty (for comparison, in 2011 the share was 30.9 %). However, it is still behind average level of EU (7.9 %).
3) Regarding regional aspect of food poverty, the analysis showed that there are significant differences between Riga & Pieriga region and other regions - the share of households who suffers from food safety is almost two times bigger in Vidzeme, Latgale, Kurzeme than in Riga & Pieriga region.
4) In addition, analysis showed that in urban territories affordability of proper meal is higher than in rural territories, however these changes are rather insignificant.
5) During the research, it was proved that seniors who live alone are at the most risk of food poverty, while couples with one or two children are in the most favourable position regarding material deprivation.
6) Analysis of statistical data demonstrated that more educated people suffer less from the food poverty – education level strongly correlates with the affordability of proper meal.

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Bibliography

1. Bellani, L. (2013). Multidimensional Indices of deprivation: the Introduction of Reference Groups Weights. *Journal of Economic Inequality*, Volume 11, pp. 495-515.
2. Boarini, R., d'Ercole, M. (2006). Measures of Material Deprivation in OECD Countries. OECD Social, Employment and Migration Working Papers, No. 37, OECD Publishing, Paris.
3. Borsh-Supan, A., Kneip, T., Litvin, H., Myck, M., Weber, G. (2015). *Ageing in Europe – Supporting Policies for an Inclusive Society*. Walter de Gruyter GmbH, Berlin/Boston, 392 p.
4. Bossert, W., Chakravarty, S., D'Ambrosio, C. (2013). Multidimenional Poverty and Material Deprivation with Discrete Data. *Review of Income and Wealth*, Volume 59, Issue 1, pp. 29-43.
5. Carney, C., Maître, B. (2012). *Constructing a food poverty indicator for Ireland using the survey on income and living conditions*. Social Inclusion Technical Paper No. 3, Dublin: Department of Social Protection. Retrieved: https://www.lenus.ie/bitstream/handle/10147/251573/xFoodPovertyPaper.pdf?sequence=1&isAllowed=y. Access: 14.02.2019.
6. Collins, M. L., Mac Mahon, D.C. B.,Weld, G., Thornton, R. (2012). *A Minimum Income Standard for Ireland, a consensual budget standards study examining households types across the lifecycle*. Dublin: The Policy Institute TCD Retrieved: https://www.tcd.ie/Communications/content/pdf/PolicyInstituteBP27Feb2012.pdf. Access: 03.02.2019.
7. Davies, A., Hirsch, D., Smith, N., Beckhelling, J., Padley, M. (2012). *A Minimum Income Standard for the UK in 2012, Keeping up in Hard Times*. York: Joseph Rowntree Foundation. Retrieved: http://www.jrf.org.uk/sites/files/jrf/minimum-income-standards-2012-full.pdf. Access: 01.02.2019.
8. Department of Health and Children (2009). *Report of the Inter-sectoral Group on the Implementation of the Recommendations of the National Taskforce on Obesity*. Dublin: Department of Health and Children. Retrieved: http://www.lenus.ie/hse/bitstream/10147/73033/1/report_group_ntfo.pdf. Access: 09.02.2019.
9. Dowler, E. (1998). Food Poverty and Food Policy. *IDS Bulletin,* Volume 29, Issue 1, pp. 58-65.
10. Dowler, E., O' Connor, D. (2012). Rights-based approaches to addressing food poverty and food insecurity in Ireland and UK, *Social Science and Medicine*, Volume 74, Issue 12, pp. 44-51.
11. Friel, S., Conlon, C. (2004). Food Poverty and Policy. Dublin: Combat Poverty Agency. Retrieved: http://www.combatpoverty.ie/publications/FoodPovertyAndPolicy_2004.pdf. Access: 09.02.2019.
12. Healy, A.E. (2019). Measuring Food Poverty in Ireland: The Importance of Including Exclusion. *Irish Journal of Sociology*, pp. 1-24.
13. Hjelm, L., Mathiassen, A., Wadhwa, A. (2016). Measuring Poverty for Food Security Analysis: Consumption-Versus Asset-Based Approaches. *Food and Nutrition Bulletin*, Volume 37, Issue 3, pp.275-289.
14. MacMahon D.C., B., Weld, G.,d Thornton, R. (2010). Minimum Essential Budgets for Households in Rural Areas Six Household Types in Rural Areas, Dublin: Vincentian Partnership for Social Justice. Retrieved: http://www.budgeting.ie/images/stories/Publications/Minimum_Essential_Budgets_for_Households_in_Rural_Areas.pdf. Access: 03.02.2019.

15. *Material Deprivation Statistics – Early Results* (2018). Eurostat. Retrieved: https://ec.europa.eu/eurostat/statistics-explained/index.php/Material_deprivation_statistics_-_early_results. Access: 13.02.2019.
16. Purdy J., McFarlane G., Harvey H., Rugkasa J., Willis K. (2006). *Food Poverty Fact or Fiction?* Belfast: Public Health Alliance.
17. Solaymani, S., Yusma, N., Yusoff.M. (2017). Poverty Effects of Food Price Escalation and Mitigation Options: The Case of Malaysia. *Journal of Asian and African Studies*, Volume 53, Issue 5, pp. 685-702.

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SELECTED ISSUES ON DIETARY SUPPLEMENTS: THEORY AND PRACTICE

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Abstract. Dietary supplements, that is agents used to supplement the regular diet, have recently become very popular among people. Nowadays, they are used as substitutes of valuable components of the well-balanced diet rather than just its supplements. Compared to previous years, the statistical data indicate an upward trend in the consumption of such products. At the same time, more and more dietary supplements are being sold via means of remote communication (the Internet). The changes in legal regulations regarding this area deserve to be discussed.

Key words: dietary supplements, health safety, diet.
JEL code: K49.

Introduction

Rationale for the choice of topic: dietary supplements have been extremely popular in the society recently. They are more and more often used as substitutes of valuable components of the well-balanced diet rather than just its supplements. Compared to previous years, the statistical data indicate an upward trend in the consumption of such products. At the same time, more and more dietary supplements are being sold via the Internet. Therefore, their increased consumption and the changes in legal regulations constitute grounds for a discussion.

Aim: to present selected aspects related to dietary supplements in the EU and national law. The study confines to the concept of dietary supplements and their labelling rules. The practical aspect concerns their use.

Methods: Two research methods have been applied in the article: the dogmatic and legal, and the empirical (a diagnostic survey); technique used: survey; tool used: questionnaire.

Conclusions: Evaluation of the existing regulations and the results of the questionnaires. The paper ends with de lege ferenda suggestions.

Definition of dietary supplement

The term "dietary supplement" is undoubtedly specialist. Its definition can be found in the law. Dietary supplements are foodstuffs and must comply with the definition of food stipulated in the Regulation (EC) No 178/2002, according to which "food" (or "foodstuff") means any substance or product, whether processed, partially processed or unprocessed, intended to be, or reasonably expected to be ingested by humans." The definition provided for in the Act on food and nutrition safety defines dietary supplement as "a foodstuff whose aim is to supplement the normal diet, and which is a concentrated source of vitamins or minerals, or other substances with nutritional or other physiological effects, single or complex, distributed in a dosage form (...), except the products that have the properties of medicinal products within the meaning of pharmaceutical law."

In light of the quoted regulations, dietary supplements are undoubtedly considered food. Similrly to other products in this category (for example bread, dairy products or vegetables), they contain certain nutrients, though present in a more concentrated form. What differentiates dietary supplements from other food products are their relatively diverse forms, for instance: capsules, pills, tablets, lozenges, powder sachets, liquid ampoules, dropper bottles and other similar forms of liquids or powders intended to be taken in small measured quantities.

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In order to correctly understand the definition itself, it is necessary to determine the purpose of use. Dietary supplements are administered to supplement the normal diet or its possible deficiencies. Unfortunately, attempts are currently being made to expand the dietary supplements market by suggesting that their composition, form of administration and purpose make them equivalent or alternative to medicines (Tomaszewska M., 2014).

It should be emphasized that medicinal products and prescription and non-prescription medicines are the products whose curative or prophylactic effect has been confirmed by tests and proven in the registration procedure.

When it comes to dietary supplements, they may have a certain physiological effect on the body, but they do not cure or prevent diseases. It is assumed that they supplement one's normal diet with vitamins, minerals or other substances that have a nutritional or other physiological effect in order to:

- maintain,
- sustain,
- facilitate,
- optimize

physiological effects.

As regards the EU and national legislation, No documentation confirming the quality and declared effects is required, which should be criticized.

Labelling

Labels are at the moment the most important and direct way of providing consumers with food information. The information on labels should be legible and, above all, simple and clear to the ordinary/typical consumer. In practice, consumers happen to find it difficult to read labels due to their small size and a large number of information required by the law. The legal basics of labelling have been stipulated in the Directive 2000/13/EC. Its numerous amendments by other acts, e.g. Directive 2003/89/EC, Regulation (EC) No. 1924/2006, or Commission Directive 2007/68/EC, testify to the necessity of adjusting such regulations to the changing reality of the dietary supplements market.

The relatively large diversity of dietary supplements undoubtedly requires an individual approach to creating their labels, both in terms of form and type of information. The knowledge of how to use dietary supplements is of fundamental importance to the consumer and to the producer. The widespread consumption of dietary supplements poses a significant problem nowadays, which is not conforming to the information on the label (Dudzik J., 2016).

The European regulations binding in the Republic of Poland, and their executory provisions, thoroughly stipulate the labelling requirements. Proper labelling can be problematic when the manufacturer wants to emphasize what distinguishes their product from others. The unit packaging of a dietary supplement is to contain the following data [RIV, i.e. the Reference Intake Value laid down in Regulation No. 1169/2011].

1) Name and identification data of the producer or distributor (based on the Community territory);

it is to enable consumers to recognize the dietary supplement and to help them distinguish it from others which the product is similar to. In order to distinguish the supplement from others, descriptive information should be placed near its name. Its market name must not mislead potential consumers, for example about its origin or other essential features such as quality, ingredients, manner of

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manufacture, or nutritional value. Information such as the name, address and, if appropriate, code of the producer, packer or vendor (based in the Community) is intended to ensure proper identification of the supplement's producer or the company placing it on the market, and the country of origin.

2) List of ingredients [Article 6 Paragraph 2 of the Directive 2000/13/EC] and quantities of certain ingredients or categories of ingredients [Article 7 of the Directive 2000/13/EC];

pursuant to Article 6 Paragraph 4a) of the Directive 2000/13/EC, "Ingredient" is any substance, including additives, used in the manufacture or preparation of a foodstuff and still present in the finished product, even if in altered form. The principle has been adopted in the EU regulations that the mandatory element of a label is a list of ingredients and quantities of some ingredients or categories of ingredients. They are given in the descending order of weight, according to the quantity used during production. The list should be preceded by the word "ingredients". Concentrated ingredients are given in their original quantity, while the additions of water or unsTable products are listed in the order of their weight in the finished product.

As regards the ingredients belonging to one of the categories contained in Annex I to the Directive 2000/13/EC, i.e. starch, oil, or milk proteins, they may be identified on the label by the names of those categories but with additional information if required by the legislator. For example, the use of the category "starch" must be complemented by its origin if that ingredient could contain gluten.

3) Net quantity or net weight and number of pieces in the case of pre-packaged dietary supplements;

pursuant to Article 8 Paragraph 1 of the Directive 2000/13/EC, the net quantity of pre-packaged dietary supplement should be expressed in:

- units of volume in the case of liquids,
- mass units,

using the litre, centilitre, millilitre, kilogram or gram, as appropriate.

Community or national provisions applicable to certain specified foodstuffs may derogate from this rule.

If a given ingredient of a dietary supplement can perform various functions, the label should inform about the function that is relevant in a given case. Quantity of an ingredient is declared if this ingredient or a category of ingredients is a part of the product's name, or it is pointed to on the label in a verbal, pictorial or graphic way, or constitutes a distinctive element (Judgment of CJEU, C-446/08). The indicated quantity of the main ingredient, expressed as a percentage, corresponds to its quantity at the time of its use. Community provisions allow, under certain conditions, for derogations from this principle [Article 7 of the Directive 2000/13/EC].

Dietary supplement labels must contain information on food ingredients classified as potential allergens. The provisions ordering information about allergens to be placed on the labels entered into force in the Member States on 25 November 2005 [Directive 2003/89/EC].

4) Health claim;

e.g. 02 - "Biotin helps to maintain normal psychological functions"; 05 - "Melatonin helps to reduce the time needed to fall asleep" [http://ec.europa.eu/food/safety/labelling_nutrition/claims/register/resources/docs/claims_pending.pdf, accessed: 20/12/2018]. Health claim is any statement, suggestion or implication that there is a relationship between health and a food category, particular food or one of its ingredients (e.g. Skrzydlo-Tefelska E., 2016). They are evaluated by the European Food Safety Authority (EFSA). If a positive opinion is obtained, the approval is made by the European Commission. The Commission

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decides whether to enter or refuse to enter a given claim in the EU register of approved health claims [Regulation (EC) No. 1924/2006].

5) Minimum durability;

pursuant to Article 9 of the Directive 2000/13/EC the date of minimum durability of a foodstuff is the date until which the foodstuff retains its specific properties when properly stored. In practice, the date is preceded by the words:

- "Best before …", when the date indicates the day,
- "Best before end...", in other cases.

As regards the above notation, it can be referred to:

- the date itself,
- the place where the date is given on the labelling.

The "expiry date" or the date of "minimum durability" should be recorded in the following order: day, month, year. Bearing in mind the varying levels of the potential consumers' awareness, the date cannot be coded. The manner of indicating the date depends on the durability of a dietary supplement. If its durability does not exceed 3 months, only the day and the month can be provided. When the durability is from 3 to 18 months, only the month and the year can be indicated. For the product durability exceeding 18 months, it is only necessary to give the year.

One example of the derogation from the above rule is Article 9 Paragraph 5 of the Directive 2000/13/EC. This provision allows other types of date indication if Community regulations so provide.

6) Storage and use;

It is mandatory to place information about storage conditions on the label of a dietary supplement with definite durability The producer should explain how to handle the supplement:

- whether to store it below or above a certain temperature,
- whether to keep it in a refrigerator after opening,
- whether to keep it away from light.

The information on how to prepare or use a supplement is placed on its label in order to avoid inappropriate application.

As regards the Polish law, this matter has been regulated in the Regulation of the Minister of Health of 9 October 2007 on the composition and labelling of dietary supplements [Journal of Laws of 2018, item 1951].

Taking into account the high degree of public interest in dietary supplements, the lack of legal requirements concerning the content of the leaflet should be assessed critically. In practice, the packaging of these products often do not contain leaflets. If they do, however, the leaflets usually contain information about indications and dosage, warnings that the product should not be used during pregnancy and breastfeeding, and information about other commercially available supplements.

Research

The research concerned the opinion of the residents of Opole[1] (a provincial/voivodeship city in the south of Poland) on the subject of dietary supplements. The survey was conducted in October and November 2018 on a group of 1,000 anonymous people over the age of 18. The aim of the survey was to determine why dietary supplements are used, as well as to find out what opinion residents hold about such products.

1 According to GUS (Central Statistical Office) data as of 31 December 2017, the city had 128,140 inhabitants.

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The questionnaire particulars included:

1. age:

- 18 - 30 years old - 452 respondents (45.2 %);
- 31 - 50 years old - 481 respondents (48.1 %);
- above 50 years old - 67 (6.7 %);

2. sex:

- women - 500 respondents (50 %);
- men - 500 (50 %);

3. employment:

- studying - 212 respondents (21.2 %);
- white-collar worker - 143 respondents (14.3 %);
- manual worker - 187 (18.7 %);
- not working - 356 (35.6 %);
- pensioner/retiree - 102 (10.2 %).

All the respondents indicated the administrative boundaries of the city of Opole as their place of residence.

The survey consisted of 10 closed and semi-open questions.

The first question was: "Do you take diet supplements?"

882 respondents (88.2 %) replied "yes". 118 respondents (11.8 %) replied "no".

According to the answers received, the vast majority of respondents use such products.

The second question was: "Why do you use dietary supplements?"

This question was semi-open, thus respondents had a choice:

a) to strengthen the organism;

b) to prevent infection;

c) to feel better;

d) to look better;

e) ……………………………… .

The obtained results allow to conclude that the respondents primarily want to strengthen their body (383 respondents, 38.3 %) and overcome the lack of energy. 279 people (27.9 %) want to protect themselves against infection. Other important factors affecting the decision to take a dietary supplement are:

- appearance improvement - 109 (10.9 %);
- well-being improvement - 89 (8.9 %).

In the semi-open question some of the respondents also pointed to:

- TV advertising - 78 respondents (7.8 %);
- fashion - 62 people (6.2 %).

Third question: "How often do you use dietary supplements?”

The respondents could choose from the following answers:

a) Regularly - every day or several times a week;

b) From time to time - several times a month;

c) Occasionally - seasonally.

As can be seen from the answers received, the use of supplements by the inhabitants of Opole varies. A relatively large number of respondents (44.8 %) use them from time to time, but on the other hand, 421 residents (42.1 %) take them regularly. The smallest number of respondents use

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them sporadically - 131 (13.1 %). The answers obtained from the respondents lead the following conclusion: a significant number of them abuse supplements. This may be explained twofold. The residents either eat meals poor in nutrients and vitamins, or they have low awareness of the effects of the excessive use of dietary supplements and their dangerous combinations.

The fourth question: "Do you use dietary supplements as an alternative to medicines?" Respondents had two choices:

a) Yes;

b) No;

Unfortunately, the obtained results are very worrying, for as many as 735 respondents (73.5 %) admitted treating supplements as substitutes for medicines. This shows a dangerous tendency towards giving up medicines in favour of foodstuffs, that dietary supplements actually are. This dangerous phenomenon is gaining in importance and results from two main reasons:

- the respondents lack the knowledge necessary to distinguish between medicines and dietary supplements;
- the advertisements and commercials are trying to put the equal sign between medicines and dietary supplements.

The fifth question: "Do you use one dietary supplement or several at the same time?"

The respondents had two choices:

a) One type;

b) Two Types;

c) Several types.

Similarly, as before, the results obtained should be assessed negatively, because:

- 452 respondents use two types of dietary supplements (45.2 %);
- 387 respondents use one type (38.7 %);
- 161 respondents take several types of supplements (16.1 %).

The sixth question: "Where do you purchase dietary supplements?"

The answers to choose from were as follows:

- traditional pharmacies;
- online pharmacies;
- the Internet;
- general shops.

As far as the place of purchase is concerned, the traditional way of purchasing dietary supplements was declared by 640 respondents (64 %). Only 73 of them (7.3 %) buy such products from online pharmacies. 120 respondents (12 %) declared buying supplements from general shops. Unfortunately, as the results of the survey indicate, some people showed No responsibility in choosing where to buy dietary supplements, for 167 respondents (16.7 %) purchase them online without paying attention to who sells them. This is due to the low awareness about the dangers associated with purchasing supplements that have not been legally approved for marketing on the Polish market.

The seventh question: "Where do you look for information about dietary supplements?"

The respondents could choose from one of the following answers:

a) The Internet - google search engine;

b) Websites about health;

c) TV;

d) Paper magazines.

As the respondents indicated, it is the Internet that they search for information about dietary supplements most often. They do so by typing their names or some key words into the search engine. This option was preferred by 724 respondents (72.4 %). The smallest number of the respondents, because only 63 people (6.3 %), pointed to paper magazines as a source of information about supplements. TV as a source of information about these products was chosen relatively often, i.e. by 213 respondents (21.3 %).

The eighth question: "What are you guided by when choosing the type of dietary supplement?"

The respondents chose from the following:

a) Previous experience;

b) Pharmacist's recommendation;

c) Low price;

d) Advertisement;

e) Brand.

When making a decision which supplement to buy, the surveyed residents are guided by numerous factors, but it is their own experience that turned out to be the most important for 380 of them (38 %). The second most important factor was pharmacist's recommendation, indicated by 297 respondents (29.7 %). Low price was important for 159 respondents (15.9 %). The influence of advertising was indicated by a similar number of respondents, that is 144 (14.4 %).

Only 20 respondents (2 %) admitted taking the brand into account when choosing a dietary supplement.

The ninth question: „Did the use of dietary supplements bring the expected results?"

The above question is of crucial importance for the conducted research. Are Poles satisfied with the dietary supplements they use? The survey showed that yes, but the level of satisfaction is not very high. According to 556 respondents (55.6 %), the supplements they had used produced an effect, though they had expected it would be higher. At the same time, 383 respondents (38.3 %) had No objections to the effect of the purchased supplements. Only 61 people (6.1 %) did not notice any improvement during the use of such products.

The tenth question: "What do you think dietary supplements are?"

The respondents had two choices:

a) equivalents of medicines,

b) food,

c) agents that supplement one's diet (vitamins).

According to the EU and the national legislators, dietary supplements are not medicines, but supplements to the diet, composed of nutrients. As the survey has shown, 460 consumers (46 %) are aware of this. Only 20 % of the respondents identified such products as medicaments. What is more, 59 % of the study participants believe that the effect of dietary supplements must be confirmed by scientific research.

Conclusions

It must be emphasized that, despite the size of supply and consumption, there is practically No supervision over the dietary supplements market from Sanitary Inspection bodies. In the legal situation as of today, everyone can introduce a supplement into the market by only declaring its

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composition to sanitary bodies by means of the so-called notification. The Polish market is particularly vulnerable to unfair market practices that infringe upon the collective interests of consumers.

De lege ferenda suggestions:

1. it is necessary to regulate the dietary supplements industry,
2. advertising of supplements should be restricted, for example by banning the broadcast of advertisements that violate the law,
3. the industry's self-regulation should be the core of the legal changes,
4. in order to ensure the safety of the citizens, the requirements regarding dietary supplements should be equalized with the requirements regarding medicines,
5. supplements should have a clearly separate place in pharmacies, provided that they are considered special foods,
6. a special authority called "food police" should be established.

References

1. Dudzik, J. (2016). *Oznakowanie i reklama zywnosci w prawie Unii Europejskiej - wybrane zagadnienia zwiazane z wejsciem w zycie rozporzadzenia nr 1169/2011 (Labelling and advertising of food in the European Union law - selected issues related to the entry into force of the Regulation No. 1169/2011).* Europejski Przeglad Sadowy. No. (2), pp. 10-15.
2. Tomaszewska, M. (2014). *Suplement diety a lek (Dietary supplement vs medicine).* Przeglad Prawniczy Uniwersytetu Warszawskiego. No. (2), pp.92-103.
3. Skrzydlo-Tefelska, E. (2016). *Oswiadczenia zywieniowe i zdrowotne w prawie Unii Europejskiej a znaki towarowe (Nutrition and health claims in the European Union law and trademarks)* Europejski Przeglad Sadowy. No. (2), pp. 4-9.
4. Judgment of the Court of Justice of the European Union of 29 April 2010, C-446/08, Approximation of the laws of the Member States relating to food supplements (Solgar et al.). Legalis.

Legal acts

1. Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety (OJ 2002 L 31, p. Journal of Law WE L 31, p. 1).
2. The Act on Food Safety and Nutrition of 25 August 2006 (Journal of Laws Laws of 2018, item 1541).
3. Directive 2000/13/EC of the European Parliament and of the Council of 20 March 2000 on the approximation of the laws of the Member States relating to the labelling, presentation and advertising of foodstuffs (OJ L 109, 6.5.2000, p. 29).
4. Directive 2003/89 / EC of the European Parliament and of the Council of 10 November 2003 amending Directive 2000/13 / EC as regards the determination of ingredients present in foodstuffs, (OJ L 308, 25.11.2003 pp. 0015 - 0018).
5. Regulation (EC) No 1924/2006 of the European Parliament and of the Council of 20 December 2006 on nutrition and health claims made on foods (OJ L 404/9, 30.12.2006).
6. Commission Directive 2007/68/EC of 27 November 2007 amending Annex IIIa to Directive 2000/13/EC of the European Parliament and of the Council as regards certain food ingredients (OJ L 310/11 , 28.11.2007).
7. Regulation (EU) No 1169/2011 of the European Parliament and of the Council of 25 October 2011 on the provision of food information to consumers, amending Regulations (EC) No 1924/2006 and (EC) No 1925/2006 of the European Parliament and of the Council, and repealing Commission Directive 87/250/EEC, Council Directive 90/496/EEC, Commission Directive 1999/10/EC, Directive 2000/13/EC of the European Parliament and of the Council, Commission Directives 2002/67/EC and 2008/5/EC and Commission Regulation (EC) No 608/2004 (OJ L 304/18, 22.11.2011).
8. Directive 2003/89/EC of the European Parliament and of the Council of 10 November 2003 amending Directive 2000/13/EC as regards indication of the ingredients present in foodstuffs (OJ L 308, 25.11.2003 pp. 0015 - 0018).
9. Regulation (EC) No 1924/2006 of the European Parliament and of the Council of 20 December 2006 on nutrition and health claims made on foods (OJ L 404/9 of 30.12.2006).
10. Regulation of the Minister of Health regarding the composition and labelling of dietary supplements of 9 October 2007 (i.e. Journal of Laws of 2018, item 1951).

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BUYING INTO 'GREEN' IDENTITY: REPRESENTATION OF SUSTAINABLE CONSUMPTION IN LATVIAN LIFESTYLE MAGAZINES (2013 – 2018)

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Abstract. There is a growing consensus that, altering consumption patterns is one of society's greatest challenges in the quest for sustainable development. Green consumption must be understood in terms of a process that has led to individuals feeling both responsible for and empowered in dealing with risks to both themselves and to the wider environment. Media representations can be considered to be a lifestyle and identity instruction for the consumer. Thus it is important to study what kind of representations there are in media in regards to green consumption. In order to do so, the most popular lifestyle magazine in Latvia *Ieva* was analysed in time period from 2013 till 2018. Results of analysis show that there are very few publications in magazine which are dedicated to issues of sustainability and green lifestyle. Lot of products are represented as natural but without explanation why and how product is natural. Identity of green consumer represented in magazine is one of consumer whose consumption acts are primarily based on micro motivations and focus on an individual's right to better environmental circumstances.

Key words: sustainability, consumption, consumer, identity, media.
JEL code: Z1.

Introduction

The rise of contemporary environmentalism in Western Europe can be traced to the 1960s and early 1970s, as concern grew about the impact of both consumption and production patterns on the environment (Cohen, 2001). As awareness of the environmental effects of advanced capitalism grows, we witness the progression of 'sustainable' consumption movements. Green consumption is now perceived as an element of environmental reform in many western societies and indeed within supra-national blocs such as the European Union (EU) (Buttel,2003). „Sustainable" here refers to a level and pattern of consumption, which meets the needs of the present without compromising the ability of future generations to meet their own needs (World Commission on Environment Development, 1987).

The notion of *sustainability* and the concept of *sustainable consumption* have recently emerged as in the academic debates that consider the environmental impacts of consumption as well.

Giddens (1991) argues that lifestyle choices, within the settings of local–global interrelations, raise moral issues that cannot simply be pushed to one side. Consumers influence the environmental landscape with their behaviour through purchasing, use practices, and recycling (Ruppert-Stroescu, LeHew, Connell, Armstrong, 2015). Green consumption must be understood in terms of a process that has led to individuals feeling both responsible for and empowered in dealing with risks to both themselves and to the wider environment (Prothero, Connolly, 2008). In this context one can distinguish a certain type of consumer; a green consumer is someone who is very concerned about the environment and therefore, only purchases products that are environmentally friendly or eco-friendly with little or No packaging, products made from natural ingredients and products that are made without causing pollution or detriment to the environmental quality (like emission hazards) (Sarkar, 2012).

This translates in particular consumer choices, which can be successfully used in marketing and profit creating as well. For example, some studies suggest that consumers are willing to pay more

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for some green goods at premium prices (Ottman, 1993). Green marketing is wildly used strategy to sell consumer goods for people who identifies themselves as green consumers.

When discussing the problem of unsustainable consumption, there is a perhaps natural tendency to focus on individual consumers' decision making and behaviour. However, the attitudes, preferences, and choices of individual consumers may be more consistent with the cultural values and norms of society. The sustainability of final consumption depends on individual consumer choices, but individual choices are severely constrained by a range of macro and structural factors media being one of those factors (Prothero, McDonagh, Dobscha, 2010). In order to have a better understanding of consumer choices, media representation of consumption must be analysed. Consumerism undoubtedly is promoted and strengthened by media discourses. The media and marketing activities often tell people what is the best and most appropriate how to celebrate.

In discussing perspectives of sustainable consumption in Latvian press, the author will look at following research questions: 1) What is meant by sustainability, green and natural and eco-friendly in publications? 2) What reasons if any are provided for positioning consumer goods and lifestyles as eco-friendly, natural and sustainable? 3) What is identity of green consumer?

Research results and discussion

In order to limit the research field, weekly magazine *Ieva* has been chosen for analysis. According to research and consulting company Kantar TNS magazine, *Ieva* was the most read publication in Latvia in 2018 (Kantar TNS). *Ieva* is weekly lifestyle magazine, which has been the most popular printed press publication in Latvia for a long time, even ahead of daily newspapers in terms of audience size. Thus analysis of this magazine will provide information on how green consumption/ sustainable consumption is communicated in media.

To cover the entire analysis period, magazine editions for two months from each year were analysed using method of content analysis. From year 2013, magazine editions of January and February were analysed; from year 2014; magazine editions of March and April were analysed; from year 2015, magazine editions of May and June were analysed; from year 2016, magazine editions of July and August were analysed; from year 2017, magazine editions of September and October were analysed; from year 2018, magazine editions of November and December were analysed. In total, 54 copies of magazine were analysed. This selection also covers the full cycle of the year and its different seasons and celebrations. This aspect is important due to the changes in consumption which is affected by seasons.

Discourse of sustainable or green consumption in magazine *Ieva* is manifested in several thematic blocks. Those blocks are 'overview of various consumer goods', articles or columns about sustainability. In this article I will examine the representation of green products and green consumer choices in aforementioned thematic blocks.

1. Overview of various consumer goods

Overview of various consumer goods in weekly magazine *Ieva* can be found in columns *Ieva chooses*, *We like it*, *Ieva's wellness*, *Style*, *Beauty*. The purpose of those columns is to introduce various consumer goods to the readers. It is important to stress that columns chosen for analysis aren't promotional materials. For purpose of this study No promotional materials were analysed. The products suggested in these columns are recommended by journalists of magazine, thus they are considered to be trustworthy by the magazines' audience. The goal of analysing aforementioned

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articles was to determine how and if any sustainable and eco-friendly products are communicated to the audience.

In the analysed materials No special focus is placed on sustainable consumer products. If product happens to be eco-friendly it is mentioned, but it doesn't serve as persuasion point. Magazine readers are not encouraged to choose particular product over other products because it is natural or green. Organic, natural or green qualities of the product are not emphasized or explained. If marketing description of the product contains such terms as natural or green or environment friendly, those terms are repeated in product description. However No further information is provided on why this product can be considered as eco, natural or green. Eco-cosmetic certificate *Ecocert* is mentioned in texts very randomly. Even if product is pictured with visible logo of the certificate on its packing it isn't mentioned in the article describing the product. One can assume that this information is not considered to be important or to be selling point for consumers.

Terminology used describing products is very limited. Term 'natural' is used in almost all cases, describing various products, various ingredients and various product characteristics, see Table 1.

Table 1

Use of term 'natural'

products	ingredients	characteristics
Natural serum **Natural live water** **Natural cream** **Natural toning bb cream** **Natural cosmetics** **Natural, aromatic oil** **Natural sisal glove** **Natural honey of various flowers** **Natural unrefined salt without additives** **Natural, innovative spray for hair** **Natural, Ecocert colour**	Natural ingredients Natural castor of zinc acid Natural colloidal silver 92 % of the ingredients are natural Natural AHA 90 % natural ingredients Natural oil Natural oils Natural active ingredients Natural plant dyes	Natural consistency Natural remedy Natural flavour Natural ingredients Natural fixation Natural recipe

Source: author's content analysis

There is No explanation given why and how product or ingredient or product characteristic can be considered as natural. It is quite hard to grasp the meaning of 'natural', what is meant with describing product as natural. In the most cases 'natural' is used as opposition of artificial and manmade. In my analysis I found No cases when term 'natural' is used as synonym to sustainable.

Other term used sporadically is 'friendly to your skin and nature' – phrase used quite often but without any further explanation, why this product is friendly to environment, what it means to be environment friendly.

The problem is rooted in marketing, which operates with superficial terms, and journalists are relaying on information provided by marketing not doing in-depth research. Thus audience is served with vague information, which is not sufficient to make informed decision about sustainable consumption.

2. Topic of sustainability

In analysed material, there were several series of articles which tackles the topic of green lifestyle. In 2014, magazine introduced new column: „Discovering Green Lifestyle. Ecological and healthy - to feel, eat and live better". In 2016 column „I commit to green" was introduced. It is worth to have in depth look into these articles, since those are the only cases in analysed period, which are explicitly dedicated to green lifestyle including green consumer choices.

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Column „Discovering Green Lifestyle. Ecological and healthy - to feel, eat and live better" is overview of various products, consumer goods which could make consumer to feel, eat and live better. Each column features 9 various products starting form wellness and beauty to food and house cleaning products.

Products featured in column form 12th of March have No eco or other labels, which would support the claim that product is ecological (Ieva, 12.03.2014). The biggest part of products featured in the column in their description has No evidence on why this product can be considered eco or green. Back heater, pumpkin seed butter, mustard powder, mix of spices, dietary supplement, oyster mushroom growing set and avocado are products with No supporting information about the products greenness. The only product with evidence provided is face cream. Description of it claims that it is made by producer of eco-cosmetics, evidence supporting this claim is not given, however one can notice bio and vegan labels on the image of the product.

In other articles from this column situation is different with several product featuring eco labels and other labels of sustainability. Column from 19th of March describes 9 products; only two of products feature vegan labels – curry and mango tofu and shampoo (Ieva, 19.03.2014). In this case proof that product is eco can be found looking at the product; vegan labels are visible on packaging. Other products form this column are Jerusalem artichoke powder, stevia sweetener, lilac wine, dust remover, bread, spinach and flint. Again magazine fails to provide any scientific or liable reason why products are considered to be eco-friendly. Quite the opposite, it uses pseudo-science as evidence in case of flint: „various stones, including flint, help to clean and structure the water" (Ieva, 19.03.2014).

In next column, one product is featuring *Ecocert* certification label (body lotion), other Organic farmers and growers labels (crystal salt). Again information about certificates are seen on the image of the product, but not mentioned in description of the products. Other products which are presented as green but without any solid evidence are muesli bar, massager, air purifier, hemp protein, dietary supplement, humus and brush. In the last column the author analysed three products have bio certificate (coconut oil, quinoa, vegetarian broth cubes) and one (latex household glows) has FSC certificate (forest management certification). Other products with No given evidence on their greenness are halva, blanket, vitamins, sprouting barley and backpacks (Ieva, 14.04.2014).

Column doesn't live up to its promise – „Discovering Green Lifestyle. Ecological and healthy - to feel, eat and live better". This column should not be considered as trustworthy source of information to model one's green consumer habits on. Selection of products is not based on any valid criteria as eco certificates, it is simple selection of goods which have been marketed or visually designed to have connotation with being natural and green.

In 2016 series of articles „I commit to green" are introduced. The promise of the series is: „*Ieva* has committed to a new, beautiful and greener life. Whether it is doable and how comfortable, simple and cheap or expensive it is, we will discover step by step in the series of articles" (Ieva, 24.08.2016). It is important to stress that series of articles have been created with financial support from the Latvian Environmental Protection Fund. Thus this series are not entirely initiative of the magazine to educate its readers on issues of sustainability, but action from state. First article of this series is dedicated to electricity on how electricity is influencing environment and can harm it, why should society save electricity: „Energy saving is the foundation of the whole green lifestyle." Article features small section „A real green finds", which contains various house appliances which can help in energy saving: temperature controller, LED lightbulb, night lamp for children and desk light (Ieva,

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24.08.2016). This selection of items is based on worthy information, providing data about electricity saving qualities of each device.

Column „I commit to green" on June 20th focuses on the waste we are leaving behind and how to minimize waste we produce, recycle and create compost (Ieva, 20.07.2016). Article features small section „A real green finds", which describes various hygiene products. The context why „A real green finds" feature hygiene products is not given, relaying on common notion that hygiene products need to be changed on regular basis and/ or has a short product life. Section features: menstrual cup, sanitary towels from fabric, as well as specific brand of tooth paste and toothbrush. Later two are described as eco-friendly providing a valid reasoning as well – *Ecocert* certificate and packaging from recycled products.

In the period chosen for analysis other articles from this series were not printed. Altogether this series of articles are informative and provide useful information on sustainable and green lifestyle. Information on products however is still lacking valid reasons for selecting products to become the part of green consumer shopping chart. These are several articles which stress necessity to recycle, save resources, reduce waste, etc. Unfortunately, the notion of sustainability is not considered in other articles. Exactly opposite, more often it celebrates consumption. Magazine uses different holidays as reasons to celebrate and thus to buy different consumer goods. The idea of DIY (dot it yourself) is promoted in articles due to financial reasons, not to avoid unnecessary consumption, but to save some money: „Why spend money on decorating if things at your household can be useful as materials for creating ornamental." (Ieva, 28.11.2018) In the analysed period, there is No discussion during Christmas time regarding amount of consumption or necessity to reduce consumption. In Western cultures, it is believed that Christmas is the peak of consumerism which is achieved by merging holiday symbols, spiritual values and commercial activities (Clarke, 2006). Thus discussion on sustainable consumption or means how to reduce consumerism would be welcomed.

3. Motivation for being green

In magazine publications reasons for buying green consumer products are mostly concern with individualistic motives of wellbeing and living in clean environment. For example, article „I am eating so as not to get sick" tackles the idea of green nutrition from position of good health. Article claims that: „It is scientifically proven that nutrition is one of cornerstones of good health" (Ieva, 11.10.2017). Other example is story about finding alternative to stain removers is positioned from perspective of individuals' environmental concerns: „I am trying to reduce amount of so called chemical cleaning products I am using on daily basis" (Ieva, 11.10.2017). Article „Green approach to dressing up the house" starts with a question: „Can house be cleaned without the use of single drop of household chemicals?" Reason for going green in house cleaning is allergies. The main focus of the article is not environmental concerns due to the harm aggressive cleaning agents might cause, but the wellbeing of the individual and family especially children (Ieva, 13.05.2015).

Consumer is not motivated by notion of green, sustainable and responsible consumption. Consumer can prefer some product over others based on their status as natural. Meaning that they are not artificial contains No artificial ingredients thus they are better for one's health and wellbeing. Concerns about environment are not the prime concern of consumer. Consumer is not buying his or her way into green identity because it isn't priority for him or her. Studies on attitudes toward environment protection show that people tend to consider themselves as environmental friendly. Unfortunately, their behaviour and consumptions habits prove that statement to be false. In study

Household pro-environmental behaviour developments in Latvia: behavioural practice and values orientation 81 % of respondents have indicated that protection of the environment is either very important (23 %) or rather important (58 %) to them. Same study shows that their behaviour does not match the criteria of being environmentally friendly. Describing their food consumption patterns more than 1/3 of respondents admit, they consume meat every day (37.7 %) or at least 2 – 3 times a week (48,8 %). 59.5 % do not recycle, only 15.3 % have their dwelling totally insulated and only 32.9 % drive cars that consume less than 6.5 litre of fuel per 100km. The most common pro-environmental behaviour is using reusable shopping bag. 48.7 % of our respondents report using it always and 38 % - using it sometimes (Brizga, Ikstens, et.all 2017).

Conclusions, proposals, recommendations

1) What in publications is meant by sustainability, green and natural and eco-friendly?
2) In the analysed period, there are few publications which tangle the issues of green lifestyle and green consumption. This is not top topic for magazine to write about, given the frame of publications – lifestyle magazine for women. Issues of green consumption however can be addressed as integral part of many various stories, but this strategy is not used in magazine.
3) What reasons if any are provided for positioning consumer goods and lifestyles as eco-friendly, natural and sustainable?
4) Magazine relies on information provided by marketing using terms like 'natural' without any restrains and valid evidence. Both products, ingredients and product qualities can be denoted as natural providing reader with No further information what it stands for. Term 'natural' is not used as argument which positions product as better or superior to other products. Products status as 'natural' is one of its qualities. Consumer is the one to make decision if 'natural' is reason enough to bay any certain product.
5) What is identity of green consumer?
6) In magazine publications, identity of green consumer is The Individual Green Citizen (Prothero, McDonagh, Dobscha 2010). Individual green citizen is consumer whose consumption acts are primarily based on micro motivations and focus on an individual's right to better environmental circumstances. Examples include the purchasing of organic products for individual health reasons or reducing waste because it is economically advantageous to do so. Identity of Individual Green Citizen is implicitly and explicitly present in various articles. It might be that *being green* is desirable social identity, but *doing green* is still behaviour to be learned. Buying green also is still practice to be acquired; media can be great tool in helping doing so. Unfortunately, in case of weekly lifestyle magazine *Ieva* buying green is something reader has to learn on his/ her own.

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Bibliography

1. Brizga, J., Feng, K., Hubacek, K. (2017). Household Carbon Footprints in the Baltic States: A global multi-regional input–output analysis from 1995 to 2011. *Applied Energy*. Volume 189, pp. 780-788.
2. Buttel, F. (2003). Environmental Sociology and the Explanation of Environmental Reform. *Organization & Environment.* 16(3), pp. 306–344.
3. Clarke, p. (2006). Christmas Gift Giving Involvement. *Journal of Consumer Marketing, 23(5)*. pp. 283-291.
4. Cohen, M. (2001) . The Emergent Environmental Policy Discourse on Sustainable Consumption. In Cohen, M., Murphy, J. (eds) *„Exploring Sustainable Consumption: Environmental Policy and the Social Sciences"*. London: Pergamon. pp. 21–37.

DOI: 10.22616/ESRD.2019.098

5. Giddens, A. (1991). *Modernity and Self-identity*. Cambridge: Polity Press.
6. Kantar TNS. *Prese.* Retrieved:http://www.kantartns.lv/petijumu-dati/prese/ Access: 06.02.2019.
7. Ottman, J. (1993). Green marketing: Challenges & opportunities for the new marketing age. Lincolnwood: NTC Business Books.
8. Prothero, A., Connoly, J. (2008). Green Consumption Life-politics, risk and contradictions. *Journal of Consumer Culture*. Volume 8(1), pp. 117–145.
9. Prothero, A., McDonagh, P., Dobscha, S. (2010). Is Green the New Black? Reflections on a Green Commodity Discourse. *Journal of Macromarketing*. Volume 30(2), pp. 147-159.
10. Ruppert-Stroescu, M. , LeHew, M., Hiller Connell, K. Armstrong, C. (2015). Creativity and Sustainable Fashion Apparel Consumption:The Fashion Detox.*Clothing and Textiles Research Journal*. Volume 33(3), pp. 167-182.
11. Sarkar, A.N. (2012). Green Branding and Eco-innovations for Evolving a Sustainable Green Marketing Strategy. *Asia-Pacific Journal of Management Research and Innovation*. Volume 8(1), pp. 39–58.
12. World Commission on Environment Development (1987). *Our common future*. Oxford: Oxford University Press.

Magazines:

1. *Ieva*. (12.03.2014). Atklajot zalo dzivesveidu. Ekologiski un veseligi, ka just, est un dzivot labak (Discovering green lifestyle. Ecological and healthy - to feel, eat and live better). p. 46.
2. *Ieva*. (19.03.2014). Atklajot zalo dzivesveidu. Ekologiski un veseligi, ka just, est un dzivot labak (Discovering green lifestyle. Ecological and healthy - to feel, eat and live better). p. 36.
3. *Ieva*. (14.04.2014). Atklajot zalo dzivesveidu. Ekologiski un veseligi, ka just, est un dzivot labak (Discovering green lifestyle. Ecological and healthy - to feel, eat and live better). p. 48.
4. *Ieva* (24.08.2016). Apnemos dzivot zalak (I commit to green). pp. 44-47.
5. *Ieva*, (20.07.2016). Apnemos dzivot zalak (I commit to green). pp. 40-43.
6. *Ieva*, (28.11.2018). Tava vainaga strategija (Your crown strategy). pp. 34-35.
7. *Ieva*, (27.10.2017). Es edu ta, lai neslimotu (I am eating so as not to get sick). pp. 44-45.
8. *Ieva*, (13.05.2015). Zala pieeja majas uzkopsanai (Green approach to dressing up the house). pp. 58-59.