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Foreword

Since the journal has been issued (2009), its scope and author range expanded and the number of national and foreign universities represented in it increased. This year the journal has published the research findings of scientists, university teaching staff and doctoral students from Latvia and other countries (Poland, Germany and Azerbaijan), and its aim is to create a space for the exchange of academic opinions and for discussion.

The authors of the journal's issue No. 8 tackle such urgent problems as competitiveness opportunities for tourism in Latgale region, control methods of Sosnowsky's hogweed in Rezekne municipality, Rezekne city's image development, the process of development of new products, electricity market development, consumer behaviours in the cultural and creative industry and other problems.

The editorial board believes that our journal, too, made makes and will make its contribution to economic growth in Latgale, Latvia and the entire European Union.

The research papers can be useful to professionals who are interested in various social science problems and solutions to the problems, and to university teaching staff, master and doctoral students, researchers and company representatives.

The editorial board wants to mention that a range of authors emerged whose papers have been published in several or even in all the eight issues of the journal and looks forward to further cooperation with the authors as well as would be glad to expand the range of authors, dealing with new urgent problems and their solutions.

The editorial board thanks the authors of papers, the peer reviewers and the cooperation partners for their contribution to the journal.

Dr.oec. Anda Zvaigzne
Chief Editor of the journal

ELECTRICITY MARKET DEVELOPMENT IN LATVIA

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Abstract. *Electricity is crucial to the development, progress, security and overall lifestyle in the global economy. A common European electricity market requires market integration and transmission grid expansion, including cross-border interconnectors. The electricity market opening in Latvia was divided into four stages; it began with legal persons in 2007 and ended with household users on 1 January 2015.*

The aim of the research is to assess the development of the Latvian electricity market since the beginning of the electricity market liberalisation.

Research methods used: monographic, descriptive, analysis, synthesis, induction, deduction and regression analysis. The Diamond Model was employed to acquire information for market analysis.

The electricity market's development was affected by its liberalisation. With the interconnections still being developed, the Latvian electricity market is slowly fitting into the Scandinavian market and decreasing its supply dependence on third countries. Now the electricity market is developing naturally; yet, it requires stricter monitoring of its development and stimulation.

Keywords: *electricity market, liberalisation, development.*

JEL code: *M2, E3, O1*

Introduction

Latvia began the opening of its electricity market on 1 July 2007 when, in accordance with Directive 2003/54/EC of the European Parliament and of Council of 26 June 2003 concerning common rules for the internal market in electricity, a legal provision on the electricity market came into force, stipulating that all electricity final consumers, which have a connection to the power grid, have the right to change their electricity supplier without any limits (Report on Control Results ..., 2013).

An open electricity market creates prerequisites for competition among electricity suppliers, which results in higher service quality and greater opportunities for electricity consumers. The electricity market opening in Latvia strengthens the single EU electricity market, thereby contributing to Latvia's power supply security and energy independence in the future (Electricity Market Opening..., 2014).

The full opening of the electricity market was initially planned for 1 September 2013, then for 1 April 2014. However, only on 1 January 2015

the opening of the electricity market was completed in Latvia, namely, all household consumers – approximately 850 000 in number – accounting for about 25% of the total electricity consumption were engaged in the electricity market (Electricity Market Opening..., 2014).

So, on 1 January 2015 the electricity market in Latvia was fully liberalised – all electricity consumers in the country purchased their electricity in a free market. According to the available information, no research investigations into whether the electricity market liberalisation is going to develop Latvia's electricity market on the whole have been yet conducted in Latvia.

Research hypothesis: the liberalisation of the electricity market serves as the basis for the development of the electricity market in Latvia.

Research aim: to assess the development of the Latvian electricity market since the beginning of the electricity market liberalisation.

To achieve the aim, the following specific **research tasks** are set:

- 1) to examine the electricity markets in Latvia and the EU;
- 2) to assess the offers of electricity suppliers for household electricity consumers in Latvia.

Research methods used: monographic, descriptive, analysis, synthesis, induction, deduction and regression analysis. The Diamond Model was employed to acquire information for market analysis.

Materials used: research papers of national and foreign scientists, research studies, Eurostat data and other information sources.

Research results

Essential issues in the field of energy are associated with the establishment of a single European electricity market and the development and introduction of relevant EU legal acts (Network Codices) as well as the attraction of EU funds and the evaluation of investment projects whose implementation allows effectively interconnecting a number of the electricity markets of EU Member States (Regulator Highlights..., 2015). To understand and analyse the current situation in the electricity market in Latvia, the authors propose criteria for market development evaluation: infrastructure development, electricity trade in the exchange, competition and electricity price.

Infrastructure development. Power interconnections of sufficient capacity are one of the most important prerequisites for optimum electricity market operation. On the whole, the Baltic States have always provided themselves with electricity, additionally diversifying economically most efficient primary resources. However, after the Ignalina nuclear power plant (NPP) was closed, the total electricity

balance of the Baltic States became negative. It has to be taken into account that the efficiency of power grid exploitation in Latvia is not high, and there are objective reasons for it (Karnītis, 2010). Based on the information on the newly constructed power interconnections and the projects being implemented, the authors have created a map for interconnections among the Baltic States, which is presented in Figure 1.

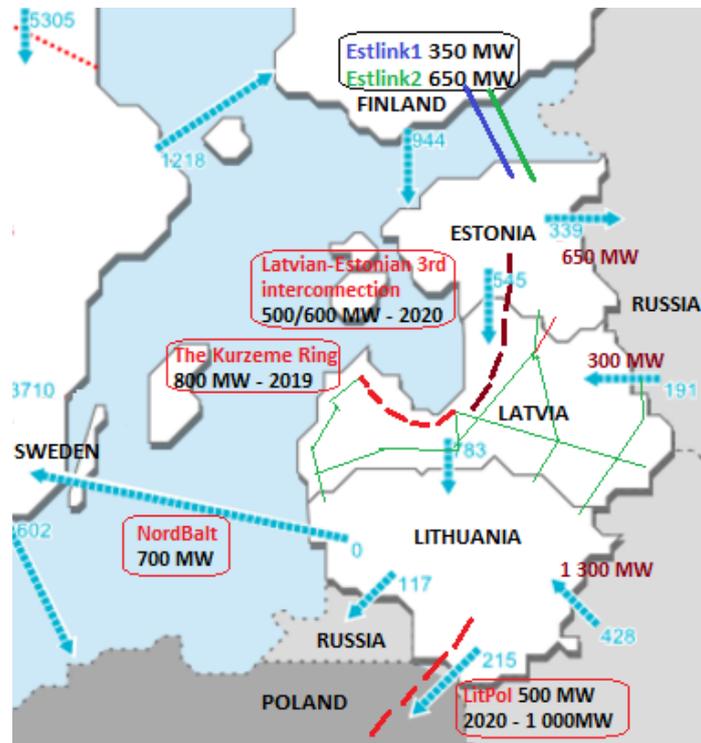


Figure 1. Map for power interconnections for the Baltic States (as of 24 April 2016, 10 p.m.) (Source: authors' construction)

The authors find that with the power interconnections between Estonia and Lithuania and other countries emerging, Latvia's access to the largest electricity markets also improves, as the Baltic States, in this way, get integrated into the Scandinavian electricity market where they can purchase electricity at lower prices. Of course, it is also essential to finish the projects started in Latvia in order to provide better electricity supply in the country's territory, increase energy supply security both in Kurzeme region and in the whole country, which gives an opportunity to completely use the NordBalt power interconnection. All the new power interconnections are necessary to reduce dependence on Russia's power supplies.

Electricity exchange (an electricity trading platform in Latvia, where within the framework of the bidding area or between separate bidding areas participants of the electricity exchange buy and sell electricity

through offers and demands. Trade of electricity also includes the physical transmission of electricity (Electricity Market Law, 2005). NordPoolSpot AS (NPS) is an electricity exchange established in 1990 and currently provides electricity exchange services in the Nordic Countries, the Baltic States and other countries. The Nordic/Baltic day-ahead market (ELSPOT) was opened on 3 June 2013, while the continuous cross-border intraday market (ELBAS) started operating on 10 December 2013 (On Appointing a Nominated Electricity..., 2015). Lithuania joined the NPS electricity exchange in June 2012, while Estonia did it in 2010 (Guidelines for Energy Sector Development ..., 2016). An analysis of electricity prices for Latvia compared the prices among the Baltic States, and the monthly price changes are presented in Figure 2.

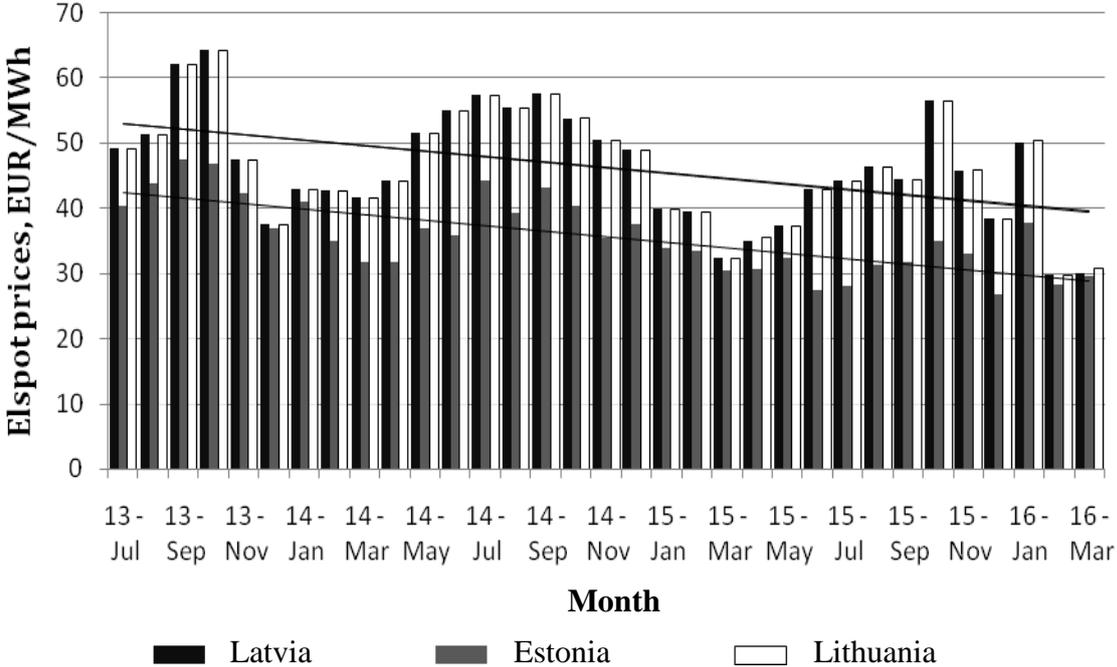


Figure 2. Nord Pool SpotEl prices in July 2013 – March 2016, EUR/MWh (Source: authors’ construction based on Nord Pool SpotEl spot prices)

No significant differences are observed between electricity prices in the bidding areas of Latvia and Lithuania; yet, there is a difference in price between the mentioned countries and Estonia. February 2016 was remarkable due to the fact that for the first time in the open market period the trading of electricity was stable thanks to the recently opened NordBalt power cable, which was officially at the test stage. In February, owing to the cable, Lithuania imported cheap electricity generated at Swedish nuclear and hydro power plants, which contributed to a decrease in electricity market prices to historically the lowest level in the markets of both countries (29.65 EUR/MWh), which was 40.71% lower than in January.

Competition in the electricity market. In any electricity market, there is competition between two or among a number of market participants that compete to sell their electrical energy. The sellers struggle to have buyers and a dominant position in the market or in a segment of the market (Mahņitko, Varfolomejeva, 2010). Competition guarantees a lower price on services. The electricity market needs liberalisation, as a competitive environment leads to the lowest price on a good or a service and it operates as an efficiency driver (Electricity Market Opening..., 2014).

As of 1 January 2013, 44 electricity producers were registered with the register of electricity traders. In the period 2010-2012, actually the following six traders operated in the market: the JSC Latvenergo, Enefit Ltd, "Enerģijas avots" Ltd, BCG Riga Ltd, Inter RAO Latvia Ltd and Baltic Energy Pool Ltd (Report on Control Results..., 2013). Eighty percent legal entities at the end of 2014 and 75% at the end of 2015 bought electricity from the JSC Latvenergo (Sustainability and Annual Report, 2015). Its biggest competitor is Enefit Ltd, which had 15% legal entities as clients at the end of 2015 (Skreja, 2016a). As of 1 January 2015, four traders supplied electricity to household clients, and 11 to legal entities. At present, 36 traders are registered, of which six represent active suppliers of electricity to household clients, while 16 supply electricity to legal entities (according to JSC "Sadales tīkls" data). Currently, approximately 13 thousand households in total have chosen another electricity trader (Skreja, 2016). This means that competition exists in the market, and the monopoly has to make efforts not to lose its market share. The authors conclude that household clients are passive, and such a situation was influenced by the postponement of liberalisation of the market, thus contributing to their distrust. Besides, it was easier to attract new household clients at the moment of opening the market. At present, after changes have taken place in the market, it is much more difficult for new market enterers to attract clients, as they do not make marketing campaigns and focus on a hope that the clients will find them on the Internet by employing price calculators, thus reducing their costs. Some traders that already operate in the market's household segment focus not on increasing the number of clients but only serve the range of existing clients.

The **price of electricity**, which is the most important criterion for the final consumer. According to Eurostat, the electricity price (all taxes and fees included) for households (annually consuming 1000-2500 kWh) in Latvia was the 14th lowest in the EU at 0.1635 EUR/kWh; in Estonia and Lithuania the prices were 0.1302 and 0.1256 EUR/kWh, respectively (Figure 3).

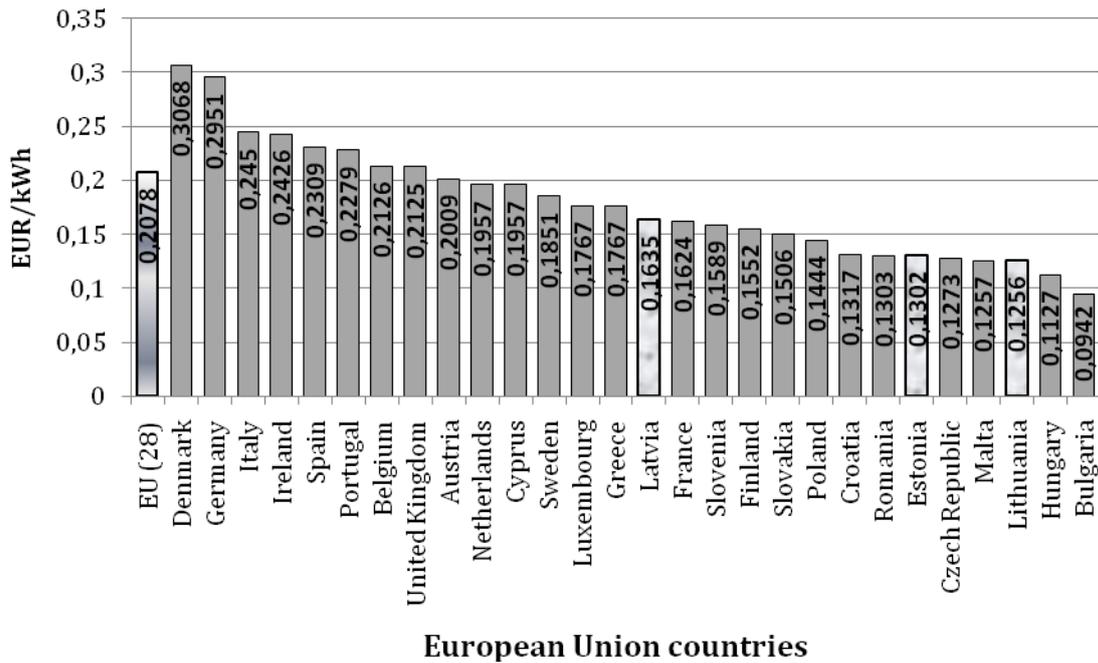


Figure 3. Electricity prices (all taxes and fees included) for households (annually consuming 1000-2500 kWh) in 2015, EUR/kWh
(Source: authors' construction based on Eurostat data)

Figure 3 shows that among the Baltic States, the price on electricity for the segment of household clients in Latvia was the highest; yet, the price was 21.32% lower than the average in the EU. After analysing the electricity prices for households in the Baltic States, the authors find that a sharp increase by 19.78% in the price occurred in Latvia particularly in 2015. So, the comparison of electricity prices for households in the Baltic States leads to a conclusion that the price in Latvia was 25.57% higher than in Estonia and 30.18% higher than in Lithuania.

Figure 4 shows the average electricity prices for households in the period 2008-2015.

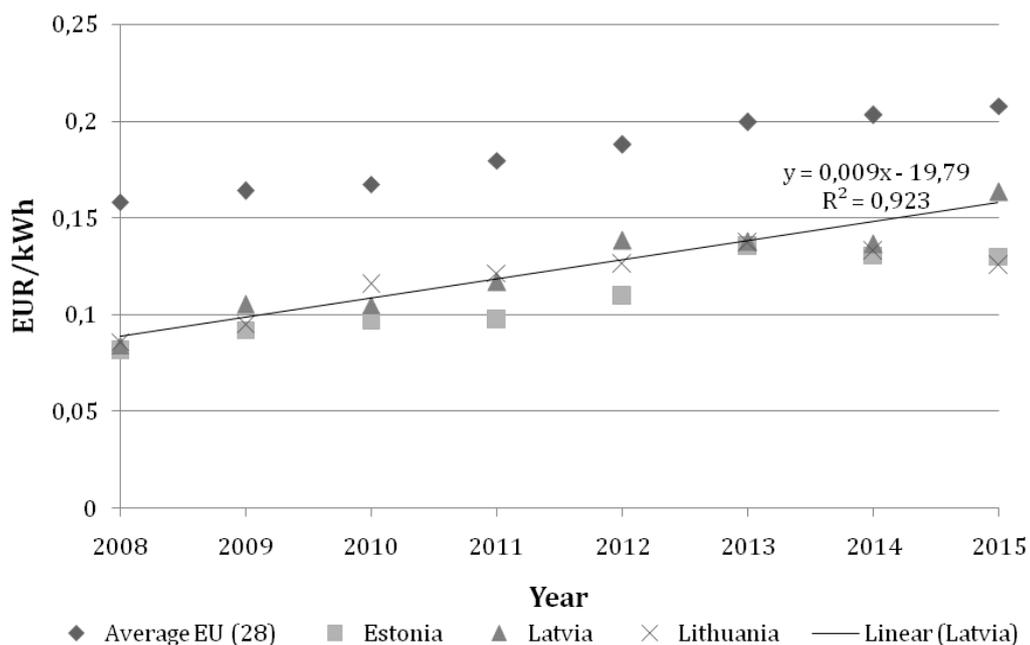


Figure 4. Average electricity prices (all taxes and fees included) for households (annually consuming 1000-2500 kWh) in the period 2008-2015, EUR/kWh
(Source: authors' construction based on Eurostat data)

A regression analysis of the average electricity prices for households in the EU in the period 2008-2015 reveals that the determination coefficient is 0.923, which means that the average electricity prices in Latvia strongly correlated with the average electricity prices in the EU, yet, were lower than in the EU.

Changes in households' average electricity consumption are presented in Figure 5.

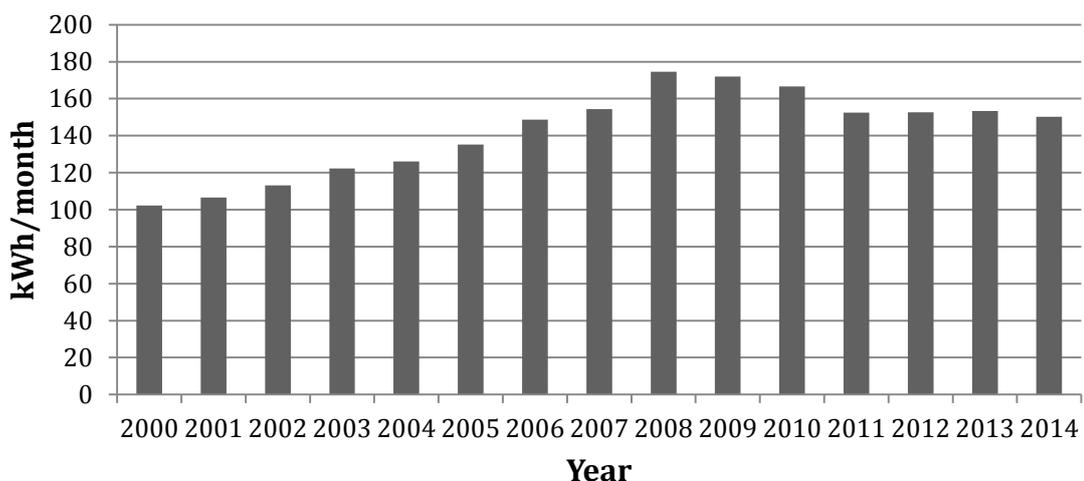


Figure 5. Average electricity consumption per household in the period 2000-2014, kWh/month
(Source: authors' construction based on Eurostat data)

The average electricity consumption per household in Latvia in recent years was equal to 150 kWh a month. Since earlier electricity tariffs were regulated in Latvia, the authors analysed an association between the average electricity consumption cost (150 kWh/month) and the minimum wage and salary in Latvia for the period 2008-2015 (Figure 6).

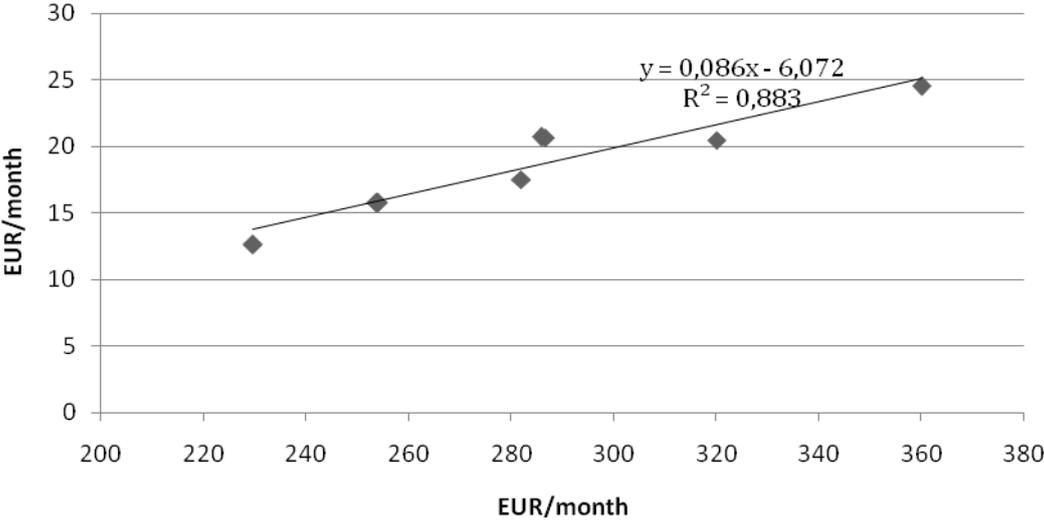


Figure 6. Association between the average electricity consumption cost and the minimum wage and salary in Latvia, EUR/month (Source: authors' construction based on Eurostat data and Arhipova, 2006)

A regression analysis of the average electricity consumption cost and the minimum wage and salary in Latvia for the period 2008-2015 showed that the correlation coefficient $r = 0.94$ and the determination coefficient $R^2 = 0.88$, which meant that the association was strong and linear. One can assert with a probability of 95% that an increase in the minimum wage and salary by EUR 1 results in an increase in the average electricity consumption cost by 0.086 EUR/month.

It has to be stressed that after the household market was opened (on 1 January 2015) the electricity traders agreed with their clients only on a third of the cost of a kilowatt-hour, as the remaining part was still regulated by the government. The tariff composition and the tariff's components are shown in Figure 7.

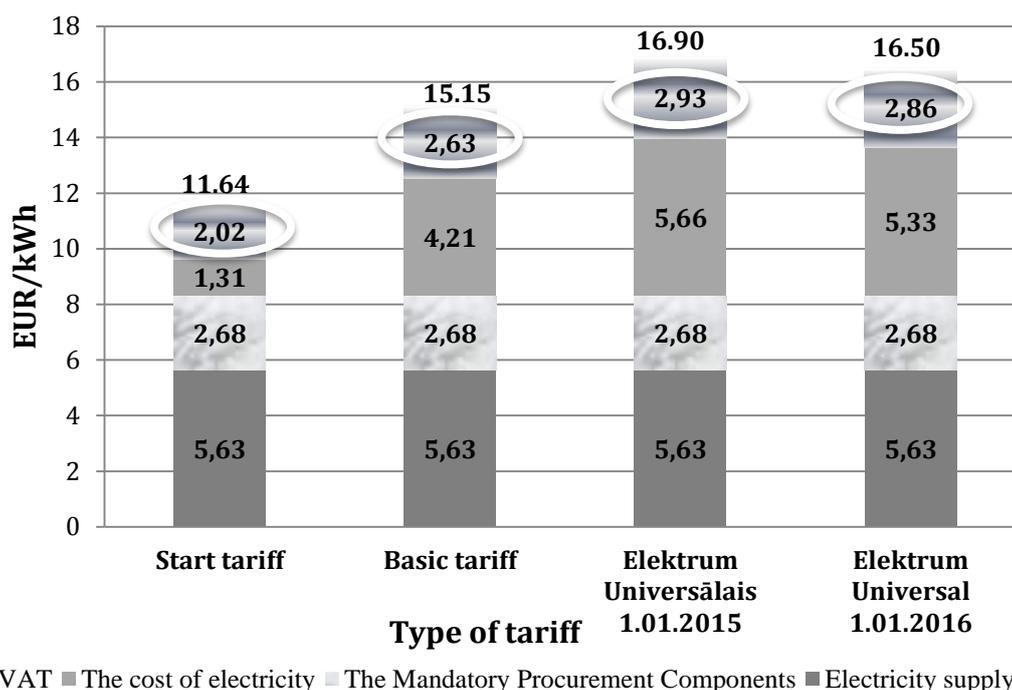


Figure 7. Electricity tariff composition for households in the period 1 April 2011 – 31 March 2016, EUR
 (Source: Guidelines for Energy Sector Development..., 2016, and electricity trader offers as of 1 January 2015 and 1 April 2016)

All the other components, except for the price, remain constant regardless of which electricity trader is chosen by a client. It has to be also mentioned that the JSC “Sadales tīkls” has submitted a new draft decision on tariffs, which may both decrease and increase the total electricity cost depending on the place of a power connection and the consumption amount. (Expert: the Plan for Balancing..., 2016). The price on electricity is not subsidised anymore (protected electricity users are an exception), the changes in the price have been relatively large since the market was opened; however, as of 1 January 2016 the price has decreased by 2.36%.

The authors analysed electricity trader offers for households when the market was opened (i.e. on 1 January 2015) and at present, grouping the households by their approximate electricity consumption (within a range from 100 to 1000 kWh/month) and comparing their annual electricity consumption costs. The comparison employed previous tariffs for captive electricity consumers (Start and Basic) and assumed that bill mailing costs did not have to be paid and subscription fees, if stipulated in the contract, were included. The household costs by consumption group for the period since 1 January 2015 are presented in Figure 8.

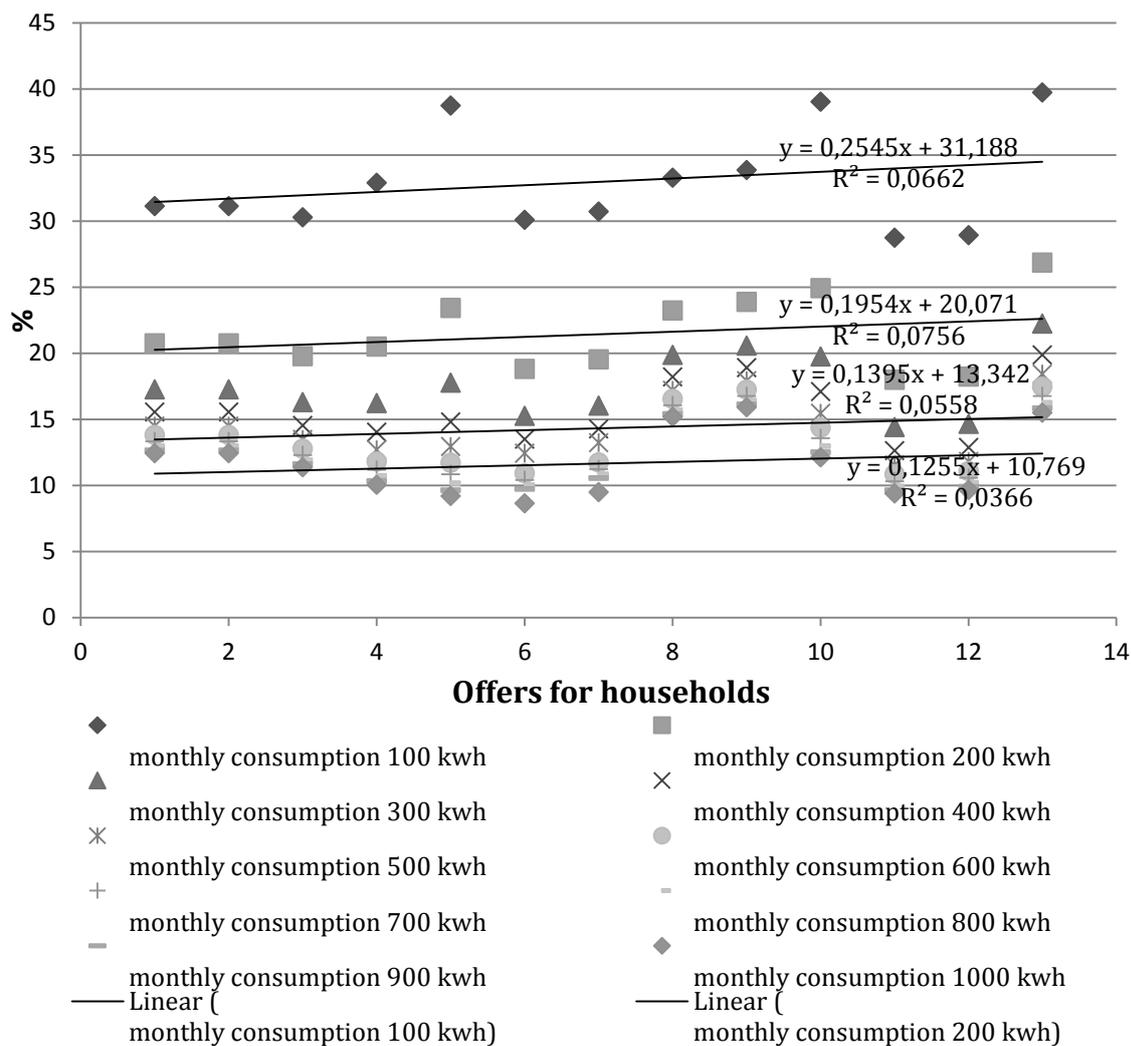


Figure 8. Annual increases in electricity consumption cost for households consuming 100 - 1000 kWh a month since 1 January 2015 (based on tariffs for captive consumers), %
 (Source: authors' construction based on electricity trader offers on 1 January 2015)

In the first trader offers, the greatest cost increase was reported for households with an average consumption of 100 kWh a month; yet, as their consumption increases, the cost difference decreases. This may be explained by the fact that before the consumer groups paid the regulated basic tariff, which better fitted the market situation.

The authors also analysed electricity trader offers for households made at present, grouping and comparing the same techniques used during the market opening. The household costs by consumption group for the period from 1 April 2016 are presented in Figure 9.

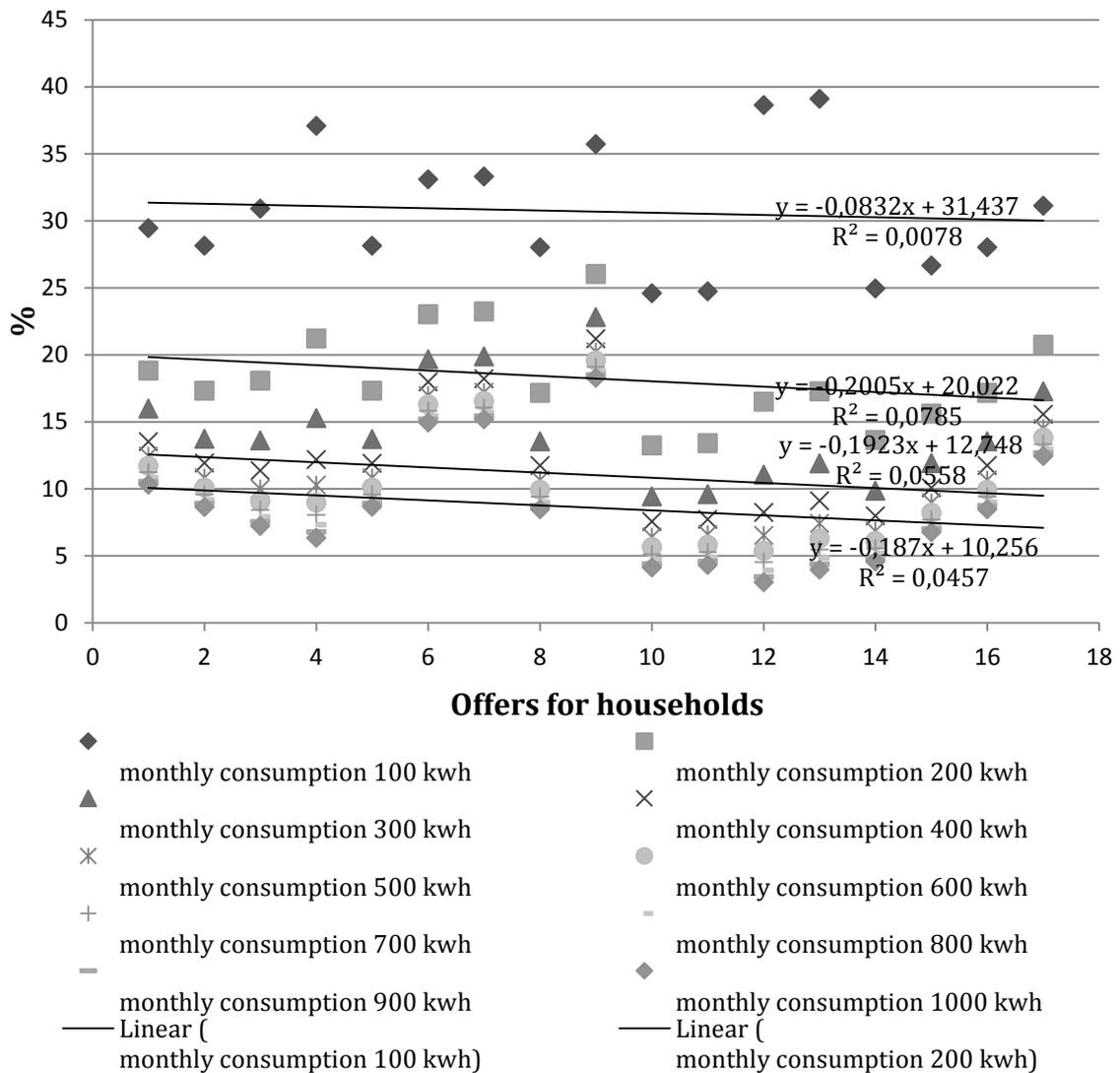


Figure 9. Annual increases in electricity consumption cost for households consuming 100 - 1000 kWh a month from 1 April 2016 (based on tariffs for captive consumers), %
 (Source: authors' construction based on electricity trader offers on 1 April 2016)

As of 1 April 2016, the price changed but the changes were small and made no significant effects on the total household expense on electricity. However, the determination coefficients calculated showed that the expense changes were insignificant.

An electricity market model is a procedure how market participants produce, sell, supply and consume electrical energy and exploit the electric power infrastructure. Based on the information analysed in the present research, the authors developed a model for the electricity trade industry according to M. Porter's diamond model (Figure 10).

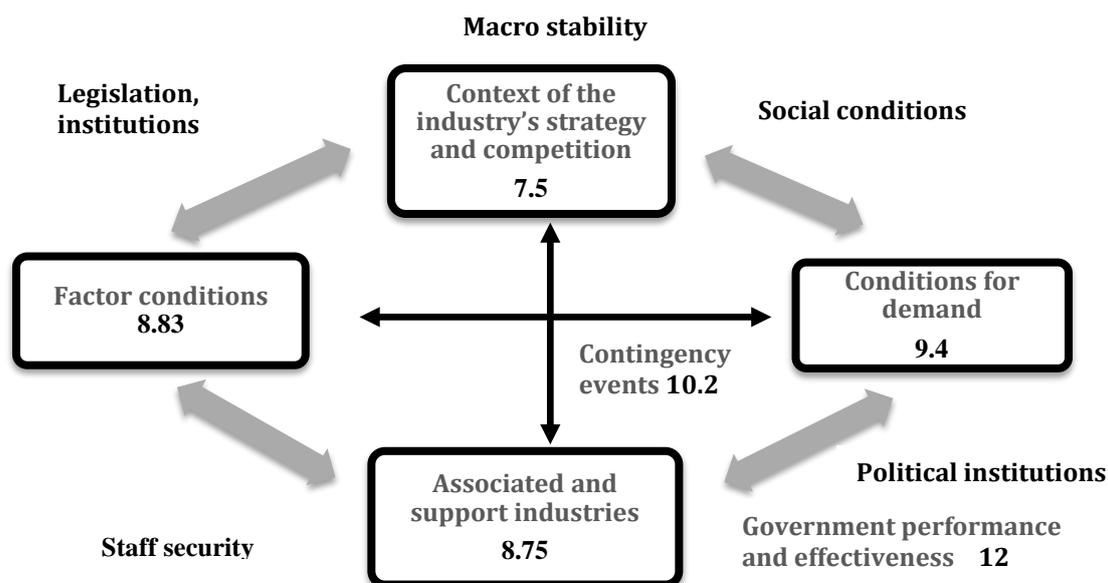


Figure 10. Electricity trade industry according to M.Porter's diamond model (Source: authors' construction based on the information disclosed in their research)

For each criteria, the authors set 4-5 indicators that were assessed both in terms of their significance for the industry and in terms of the current situation in the industry. The averages of total scores of both assessments were multiplied, thus acquiring the overall effect indicator.

According to M.Porter's diamond model, the greatest effect on the industry's further development is made by the government, which is logical, as both the historical monopoly JSC Latvenergo and the power transmission and distribution operators, which have become natural monopolies, belong to the Ministry of Economics. For the industry's further development, the conditions for demand for electricity is the next most important prerequisite, which may be justified by the fact that electrical energy is a necessity without which the modern life is unimaginable.

The context of associated and support industries is almost as important as "factor conditions", as electricity traders alone would be incapacitated without transmission and distribution operators and without participating in the exchange.

It has to be noted that the significance level of "contingency events" equals 10.2, which means that there are events in the industry that cannot be controlled by the enterprises but their effects are very significant.

Conclusions and suggestions

1. Since the electricity market was opened in Latvia, positive trends have been observed in this market: power interconnections are developed, electricity may be bought in the exchange and competition increased; yet, the electricity price for the segment of households is declining very gradually, as such clients are passive.
2. The liberalisation in particular positively influenced the electricity market, as power interconnections are being developed, the electricity markets of the Baltic States gradually integrate into the electricity markets of the Scandinavian countries and the supply dependence on third countries decreases. Also, it is important that during the power industry's restructuring the power transmission and distribution networks were separated from power generation and trade activities to contribute to the optimum functioning of the electricity market, thereby enhancing competition in this market.
3. At present, the electricity market is developing naturally; yet, greater control and stimuli are necessary.
4. The Public Utilities Commission has to implement greater control over not only the transmission and distribution operators but also over the field of electricity trade in order to contribute to electricity trader activity and the awareness of household clients because currently the public lacks knowledge of the principles of operation of an electricity market and the price formation mechanism (including the principles of operation of an electricity exchange) and free market advantages.
5. The government has to actively engage in fostering the electricity market's development: the justification for regulated tariffs has to be reviewed and the attraction of EU funds for the infrastructure has to be continued, as the market's liberalisation by itself does not ensure its further development; therefore, a stimulative environment has to be provided in all the dimensions.
6. The government has to continue synchronising the Baltic electricity transmission systems with the European ones, as higher competition, which works as the market driver, could be expected only if making the market more transparent.

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ELEKTROENERĢIJAS TIRGUS ATTĪSTĪBA LATVIJĀ

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Kopsavilkums

Elektroenerģija ir svarīga attīstībā, aizsardzībā un kopumā dzīves ciklā globālajā ekonomikā. Kopējais Eiropas elektroenerģijas tirgus pieprasa gan tirgus integrāciju, gan pārvades tīklu paplašināšanu, tostarp arī pārrobežu starpsavienojumu attīstību. Elektroenerģijas tirgus atvēršana Latvijā tika sadalīta četros posmos; tā sākās ar juridiskām personām 2007. gadā un noslēdzas ar mājsaimniecības lietotājiem 01.01.2015.

Pētījuma mērķis ir izvērtēt Latvijas elektroenerģijas tirgus attīstību kopš elektroenerģijas tirgus liberalizēšanas uzsākšanas.

Pielietotās pētījuma metodes: monogrāfiski aprakstošā metode, analīze, sintēzes, zinātniskās indukcijas, dedukcijas metodes un regresijas analīze un pielietots Dimanta modelis tirgus analīzei.

Elektroenerģijas tirgus attīstību ietekmējusi tieši tā liberalizācija. Joprojām attīstās starpsavienojumi, Latvijas elektroenerģijas tirgus lēnām iekļaujas Skandināvijas tirgū un samazinās piegāžu atkarība no trešajām valstīm. Pašlaik elektroenerģijas tirgus attīstās dabiski, bet tam nepieciešama stingrāka uzraudzība un stimulēšana, lai tas attīstītos.

Atslēgas vārdi: elektroenerģijas tirgus, liberalizācija, attīstība.

VISUALIZATION CAPABILITIES OF SIMULATION OF ECONOMIC PROCESSES

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Abstract. *Educational experience shows that during the research process researchers perceive graphical information better than analytical relationships. Many economic courses operate with models that were previously available only in mathematics and physics disciplines. As a possible solution, there could be the use of the package Matlab Simulink in the realization of different algorithms both for engineering disciplines and economic studies. The article substantiates the usefulness of implementing the simulation models during the early stage of the research, when in parallel to acquiring analytical relations, simulation models may be introduced. The aim of the article is to show Matlab Simulink suitability for the purpose of visualizing simulation models of various economic disciplines. To reach the aim, the following research tasks have been set: identification of Matlab Simulink possibilities for simulation of economic processes; demonstrate visualization models on the basis of examples; visualization of time series model using Latgale unemployment rate data. The article presents examples of using simulation modeling in the economic research processes - optimal tax rate searching and time series application. Common research methods are used in this research: descriptive research method, statistical method, mathematical modeling.*

Keywords: *Matlab Simulink, modeling, simulation, teaching, visualization.*

JEL code: *C63*

Introduction

The classification of general economic models is based on the scope of the economic system under study. From this point of view, the models can be divided into three major groups: the models of firms, industry models and macroeconomic models.

The model should be based on solid empirical basis. However, this information is usually not available for developers of economic models. The management of companies simply do not wish to give their business details to the third person. This is especially true for companies operating in the face of strong competition.

The aim of the research study on different simulation models is the formation of a researcher's theoretical knowledge and practical skills in the use of simulation modeling techniques in research of solving specific problems in modeling of real economic applications. During the course, researchers get acquainted with the means of simulation modeling processes of functioning systems, master the simulation modeling

methods and typical stages of modeling process that form the “chain”: the construction of the conceptual model and its formalization – model algorithmization and its computer implementation – simulation experiment and interpretation of the results of the modeling; acquire practical skills for implementation of modeling algorithms for studies of characteristics and behaviour of complex economic systems (Kay, 1984; Karel & Tomas, 2015).

Simulation - the most powerful and versatile method for studying and evaluating the effectiveness of systems, the behaviour of which depends on the influence of random factors.

The implementation of such opportunities in the universal programming language is a difficult task. Currently, there is quite a lot of software that allows to model processes. However, now there is a product that allows solving these problems quite effectively – the MATLAB package (Kiusalaas, 2016; Siau & Bayern, 2015; Smith, 2013) containing a visual simulation tool – Simulink (<http://se.mathworks.com/products/simulink/>). Simulink - a tool that allows you to simulate the system quickly, get the indexes of expected effect and compare them with the amount of effort required to achieve them (Karel & Tomas, 2015; Xue & Chen, 2013).

The article substantiates the usefulness of implementing the simulation models during the early stage of the research, when in parallel to acquiring analytical relations, simulation models may be introduced.

The main aim of the article is to show Matlab Simulink suitability for the purpose of visualizing simulation models of various economic disciplines.

To reach the aim, the following research tasks have been set:

- identification of Matlab Simulink possibilities for simulation of economic processes;
- demonstrate visualization models on the basis of examples;
- visualization of time series model using Latvian unemployment rate data.

A study was carried on using Matlab Simulink capabilities in the optimal tax rate modeling and in the application of time series analysis possibilities with the help of Simulink.

To demonstrate the practical use of a time series with the help of Matlab, data on the unemployment rate in Latvia in the years 1996-2015 from the Latvian Central Statistical Bureau was taken.

Common research methods are used in this research: descriptive research method, statistical method, mathematical modeling.

Possibilities of the software package Matlab Simulink

Of particular interest for simulation is a Simulink tool designed specifically for modeling dynamical systems. It has a library of standard graphics units with built-in mathematical functions. It is sometimes called a tool of visual modeling (Shiflet & Shiflet, 2014; Silva, 2009).

Although Simulink is designed mainly to solve engineering and scientific- technical problems, the possibilities of its use are almost unlimited. The input of initial parameters is made interactively by graphics assembly of elementary blocks circuit diagram, resulting in a model of the studied system. The blocks included in the model relate to each other both in information and in management. The type of connection depends on the type of the block and the logic of the model.

The Simulink program is an application to the MATLAB package. The simulation, using Simulink, implements the principle of visual programming whereby the user on the screen creates a model of a structure, process or system from standard blocks of the library, and performs calculations. In this case, unlike in classical ways of modeling, the user does not need to study the programming language and numerical mathematics methods thoroughly, there is enough to have some general knowledge required when working on the computer, and, of course, knowledge on the subject area in which he works.

Creating a model in this way, and then launching it, it is possible to see the results of modeling. In the simulation, the user can choose the method for solving equations, as well as the way to change the model time (with a fixed or variable step). During the simulation, it is possible to monitor the processes happening in the system. To this purpose, special viewing devices that are part of the Simulink library are used. The simulation results can be presented in the form of graphs or tables.

Series of research were carried out in order to demonstrate the Simulink suitability for simulation model visualization purposes in different engineering disciplines. It should be noted that often the analytical solution is much simpler than the visual Simulink model, but in perspective, it gives an understanding of such models usefulness.

Figure 1 shows the used blocks' description and its explanation given in the examples.

The **Discrete Time Integrator** block (Commonly Used Blocks) performs discrete-time integration or accumulation of a signal. We use this block in discrete-time systems instead of the Continuous Integrator block in continuous-time systems. The block can integrate or accumulate using the Forward Euler, Backward Euler, and Trapezoidal methods.

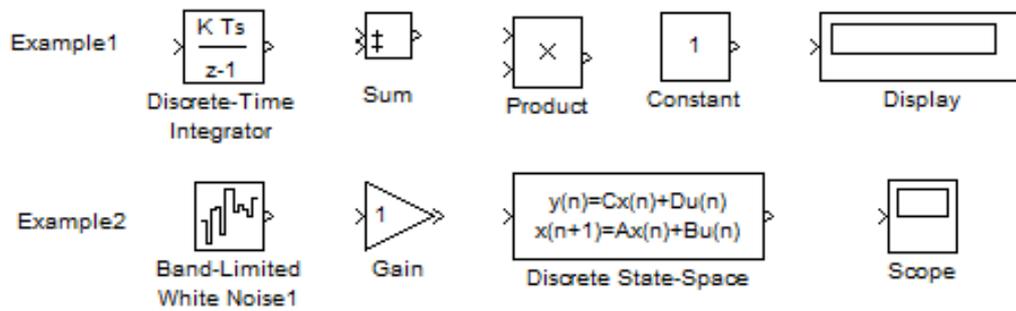


Figure 1. Blocks used in the examples (*Source: author's construction*)

The **Product** block (Commonly Used Blocks) block performs multiplication or division of its inputs. This block produces outputs using either element-wise or matrix multiplication, depending on the value of the Multiplication parameter.

The **Sum** block (Commonly Used Blocks) performs addition or subtraction on its inputs. This block can add or subtract scalar, vector, or matrix inputs.

The **Constant** block (Sources) is used to define a real or complex constant value.

The **Display** block (Sinks) shows the output value at the end of the simulation time.

The **Band Limited** block (Sources) is an implementation of white noise into Zero-Order Hold block.

The **Gain** block (Commonly Used Blocks) multiplies the input by a constant value (gain). The input and the gain can each be a scalar, vector, or matrix. We specify the value of the gain in the Gain parameter.

The **Discrete State-Space** block (Discrete) implements the system described by the equations: $x[n + 1] = Ax[n] + Bu[n]$ $y[n] = Cx[n]$.

Research part

Example 1. Optimal Tax Rate searching

The aim of the experiment: to study the dependence of budget revenues on the tax rates. The author used the (Cisar, 2004) study results.

The state announces the income tax rate and receives funds from the companies to the budget. Companies have their own capital, get profit, and pay funds to the budget according to the tax rate. After-tax profit as retained earnings is fully included in the company's own capital. Dividends are not paid out, no other deductions from income are done. All profit is divided only into two flows: to the budget and the rest-to the equity.

Budget revenues for a certain period of time will be the greatest not at the maximum but at the optimum tax rate for the budget. That is, with

the growth of the tax rate, the revenues to the budget will increase and then decrease.

The amount of tax revenues from enterprises for the simulated period is stored in the fiscal accounts, and is represented by the integral:

$$BD(t) = \int_{t=tb}^{t=tf} PRF(t) \cdot TXRT \cdot dt \quad (1)$$

where $BD(t)$ – amount of funds received in the budget from the beginning of the simulation till the moment t , euro;

$PRF(t)$ – pretax profit, derived by an enterprise at the moment t , euro/year;

$TXRT$ – income tax rate;

t – current time, year.

tb – beginning moment of simulation;

tf – final moment of simulation.

A profit balance capitalized by an enterprise during the simulation time:

$$CP(t) = \int_{t=tb}^{t=tf} PRF(t) \cdot (1 - TXRT) \cdot dt \quad (2)$$

Profit at time t :

$$PRF(t) = CP(t) \cdot RN \quad (3)$$

where RN - profitability of the enterprise capital. It is set as a parameter of the enterprise, initial data.

The model of such a process is shown in Figure 2.

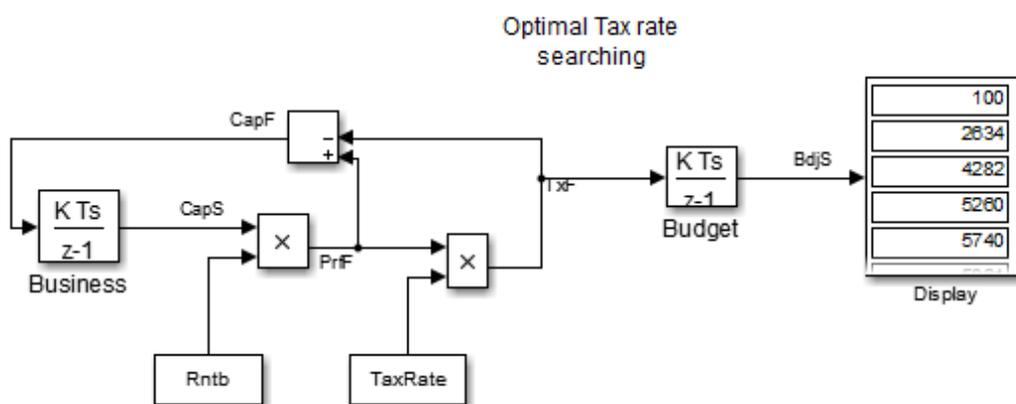


Figure 2. Optimal tax rate searching model

(Source: author's construction - adapted from Cisar, 2004)

In the scheme block **Business**, there is presented the hoarder of the equity of the enterprise, it is taken from the library of elements as a block

Integrator of discrete time. The investment flow **CapF** enters on the block input. It is after-tax, retained profit. It is accumulated by a business and increases its equity capital. Block **Out** - is the amount of capital in business **CapS**. Profitability is defined by a block with the name **Rntb**. The next block works out the multiplication of the profit flow on the tax rate **Tax Rate**. This is the flow of deductions from profits to the state budget **TxF**. The tax rate is set with the name **Tax Rate**. The block **Budget** is represented by the integrator. It accumulates tax revenues **TxF** for the simulation period as a variable **BdjS**. The block **Display** reflects numerical values of **BdjS**.

The optimal tax rate modeling result is shown in Figure 3.

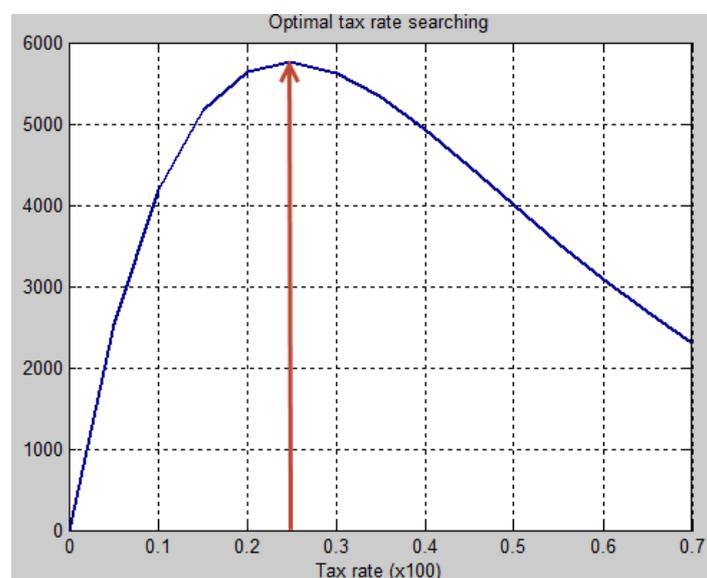


Figure 3. Optimal tax rate (*Source: author's construction*)

With increasing rates, the revenues to the budget increase and then decrease. There is a strongly marked maximum, i.e., the optimal tax rate for the budget. The higher the profitability of the enterprise is, the more pronounced the optimal tax rate is. With the growth of the profitability, the optimal rate is reduced (shifted to the left), aiming at a fixed value, on our charts, approximately, to 23 - 25%.

Example 2. Economic time series data modeling

A time series is a sequence of real numbers that represent the measurements of a real variable at equal time intervals, whereas a time series database is a collection of time series (Kirchgassner and Wolter, 2007; Lutkepohl, 2005; Tsay, 2002; Montgomery et. al., 1988). Time series data can be analysed in many different ways. For instance, to perform this task various mathematical models can be used.

Time sequences appear in many applications, to be more precise, in any applications that involve a value that changes over time. There is one problem concerning the time sequences has been paid a lot of attention to recently, i.e., the problem of similarity retrieval of time sequences in databases, or the so called “query by example” (Vlachos and Gunopulos, 2004).

The ARMA model is offered (Montgomery et. al., 1988) with the help of following equation:

$$y_n = 10 + 0.6 y_{n-1} + u_n + 0.9 u_{n-1} \tag{4}$$

where $\sigma^2 = 4$.

The matrices for the discrete state-space representation of the disturbance are as follows: (Nembhard and Nembhard, 1996):

$$A = \begin{bmatrix} 0.6 & 0.9 \\ 0 & 0 \end{bmatrix} \quad B = \begin{bmatrix} 1 \\ 1 \end{bmatrix} \quad C = [1 \ 0] \quad D = [0]$$

The theoretical time series simulation model (Nembhard and Nembhard, 1996) is shown in Figure 4 and Figure 5.

The following graph illustrates that simulation methods can be used in time series analysis. It can be used as an example to demonstrate Simulink possibilities in changing various parameters of simulation model. It should be noted that the use of real data in this model is quite unwieldy.

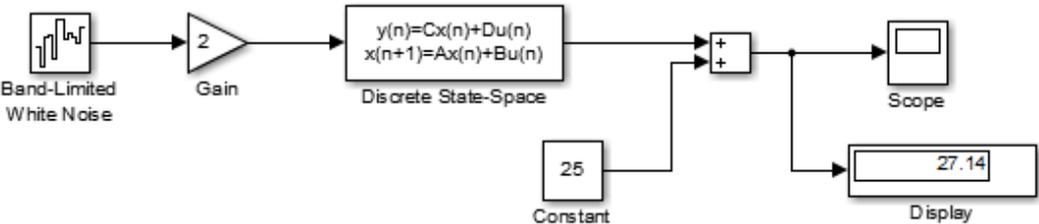


Figure 4. Time series ARMA process simulation model
 (Source: author’s construction - adapted from Nembhard and Nembhard, 1996)

To demonstrate the practical use of a time series with the help of Matlab, data on the unemployment rate in Latgale in the years 1996-2015 (see Table 1) from the Latvian Central Statistical Bureau was taken.

In graphical form it is shown in Figure 6. This data time series is shown in Figure 7.

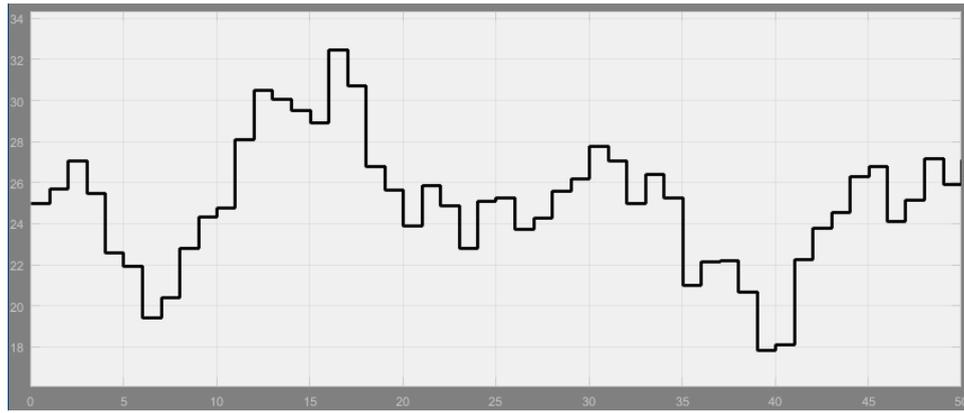


Figure 5. Realization of the ARMA random stream process
 (Source: author's construction - adapted from Nembhard and Nembhard, 1996)

Table 1

Unemployment rate in Latgale (Source: CSB, 2016)

Year	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Level (%)	23.4	16.7	17.0	21.9	20.9	20.8	18.5	18.0	14.6	14.5

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Level (%)	11.6	8.7	9.6	18.0	19.5	19.0	20.9	17.3	17.3	19.0

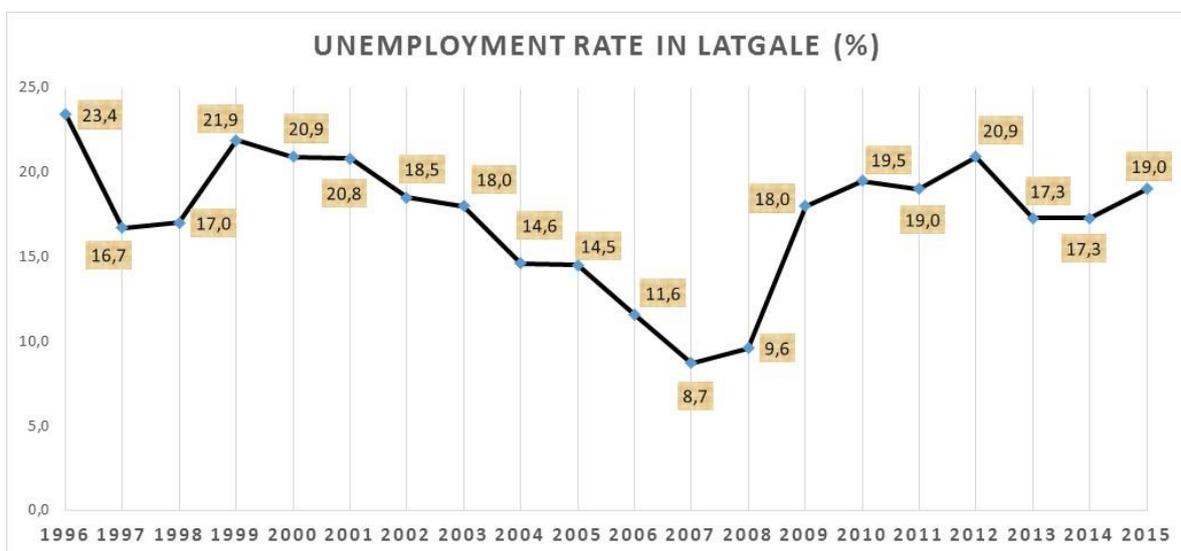


Figure 6. The unemployment rate over the years
 (Source: author's construction)

Although in this case, the visual model may seem complicated, but its further understanding makes it possible to create complex system models - not only in engineering, but also in economics, environmental sciences, sociological studies, and so on (Anderson, 2005; Cerný, 2009; Chapra & Canale, 2015).

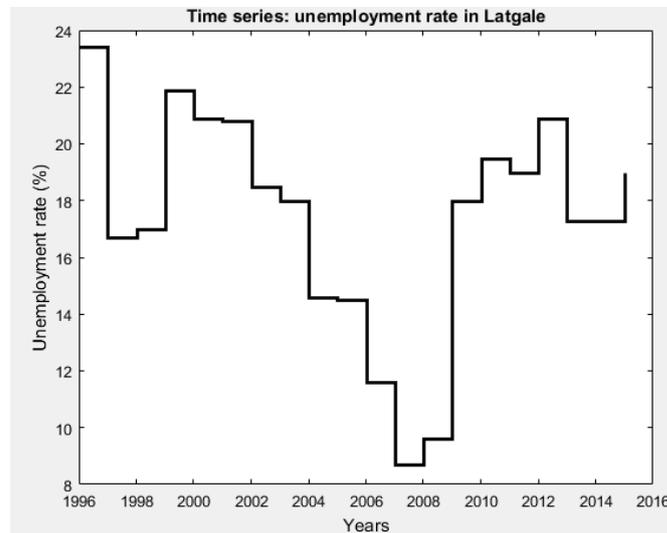


Figure 7. Time series graph (*Source: author's construction*)

Conclusions

In this article the author substantiates the usefulness of introduction of a simulation model for the economics studies. It gives researchers the opportunity to visualize different correlations in graphical form.

In study part the possibilities of simulation modeling for economic studies are demonstrated - optimal tax rate searching and time series application. As a practical example, the time series acquisition from data on the unemployment rate in Latgale is shown. In further studies, the author intends to focus on time series forecasting.

The author is assured that the use of simulation models makes it possible to raise a researcher' horizon and gives an idea of the potential uses of such models.

Thus it can be concluded that the Matlab Simulink tool is a very suitable tool not only in engineering calculations, but also can serve as a simulation model visualization tool in various science fields.

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EKONOMISKO PROCESU MODELĒŠANAS VIZUALIZĀCIJAS IESPĒJAS

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Kopsavilkums

Pieredze rāda, ka pētnieki izziņas procesā daudz labāk uztver grafisko informāciju, nevis analītiskās sakarības. Daudzi kursi operē ar modeļiem, kas agrāk bija pieejami tikai matemātikas un fizikas disciplīnās. Kā iespējamais risinājums būtu paketes Matlab Simulink izmantošana dažādu algoritmu realizācijā gan inženierzinātņu disciplīnās, gan arī ekonomiskajos pētījumos.

Tika veikta pētījumu sērija, lai demonstrētu Matlab Simulink piemērotību dažādu ekonomisko disciplīnu simulācijas modeļu vizualizācijas nolūkā. Jāatzīmē, ka bieži vien analītiskais risinājums ir daudz vienkāršāks, nekā vizuālais Simulink modelis, taču perspektīvā tas dod sapratni par šādu modeļu izmantošanas lietderīgumu. Lai arī šajā gadījumā vizuālais modelis varētu likties sarežģīts, taču tā izpratne turpmāk dod iespēju veidot kompleksus sistēmu modeļus – ne tikai inženierzinātnēs, bet arī ekonomikā, vides zinātnēs, socioloģiskajos pētījumos utt.

Šajā pētījumā autors pamato simulācijas modeļu ieviešanas lietderību jau sākotnējā pētījumu procesā, kad paralēli analītisko sakarību apgūšanai var ievest arī simulācijas modeļus.

Pētījumu daļā tiek demonstrētas modelēšanas iespējas ekonomiskajos pētījumos – optimālās nodokļu likmes skaitļošanā un laikrindu analizē. Kā praktisks piemērs ir parādīta laikrindu iegūšana no datiem par bezdarba līmeni Latgalē. Turpmākajos pētījumos autors plāno pievērsties laikrindu prognozēšanai.

Tādējādi var secināt, ka Matlab Simulink ir ļoti piemērots rīks ne tikai aprēķinu veikšanai, bet arī var kalpot kā simulācijas modeļu vizualizācijas rīks dažādās zinātņu jomās.

Atslēgas vārdi: Matlab Simulink, modelēšana, simulācija, vizualizācija.

CONSUMER BEHAVIOUR MANAGEMENT FEASIBILITY STUDY IN THE CULTURAL AND CREATIVE INDUSTRY: THE CASE OF 'THE EMBASSY OF LATGALE "GORS"'

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Abstract. *The number of cultural institutions has increased in recent years. The range of cultural events offered is so varied that cultural institutions often have problems to choose the most suitable marketing techniques in order to successfully compete in the saturated market and attract new customers. Since 2013 in Latvia three new concert halls have been built and a number of cultural centers have been renovated, therefore it is necessary to seek for new ways to act on the consumer and acquire that part of the public that have not attended cultural institutions or do it very rarely. The aim of the research is to explore possibilities on how to manage consumer behavior- influencing factors when choosing cultural event offers. The following primary research methods are used: the monographic or descriptive research method, the Statistical Package for the Social Sciences (SPSS) processing method, the deductive method, evaluation and analysis of surveys, graphical analysis and synthesis. The key results are: a survey of consumer behavior - influencing factors of cultural event attendance by generations in the Embassy of Latgale "GORS". Consumer behavior influencing factors by generations in the Embassy of Latgale "GORS" needs to be realized in order to attract new customers.*

Keywords: *consumer behavior, consumer behavior - influencing factors, cultural economics, generations*

JEL code: Z190, M110, M390, L780, R320

Introduction

There is a growing interest in a variety of cultural events and role of cultural event attendance as a kind of spending leisure time. Cultural event attendance became not only a leisure activity but also a meeting place and an opportunity to socialize. In order to be able to offer a high-quality programme of cultural events, a consumer behaviour research needs to be realized, which will allow cultural institutions to offer more appropriate products to meet consumer needs.

Customers are becoming more demanding and to be able to understand and predict customer's behaviour, it is necessary to identify the factors influencing the purchase of cultural products.

The aim of this research is to explore possibilities on how to manage consumer behaviour influencing factors when choosing cultural event offers.

The main tasks of the research are: to provide an analysis of cultural and creative industry theoretical aspects, to evaluate consumer behavior - influencing factors of cultural event attendance by generations in the Embassy of Latgale "GORS" and to elaborate conclusions and proposals.

Research object: consumer behaviour.

Research subject: consumer behaviour influencing factors.

Research period: 2012.-2016.

Research hypothesis: using different marketing activities depending on the distinctive types of generations is a way for attracting new customers.

Main research methods applied in the research are the monographic or descriptive research method, the Statistical Package for the Social Sciences (SPSS) processing method, the deductive method, evaluation and analysis of surveys, graphical analysis and synthesis.

Novelty of the research: it performed a consumer behaviour analysis from the generational perspective at the Embassy of Latgale "GORS".

Research results

1. Development trends in the cultural and creative industry

Back in the 90ies the attempts to evaluate the socioeconomic impact of the sector of culture in economically developed countries such as the United Kingdom, the USA, Germany, France, Denmark, Australia etc. showed that the sector associated with culture or entertainment, non-traditional production structures and objects of copyright was the fastest growing sector with the greatest development potential. Cultural and creative industries have great potential for local, regional and national development as well as a significant impact on the wider economy (Heilbrun, 2001).

M. Pūķis indicates that in Latvia from the beginning of the 90ies a devious view has dominated regarding culture as the consuming sector, which did not significantly affect the economy. The cultural and creative industry affects public budgets, the public-private economy in both ways - directly and indirectly (Pūķis, 2011).

In all documents and studies related to the cultural and creative industry not only in Latvia but also worldwide there are problems and difficulties to define the term "cultural and creative industries".

In Estonia creative industries, by definition, are an economic sector that is based on individual and collective creativity, skills and talent and is capable of creating welfare and jobs through the generation and use of intellectual property (Ministry of..., 2005).

In Lithuania, creative industries are defined as activities based on an individual's creative abilities and talent, the objective and result of which is intellectual property and which can create material wellbeing and work places (Makselis, 2010).

In the United Kingdom, creative industries are defined as 'those activities which have their origin in individual creativity, skill and talent and which have a potential for wealth and job creation through the generation and exploitation of intellectual property' (Ministerial..., 2001).

In Latvia the Ministry of Culture defines cultural and creative industries as 'activities, based on individual and collective creativity, skills and talents, which by the way of generating and utilizing intellectual property are able to increase welfare and create jobs (LR Kultūras..., 2014).

Because the United Kingdom was the first which offered an original definition of creative industries (the definition developed by the British government in 1998 and updated in 2001), it has been widely adopted by other countries including Latvia, with sectors adapted based on local commercial and cultural importance (British..., 2008).

Comparing the above mentioned definitions, the author concludes that all the definitions by their nature are very similar, with minor adjustments in each of the countries examined. In the United Kingdom's and Lithuania's proposed definition, cultural and creative industries are based on individual creativity, while in the Latvian and Estonian definitions there appears the term "collective creativity", which means that not only the individual can create cultural products, but also group work based on a collective idea creates a cultural product. An example is the folk dance group where an individual dancer's talent is not as high valued as the team's value added.

The author recommends creating such a sector as cultural heritage in Latvia. In Latvia, cultural heritage as value is highly appreciated and currently not shown as a sector. It is going to promote the cultural heritage for next generations and help to strengthen national identity. The author also recommends combining television, radio and interactive media sectors into one sector. It is going to reduce the sector's fragmentation.

Table 1

Cultural and creative industries in selected countries
(The author's compilation based on LR Kultūras..., n.d., Ministry..., 2005, Makselis, 2010, Ministerial..., 2001, Directorate-General..., 2006)

		Country				
Cultural and creative industry sectors	Latvia	Estonia	Lithuania	United Kingdom	European Union	
	Advertising	Advertising	Advertising	Advertising	Advertising	
	Architecture	Architecture	Architecture	Architecture	Architecture	
	Television	Audiovisual field	The creation and broadcasting of radio and television programmes	Television and radio	Television and radio	
	Music	Music	Music	Music	Music	
	Visual arts	Arts	Visual arts	Designer fashion	Visual arts	
	Radio and interactive arts	Cultural heritage	Cinema and video art	The art and antiques market	Cultural heritage	
	Design	Design	Design	Design	Design	
	Cultural education	Performing arts	Crafts	Crafts	Video games	
	Publishing	Publishing	Publishing	Publishing	Books and press	
	Computer games and interactive software	Information technology	Software and computer services	Interactive leisure software (i.e. video games)	PC manufacturers, MP3 player manufacturers, mobile industry, etc.	
	Performing arts	-	Applied arts	Performing arts	Performing arts	
	Recreation, entertainment and other cultural activities	-	Dramatic art	Film and video	Film and video	
	Cinematography	-	-	Software and computer services	-	

Table 2

Number of the employed in the cultural and creative sector in Latvia by industry, 2012-2014 (*the author's compilation based on LR Kultūras..., 2014*)

Cultural and creative industries	Year			
	2012	2013	2014	Changes (2014/2012)
Performing arts	7728	8061	8689	961
Heritage	4866	4954	5060	194
Film and video	640	689	775	135
Radio un television, the Internet	2491	2653	2828	337
Music	187	149	156	-31
Books and press	3699	3570	3488	-211
Design	535	627	927	392
Architecture	2262	2281	2521	259
Advertisement	4761	5240	5930	1169
Crafts	661	689	747	86
Education and individual creativity	3553	3685	3784	231
Recreation and entertainment	9450	10007	11587	2137
Total:	40833	42605	46492	5659

Table 2 indicates that the total average number of employees in the creative and cultural sector has been growing year by year and, comparing 2014 with 2012, the number in this sector has increased by 5659 employees. The number of employees increased in all the industries, with the exception of music as well as books and press, which represents the biggest drop - 211 employees. The reason could be associated with rapid technological development. The highest rate was observed in the leisure and entertainment industry, where the number of the employed has increased by 2137 employees since 2012. This industry generally has also the largest number of employees, whereas the smallest number is in the music industry.

The author is convinced that the cultural and creative industry's development in Latvia is influenced by the fact that primarily creative and qualified people are concentrated in large cities. In the case of Latvia, it is the capital city of Riga. That's the reason why the cultural and creative industries' development in rural areas is not so fast. But in order to develop and improve the offers of cultural activities in the regions, three concert halls were built, which are located in Cesis, Rezekne and Liepaja. The concert halls are offering a wide range of cultural events, works of art and interior objects exhibitions, as well as other creative activities. The availability of the concert halls has contributed to the cultural sector's

development in the regions and stimulated the overall development of the Latvian economy.

2. Evaluation of consumer behaviour-influencing factors at the Embassy of Latgale “GORS”

To find out the factors that influence consumer behaviour and the decision-making process when choosing to attend cultural events at the Embassy of Latgale “GORS”, the author conducted a survey, which involved information about respondents and nine questions. The main task of a survey as a qualitative method is to determine consumer attitude towards cultural events offered in the Embassy of Latgale “GORS”, motivations, behaviour and the factors influencing the decision-making process.

The research used both direct and indirect questionnaires through the Internet. In the survey, there were collated and analyzed 253 respondents - 90 men and 163 women aged from 13 to 68 years.

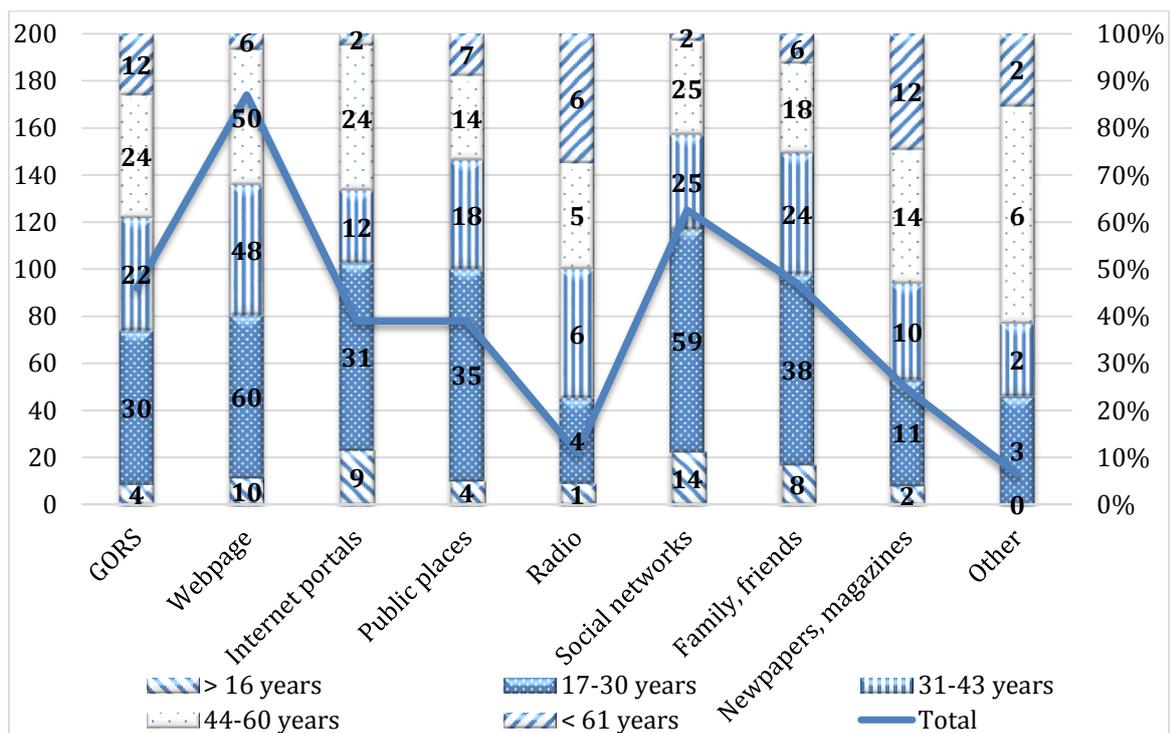


Figure 1. Information gathering channels about cultural events at the Embassy of Latgale “GORS” from the generational perspective
(Source: own research)

The major channel for obtaining information about cultural events at the Embassy of Latgale “GORS” was the website - www.latgalesgors.lv, as 69% of all the respondents used this channel. Forty nine % of the respondents were using social networks, but only 9% of all the

respondents were using radio as an information gathering channel about cultural events at the Embassy of Latgale “GORS”. The respondents indicated that also TV and the websites - www.bilesuparadize.lv and www.bilesuserviss.lv were widely used as information channels.

Generation Z was mainly using social networks to gain information about cultural events. Generation X, Y, and Baby Boomers as the main information channel, used the website – www.latgalesgors.lv. Veterans, as the main information gathering channel, used the Information Centre at the Embassy of Latgale “GORS” and newspapers and magazines (see Figure 1).

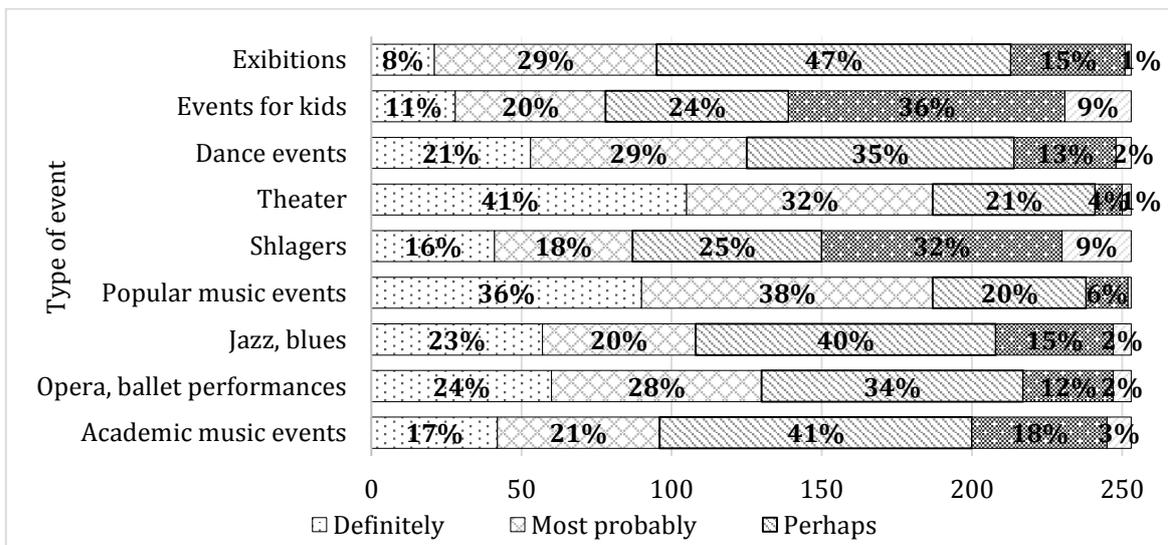


Figure 2. Attendance by type of events
(Source: own research)

Figure 2 shows that the respondents mainly attended theatre and popular music events, as 41% of the respondents noted that would definitely attend theater and 36% of all respondents will definitely attend popular music events. Only 8% of the respondents indicated that they would definitely attend exhibitions. Thirty six % of all the respondents noted that they would not attend events for kids. This is explained by the fact that only families with kids attend this type of events. The answer “perhaps” was widely represented, which meant that this part of the audience might change their view and after a variety of marketing activities could attend cultural events.

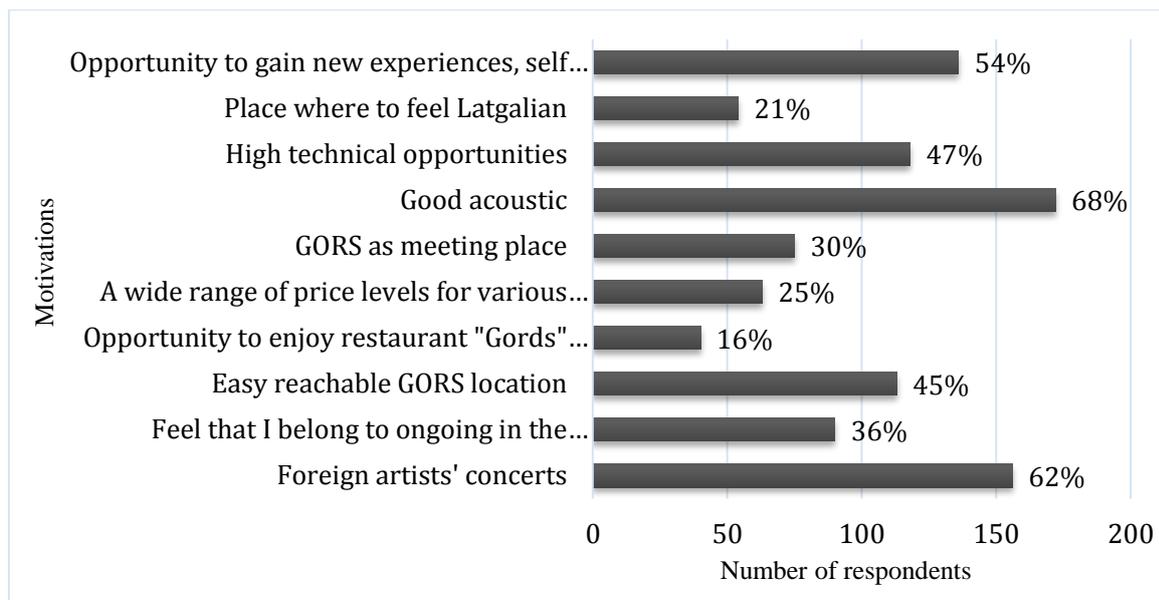


Figure 3. The main motivations to visit the Embassy of Latgale “GORS”
(Source: own research)

The respondents were mostly affected by cultural factors and environmental factors. The main motivation for choosing to attend cultural events at the Embassy of Latgale “GORS” was good acoustics (68%), which is an environmental factor. The second biggest motivation was opportunity to attend a foreign artist’s concerts (62%), which is a cultural factor. Only 16% of all the respondents noted that main motivation was opportunity to enjoy meals and drinks offered by restaurant “Gords”. It means that psychological factors affect visitors the least.

Table 3
Consumer behaviour-influencing factors from the generational perspective (Source: own research)

Motivations	Age					Total number of respondents
	Under 16, %	17-30, %	31-43, %	44-60, %	Over 61, %	
Opportunity to gain new experience, self-improvement	77	54	49	55	40	136
Place where to feel Latgalian culture	6	18	18	28	47	54
High technological opportunities	65	41	51	42	67	118
Good acoustics	65	70	71	58	93	172
GORS as a meeting place	29	25	28	35	40	75

Table 3 continued

Wide range of price levels for various events	12	25	25	20	60	63
Opportunity to enjoy restaurant "Gords" meals and drinks	0	11	25	19	13	40
Easy reachable location of GORS	18	46	48	44	60	113
Feeling that I belong to the ongoing in the concert hall	41	29	41	32	67	90
Foreign artists' concerts	82	60	62	58	60	156

For generation Z (the age group up to 16 years of age), the main motivation to attend cultural events at the Embassy of Latgale "GORS" was opportunity to attend foreign artists' concerts (82%). No one from this generation mentioned opportunity to enjoy restaurant "Gords" meals and drinks as the main motivation. It shows that for generation Z, the main behaviour-influencing factors were cultural factors.

For generation Y (the age group from 17 to 30 years of age), the main motivation was good acoustics (70%). Only 11% of all the respondents, as a motivation to attend culture events in the Embassy of Latgale "GORS", mentioned opportunity to enjoy restaurant "Gords" meals and drinks. It shows that for generation Y the main behaviour-influencing factors were environmental factors and cultural factors.

Seventy one % of all the respondents in the age group from 31 to 43 (generation X), as the main motivation to attend the Embassy of Latgale "GORS", mentioned good acoustics. A less important motivation for this generation was the fact that the concert hall was a place where to feel Latgalian culture (18%). It shows that for generation Z the main behaviour-influencing factors were cultural factors. For generation X the main behaviour-influencing factors were environmental factors.

Baby Boomers (the age group from 44 to 60 years of age), as the main motivations indicated good acoustics and opportunity to attend foreign artists' concerts (58% in each statement).

For Veterans the main motivation was good acoustics (93%), and the main behavioural-influencing factors were environmental factors.

As a less important motivation, all the generations indicated opportunity to enjoy restaurant "Gords" meals and drinks which is a psychological factor. The author concludes that psychological factors do not influence the attendance of cultural events at the Embassy of Latgale "GORS".

Conclusions and suggestions

The main information gathering channels about culture events at the Embassy of Latgale "GORS" were the website – www.latgalesgors.lv represented by 174 respondents or 69% and social networks represented by 125 respondents or 49% of the total. This confirms the importance of the Internet as an information obtaining channel. The main behaviour-influencing factors when choosing to attend the Embassy of Latgale "GORS" were cultural and environmental factors. Most of the respondents, as the main motivation to attend cultural events at the Embassy of Latgale "GORS" indicated good acoustics (68% or 172 respondents) and opportunity to attend foreign artist concerts (represented by 62% or 156 respondents).

When developing marketing activities to increase the attendance of cultural events, it is important to take into account cultural event attendance from the generational perspective. This will help to better define the target audience and to select the most appropriate channels for transmitting information to each of the generations. It is important to be aware of the company's target audience and the company's aims because each of consumer generations prefers different communication channels for obtaining information about the product. It will help to reach a wider audience and more effectively manage the company's financial resources.

In Latvia the Ministry of Culture need to create such as sector as cultural heritage followed the Estonian and European Union example. In Latvia, cultural heritage as value is highly appreciated and currently not shown as a sector. Creating such as sector would help to strengthen national identity and promote the cultural heritage for the next generations. In Latvia the government needs to develop support program that would allow small businesses to offer competitive products on the market and would help to increase small business growth and development.

The hypothesis of the research was confirmed - using different marketing activities depending on the distinctive types of generations is a way to attract new customers.

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PATĒRĒTĀJU UZVEDĪBAS VADĪBAS IESPĒJU IZPĒTE KULTŪRAS UN RADOŠAJĀ NOZARĒ: LATGALES VĒSTNICĪBAS "GORS" PIEMĒRS

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Kopsavilkums

Arvien vairāk pieaug interese par dažādiem kultūras pasākumiem un arvien lielāku lomu ieņem kultūras pasākuma apmeklējums, kā brīvā laika pavadīšanas veids. Kultūra tās dažādākajās izpausmēs ir mūsu ikdienas sastāvdaļa. Kultūras pasākumu apmeklējums ir kļuvis ne tikai par brīvā laika pavadīšanas veidu, bet arī par satikšanās vietu un iespēju socializēties. Lai spētu piedāvāt kvalitatīvi izstrādātu kultūras pasākumu programmu un sasniegtu savus klientus, ir nepieciešama patērētāju uzvedības izpēte, kas kultūras iestādēm ļautu piedāvāt patērētāju vēlmēm atbilstošāku produktu klāstu.

Raksta mērķis ir izpētīt iespējas vadīt patērētāju uzvedību ietekmējošos faktorus kultūras norišu piedāvājumu izvēlē.

Izvirzītā mērķa sasniegšanai ir izvirzīti šādi uzdevumi:

1. Sniegt kultūras un radošās nozares teorētisko aspektu analīzi.
2. Veikt patērētāju uzvedību ietekmējošo faktoru novērtējumu par kultūras pasākumu apmeklēšanu Latgales vēstniecībā GORS, kā arī veikt iegūto datu analīzi.
3. Izdarīt secinājumus un izstrādāt priekšlikumus par patērētāju uzvedības vadības iespējām kultūras nozarē - pasākumu piedāvājumu izvēlē.

Pēc iegūtajiem rezultātiem autore secina, ka kvalitatīvu kultūras norišu piedāvājums ne tikai palielina kultūras nozīmi Latvijā, bet arī veicina ekonomikas izaugsmi kopumā.

Svarīgākais informācijas iegūšanas kanāls par pasākumiem, kas norisinās Latgales vēstniecībā GORS ir mājaslapa – www.latgalesgors.lv, ko informācijas iegūšanai izmanto 174 respondenti jeb 69% un sociālie tīkli, ko pārstāv 125 respondenti jeb 49% no kopēja respondentu skaita. Tas apstiprina interneta kā informācijas kanāla nozīmīgumu. Pircēju rīcību, izvēloties apmeklēt kultūras pasākumus Latgales vēstniecībā GORS, visvairāk ietekmē kultūras faktori un ārējās vides faktori.

Izstrādājot pasākumu veicināšanas aktivitātes kultūras pasākumiem, jāņem vērā klientu apmeklējums pa dažādiem pasākuma veidiem paaudžu griezumā. Tas ļaus veiksmīgāk noteikt pasākuma mērķauditoriju un palīdzēs izvēlēties atbilstošākos informācijas nodošanas kanālus katrai no paaudzēm. Kultūras uzņēmumiem un Latgales vēstniecības GORS mārketinga nodaļas vadītājam ir svarīgi apzināties uzņēmuma mērķauditoriju un to, kādus mērķus uzņēmums vēlas sasniegt, jo katra no patērētāju paaudzēm izvēlas atšķirīgus komunikācijas kanālus informācijas iegūšanai par produktu. Tas ļaus sasniegt plašāku auditoriju un efektīvāk vadīt uzņēmuma finanšu resursus.

Atslēgas vārdi: patērētāju uzvedība, patērētāju uzvedību ietekmējošie faktori, kultūras un radošā nozare, paaudzes.

THE ROLE AND IMPORTANCE OF COMPANY CRISIS DIAGNOSIS IN ANTI-CRISIS MANAGEMENT

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Abstract. *Nowadays, under a free market, crises at companies are a frequent phenomenon; however, anti-crisis management and related aspects are currently a little researched problem in Latvia. The research aim is to examine the nature of company crisis diagnosis and its role and importance in the anti-crisis management system. The research general tasks are: to describe the nature of company crisis diagnosis and review the scope, purpose and tasks of performing a diagnosis; to examine the role and importance of company crisis diagnoses in the company's anti-crisis management system. To achieve the aim, the following research methods were employed: monographic, descriptive, comparison as well as analysis. The present research performed an analysis of the definitions of company crisis diagnosis, an examination of the scope of purposes and tasks of performing a diagnosis; it defined the crisis diagnosis as the systematic application of several different (usually financial) models aimed at assessing the situation of the company, as well as the discovery of indications of a potential crisis. Also, the role and importance of diagnosis of a crisis at a company in its anti-crisis management were determined stressing the fact that crisis diagnostic is a source of high-quality and credible information about the real situation and the availability of resources as well as the basis for carrying out further anti-crisis activities and making decisions both during the process of crisis prevention and within the overall company management system.*

Keywords: *Anti-crisis management; company crisis; crisis diagnosis.*

JEL code: *M000; M290*

Introduction

Nowadays, under a free market, crises at companies are a frequent phenomenon. The emergence of crises in the economy of a company is not always associated with the business performance of the legal entity itself: economic cycles and other macroeconomic relationships determine the emergence of a number of crises at the company. Therefore, a modern company management system has to be appropriate for discovering the indications of a potential crisis beforehand or providing the effective management of the current crisis as well as for protecting the company from negative consequences as much as possible. In this respect, foreign scientific practice in the fields of management and economics offers a wide range of research investigations dedicated to anti-crisis management – a separate kind of company management. Foreign research studies (Meište & Jakštie, 2015; Garškaite-Milvydiene, 2014; Altman & Hotchkiss, 2006;

Darling & Kash, 1998; Коротков, 2003; Бланк, 2006; Авдошина, 2012; Решетникова, 2011) have focused on anti-crisis management from a number of perspectives: company management under a comprehensive economic crisis, a set of measures to be implemented in the insolvency situation of a company and particular activities to be done by an administrator during restructuring, reorganisation or bankruptcy.

In Latvia, a few researchers (Mogorite, Magidenko, et al., 2012; Didenko, Magidenko, et al., 2008; Didenko, Mogorite et al., 2012) have performed examinations of the principles of anti-crisis management and of overcoming a crisis. That is why anti-crisis management and related aspects are a little researched problem in Latvia.

Hypothesis: a company crisis diagnosis is an important initial element of anti-crisis management for the company.

The research aim is to examine the nature of company crisis diagnosis and its role and importance in the anti-crisis management system.

The research object is company crisis diagnoses. The research subject is the role and importance of company crisis diagnoses in the anti-crisis management system.

The specific research tasks are as follows:

- To describe the nature of company crisis diagnosis and review the scope, purpose and tasks of performing a diagnosis;
- To examine the role and importance of company crisis diagnoses in the company's anti-crisis management system;
- To elaborate conclusions on the key principles of company crisis diagnoses and their role and importance in the company's anti-crisis management system based on the review of scientific and specific literature.

To achieve the aim, the following research methods were employed: monographic, descriptive, comparison as well as analysis. An analysis of the definitions of company crisis diagnosis was performed, the scope of purposes and tasks of performing a company crisis diagnosis was examined, the definition of the term crisis diagnosis was supplemented based on foreign research methodologies, the role and importance of performing company crisis diagnoses were identified as well as the most important conclusions were drawn by using the mentioned methods.

Company crisis diagnosis, its purpose and main tasks

To date, the problem of diagnosing a crisis at micro level (the level of a business entity) has been little researched in Latvia. However, a number of interpretations of company crisis diagnosis are available in the foreign scientific literature. The term diagnosis is defined as the revelation of

nature and causes of a particular phenomenon; as the identification, description of a problem (Darling & Kash, 1998); or as the identification of the symptoms or signals, which determine the existence of a problem (Smith, 1995). An examination of the object to be diagnosed aims to yield the diagnosis results, i.e. to make a conclusion on the state of the object diagnosed (Решетникова, 2011). The mentioned and similar explanations may be theoretically considered to be universal, and they may be employed in various fields, including economics.

The latest research studies (Sakalas & Virbickaite, 2011; Garškaite-Milvydiene, 2014; Meište & Jakštie, 2015) define a crisis diagnosis as the application of several different (usually financial) models aimed at assessing the situation of the company, as well as the discovery of indications of a potential crisis. By defining this term in such a way, the object to be diagnosed is specified: a company and its financial situation. A number of researchers (Львова, 2015; Бурцева & Жарких, 2012; Решетникова, 2011; Бланк, 2006) point that a company diagnosis is a process that takes place in a particular space and time and it is of systematic nature (Асаул & Коротаева et al., 2007). For these reasons, it is advised to integrate the principle of regularity in the definitions of a company crisis diagnosis, placing focus on the systematic application of models aimed at assessing the situation of the company and the discovery of indications of the crisis.

Based on the diverse definitions of the term company crisis diagnosis, the scientific literature provides a number of definitions of the purpose of performing it. In general, the purpose of performing a diagnosis is defined as the necessity to identify the deviation of performance indicators from the standard (Решетникова, 2011) and to establish a diagnosis for the object examined or to give an assessment of the object's state as of the end date of a process (Коротков, 2003; Минаева & Юткина, 2008; Курочкин, 2015) and for the future (Коротков, 2003; Минаева & Юткина, 2008), as the results of the crisis diagnosis are often employed to forecast the company's future prospects (Баймахамбетова, 2010) as well as to simulate the potential scenarios of the crisis.

Detailing the definition leads to the purpose of performing a company crisis diagnosis – to assess the company's situation and to reveal and describe the indications and nature of a crisis beforehand (Баймахамбетова, 2010). Based on an examination of the nature of crisis diagnosis and the definitions of purposes of performing a diagnosis, one can find that the key purpose of performing the crisis diagnosis is to assess or diagnose the company's situation and to identify the indications and characteristics of a potential or the current crisis beforehand.

In general, the tasks of performing a diagnosis may involve the identification of certain activities and their implementation aimed at improving the performance of all elements of the system (Коротков, 2003; Минаева & Юткина, 2008; Курочкин, 2015). To provide effective business performance and in order not to lose a competitive advantage, every company has to persistently observe (critically) its current situation (Решетникова, 2011). Performing such a task can be provided by a correctly functioning system of crisis diagnosis.

Company crisis diagnosis in the anti-crisis management system

Anti-crisis management is “a process, which anticipates the danger of crisis, carries out an analysis of its symptoms, measures limiting the negative consequences of the crisis and uses its factors to continue the development process” (Krzakiewicz, 2008). Researchers emphasize the essence of anti-crisis management: its task is to avoid a crisis at a company or, in case it is present, to minimise the potential negative consequences of the crisis for the company’s systems (Коротков, 2003; Garškaite-Milvydiene, 2014), including minimising the financial loss of the company. So, performing a crisis diagnosis, the purpose of which is to identify the indications of a potential crisis beforehand or reveal the characteristics of the current crisis, is a separate function of anti-crisis management and a specific stage (Баймахамбетова, 2010), which involves a number of gains (see Figure 1).

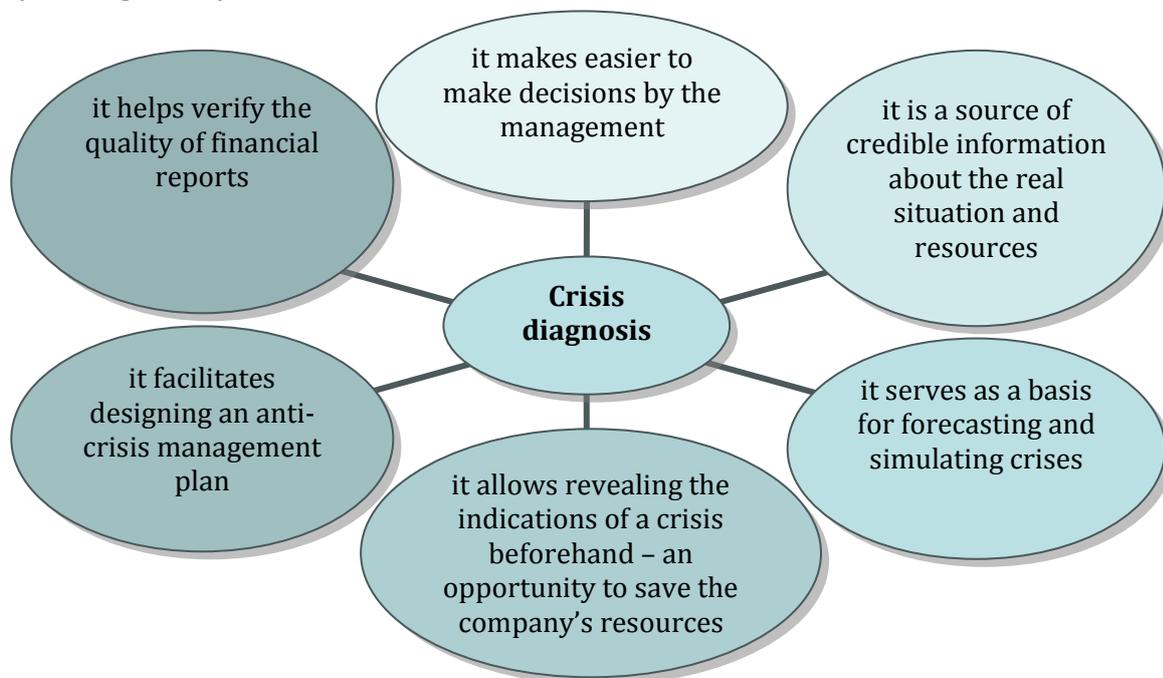


Figure 1. Gains from crisis diagnosis in the anti-crisis management system (created by author)

Performing a crisis diagnosis plays an important role, and it may be called an example of a company's decision-making and information system for its management (Sakalas & Virbickaite, 2011). When systematically assessing a company's situation and identifying the symptoms of a crisis, the company's managers and owners acquire high-quality and credible information about the company's real situation and opportunities at the particular stage of crisis (Балдин & Передеряев et al., 2012). If employing a number of indicators, performing a crisis diagnosis provides and to some extent facilitates an analysis of a large amount of information (Sakalas & Virbickaite, 2011).

Based on the result of performing a diagnosis, a company's managers get an opportunity to make prudent decisions regarding taking specific management measures and to design an adequate anti-crisis management plan (Sakalas & Virbickaite, 2011; Балдин & Передеряев et al., 2012), as well as to develop and correct the company's strategy and tactics according to the situation (Назаренко, 2011). "Diagnosing a crisis is important to identify its level of depth, what will lead to further decisions in selecting means and resources on crisis liquidation and restoring company performance or starting the bankruptcy process or event liquidation" (Sakalas & Virbickaite, 2011; Meište & Jakštie, 2015). After summarising the opinions available in the scientific literature, one can conclude that a crisis diagnosis is a source of high-quality and credible information about a company's situation and resources and it serves as a basis for carrying out further anti-crisis activities and making decisions not only during the process of crisis prevention but also within the overall company management system.

Some researchers (Sakalas & Virbickaite, 2011) point that the earlier the indications of a crisis are revealed, the more adequate anti-crisis (avoidance) measures can be taken and the greater opportunities to incur smaller losses are available for companies. For example, in the prodromal crisis phase, which some researchers (Mitroff et al., 1996; Fink, 2002; Paraskev, 2006; Meište & Jakštie, 2015) note as the first stage of crisis development, the probability of emergence of problems as well as of bankruptcy is very low because at this stage fluctuations in the performance of the company not always indicate a crisis (Meište & Jakštie, 2015), and by discovering crisis signals particularly in the prodromal crisis phase, the company can avoid significant losses, as in this case the company has an opportunity to identify the causes of a potential crisis, to design a plan of adequate anti-crisis activities and to avoid the crisis through effectively implementing the plan. Otherwise, "if the right moment is missed and situation is not assessed properly, a crisis can strike a company and its performance and management cannot avoid big losses"

(Meište & Jakštie, 2015). At the next acute crisis stage it is impossible to recover all the loss (Darling & Kash, 1998), and with the crisis becoming stronger, the company's losses increase, whereas its opportunities to stabilise the situation and regain the pre-crisis situation decline. By carrying out only crisis diagnosis activities when the indications of obvious problems appear, the probability of incurring greater losses considerably rises, which can lead to the deep insolvency of the company, its bankruptcy and the initiation of a liquidation procedure. That is why an early (timely) discovery of the indications of a crisis increases opportunities to overcome the crisis and reduces the probability of large losses in case the crisis develops. Performing a crisis diagnosis is one of the preventive measures in the anti-crisis management system.

However, it is important to note that a crisis diagnosis done at high quality and the timely identification of indications of a potential or the current crisis and the characteristics of the crisis that are objectively assessed, for example, the depth of the crisis, do not guarantee that the company's crisis is avoided completely. It is important to objectively assess the causes of the crisis, design an anti-crisis management plan according to the situation and prudently implement the plan's activities, mobilising the resources available to the company.

Conclusions

1. The latest research studies (Sakalas & Virbickaite, 2011; Garškaite-Milvydiene, 2014; Meište & Jakštie, 2015) define a crisis diagnosis as the application of several different (usually financial) models aimed at assessing the situation of the company, as well as the discovery of indications of a potential crisis. If taking into consideration the fact that a company diagnosis is a process of systematic nature, which takes place in a particular space and time, it is advised to integrate the principle of regularity in the definitions of company crisis diagnosis (which is not specific to the definitions examined), putting focus on the systematic application of models aimed at assessing the situation of the company and the discovery of indications of the crisis.
2. Detailing the definition leads to the purpose of performing a company crisis diagnosis – to assess the company's situation and to reveal and describe the indications and nature of a crisis beforehand.
3. After summarising the opinions available in the scientific literature, one can conclude that a crisis diagnosis is a source of high-quality and credible information about a company's situation and resources and it serves as a basis for carrying out further anti-crisis activities and

making decisions not only during the process of crisis prevention but also within the overall company management system.

4. An early (timely) discovery of the indications of a crisis increases opportunities to overcome the crisis and reduces the probability of large losses in case the crisis develops. Performing a crisis diagnosis is one of the preventive measures in the anti-crisis management system.

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UZŅĒMUMA KRĪZES DIAGNOSTIKAS LOMA UN NOZĪME PRETKRĪZES VADĪBAS SISTĒMĀ

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Kopsavilkums

Mūsdienu brīvā tirgus apstākļos krīzes uzņēmumā ir bieža parādība, savukārt pretkrīzes vadība un ar to saistītie aspekti šobrīd paliek maz pētīts jautājums Latvijā. Pētījuma mērķis ir izpētīt uzņēmuma krīzes diagnostiku, tās nozīmi un lomu pretkrīzes vadības sistēmā.

Pētījuma objekts – uzņēmuma krīzes diagnostika. Pētījuma priekšmets – uzņēmuma krīzes diagnostikas nozīme un loma pretkrīzes vadības sistēmā.

Pētījuma uzdevumi ir sekojoši:

1. Izpētīt uzņēmuma krīzes diagnostiku, apskatīt jēdziena saturu, mērķi un uzdevumus;
2. Izpētīt uzņēmuma krīzes diagnostikas lomu un nozīmi pretkrīzes vadības sistēmā;
3. Balstoties uz zinātniskās un nozares literatūras pētījuma rezultātiem, veikt secinājumus par uzņēmuma krīzes diagnostikas pamatnostādņem, tās lomu un nozīmi uzņēmuma pretkrīzes vadības sistēmā.

Izvirzītā mērķa sasniegšanai tika izmantotas monogrāfiska jeb aprakstoša pētīšanas, salīdzināšanas, kā arī analīzes metodes. Pielietojot minētās metodes, tika veikta uzņēmuma krīzes diagnostikas definējumu analīze, mērķu un uzdevumu saturiskā izpēte; aktualizēta un noteikta uzņēmuma krīzes diagnostikas loma un nozīme pretkrīzes vadības sistēmā, kā arī ir veikti šādi svarīgākie secinājumi.

Jaunākajos zinātniskajos pētījumos (Sakalas & Virbickaite, 2011; Garškaite-Milvydiene, 2014; Meište & Jakštiena, 2015) krīzes diagnostika tiek definēta kā vairāku atšķirīgu (parasti finanšu jomas) modeļu pielietojums uzņēmuma stāvokļa novērtēšanai, kā arī iespējamās krīzes pazīmju atklāšanai. Apsverot faktu, ka uzņēmuma diagnostika ir sistemātiska rakstura process, kas norisinās noteiktā telpā un laikā, tiek piedāvāts uzņēmuma krīzes definējumos atzīmēt sistemātiskuma principu (ko neparedz izpētītie definējumi), liekot akcentu uz sistemātisku modeļu pielietojumu uzņēmuma stāvokļa novērtēšanai un krīzes pazīmju atklāšanai.

Izejot no konkretizētā krīzes diagnostikas definējuma, tās mērķis ir novērtēt uzņēmuma stāvokli jeb veikt diagnozi un laicīgi identificēt iespējamās vai esošās krīzes pazīmes un raksturlielumus.

Apkopojot vairākus zinātniskajā literatūrā izklāstītus viedokļus, var secināt, ka krīzes diagnostika ir kvalitatīvās un ticamas informācijas avots par uzņēmuma konkrēto situāciju un resursu esamību, kā arī pamats turpmāko pretkrīzes pasākumu veidošanai un lēmumu pieņemšanai ne tikai krīzes novēršanas procesā, bet arī vispārējā uzņēmuma vadības sistēmā. Savukārt agrīnā (savlaicīga) krīzes pazīmju diagnosticēšana palielina krīzes pārvarēšanas iespējas un samazina uzņēmuma lielo zaudējumu varbūtību, tā krīzes attīstības gadījumā.

Atslēgas vārdi: krīzes diagnostika; pretkrīzes vadība; uzņēmuma krīze.

EVALUATION OF PHARMACEUTICAL CARE SERVICES' QUALITY IN LATVIA: THE CASE STUDY OF "MENESS APTIEKA"

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Abstract. *The availability of quality pharmaceutical care services is an important precondition for the nation's welfare, therefore their quality maintenance and regular evaluation is one of the main challenges that pharmacies have to deal with. Based on the previous studies of theoretical fundamentals of service quality, the authors have set the research aim to apply SERVPERF and SERVQUAL methods of service quality evaluation for identifying the quality gaps in "Meness aptieka" pharmaceutical services. Retrospective evaluation of service quality can only partly show if quality is at sufficient or insufficient level, therefore authors recommend service providers to use a combined quality evaluation system which includes both identifying of customer expectations and their real experience, afterwards comparing those evaluations to detect gaps in real performance. The research results showed that the quality of the four surveyed "Meness aptieka" pharmacies' services in Jurmala is at high level and meets customer expectations. There were few minor quality gaps detected, among which most important was customers' dissatisfaction with new product promotions in pharmacies, which are perceived rather as aggressive sales than holistic care for customer's health.*

Keywords: pharmaceutical care services, service quality, SERVPERF, SERVQUAL.
JEL code: L15, L84

Introduction

The health of population is one of the most important prerequisites for public happiness and welfare. Nowadays, medicinal products are an indispensable and essential part of health care services in all cultures and societies. Available access to medicine is a crucial precondition for many disease prevention programmes and the treatment component of virtually all diseases. Equally important is the pharmacist who is specifically educated and trained health care professional, to whom the company has entrusted the distribution of medical products. In order to deal with

health-related needs of the population, pharmacists are assuming increasing responsibility for the final outcome of medical treatment and are expected to improve their experience on regular basis to consult people not only about medical products, but also actively get involved in holistic health promotion, disease prevention and prevention-related services.

However, after visiting the website “sudzibas.lv” (“complaints website “ that accumulates various negative comments, references about products and services in Latvia, and thus can be regarded as a “black list” indicating companies with negative reputation), the authors conclude that the population of Latvia quite often complains about the quality of pharmaceutical services in almost all pharmacy networks. Although it is impossible to fully trust those references, it still shows the most problematic areas with which the management of pharmacy networks has to deal with. Almost all complaints with a few exclusions have been addressed to unsatisfactory rendering of services, i.e. pharmacist’s work (poor knowledge of languages, indifferent attitude, rudeness, insufficient competence, poor knowledge of active components in a product etc.). Since the market of pharmaceutical care services is mature and saturated in Latvia including both local and international capital intensive pharmacy chains, the management of pharmacies is highly interested in opportunities to timely identify the gaps in service provision. However, up to now pharmacies mainly have focused on retrospective evaluation of service quality, most often using a “secret customer” method. The authors of the article have aggregated scientific literature on service quality to search for new opportunities how to manage service quality more efficiently taking into consideration not only management’s objectives, but also customers’ expectations, which in authors’ opinion is an important driving force of the development of contemporary and high quality services of pharmaceutical care.

The **aim** of the present research is, basing on the SERVPERF and SERVQUAL methods of service quality evaluation, to identify the quality gaps in “Meness aptieka” pharmaceutical services. The **object** of the research is service quality evaluation. The **subject** of the research is service quality evaluation in “Meness aptieka” pharmacies. The authors have formulated the **hypothesis**: quality disconfirmation models are easy to adapt and useful for constant monitoring and perfection of pharmaceutical services.

The **tasks** of the research were:

1. to describe alternative theoretical models for service quality evaluation;

2. based on the theoretical fundamentals of service quality, to define the quality dimensions of pharmaceutical care service;
3. to perform empirical investigation of service quality disconfirmation model and identify the quality gaps of “Meness aptieka” pharmaceutical care services.

Scientific methods

In the research work, theory analysis was applied to aggregate the most important aspects of service quality evaluation. Analytical method was applied to investigate the dimensions of a pharmaceutical service product and perform gap analysis of its quality. Statistical method (SERVQUAL) was applied to aggregate “Meness aptieka” customers’ service evaluations. Logical construction method was applied in the conclusion part to present the authors’ conclusions about the results of the research.

Research results

The brand owner of pharmacy companies “Meness aptieka” and wholesaler “Recipe Plus” is JSC “Sentor Farm aptiekas” that is incorporated in a local holding company JSC “Repharm”. JSC “Sentor Farm aptiekas” was founded in 2003. “Recipe Plus” medicine wholesaler was established in 1995. “Recipe Plus” company’s share capital is 1 643 416 EUR, and it is the provider of medicine and medical products for 750 Latvian pharmacies and more than 100 medical facilities. “Sentor Farm” company’s share capital is 199 202 EUR. This pharmacy company incorporates more than 220 pharmacies and 12 subsidiary pharmacies in Riga and regions of Latvia, thus it can be regarded as the leading player of the industry (Meness aptieka, 2016).

A significant tool for enabling constant monitoring and perfection of provided services for all customer groups is company’s quality assurance program. The headstone of “Meness aptieka” quality assurance is its internally organized “secret customer” visit that is regularly used in all pharmacies of “Meness aptieka” chain.

The study of the scientific literature on service management and marketing reveals the complicated nature of a service product. The basic attributes that make it different from a good are services’ intangible character, inconsistent performance, the fact that services are more a chain of activities but not goods, the fact that services in most of cases are produced and consumed simultaneously and at last the fact that a service product value is created in the process of seller’s and buyer’s interaction (Solomon et.al., 2008; Palmer, 2015). Because of lack of hard measures, statistical quality control techniques are not always as successful in

services as they are in manufacturing. Therefore, service quality measurement requires other tools specially designed to measure service product as a set of tangible and intangible benefits (Grönross, 2007).

Service quality researchers, represented by Zeithaml et.al., (1988), Cronin, Taylor (1992), Mc Alexander, Kaldenburg (1994), have aggregated all service product contents in so called five service quality dimensions: tangibles, reliability, responsiveness, assurance and empathy. Each of the dimensions includes 4-5 criteria; consequently a service product is composed of 22 criteria from five dimensions. The five quality dimensions of a service product are: (1) tangibles (material benefits); (2) assurance (competence of the staff, knowledge and professionalism) (3) reliability (ability of the staff to perform the promised service dependably and accurately); (4) responsiveness (promptness and helpfulness of the staff to render the service timely, efficiently); (5) empathy (staff's individualized attention, understanding of the customer's special requirements).

Given the complex nature of services quality, it is not surprising that there have been divergent views about the best way to conceptualize and measure it (Palmer, 2007). To practically evaluate service quality in a company, there are basically two different approaches: (1) performance-only evaluation (hereinafter SERVPERF); (2) disconfirmation models (hereinafter SERVQUAL).

SERVPERF is a performance measurement tool, which is a survey, consisting of 22 questions about the performance of the five quality dimensions. Usually for the evaluation of a service quality a Likert scale from 1 (strongly agree) to 7 (strongly disagree) is used.

It is the simplest approach to measuring service quality which intends asking customers to rate the performance of a service. The approach, which is revealed in the formula below, developed by Cronin and Taylor in 1992, illustrates the way how it is accomplished in practice.

$$SQ_i = \sum_{j=1}^k P_{ij} \tag{1}$$

SQ_i – person's 'i' perceived service quality

k = service criteria/units

P = person's 'i' perception regarding the service criterion 'j' performance.

Another approach is SERVQUAL. By this approach a service is deemed to be of high quality when customers' expectations are confirmed by subsequent service delivery. Because of the emphasis on differences between expectations and perceptions, this model is often referred to as

disconfirmation model. The same survey questions as in SERVPERF are asked, only in this approach there are two survey parts: Part A – expectations regarding a service product quality and Part B – real performance of a service product quality. Measures of service quality can be derived quite simply by subtracting expectation scores from perception scores (Palmer, 2007). This approach, which has been developed by Zeithaml, Berry and Parasuraman in 1988, is illustrated in the formula below.

$$SQ_i = \sum_{j=1}^k (P_{ij} - E_{ij}) \quad (2)$$

SQ_i – person's 'i' perceived service quality

k = service criteria/units

P = person's 'i' perception regarding the service criterion 'j' performance

E = person's 'i' expectations regarding 'j' criterion of service quality

Since “Meness aptieka” already uses a “secret customer” quality control method, authors' intention was to practically test the SERVQUAL methodology. According to SERVQUAL methodology, the authors elaborated and performed two surveys: the first one (*A survey*) was organized to find out general expectations of the population regarding pharmaceutical care services and the second one (*B survey, which complies with SERVPERF survey*) was used to evaluate real performance of service quality in five pharmacies of “Meness aptieka” chain that are located in Jurmala. Authors' intention was to find out if quality of five Jurmala pharmacies complies with average expectations that population generally have regarding pharmaceutical services in Latvia. “A” part survey was organized as an online survey during January-March 2016 and in it 103 valid replies were received. Whereas “B part” survey was organized during January-March 2016 in five different concept (different locations, sizes, specializations, target markets, turnovers) pharmacies of Latvia resort city Jurmala, which hereinafter are called pharmacies X, Y, Z, and T, where authors personally interviewed incoming customers, thus obtaining 86 answers.

In order to perform quality evaluation in “Meness aptieka” chain, the authors have adapted survey questions (by changing their content and reducing their amount to nine questions) and titles of the five dimensions so that they more precisely fit to the specifics of the pharmaceutical service: (1) material benefits: questions 1-2 (pharmacy interior, decorations); (2) assurance: questions 3-4 (competence, product and price labels, placement, merchandizing); (3) innovations: question 5

(introducing customers with new products); (4) reliability: questions 6-7 (ability to receive health control tests; pharmacist's appearance, language knowledge etc.); (5) empathy: questions 8-9 (willingness to help, personalised care, tolerance etc.).

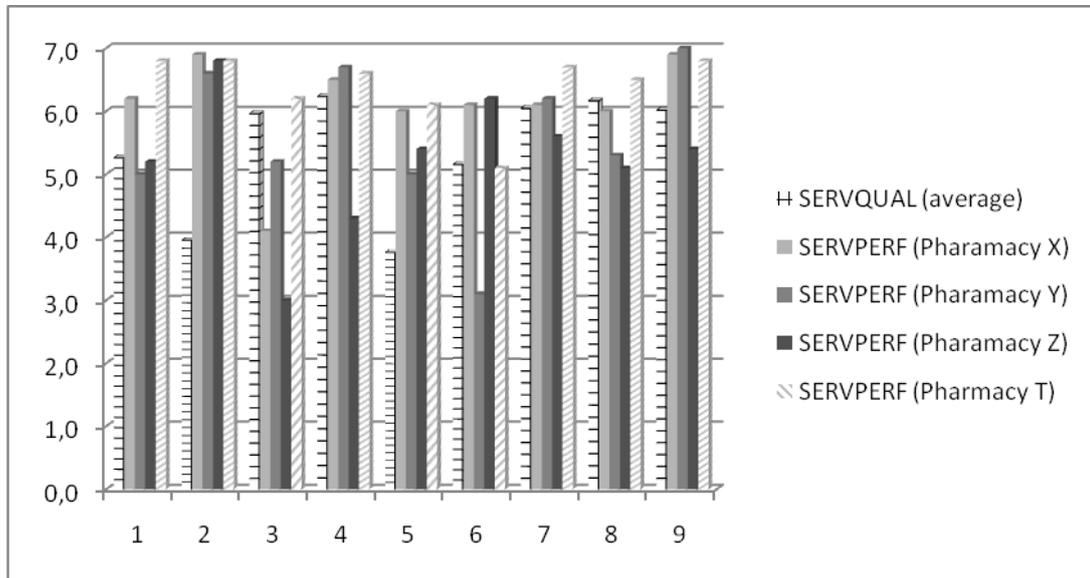


Figure 1. Comparison of SERVQUAL (expectations) and SERVPERF (real performance) survey results in “Meness aptieka” four pharmacies (Source: Matute, 2016)

Figure 1 reveals that both in pharmacy X and T interior and decorations (question 1) exceed customers' expectations, whereas in pharmacies Y and Z almost meet customer expectations, which in general means that in these pharmacies material dimension of the pharmaceutical services is optimal and complies well with customer needs. Question 2 was focused on finding out if customers appreciate the availability of customer rest area, and here customers' answers show that such area in fact is unimportant for them. Accordingly, in pharmacies could use this area for other better purposes. Regarding product placement and visibility of prices (question 3), only pharmacy T meets customer expectations. The rest of pharmacies due to different reasons have caused customer disappointment (insufficient space, dark, empty shelves etc.), however, it must be emphasized that this aspect in the overall pharmaceutical service is important to customers. Question 4 inspects if pharmacist is able to provide quality advice, explanation about pharmaceutical products. The results show that this aspect is important for customers. The research data show that all pharmacies (except pharmacy Z) have indicated very good performance of this criterion, which has to be evaluated positively. Respondents' answers on question 5 show that in all pharmacies customers are regularly informed about the new products, however

customers do not highly appreciate availability of such information. The pharmacists involved in the research reported about many critical comments from customers who showed their dissatisfaction with wasting their personal time and unwillingness to listen to the new product advertising. Question 6 deals with assessing customers' experience with using health control services (e.g. blood pressure, weight control etc.). In this aspect, respondents' answers differ within the four pharmacies. In pharmacies X and Z customer expectations are exceeded, in pharmacy T they are not exceeded, but in pharmacy Y they are not delivered. The explanation to pharmacy's Y low evaluations could be justified by the fact that this pharmacy is located inside the hospital, thus "Meness aptieka" does not provide these service leaving them in profession doctors' area of competence. Respondents' replies to question 7 give evidence that professional competence of pharmacists is high in all pharmacies, except pharmacy Z. This pharmacy could be characterized as the one with smaller turnover, lower income customers, less attractive location, which makes this pharmacy a less attractive workplace for young and perspective specialists and thus forces the management to employ here pharmacists with less motivation to work better. Question 8 was focused on finding out if pharmacists are interested to satisfy customers' needs, are kind, sympathetic to every customer. The replies show that unfortunately only pharmacy T can meet customers' expectations regarding this aspect. The authors suggest that in such a situation the management should try to find out what exactly are the reasons for this pharmacy's positive evaluations and possibly apply benchmarking to transfer to other pharmacies the methods, approaches and system that are used in pharmacy T. The respondents' answers on the question 9 indicate that all pharmacists (except those from pharmacy Z) provide extensive, topical and clear information about the products, and customers' expectations are even exceeded in this aspect, which gives evidence of professionalism and responsiveness of "Meness aptieka" pharmacists.

Conclusions and suggestions

The analysis of theory leads to the conclusion that service quality evaluation is more complicated than evaluation of goods quality because services are intangible and mostly are consumed and provided simultaneously. Important component of the service product is its implementer. The analysis of pharmaceutical services clearly show that the role of pharmacist is highly important in the overall performance of the pharmaceutical service, therefore extensive quality evaluations should be organized on regular basis. Retrospective evaluation of service quality ("secret customer" method) can only partly show if quality is at sufficient/

insufficient/ optimal level, therefore authors recommend service providers to use a combined quality evaluation system which includes both identifying of customer expectations and their real experience of using the service afterwards comparing those evaluations to detect gaps in real performance. Authors' research gave evidence that quality disconfirmations models are easy to apply and adopt for evaluation of pharmaceutical services. Moreover, such models ensure regular monitoring of service quality and ability to precisely detect the quality gaps in the overall service product.

In order to clearly identify the problem areas of the service, the authors recommend specifying various quality dimensions, e.g. material benefits, responsiveness of the staff etc., because often quality problems concentrate only in several particular areas that can be easily eliminated by the management.

In general, the quality of the four "Meness aptieka" pharmacies services in Jurmala city is at high level and meets customer expectations. The management of "Meness aptieka" has to re-engineer the present approach of innovative/new product promotion at pharmacies because customers do not appreciate or even find it obtrusive if pharmacists actively recommend new products, and thus new product promotions are more perceived as aggressive sales than holistic care for customers' health by offering them the latest and improved performance products.

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FARMACEITISKĀS APRŪPES PAKALPOJUMU KVALITĀTES NOVĒRTĒŠANA LATVIJĀ: „MĒNESS APTIEKA” SITUĀCIJAS ANALĪZE

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Kopsavilkums

Kvalitatīvu farmaceitiskās aprūpes pakalpojumu pieejamība ir būtisks priekšnosacījums jebkuras nācijas labklājībai, tāpēc aptieku sniegto pakalpojumu kvalitātes uzraudzības un kontroles aspektu loma aizvien pieaug. Latvijā veikto veselības nozares reformu un taupības pasākumu ietekmē farmaceitiskā aprūpe ir kļuvusi par būtisku primārās veselības aprūpes sastāvdaļu, tādēļ šo pakalpojumu pieejamībai un kvalitātei tiek pievērsta aizvien lielāka uzmanība gan no nozares uzraugošo institūciju, gan sabiedrības puses, kas nosaka pētāmās tēmas aktualitāti. Balstoties uz iepriekš veikto pakalpojumu kvalitātes zinātniskās literatūras analīzi, autori uzstādījušu pētījuma mērķi izmantot SERVPERF un SERVQUAL metodes, lai noteiktu farmaceitiskās aprūpes pakalpojumu problemātiskās jomas “Mēness aptiekā”, fokusējoties uz Jūrmalas teritorijā izvietotajām dažāda koncepta aptiekām. Tā kā pēc autoru domām retrospektīva pakalpojumu kvalitātes izvērtēšana spēj tikai daļēji noteikt, vai kvalitāte ir atbilstošā vai neatbilstošā līmenī, tika izmantota kombinēta pakalpojumu kvalitātes novērtēšanas sistēma, kura paredz gan klientu gaidu noteikšanu, gan arī reālā izpildījuma novērtēšanu, noslēgumā salīdzinot abus šos rādītājus. Pētījuma rezultāti atklāja, ka četrās Jūrmalas aptiekās, kopumā ņemot, farmaceitiskās aprūpes pakalpojumi tiek sniegti augstā kvalitātes līmenī. Tomēr tika konstatētas arī atsevišķas pakalpojumu kvalitātes neatbilstības klientu gaidām, no kurām galvenā bija klientu neapmierinātība ar jauno produktu virzīšanas pieejām aptiekās, kuras klienti uztver kā agresīvu tiešo pārdošanu, bet nevis holistiskas rūpes par klientu veselību. Konstatētās plaisas „Mēness aptiekā” tīkla sniegto farmācijas pakalpojumu kvalitātē palīdz skaidrāk saskatīt prioritārās jomas, kas aptieku vadītājiem ir jāsakārto atbilstoši patērētāju gaidām.

Atslēgas vārdi: farmaceitiskās aprūpes pakalpojumi, pakalpojumu kvalitāte, SERVPERF, SERVQUAL.

TOURISM DEVELOPMENT IMPACT ON THE ECONOMY OF AZERBAIJAN

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Abstract. *The aim of this research is to explore tourism development impact on the economy of Azerbaijan. International tourism as a source of both direct and indirect incomes of the state encourages the development of different sectors not specific to the tourism infrastructure, but through the multiplier effect. In this context, the authors analyze the impact of tourism on employment in Azerbaijan and calculate the indirect impact of tourism on the economy of Azerbaijan due to the multiplier effect. The development of tourism in Azerbaijan is constrained by a number of factors, some of which have been analyzed in the paper. Moreover, based on some of the models and data available in Azerbaijan tourism statistics, the authors assess the indirect impact of tourism on the economy in a long term. The results can be used to assess the overall impact of tourism on the economy of the state; to forecast the development of the tourism industry; to forecast the development of related industries; to assess indirect effects of tourism on the growth of population welfare; to forecast the dynamics of change and the efficient use of labour resources; to develop an investment industry strategy; to develop an effective system of taxation, etc.. The following research methods were used: content analysis of tourism development documents, statistical data analysis; comparative analysis, synthesis, abstract and logical construction methods for studying tourism development opportunities.*

Keywords: *tourism; economic development, GDP, employment*

Jel Code: *01; 0180; J680*

Introduction

Rich historical, cultural, and natural heritage in Azerbaijan attracts tourists from all over the world. Azerbaijan is characterized by wilderness, a rich flora and fauna, numerous sources of minerals, ancient architecture, a kind of national culture and national cuisine, geological monuments like mud volcanoes, deep gorges, waterfalls. It is an area with 11 climate zones, where you can relax in all seasons. Azerbaijan has great potential for tourism development with its rich historical and cultural heritage, natural resources. These resources are the factors of the further development of tourism. In Azerbaijan, the direct impact of tourism is taken into account on the economy as a whole with a relatively high degree of reliability. Tourism is a source of both direct and indirect revenues of the state, encourages the development of various sectors, not specific to the tourism

infrastructure, but through a multiplier effect. This sphere impacts employment as well.

The aim of this research is to explore tourism development impact on the economy of Azerbaijan. To achieve this aim, several tasks were defined:

- to analyse the impact of tourism on employment in Azerbaijan;
- to analyse the indirect impact of tourism on the economy of Azerbaijan due to the multiplier effect;
- to work out proposals for the development of tourism in Azerbaijan.

The research subject: the factors influencing tourism development in Azerbaijan.

The hypothesis of this research: it is possible to increase the share of the tourism industry in the gross domestic product (GDP) of Azerbaijan.

Novelty: There are analysed the impact of tourism on employment and the indirect impact of tourism on the economy of Azerbaijan due to the multiplier effect.

The developed recommendations can be used to assess the overall impact of tourism on the economy of the state; to forecast the development of the tourism industry; to forecast the development of related industries; to assess indirect effects of tourism on the growth of population welfare; to forecast the dynamics of change and the efficient use of labour resources; to develop an investment industry strategy; to develop an effective system of taxation, etc.

To accomplish the objectives of this research study, the following research methods were used: content analysis of tourism development documents, statistical data analysis; comparative analysis, synthesis, abstract and logical construction methods for studying tourism development opportunities.

Research results

The impact of tourism on employment in Azerbaijan

Since 2003, the unemployment rate in Azerbaijan is evaluated not only by the number of the officially registered unemployed, but also according to ILO methodology. The ILO-Comparable estimates are based on full coverage surveys and present the employment and unemployment estimates in standard age groups for the core active ages, to minimise non-comparability related to differences in minimum or maximum age limits. To avoid inconsistencies associated with the use of different reference periods, the ILO-Comparable statistics are adjusted and expressed in terms of annual averages (IX ILO-Comparable..., 2012).

The number of the unemployed from 2002 to 2012 decreased by 195.5 thousand and was 243.1 thousand people. Successfully conducted by the state, employment policy plays an important role in reducing the number of the unemployed (Джавадова Р.Д., 2010).

The role of economic entities in the tourism industry, including hotel management in solving problems of employment is undeniable.

In Azerbaijan's tourism the average number of workers employed directly, including those employed in the hotel industry, and those who have specialized in accommodation facilities directly in the tourism industry annually increases. At the same time, it is difficult to understand what data should be included in the employment statistics, since workers, for example, hotels and restaurants not only serve tourists. The employment rate is higher in the resorts that are in great demand.

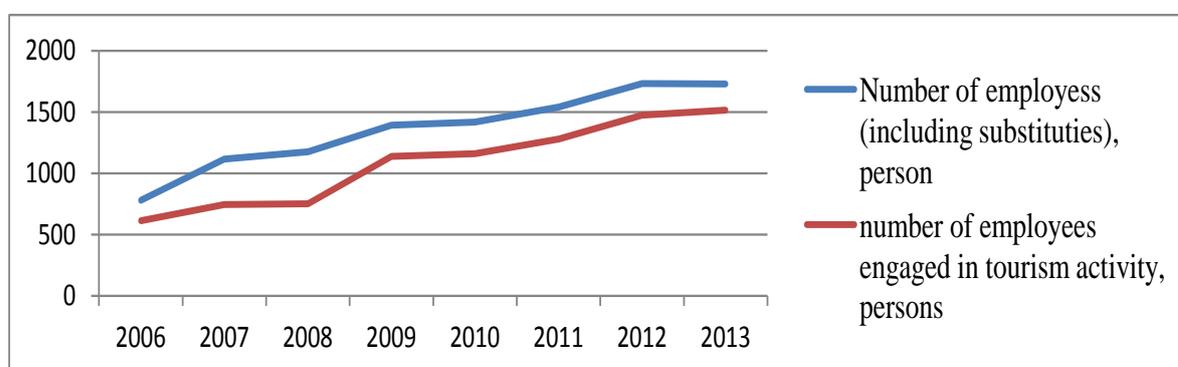


Figure 1. The dynamics of employment indicators in the field of tourism in Azerbaijan (Source: *World and regional statistics...*, 2015)

In 2013, rapidly growing demand for tourism services has led to an increase in the proportion of the employed population by 13% from the total population in comparison with 2002. The level of economic activity of the entire population during the study period increased by 7.3% and totalled 4.6 million people. The dynamics of employment in absolute terms was 514.2 thousand people. As a result, the dynamics of the economic activity of the labor force outstrips the number of workforce itself (World and regional statistics..., 2015).

Currently 7321 people are working in accommodation facilities. The number of employees in the past six years increased by about 65%. In 2012 the costs of accommodation enterprises on salaries were 27 389.2 thousand manats. The average monthly salary of workers in the sphere of hotel business in 2012 was approximately 310 manats; the salary has increased by 26.5% since 2011. In the same year, the average monthly

salary in the country was 397 manats (World and regional statistics..., 2015).

The indirect impact of tourism on the economy of Azerbaijan due to the multiplier effect

In Azerbaijan, the direct impact of tourism is taken into account on the economy as a whole with a relatively high degree of reliability. The calculation of the indirect effect of tourism is made possible through the use of a multiplier – a scalar indirect impact of tourism on the economy and social sphere of the state. The multiplicative effect of tourism is the most important, which is caused by the specifics of the industry, as well as the presence of “invisible export” paradox (Rzaev, R. R., Rzaeva, I. R., 2005)

The indirect impact of tourism on the economy depends not only on tourist expenditure in their place of residence, but also on the tendency of resource accumulation by the population and businesses involved in the present cycle. The higher is a tendency to accumulate, the lower is the value of the multiplier effect. Therefore, it is believed that a tourist multiplier for a particular region – a factor reflecting the increase in indirect revenues in the region, depending on the tourist expenditures. If the tendency of resource accumulation by the population and enterprises in one particularly selected region is assumed constant, an increase in the multiplier effect of tourism is necessary: the development of the tourism industry and infrastructure in the region; availability of rich and eco-friendly tourism resources; regional economic development and its consumer sphere; a good tourist image of the region; unlimited supply of import-substituting goods and services; free entry and exit of tourists in the region, etc. Since the main components in a multiplicative effect are tourist expenditures, the economic and legal policy in the region should be aimed at their maximum stimulation.

Tourist expenses in a particular place of residence is a revenue of tourism enterprises, transport companies, trade, consumer services, telecommunications, the business field of leisure and entertainment, etc. These revenues are an additional profit for investment, salaries, jobs etc. Moreover, for the budgets of all levels they induce additional taxes, fees, charges and fees. Then, on the next turnover cycle, they mean additional income of the company invested in its development that, in fact, leads to additional revenue for companies supplying equipment and materials, construction and implement etc. Such cyclical assets turnover: cost – income – expenses – revenues – ..., with certain reservations, can be described as a simplified model (Gulajev, V.G., 2008).

$$Y=I/(1-MPC), \quad (1)$$

where I - investments, which are defined as the costs of tourists; MPC – marginal propensity to consume. Marginal propensity to consume of the region (country), which is defined as the ratio of the change in the population consumption «ΔB» for a certain period to the level of change in income «ΔD», causing a change during this interval of time: $MPC = \Delta B / \Delta D$
In this case, a multiplier is

$$\lambda=1/(1-MPC), \quad (2)$$

that, in terms of $\delta = MPC$, is the sum of an infinitely decreasing geometric progression

$$\lambda = \delta + \delta^2 + \delta^3 + \dots + \delta^n, n=1,2,\dots \quad (3)$$

If it is considered that for each additional unit consumed the conditional δ is the increase in revenue in the first circulation of money, then the n-th step of calculating an increase of δ^n . Using the equation (3), it is possible to count the number of turnovers of tourist spent funds (transactions). Moreover, based on the model (1) and data available in Azerbaijan tourism statistics (Data of the State Committee of Statistics of the Republic of Azerbaijan for 2013, 2015), there should be assessed the indirect impact of tourism on the economy in a long term.

The average marginal propensity to consume is 0.7775. However, more than a refined MSP value is less than the average country level of 4.9%. Therefore, in further calculations MSP is assumed to be in the value of 0.7394 or 73.94%. Next, using the calculated multiplier model, it can be obtained that

$$\lambda=1/(1-MSP)=1/(1-0,7394)=3,84, \quad (4)$$

where on the basis of the equation (3), the multiplier effect of spending per tourist will be

$$\begin{aligned} &701/(1-0,7394)= \\ &701+0,7394*701+0,7394^2*701+0,7394^3*701+\dots+0,7394^n*701=2690 \end{aligned}$$

In this case, the average expenditure generates an additional income of \$701 a year per tourist in the country providing \$ 2690 in the city budget, making it at about 15 circles. The latter is easy to check if it is taken into consideration that starting with $n > 14$, the funds remaining in

circulation are very small, i.e., the inequality $0.7394n \cdot 701 < 10$ for all $n > 14$.

At the same time, it should be recognized that the obtained value of the tourist multiplier does not reflect a number of factors affecting it downward. A more accurate value of the multiplier can be obtained on the basis of its generalized differentiated model (Gulajev, V.G., 2008), which takes into account corrective (clarifying) factors. However, the existing methods of statistical data in the field of domestic tourism do not allow taking into account exogenous factors of the model in its entirety.

The multiplier can be corrected downwards for 15-40% if the standards of the International Classification of Tourism Activities (SIKTA) and on the basis of recommendations by the World Tourism Organization (WTO) Statistics of Tourism and the United Nations on the scale of Azerbaijan is taken into consideration. This means that the real value of the multiplier for the tourism of Azerbaijan will be in the range $2.304 \div 3.264$. Therefore, the average value of $\lambda = 2.784$, which allows to adjust the indicators of tourism development in Azerbaijan in the medium and long term at the stage of preliminary estimates. (Gulajev, V.G., 2008)

The results can be used to assess the overall impact of tourism on the economy of the state; to forecast the development of the tourism industry; to forecast the development of related industries; to assess indirect effects of tourism on the growth of population welfare; to forecast the dynamics of change and the efficient use of labour resources; to develop an investment industry strategy; to develop an effective system of taxation, etc.

Conclusions and suggestions

Azerbaijan is characterized by wilderness, a rich flora and fauna, numerous sources of minerals, ancient architecture, a kind of national culture and national cuisine, geological monuments, as mud volcanoes, deep gorges, waterfalls. It is an area with 11 climate zones, where you can relax in all seasons. Azerbaijan has great potential for tourism development.

Tourism is a source of both direct and indirect revenues of the state, encourages the development of various sectors, not specifically related to the tourism infrastructure, but through a multiplier effect. The tourism sector in Azerbaijan is developing day by day, becoming one of the most important sectors of the economy.

More faster growth of tourism can be encouraged by the development of a tourism development marketing strategy in Azerbaijan. New ways for tourism growth reveal collaboration opportunities: more close

cooperation between the public and private sectors in the development of tourism products and tourism infrastructure; more close cooperation between tourism business sectors and education institutions that provide tourism study programmes, in human resource development for improving the service level in the tourism industry.

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TŪRISMA ATTĪSTĪBAS IETEKME UZ AZERBAIDŽĀNAS EKONOMIKU

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Kopsavilkums

Azerbaidžāna ir atpazīstama ar savu neskarto dabu, bagāto floru un faunu, neskaitāmiem minerālvielu avotiem, seno arhitektūru, savdabīgo nacionālo kultūru un nacionālo virtuvi, ģeoloģiskajiem pieminekļiem, kā dubļu vulkāniem, dziļām aizām, ūdenskritumiem. Tā ir teritorija ar 11 klimatiskām zonām, kur var atpūsties visos gadalaikos. Azerbaidžānā ir liels potenciāls tūrisma attīstībai.

Pētījumā tiek analizēta tūrisma ietekme uz nodarbinātību Azerbaidžānā, aprēķināta netiešā tūrisma ietekme uz ekonomiku multiplikatīvā efekta rezultātā. Pamatojoties uz pēdējiem datiem, kas pieejami Azerbaidžānas tūrisma statistikā, ir izvērtēta netiešā tūrisma ietekme uz ekonomiku ilgtermiņā. Pētījuma rezultātus var izmantot, lai novērtētu kopējo tūrisma ietekmi uz valsts ekonomiku, prognozēt tūrisma nozares attīstību, kā arī saistīto nozaru attīstību, izvērtēt netiešo tūrisma ietekmi uz iedzīvotāju labklājības izaugsmi; prognozēt izmaiņu dinamiku darba resursu racionālai izmantošanai, kā arī izstrādāt tūrisma nozares stratēģiju, izstrādāt efektīvu nodokļu sistēmu u.c.

Atslēgas vārdi: tūrisms, ekonomiskā attīstība, IKP, nodarbinātība.

DEVELOPMENT OF THE IMAGE OF REZEKNE CITY

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Abstract. *The research analyzes the development of the image of Rezekne city (Latvia). Attractiveness of a city is described by its image. Three main target groups which are interested in city's attractiveness are: dwellers, tourists, and business people. The attitude of these target groups were researched in the previous studies by several researchers. It is important to review the negative and positive aspects presented in this research study to minimize the negative elements and highlight the positive or attractive elements. The nature of Rezekne as a potential tourist destination, mainly in the scope of its history and attractions, is an important issue which is discussed in this paper. The research was qualitative and exploratory, consisting of a literature review followed by an empirical investigation using interviews with tourism experts located in the city of Rezekne. The aim of the research study is to investigate tourism specialists' views on the opportunities for increasing the attractiveness of Rezekne city for tourists.*

Keywords: attractiveness, image development, image of city, tourists, tourist destination

JEL code: M390, L830

Introduction

Rezekne is the 7th largest city in Latvia. It is located at the cross of two strategically important transportation trunk roads and railway (Riga-Moscow and St. Petersburg-Warsaw), which creates good preconditions for successful development of the city. It has become a border city between the EU, NATO, and the Eastern states. Rezekne is located 242 km from the state capital Riga, 685 km from Moscow, 450 km from St. Petersburg, and 860 km from Warsaw.

Furthermore, the city provides several tourism offers like picturesque nature, historical and cultural monuments, and more. In addition, the city continues to develop activities with aim to increase incomes from tourists. Image of city and city's marketing increasingly become important issues for cities to ensure and maintain their attractiveness to tourists.

Improvements of infrastructure, several famous events like the 'Half Marathon', 'Latgale Pottery Days', 'Week of Latgalian Films' and 'Latgalian Gold Autumn's Sounds' festival, or cultural and historical objects like the Concert Hall 'GORS', which is known as the best concert hall in the Baltic area in terms of acoustic quality, are the reasons of the increasing number of tourists in Rezekne.

The attractiveness of Rezekne city has been investigated by several researchers: Ezmale S., Litavniece L., Silinevica I., Znotina D., Silicka I., Dembovska I. They have researched the attitude of the main target groups (city dwellers, business people, tourists) to attractiveness of Rezekne.

Unlike the previous studies, this research has explored the tourism specialists' views on the opportunities to increase the city's attractiveness in the view of tourists. The aim of this research study is to investigate the opportunities to increase the attractiveness of Rezekne city for tourists from the tourism specialists' point of view.

Hypothesis of the research: Rezekne city interesting for tourists with its cultural, historical, or relax opportunities. The methods used in this research study are as follows: the expert interview method, logical constructive methods, content analysis.

Analysis of inbound tourism in Rezekne city

According to Latgales statistika (Tab.1), the number of tourists in Rezekne increases year by year. In 2013, there were 12,277 guests who used tourist accommodation services, in 2014 – 14,816 guests, and in 2015 – around 16,275.

Table 1

Number of tourists in Rezekne in 2013-2015
(Source: Latgales statistika, 2016)

Year	Tourist accommodation services	Craftsman work-shops	Museums & Exhibition	Cultural, historical, and sacral objects	Farms visitations	Rec-reation firms	Natural objects	Total
2013	12277	1748	15846	760	45013	-	2789	78433
2014	14816	3434	19623	823	56565	-	3213	78851
2015	16275	3455	21213	836	58721	400	3316	104206

As well, annual growth in the number of participants of such events like 'Craftsman workshops', 'Museums & Exhibitions', 'Cultural, historical and sacral objects', 'Farm visitations', and 'Natural objects' was estimated. In 2015, the total number of tourists had increased by 25,355 visitors, compared with 2014.

Research results

Methodology

The aim of this empirical study is to discover the attractiveness of Rezekne City for tourists and to find out which are the opportunities the city provides to meet the needs of tourists from the tourism specialists' viewpoint.

For the research of this topic Express Interviews method was selected. The following factors have served as the main reasons of this selection: efficiency, high reliability, and quick obtainment of good results. Bogner, Littig, and Menz (2009) explain the advantages the Express Interviews methodology in this way: 'talking to experts in the exploratory phase of a project is a more efficient and concentrated method of gathering data than, for instance, participatory observation or systematic quantitative surveys. Conducting expert interviews can serve to shorten time-consuming data gathering processes, particularly if the experts are seen as "crystallization points" for practical insider knowledge and are interviewed as surrogates for a wider circle of players. Expert interviews also lend themselves to those kinds of situations in which it might prove difficult or impossible to gain access to a particular social field'.

As experts in the field of tourism marketing the following specialists were interviewed, see Tab.2.

Table 2
Experts in the field of tourism marketing (*source: author's data*)

Name of expert	Current position	Experience in tourism industry
R. Liepina	Professor, owner of guest house	Owner of guest house „Sidari”, Latgale region (15 years)
I. Silineviča	Professor in Regional Economics in Rezekne Academy of Technology (RTA)	Tourism guide (6 years) Manager of regional tourism projects (3) Author of textbook „Tourism Analysis”
I. Balčūne	Manager of Luznava Manor in Rezekne Municipality	Developer of new tourist products (1 year)
V. Deksne	Owner of a guest house	Owner of a guest house (8 years)
I. Dembovska	Lecturer in RTA	Experience in tourism industry (15 years)
I. Silicka	Lecturer in RTA	Experience in tourism industry (20 years)
E. Pastare	Tourism information consultant at Rezekne Tourism Development Centre	Previously – a consultant at Klein Ltd in Riga, Experience working with foreign tourists. (3 years)
I. Zelča	Consultant at Tourism Information Centre in Rezekne	Tourism consultant (9 years)

Several questions were included in the survey. They were related to the tourism attractiveness of Rezekne city, and to the tourists' satisfaction with transport prices, and their satisfaction with tourism objects. The interviewees were asked to formulate recommendations for increasing the attractiveness of Rezekne for tourism.

Results of the express interviews

Tourist attractiveness of Rezekne city

The statement '*GORS is the brand of Rezekne City*' was included in the survey because of its popularity far outside of Rezekne city. Brand of the concert hall GORS has been developed in cooperation with the brand development company MATKA and inhabitants of Latgale and is considered as a symbolic location expressing Latgale's immense will to live. In the formulated statement, all respondents (100%) have confirmed that GORS is the brand/trademark of Rezekne city.

The statement '*ZEIMULS is very attractive for tourists*' was included in the survey because of the breath-taking view to the castle hill and the historical city centre from the towers of the building. Moreover, it is regarded as the largest building under a green roof in the Baltic region and had been nominated for the „Latvian Architecture Award 2012”. It is one of the most original buildings in Latvia and it is recognised as the tourism object. 62% of the respondents have agreed in the opinion that ZEIMULS represents an attractive object for tourists. However, 25% of respondents have somewhat agreed and 13% – have disagreed with this statement.

The statement '*Latgale's culture and history museum*' is the main tourism object which discovers Latgalian identity' was included in the survey because visitors can explore thoroughly the history of the city, enjoy a variety of art exhibitions and join creative workshops.

50% of the respondents have strongly agreed and 25% agreed, and confirmed that 'Latgale's culture and history museum' was the main tourism object discovering Latgalian identity. The other 25% somewhat agreed with the statement.

The statement '*Rezekne is interesting only for tourists who are interested in history and culture*' was included in the questionnaire because it would help to find out if Rezekne had attractive places to offer for tourists without special interest in history and culture. 75% of the experts have strongly agreed, agreed, or somewhat agreed, and are of the opinion that the main focus of the city is based on history and culture tourism. But 25% of the respondents disagreed with this statement.

The statement *'The monument "United for Latvia" (Latgale's Mara) is the most recognizable symbol of Rezekne'* was included in the survey because it is the monument devoted to the participation of Latvians in war for independence in 1920 and is therefore an extremely important symbol of Rezekne city and very popular among tourists. It represents the efforts the nation has undertaken to rebuild and protect their country. According to the survey of experts, the monument 'United for Latvia' represents the most recognizable symbol of the city: 80% of the respondents have strongly agreed and 20% - agreed with the statement.

The statement *'The new Engineering Faculty building of Rezekne Academy of Technologies is a symbol for the way of innovative thinking of Rezekne'* was included in the questionnaire because it is one of the most contemporary buildings in the city. It reflects the progress and development of the city and in the whole region. At this point, all the experts (100%) have strongly agreed or agreed with the statement and had the opinion that the modern engineering faculty building demonstrates the innovation and progress of the city.

The statement *'The Castle Hill is the most remarkable and most visited place in Rezekne'* was involved in the survey because it represents the oldest historical monument and is therefore one of the places most visited by tourists. The evaluation of this statement shows that 62.5% of the respondents strongly agree or agree and are fully convinced that the Castle Hill is actually one of the most visited attractions in the city; 37.5% of the experts have somewhat agreed with this statement.

The statement *'Means of transport for tourists are available 24h'* was involved in the questionnaire because accessibility and the number of transport options have a great importance for tourists. 62,5% of the respondents have strongly disagreed or disagreed, and only 37.5% of the respondents have somewhat agreed with this statement. According to the experts, the transportation links within the city are rather skinny and upgradeable. During the day, one can get relatively well around the town, but it becomes difficult in the late evening.

The statement *'In the restaurants you will mainly find traditional Latgalian food'* was included in the questionnaire because traditional dishes are part of the culture. Tourists are not interested just seeing culture, but also tasting it. However, there are also tourists who prefer to eat food familiar to them. Therefore it is important to know, if tourists can find both in the restaurants. At this point, 67.5% of the experts have disagreed answering that a person could find more than just traditional Latvian food in the restaurants. Aside from that, there are some international food stalls such as 'Ausmenja Kebab' and 'La Pizza', or a traditional Chinese restaurant. In addition, visitor can find popular

international dishes on the menu in any restaurant. 20% of the respondents have somewhat agreed and only 12.5% - agreed with this statement.

The statement *'Rezekne Academy of Technologies has a remarkable role in preparing specialists for the tourism industry'* was included in the survey because tourism specialists are needed for the development of the tourism industry in Rezekne. There are study programme with tourism management specialization in Rezekne Academy of Technologies. 62.5% of the experts have strongly agreed/agreed and 37.5% - somewhat agreed with this statement and are absolutely confident that 'Rezekne Academy of Technologies' plays a quite important and productive role in terms of development of tourism experts.

The statement *'The quality of the hotel infrastructure in Rezekne meets the European standards and expectations of tourists'* was included in the survey because tourists make great emphasis on comfort and hygiene in hotels. Judged by the experts, the quality of the hotels and accommodations in the city is satisfactory and represents a relatively good price-performance ratio. 50% of the respondents have somewhat agreed and 37.5% - agreed with this statement. Only 12.5% of the experts have disagreed.

The statement *'The quality of service in hotels meets the European standards'* was included in the questionnaire because not only hygiene and comfort are important for tourists. In order to make customers not just satisfied but as well inspired for a return visit, a good service is necessary. Hence, the quality of service in the hotels and lodging meets the European standards according to the experts. 87.5% of the experts have agreed with this statement and only 12.5% of them have disagreed.

The statement *'The quality of the restaurant infrastructure meets the European standards'* was involved in the survey because not only the quality of food is important for tourists but also the ambience and the atmosphere have a major impact on the customers satisfaction. 37.5% of the respondents have agreed and another 37.5% - somewhat agreed with this statement. However, 25% of the experts have disagreed in this case.

The statement *'The quality of service in restaurants meets the European standards'* was included in the questionnaire because the service quality (friendliness/speed) has an extremely important role in restaurants. Even if the ambience is excellent, a bad service can be fatal for the business. On this issue, 37.5% of the experts have agreed and 25% somewhat agreed with this statement. However, 37.5% of the respondents have disagreed and are of the opinion that the quality of service in restaurants doesn't meet the European standards.

The statement *'There is good access to Rezekne by car, and by train'* was included in the survey because not only the transportation options within the city are important to tourists, but as well the access to the city from outside. If the place is difficult to reach, city can lose potential tourists.

Most of the respondents (87.5%) are convinced that accessibility of the city from outside is relatively satisfactory, only 12.5% of the respondents have disagreed with this statement.

The statement *'Rezekne has a good location from the geographical aspect'* was included in the questionnaire because the geographical location of a place has a great importance for tourism as well as for business (companies). If the neighbouring towns or regions are more accessible, the possibility to attract visitors or companies is higher.

According to the experts (87.5%), the city has a very good geographical location. 12.5% of the experts have somewhat agreed with this statement. Rezekne is situated in about 250 km to the east from Riga and around 63 km to the west from the Latvian-Russian border, at the intersection of the roads and railways of Moscow-Riga and Warsaw-Saint Petersburg transport routes.

Price-performance ratio of transportation

The statement *'Please evaluate the price-performance ratio of the following transport opportunities'* was included in the survey because the number, as well as prices, are extremely important for tourists.

50% of all respondents have the opinion that the price-performance ratio of public buses is good, 37.5% of respondents have answered that it is moderate. Only 12.5% consider that the price-performance ratio of buses is excellent.

In the case of taxis, 62.5% of the experts believe that the price-performance ratio is good, and 37.5% of them have noted that it is moderate.

Concerning the car rental, 62.5% of respondents have the opinion that the price-performance ratio is bad and 37.5% says it is moderate.

Satisfaction of tourists with tourism objects

The question *'To what extent does Rezekne meet the needs of tourists?'* was involved in the questionnaire because more tourism offers the city can provide, more needs of tourists can be met. 62.5% of the experts have the opinion that the environment, in general, in Rezekne is very good or even

excellent for tourists, 37.5% of experts believe the natural environment provided by the city is good.

Regarding 'the historical sights', 62.5% of the respondents have mentioned that Rezekne offers excellent/very good opportunities to visit historical places. Another 37.5% have noted it is good, but not excellent.

On the issue 'nightlife', 75% of the experts consider that the opportunities offered are average. 12.5% of respondents consider the nightlife opportunities as poor, and only 12.5% agree they are good.

Regarding 'shopping', 50% of the experts have the opinion that the opportunities are poor. The other 50% believe they are average.

62.5% of the respondents believe that tourism information is very good and 25% have even mentioned it is excellent. Furthermore, 12.5% consider that the tourism information in Rezekne is good.

Regarding the issue 'beach', 37.5% of the experts have valued it as poor and 25% have told it is average. Only 25% consider it is good.

Brand of Rezekne City

A query '*Please, state the brand of Rezekne City*' was included in the survey because it was interesting to find out what the particular experts thought of the brand of the city. All of the respondents, 100%, have agreed that 'GORS' is the image of Rezekne.

Recommendations for tourism development in Rezekne

A request '*Please, name your suggestions for development of tourism in Rezekne!*' was included in the questionnaire because it would help to find out opportunities for tourism development in Rezekne by evaluating the ideas and solutions of tourism experts. The developed proposals vary depending on the experts' views.

- Prof. Liepiņa (owner of the guest house) have noted that the development of low-price hostels and holding of different festivals as 'Latgale Folk Dance', 'Latgale Schlager Days', or 'Latgale Festival of Musicians' would be very important for tourism development in Rezekne.
- Prof. Silineviča is convinced that development of the tourism interest education (hobby groups) in every school (primary and secondary) of Latgale region would provide a good development opportunity for tourism. The aim of this informal education would be to raise children's interest about tourism opportunities in the native region from the early age.
- Mrs. Balcune, the manager of Luznava Manor in Rezekne

Municipality, have concluded that an improvement of public transport and car rental is necessary for development of tourism attractiveness of Rezekne city.

- Mrs. Dekšne, owner of the guest house, is convinced that development of medical tourism would be helpful to increase tourism revenues in Rezekne.
- Lect. Dembovska considers that creation of a new attractive tourism products (e.g. a new Spa hotel) would be a reasonable solution.
- The specialist of the Tourism Development Centre suggests to pay attention to development of the active tourism segment to attract more families with children and to make the city more alluring not only for admirers of culture and history, but also for fans of active recreation.

Conclusions and suggestions

Overall, the tourism offer of Rezekne city proves to be consistently positive, even if there are undeniable weaknesses. Despite the slowly increasing number of visitors, it is possible to speak about a very modest tourists' track record due to the existing versatile tourism infrastructure, recently achieved success in marketing, and promising potential.

The main potential of the city is its culture, history, and still untouched nature offering relaxation, nature experience, and enjoyment for the tourists.

The biggest challenge on the part of tourism stakeholders is to promote tourism, while obtaining its most valuable asset, the unique landscape, and natural heritage. Accordingly, establishment of a nature park and the classification as a world heritage can be considered as a key success factor for the sustainable tourism development in Rezekne.

The research has also shown that, in terms of marketing, not all of the tourism potential has been exploited. There is a lack of a comprehensive target group and theme-oriented marketing with clear strategies at the national and international level. Rezekne impresses with its diversity in a small location and needs to be positioned as an attractive destination on the global tourism market.

To obtain the tourists' appreciation, for example, an implementation of the ideas and solutions of the experts is needed. Though, it is possible only if the local, regional, and national stakeholders follow a clear strategy with exactly defined objectives and measures.

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RĒZEKNES PILSĒTAS TĒLA ATTĪSTĪBA

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Kopsavilkums

Iepriekšējie pētījumi par Rēzeknes pilsētas pievilcību aptvēra trīs galvenās mērķa grupas: pilsētas iedzīvotājus, tūristus un cilvēkus, kas nodarbojas ar uzņēmējdarbību.

Šī pētījuma mērķis ir izzināt tūrisma speciālistu viedokļus par iespējām palielināt Rēzeknes pilsētas pievilcību tūristu mērķa grupai.

Pētījumā izmantotās metodes: ekspertu intervija, loģiski konstruktīvā metode un kontentanalīze,

Rēzeknes pilsēta tūristiem visnotaļ atraktīva. Neskatoties uz to, ka apmeklētāju skaits pieaug lēni, daudzveidīga tūrisma infrastruktūras izaugsme veido daudzsoļu tūrisma galamērķa potenciālu. Galvenās tūrisma pievilcības pilsētā veido kultūras, vēstures un dabas objekti, kas piedāvā atpūtas, un dabas baudījumu iespējas. Pats lielākais izaicinājums no tūrismā ieinteresētajām personām ir pievienotās vērtības radīšana, izmantojot kultūrvēsturisko mantojumu, unikālo ainavu un dabas mantojumu, ko var uzskatīt par noteicošo veiksmes faktoru ilgtspējīgai tūrisma attīstībai Rēzeknē.

Atslēgas vārdi: pievilcība, tēla veidošana, pilsētas tēls, tūristi, tūristu galamērķis.

YOUNG PEOPLE IN THE EUROPEAN UNION LABOUR MARKET

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Abstract. *In an era of aging of the European Union population, it is crucial to take care of human resources in various spheres of their life. The potential of young people is particularly important, as their economic activity creates the basis of maintaining the European welfare state model. However, the labour market situation of young people is difficult. Moreover, the phenomena, which have recently attracted increasing attention, are remaining for young people without employment, education or training (NEET). The occurrence of NEET's resources is harmful at micro level - due to pauperization of European households as well as for the whole economy due to insufficient usage of human resources. The paper aim is to compare how the situation of young people differs in the European Union labour markets.*

The paper was based on both the desk-research of literature as well as the analysis of selected economic indicators of young people (aged 15-29 years). The indicator analysis was made through the usage of cluster analysis (Ward's method and k-means method). The data was gathered from the databases of Eurostat. The selected indicators determine the labour market situation of young people in the EU countries and they are derived from two years – 2006 and 2014.

Ward's and k-means methods allowed for dividing the EU countries into three groups. It occurred that the groups in 2006 have a completely different composition of countries than in 2014, which was mainly determined by crisis influences on the labour markets as well as directions of conducted reforms. Additionally, the k-means method allowed for comparison of selected groups on the basis of chosen variables and determination of countries with the best and the worst situation of young people.

Keywords: *young people, labour market indicators, labour market policy, educational policy, NEET, European Union, Ward's method, k-means method.*

JEL code: *J2, J6, J8*

Introduction

The European population is continually subject to aging. The historical shape of its age pyramid has moved away from a triangle (associated with an expanding population) and has been reshaped, with a smaller proportion of children and young people and an increased share of elderly persons (Eurostat, 2015).

In such a demographic situation, maintaining European welfare systems, pension schemes and public healthcare systems, while the overall demand for such services is likely to increase, due to the rising number of elderly

people, became a significant challenge. As such, policymakers are concerned about how to ensure the long-term sustainability of public finances in the face of a declining share of economically active people. The reasonable policy toward activation of young generations (together with family policy) can be treated as the priority of European cohesion orientation.

Such a policy is crucial, as the labour market situation of young people in the EU is much worse than in the entire generation. Moreover, the phenomena, which have recently attracted increasing attention, are remaining for young people without employment, education or training (NEET). Eurostat calculates that in 2014 the NEET rate of EU-28 reached 15.4%. The occurrence of NEET's resources is harmful at micro level - due to the pauperization of European households as well as for the whole economy due to the insufficient usage of human resources.

The paper aims to compare how the situation of young people differs in the European Union labour markets.

The following tasks were set to accomplish the aim:

1. identifying of the indicators describing labour market situation of young people,
2. comparing of the labour market situation of young people among the EU countries in 2006 (before the economic crisis) and in 2014 (when labour markets were already under the effects of the crisis),
3. clustering of the European Union countries with respect to selected young people's labour market indicators,
4. elaborating of conclusions concerning the conducted analysis of the EU countries.

The main thesis of the paper is that the labour market situation of young people in the European Union is significantly diversified.

The paper was based on both the desk-research of literature as well as the analysis of selected economic indicators of young people (aged 15-29 years) through usage of cluster analysis (Ward's and k-means methods). The data was gathered from the databases of Eurostat. The indicators were selected, which determined the situation of young people in the EU countries in two years – 2006 and 2014. The first year presented the period before the economic crisis, whereas in the 2014 the crisis has already fully affected European Union labour markets.

The main tendencies in professional activity of young people in the EU

The generation of people aged 15-29 in the EU is characterised by worse labour market indicators than their older counterparts. It concerns both a lower employment rate and a higher unemployment rate. The Eurostat data show that in 2014 the employment rate for the EU-28 countries reached 69.2% and the youth employment rate - 46.4%; at the same time the unemployment rate for the EU-28 population in total reached 10.2% and for young people aged 15-29 - 17.3%

Employment and education are intrinsically linked (EESC, 2011). The labour market situation of young people is determined not only by the potential of labour demand and the number of vacancies but also by the abilities of the education system in terms of providing graduates with the skills needed in the labour market.

Out of negative tendencies in professional activity of young people there should be determined early school leaving (ESL). It should also be noted that in most countries ESL is more prominent in vocational education training (VET) (European Commission).

As early school leaving is more frequent among young people from disadvantaged backgrounds, among people with migrant background and ethnic minorities such as Roma, and among boys, these should be key target groups for policy interventions. One of the objectives of the Europe 2020 strategy is to bring down the share of early school leavers to below 10% by 2020.

In the current conjecture, the integration of youths in the society can no longer follow the traditional and linear path and model (as a succession of steps from school to job), and hence is replaced by diversified and individualised trajectories from school to job. Thus, traditional approaches regarding the analysis of youths' vulnerable position in the labour market are no longer efficient, as many of these transitions are not highlighted by the conventional indicators of the labour force market.

Therefore, researchers, national and international authorities began to use alternative concepts and indicators for characterising and analysing the situation of the youths in the labour market. For individuals aged between 15 and 29 years and those who, irrespective of their educational level, are not employed or in educational or vocational training and hence exposed to a higher risk of social and labour market exclusion, the NEET concept (not in employment, education or training) was coined (Bălan, 2015).

The term NEET has come into the policy debate in recent years due to the disproportionate impact of the recession on young people (under 30 years old).

Unlike for unemployment or employment, there is no international standard for the definition of NEETs (Elder, 2015).

Eurostat, the ILO and certain other organizations have adopted the following definition of the NEET rate: *the percentage of the population of a given age group and sex who is not employed and not involved in further education or training* (Elder, 2015).

$$\text{NEET rate (\%)} = \frac{\text{unemployed non-students} + \text{inactive non-students}}{\text{youth population}} \times 100 \quad (1)$$

The numerator of the above indicator refers to persons meeting two conditions: (1) they are not employed (i.e. are unemployed or inactive), and (2) they have not received any education or training in the four weeks preceding the survey. The denominator, according to Eurostat, is the total population of the same age and sex group, excluding respondents who have not answered the question “Participation in regular education and training”.

Current literature frequently simplifies the measurement of NEETs to unemployed + inactive non-students, ignoring the fact that some unemployed persons are also students and should thus be excluded from the calculation.

The NEET's rate can be treated as an important indicator describing the level of social exclusion, as the association of NEETs to marginalization offers the best “fit” among the numerous interpretations (Elder, 2015).

Youths’ unemployment, the ‘NEET’ status, as well as the circumstances in which youths are forced to give up searching for a job, or forced to work in inadequate conditions have a strong impact on the economy of a society, on the families of these youths, and on their personal and professional development as well as on the society at large (Bălan, 2015).

Bynner and Parsons (2002) have identified in their developed studies a series of risk factors in becoming a NEET in Great Britain: the socio-economic fund of the family, parental education, the interest of parents in child’s education, the area of residence and the educational level for children.

Eurofound determined the following risk factors of becoming a NEET in the EU (Eurofund, 2015):

- education - young people with a low level of education are 3 times more likely to become a NEET compared to others¹.
- immigration - young people with immigration background are 70% more likely to become a NEET compared to nationals,
- disability - those declaring disability are 40% more likely of becoming a NEET compared to others,
- divorce - divorce of parents extends the possibility to become a NEET by 30%,
- unemployment - having parents who have experienced unemployment increases the probability of being a NEET by 17%,
- household income - young people with the low income in the household are more likely to become a NEET than others,
- location - living in remote areas increases the risk of becoming a NEET up to 1.5 times.

The labour market situation of young people in the EU countries

There were selected to the analysis a set of labour market indicators, which describe both the activity of young people in the labour market as well as their professional and educational exclusion. The analysis of those measures² (like youth employment rate, youth unemployment rate, youth long-term unemployment rate, early leavers from education and training, NEET rate) prove that the EU countries are diversified in terms of those measures. The EU countries were grouped in clusters following Ward's and k-means methods.

Ward's method is the most popular hierarchical agglomerative method used in the social sciences (Aldenerfer&Blashfield, 1984). This procedure creates groups which are highly homogeneous by optimizing the minimum variance, or an error sum of squares (ESS), within clusters (Teo, 2014).

The K-means method classifies a given data set through a certain number of clusters (assume k clusters) fixed a priori. The main idea is to define k centroids, one for each cluster (MacQueen, 1967). It is the most useful for forming a small number of clusters from a large number of

¹ However, tertiary education does not prevent against becoming a NEET. In the EU, 10% of young people with such an education have become a NEET. That share is lower for Austria, Denmark, Germany, the Netherlands, Sweden and the UK (it reaches less than 6%). At the same time, it is twice the EU average in Estonia and Italy - 20% (Eurofound, 2015).

² Beside the indicator of early leavers from education and training, which refers to persons aged 18 to 24, the rest of analysed indicators concern people aged 15 - 29.

observations. It requires variables that are continuous with no outliers. In the below analysis there were selected the following 13 variables - Figure 2 and Figure 4 (v1 - early leavers from education and training, v2 - youth employment rate (total), v3 - youth employment rate (female), v4 - youth employment rate (male), v5 - youth unemployment rate (total), v6 - youth unemployment rate (female), v7 - youth unemployment rate (male), v8 - youth long-term unemployment rate (total), v9 - youth long-term unemployment rate (female), v10 - youth long-term unemployment rate (male), v11 - NEET rate (total), v12 - NEET rate (female), v13 - NEET rate (male)).

In 2006 both clustering methods grouped the EU countries in three clusters - Figure 1 and Figure 2. Analysing the cluster participants, it can be noted that they are comparable in the groups selected by Ward's method and the k-means method. Cluster 1 consisted of: Poland, Croatia, Slovakia, Greece, Bulgaria, Italy, and Romania. Cluster 2 created by Ward's method gathered Belgium, France, Germany, the Czech Republic, Slovenia, Hungary, Cyprus, Latvia, Estonia, Luxemburg, Lithuania, Spain, Malta, Portugal, at the same time Cluster 2 formed by the k-means method additionally contained Finland and Sweden. Cluster 3 created by Ward's method included Austria, Ireland, the United Kingdom, Denmark, the Netherlands, Finland and Sweden (following the k-means method, the last two countries were not included in Cluster 3, as they joined Cluster 2).

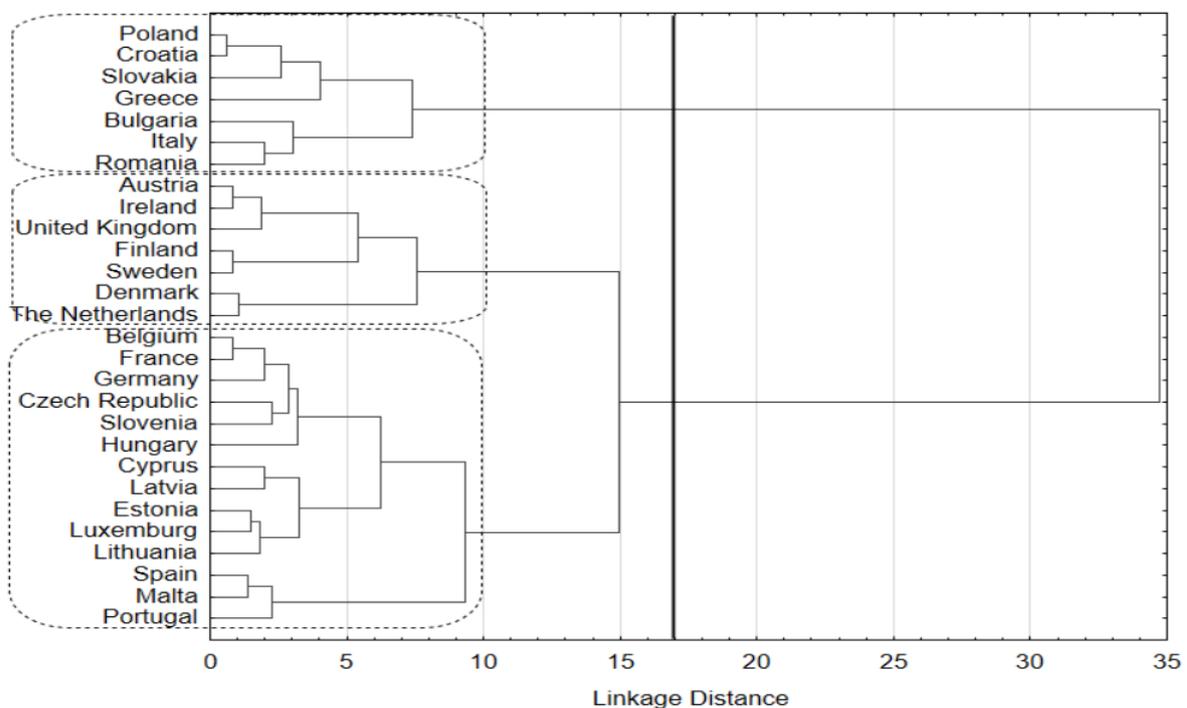


Figure 1. Tree clustering of the European Union countries with respect to selected young people's labour market indicators in 2006
(source: author's calculation based on Eurostat data)

The K - means method allows for profiling the clusters in terms of selected variables. In 2006, the countries grouped in Cluster 1 represented the worst situation of young people, as it was characterised by low youth employment rates, high unemployment rates (including long-term unemployment) as well as significant NEET rates. In that period, the best situation of young people was among countries gathered in Cluster 3 - Austria, Ireland, the United Kingdom, Denmark, the Netherlands. Cluster 2 represented the average level of the selected indicators.

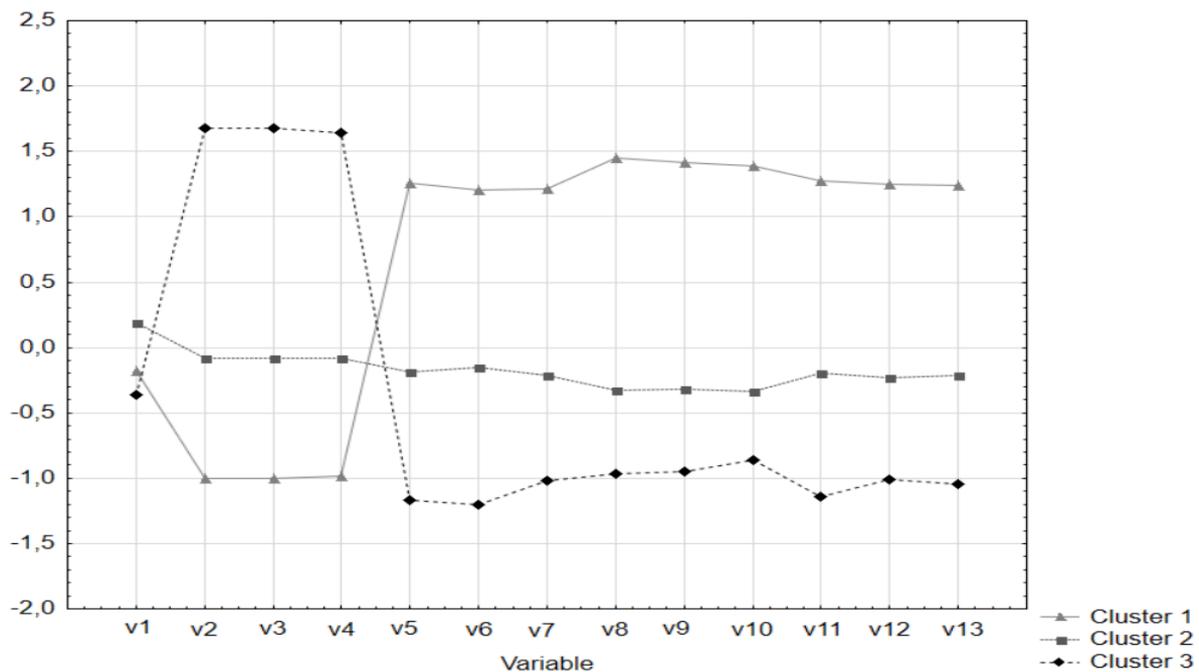


Figure 2. K-means clustering of the European Union countries with respect to selected young people's labour market indicators in 2006 (source: author's calculation based on Eurostat data)

In 2014, after the influence of the crisis effects on the labour market, there were changed the countries included in the selected three clusters. Cluster 1, with the worst young people's indicators, was left by Poland, Slovakia, Romania and Bulgaria and joined by Spain. Cluster 2, representing the average level of the selected indicators, was joined by Poland, Slovakia, Romania and Bulgaria, Ireland (which situation worsened in comparison with 2006). Cluster 2 was left by Spain (moved to Cluster 1), Germany, Latvia, Estonia, Luxemburg, Malta, Finland and Sweden (moved to Cluster 3).

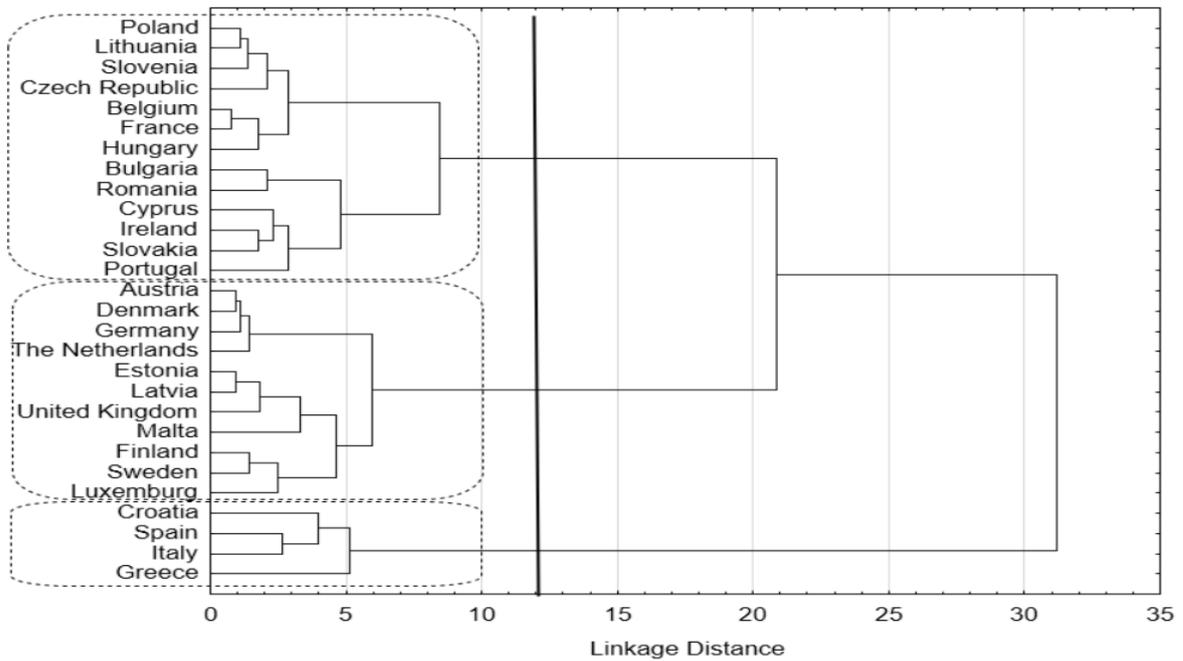


Figure 3. Tree clustering of the European Union countries with respect to selected young people's labour market indicators in 2014
(source: author's calculation based on Eurostat data)

Following k-method clustering, in 2014, the best young people's indicators were in Austria, the Czech Republic³, Denmark, Estonia, Finland, the Netherlands, Luxemburg, Latvia, Malta, Germany, Sweden, the United Kingdom (Cluster 3). The worst measures were in Croatia, Spain, Italy and Greece.

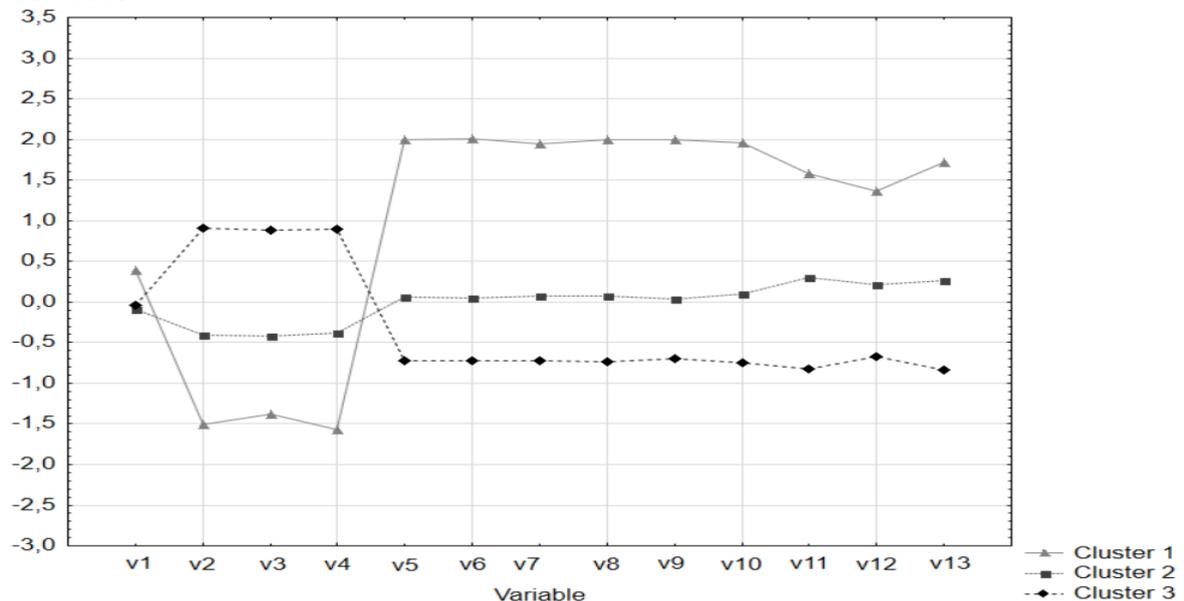


Figure 4. K-means clustering of the European Union countries with respect to selected young people's labour market indicators in 2014
(source: author's calculation based on Eurostat data)

³ That country in Ward's method was classified in the cluster 2.

The EU policy aimed at young people

The EU's overarching Europe 2020 growth strategy highlights young people in one of its five headline targets: aiming to cut early school leaving to no more than 10% of the student population, and to boost the number of youngsters graduating from university or further education.

To implement the strategy, the European Commission has set out seven flagship initiatives. One of these, entitled Youth on the Move, aims to improve education and training and make it more relevant to young people's needs, encourage them to take advantage of the EU grants and opportunities to study or train in another EU member state, and ultimately help them to find employment.

The EU Member States have also tried a number of measures to prevent young people of becoming a NEET and to reintegrate those who are NEETs.

Maguire and Rennison (2005) consider that the measures adopted by governmental bodies subsidising youths to remain in the educational system have a positive impact on diminishing the numbers of youths going through the NEET state.

Vocational Education and Training (VET) systems can help to reduce early school leaving by offering an alternative to general education. Successful approaches often combine work experience with more theoretic and school-based teaching and strongly involve business. Also better guidance and better targeted support of VET students can help to reduce early school leaving.

Moreover, it is essential to engage employers and their representatives in construction the measures that focus on fostering their beneficiaries' employability (Eurofound 2015).

Because of heterogeneity of NEET's group (Furlong, 2006), the policy directed toward that group of young people should be able to identify the distinct characteristics and needs of the various sub-groups (Elder, 2015).

The following actions are proposed for unemployed non-students: active labour market policies to encourage hiring of young persons⁴, sectoral and monetary policies to encourage job growth; social protection of the unemployed; training programmes for the unemployed; aligning the education system with labour demand⁵; entrepreneurship training and incubation; employment services.

⁴ Those actions seem to be effective in Nordic countries and the Netherlands (all included in cluster 3 in the above analysis).

⁵ One of the solutions in that area is dual learning developed in Germany and Austria (belonging to the cluster 3).

Younger bands (15–19, 20–24), who can be less educated face higher unemployment; require re-training programmes; improvements in the education system; encouraging more inclusive education, including technical education; apprenticeship and mentoring programmes.

In the case of the upper age band (25–29), there is an issue of graduate unemployment and likely to be structurally unemployed; policies should aim at a mix of policies above (to address unemployment) but with heavy concentration as well on promoting job growth.

Limited job growth in a country can push young people to remain inactive at home or migrate. In such a situation, policies should aim at a mix of policies above (to address unemployment) but with heavy concentration on promoting job growth and social protection to ensure basic needs are met.

If the cultural or discriminatory practices exclude one sex (typically young women) from the labour market, policy should include legal responses to promote an equal opportunity, public awareness campaigns, promotion of entrepreneurship, provision of child-care solutions, widening the occupational spectrum for both sexes and perhaps even subsidizing all female enterprises or branches of enterprises.

In the case of younger bands (15–19), there is a problem of ESL. The policy mix in this regards should be geared toward improved investment in the education system with universal access.

Conclusions

Young people situation in the European Union labour market is worse than for the average population. The young people's exclusion concerns not only low employment level and high unemployment but there has also been noticed early school leaving as well as the phenomena of maintaining by people aged 15-29 without employment, education and training.

The conducted analysis of young people indicators proves the substantial heterogeneity of the youth situation in the European Union labour market.

The cluster of countries with the best labour market indicators is currently created by Austria, the Czech Republic, Denmark, Estonia, Finland, the Netherlands, Luxemburg, Latvia, Malta⁶, Germany, Sweden, and the United Kingdom.

In Nordic countries and the Netherlands, it can be connected with the strong position of effective active labour market policy (ALMP) in their

⁶ The recession in Malta was less severe and its impact on the labour market more moderate. It could influence relative improvement of young people situation (Central Bank of Malta, 2013).

flexicurity models (Rollnik-Sadowska, 2013). Even though there is high employment elasticity, ALMP enables efficient return to the labour market.

Austria and Germany followed by the Czech Republic, Latvia or Estonia have implemented education policies adjusted to labour demand needs (in Germany based on the large extend on dual learning). Moreover, industries in Germany are characterised by high labour demand, which means a significant number of vacancies (which also influence neighbouring Austria and the Czech Republic).

The surplus labour demand is the domain of Luxembourg, where the excess job openings have to be filled with outside job seekers.

The United Kingdom represents strong workfare state orientation focused on the professional activation (Rollnik-Sadowska, 2015).

At the same time, the worst situation of young people is in the countries (Spain, Italy and Greece) which suffer from the results of crisis influencing their labour markets. It is also unfavourable in the new EU Member State - Croatia.

The EU policy aimed at solving young people problems should consider good patterns implemented in the countries with the stable situation in labour market of that age group. That favourable situation is connected both with the structural reforms of social policy as well as the efficient labour market and educational policies.

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JAUNIEŠI EIROPAS SAVIENĪBAS DARBA TIRGŪ

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Kopsavilkums

Eiropas iedzīvotāju novecošanās laikmetā ir svarīgi parūpēties par cilvēkresursiem dažādās dzīves sfērās. Īpaši ir svarīgs jauniešu potenciāls, jo to ekonomiskā darbība rada pamatu, lai saglabātu Eiropas labklājības valsts modeli. Taču jauniešu stāvoklis darba tirgū ir smags. Vēl jo vairāk, tās parādības, kuras piesaistīja pastiprinātu uzmanību, ir aktuālas jauniešiem bez darba, izglītības vai nemācās (JBDIN). Mikrolīmenī, JBDIN resursi ir kaitīgi, jo Eiropas mājsaimniecības kļūst nabadzīgākas, kā arī tas ir nelabvēlīgi visai tautsaimniecībai, jo netiek izmantoti visi cilvēkresursi. Raksta mērķis ir salīdzināt jauniešu stāvokli Eiropas Savienības darba tirgū.

Raksts tika balstīts uz literatūras izpēti un jauniešu (15-29 gadu vecumā) ekonomisko rādītāju analīzi. Rādītāju analīze tika veikta, izmantojot klasteru analīzes metodi (Varda metodi un k-vidējo vērtību metodi). Dati tika iegūti no Eurostat datubāzēm. Izvēlētie rādītāji raksturo jauniešu stāvokli darba tirgū ES valstīs un tie tika izvēlēti diviem gadiem – 2006. un 2014. gadam.

Varda un k-vidējo vērtību metodes ļāva iedalīt ES valstis trīs grupās. Izrādījās, ka grupu iedalījums 2006. gadā pilnīgi atšķīrās no iedalījuma 2014. gadā, ko galvenokārt noteica krīzes ietekme uz darba tirgu, kā arī īstenoto reformu virzieni. Bez tam, k-vidējo vērtību metode ļāva salīdzināt izvēlētās grupas uz atlasīto rādītāju pamata un noteikt valstis, kurās jauniešiem ir vislabākais un vissliktākais stāvoklis darba tirgū.

Atslēgas vārdi: jaunieši, darba tirgus rādītāji, darba tirgus politika, izglītības politika, jauniešiem bez darba, izglītības vai nemācās, Eiropas Savienība, Varda metode, k-vidējo vērtību metode.

A NEW INNOVATIVE PRODUCT PORTFOLIO IN LATVIA AND ITS AVAILABILITY ON THE MARKET (BUSINESS INCUBATION PROGRAMME 2009-2014)

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Abstract. *New product development is a very important issue for economic growth and welfare growth in general. The support programme of business incubators plays a significant role for operation of start-up companies in their creation of new products. In spite of it many enterprises of business incubators are not able to finish their innovation process, which shows on necessity to research these problems. The aim of the research is to investigate the portfolio of new products which were developed by Latvian Start-up companies in the frame of the Business Incubation Programme 2009-2014, related to commercialization and market uptake. The research is based on the authors' conducted research as a part of scientific grant of Rezekne Academy of Technologies „New product development process modeling and analysis in Latvia – innovation barriers”. The following methods are used in this research: content analysis, deductive, logical and comparison, and word cloud methods. As a result, the authors worked out and offered the word cloud of innovative products, which are produced in business incubators in Latvia, and which are available in markets. The authors worked out the word cloud of New Products, which are produced in business incubators, but are not on the markets.*

Keywords: Innovation Economic Development, R&D

JEL code: 012, 0310, 0320

Introduction

Innovation is a process, which inevitably leads to a successful commercialisation. The definition of innovation in Latvia (LR EM, 2016): „Innovation is the process by which new scientific, technical, social, cultural or other areas ideas, developments and technologies being implemented in the market and competitive product or service. In the European Commission's Directorate General for Enterprise and Industry study „Innovation Management and the Knowledge Driven Economy” (Innovation Management..., 2004) the term „innovation” has such a definition: „Innovation is a successful upgrade (novelty) in production, inclusion and the use of the economic or social area.”

The aim of the research is to demonstrate new products' development in the Business Incubation Programme 2009-2014 by the Latvian start-up companies concerning commercialization and market uptake.

In order to achieve this objective, the authors conducted theoretical studies, examining the existing innovation level of Latvia by using content analysis, deductive, logical and comparison and word cloud methods. As a result, the authors worked out and offered the word cloud of innovative products, which are produced in business incubators in Latvia, and which are available in markets. In the same way the authors worked out the word cloud of New Products, which are produced in business incubators, but are not on the markets.

Research results

Since 2005 the World Economic Forum (WEF) has published the Global Competitiveness Index (GCI). The GCI combines 114 indicators that capture concepts that matter for productivity. These indicators are grouped into 12 pillars: institutions, infrastructure, macroeconomic environment, health and primary education, higher education and training goods, market efficiency, labor market efficiency, financial market development, technological readiness, market size, business sophistication, and innovation. The GCI includes statistical data from internationally recognized agencies and data from the World Economic Forum's annual Executive Opinion Survey. This year's Report provides an overview of the competitiveness performance of 140 economies. In 2012-2013 Latvia ranked 55-nd (out of 144) in the GCI, in 2013-2014 Latvia ranked 52-nd (out of 148) in the GCI, in 2014-2015 Latvia ranked 42-nd (out of 144) in the GCI, but in 2015-2016 Latvia ranked 44-nd (out of 140) in the GCI (Klaus Schwab, 2015).

In 2015-2016 Latvia ranked 62-nd (out of 140) in the Innovation Pillar of the GCI. The most problematic factors for doing business were as follows: tax rates, inefficient government bureaucracy, access to financing, complexity of tax regulations, inadequately educated workforce, insufficient capacity to innovate, policy instability, poor work ethic in a labor force, corruption, inadequate supply of infrastructure, restrictive labor regulations. The stage of Latvia' development in this forum was defined as transition from the efficiency driven to the innovation driven economy. (Klaus Schwab, 2015)

Latvia is a modest innovator. Innovation performance has been increasing until 2011 but dropped in 2012-2013. In 2014 the innovation index rose sharply. Over time, Latvia has been improving its relative performance to the European Union (EU) from 42% in 2007 to 49% in

2014, although there was a significant dip in 2012-2013. Latvia performs well below the EU average for most dimensions, particularly for open, excellent and attractive research systems, linkages and entrepreneurship and innovators. The relatively worst performing indicators are public-private co-publications, non-EU doctorate students and license and patent revenues from abroad. Relative strengths for Latvia are in non-R&D innovation expenditures, the population with completed tertiary education and youths with upper secondary level education. Despite the fact that Latvia performs below the average of the EU for almost all indicators, performance is increasing for about two-thirds of the indicators. High growth is observed for non-EU doctorate students (32%), community trademarks (17%) and new doctorate graduates (14%). A large decline in performance is observed for R&D expenditures in the business sector (-9.0%). For small and middle enterprises (SME), product/process innovations are 51% relative to the average EU. SME marketing/organizational innovations are 64% relative to the average EU. Employment in fast growing firms in innovative sectors is 63% relative to the average EU (Innovation Union..., 2015). These facts show that Latvia has a low innovation performance. It is largely based on a small proportion of innovative companies, small investments in R&D activities and the insufficient cooperation between science, technology and innovation development organisations, higher education and industry sectors (Latvian national..., 2014). One of the most important public support measures in this area is the Latvian Investment Development Agency (LIDA) operational programme "Entrepreneurship and Innovation" 2.3.2.1. activity "Business incubators" funded by the European Regional Development Fund (ERDF) (hereinafter – activity). These activities within the tenderers (start-up companies until 2 years of age) could receive business support services (advice and infrastructure support) and specialised services (new product development consultancy, design and prototyping services, laboratories, international marketing services, design services, etc.) by concluding the appropriate contracts with the business incubator operator or / and the service providers. In the frame of this activity, 493 firms were supported until December 31, 2013. The mostly used services were the consultations about new products development: prototypes' development, technological solutions and services (Latvian National..., 2014). The implementation of the project takes place in all the 5 regions of Latvia and Riga municipality, based on belonging to any business incubator's operator.

The location of business operators in territory of Latvia is shown in Figure 1. There are the following business operators in Latvia: Riga City, the Creative Industry Business Incubator, nongovernment organization

(NGO) “Techhub Riga”, Riga planning region, general partnership Riga Region Business Development Incubator, Kurzeme planning region 1, Ltd., Kurzeme Business Incubator, Kurzeme planning region 2, NGO “Venstspils Augsto tehnoloģiju parks”, Zemgale planning region 1 and 2, Ltd. “JIC Biznesa inkubators”, Vidzeme planning region 1, NGO “Valmieras Biznesa un Inovāciju Inkubators”, Vidzeme planning region 2, NGO “Biznesa inkubators Cēsis”, Latgale planning region 1 and 2, NGO “Latgales aparātbūves tehnoloģiskais centrs”.

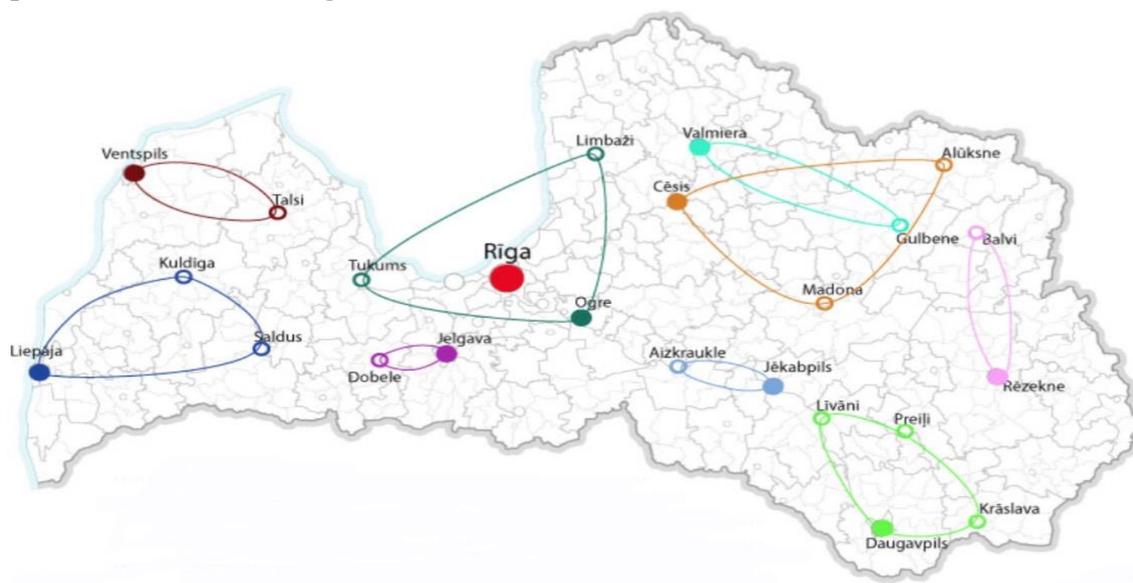


Figure 1. Location of business operators in the territory of Latvia
(source: *Biznesa operatori...*, 2011)

The research objects were the start-up companies which have developed new products in the frame of Business Incubator Programme 2009-2014 financed by the ERDF and managed by the LIDA during the years 2009-2014. Overall, 141 firms took part in this selection process (KBI 11 companies; VATP 10; HUB 10; RRBAI 39; THESE 20; VBII 15; MAGNUS 14; LATC 22). Information about these firms was selected from the websites and from the business incubators’ operators. We assume these start-ups are among the most promising ones and with more innovative products to show publicly. Kurzeme Business Incubator with its headquarters in Liepāja, also located in Saldus and Kuldīga, shows 18 start-ups in Liepāja, 7 in Kuldīga and 5 in Saldus. From overall 30 companies, we selected 11 with the most innovative products – 10 of them are available in the market – by a more detailed investigation (Uzņēmumi..., 2016). The incubator Ventspils High Technology Park (VATP) with the centre in Ventspils and also located in Talsi have publicized 120 start-up companies, from them we selected 10 most innovative companies (biznesa-inkubatora-absolventi, 2016) The NGO

services, design and prototyping services, laboratories, international marketing services, design services, etc. In the frame of this activity, 603 firms in Latvia were supported until September 31, 2013. As a result, 864 new products were developed by these companies. The mostly used services were the consultations about new products' development, like prototypes' development, technological solutions, and services. The implementation of the project took place in all the 5 planning regions of Latvia and Riga municipality, based on belonging to some business incubators' operators.

The fact that one in three start-up products, which were developed in the business incubators under the Business Incubator Programme, was not able to finish the innovation process shows on necessity to research these problems. Furthermore, the business incubator operators on their internet home pages have named these products as the most successful. Detailed research is going to help to reveal the reasons and the main obstacles for the market uptake of innovations.



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JAUNU INOVATĪVU PRODUKTU PORTFELIS LATVIJĀ UN TĀ PIEEJAMĪBA TIRGŪ (BIZNESĀ INKUBĀCIJAS PROGRAMMA, 2009-2014)

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Kopsavilkums

Viens no svarīgākajiem valsts atbalstiem inovāciju klimata uzlabošanā valstī bija Latvijas Investīciju attīstības aģentūras darbības programmas 'Uzņēmējdarbība un inovācijas' 2.3.2.1. aktivitātes 'Biznesa inkubatori', ko finansēja Eiropas Reģionālās attīstības fonds. Šīs programmas ietvaros uzņēmumiem līdz 2 gadu vecumam varēja saņemt uzņēmējdarbības atbalsta pakalpojumus un specializētos pakalpojumus, projektēšanas un prototipēšanas pakalpojumus, laboratorijas, starptautiskā mārketinga pakalpojumus, dizaina pakalpojumus u.c. Šīs aktivitātes ietvaros līdz 2013.g. 31.septembrim tika atbalstīti 603 uzņēmumi, šie uzņēmumi attīstījuši 864 jaunus produktus. Konsultāciju pakalpojumi tika izmantoti galvenokārt jaunu produktu attīstībai, kā prototipu izstrādei, tehnoloģiskiem risinājumiem un pakalpojumiem. Projekta īstenošana notika visos 5 Latvijas plānošanas reģionos un Rīgas pašvaldībā caur kādu no biznesa inkubatora operatoru.

Ikvienā valstī jaunu produktu attīstīšana ir ļoti svarīgs ekonomikas izaugsmes un labklājības nosacījums. Biznesa inkubatoru (BI) atbalsta programmas spēlē nozīmīgu lomu BI uzņēmumu jaunu produktu radīšanā. Neskatoties uz to, daudzi BI uzņēmumi Latvijā nav sasnieguši inovāciju beidzamo fāzi - ieviešanu tirgū. Tas noteica nepieciešamību pētīt šo problēmu. Pētījuma mērķis bija izvērtēt jaunu biznesa inkubatoru uzņēmumu produktu attīstību, kas izstrādāti atbalsta programmas "Biznesa inkubācijas programma, 2009-2014" ietvaros pēc to pieejamības tirgū.

Atslēgas vārdi: Inovācija, Ekonomiskā attīstība, P&A.

COMPETITIVENESS OPPORTUNITIES FOR TOURISM IN LATGALE REGION

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Abstract. *In this research study, opportunities for improvement competitiveness in the context of tourism in Latgale region are analysed and disclosed. Building tourism competitiveness by means of efficiency, quality, and innovation is underlined in this research study. Measuring and providing the efficiency of tourism products in the public sector is a weak point in the development of tourism competitiveness in Latgale region. Findings of this research allow expressing proposals for increasing efficiency and tourism competitiveness overall. The competitive advantage development model for tourism products in Latgale is offered in this research study. Recommendations are related to human resources, which are engaged in regional tourism development, and to strengthening the capacity of the municipalities, that will allow developing the competitiveness of tourism in the region and tourism regional policy in general.*

Keywords: *regional economics, municipalities, competitiveness, tourism, natural resources*

Jel code: *R11, O1, P28*

Introduction

In accordance with the findings of tourism analysis in the European Union (EU) (Tūrisms, 2016) international tourism in the world, in 2014, amounted to 1.113 billion travellers (+4.3%), including 582 million persons that have entered Europe, covering 51% of the market (+3%). The EU has the world's favourite tourist destination status. In addition, a study on long-term prospects provides some moderation in the growth of tourism in Europe by 2030, which, in accordance with the estimates, will be 744 million tourists (+1.8%), or 41.1% of the market. In the EU, the tourism industry in its immediate sense (traditional travel and tourism service providers) encompasses 1.8 million businesses, primarily small and medium-sized enterprises (SMEs). Tourism contributes 5% to gross domestic product (GDP) and employs 5.2% of the economically active population (that corresponds to approximately 9.7 million people). Taking into account the close links with other sectors of the economy, this contribution is even higher (more than 10% of GDP and almost 12% of total employment, which corresponds to 13 million workers).

In Latvia, tourism impact on the national GDP approaches 4%. In 2015, the export in the tourism industry in Latvia increased by 7.5% in comparison with 2014. Expenses of foreign tourists increased by 16.6%

(Tūrisma un viesnīcu...,2016). In addition, the multiplicative effect of the tourism industry has stimulated the increase of demand in many service industries. Tourism becomes more and more important in the employment and policy of the economic growth. Tourism has very strong environmental and sustainability aspect.

Latvia is divided into five planning regions. 14.5% of the population of Latvia live in Latgale region. The territory of Latgale region occupies 22.5% of the territory of Latvia (Valdība atbalsta ...,2016). Two cities and 19 counties are located in Latgale region. Each of them operates in accordance with its development strategy. Tourism as one of the specializations is defined in all of these development strategies.

Latgale region might get a competitive advantage as an international tourism destination, taking into account its geographical location, its rich natural and cultural resources, and opportunities of international support in the development of tourism products. The efficiency of the tourism products, developed within the frame of international projects, is not measured. After implementation of these projects, sustainability of developed tourism products is not properly controlled and managed. It means that the competitive advantage opportunities are not used and developed to the full extent. In this aspect, a vital problem for this region is the competitiveness in tourism.

The aim of this research is to reveal opportunities for the development of tourism competitiveness in Latgale region.

To achieve this aim, several tasks were defined:

- to interpret the measurement of tourism competitiveness;
- to carry out an analysis of the factors influencing the competitive advantage of tourism products;
- to work out proposals on the opportunities for the development of tourism competitiveness in Latgale region.

The research subject: the factors influencing the competitive advantage of tourism in Latgale region.

The hypothesis of the research: it is possible to increase the competitiveness of tourism in Latgale region by improving the capacity of human resources and by increasing the efficiency of tourism products in the public sector.

Novelty: the improvement of competitiveness in the context of tourism development in Latgale are analysed and disclosed; these opportunities are mainly related to the development of human resources, which are the major factor in the competitive capacity development in the municipalities. The competitive advantage development model for tourism products in Latgale is offered in the research study. The recommendations developed for municipalities' councils in terms of

efficiency of tourism products might be used for increasing competitiveness in tourism.

To accomplish the objectives of the research study, the following methods are used: content analysis of regional/municipality development documents, statistical data analysis; comparative analysis, synthesis, abstract and logical construction methods for studying competitiveness opportunities in the tourism area and human resources development opportunities.

Research results

There are many definitions referring to tourism competitiveness in the various sources. In this research study the author has used the following definition of competitiveness: 'Tourism competitiveness for a destination is the ability of the place to optimise its attractiveness for residents and non-residents, to deliver quality, innovative, and attractive (e.g. providing good value for money) tourism services to consumers and to gain market shares on the domestic and global market places, while ensuring that the available resources supporting tourism are used efficiently and in a sustainable way' (Dupeyras et al., 2013). A. Dupeyras and N. MacCallum have emphasized the absence of a good system of indicators that governments could use for measuring success and competitiveness in tourism: 'Competitiveness in tourism is not currently measured and monitored adequately by governments. One of the reasons for this is the difficulty in identifying a few core indicators to effectively measure and monitor what remains a very broad concept'. The key initiatives for measuring competitiveness in tourism mostly are found at the tourism industry level. Some of the studies look at cities and regions, others are concerned mainly with the hotel industry. At international level, the major undertaking remains the WEF Travel and Tourism Competitiveness Index. Several countries also use the Nation Brand Index which measures the image and reputation of the world's nations. A. Dupeyras and N. MacCallum (Dupeyras et al., 2013) have suggested to organise the indicators of competitiveness in tourism around the following four categories:

- 1) indicators measuring the tourism performance and impacts;
- 2) indicators monitoring the ability of a destination to deliver quality and competitive tourism services;
- 3) indicators monitoring the attractiveness of a destination;
- 4) indicators describing support policies and economic opportunities.

The findings of the World Economic Forum (WEF) annual Tourism Competitiveness Index research have disclosed that, among 133 countries, Latvia IS the 48-th most attractive tourist destination in the world (Travel & Tourism Competitiveness Report, 2009). In 2015 Latvia ranked the 53-rd (out of 141) in the Travel & Tourism Competitiveness Index. In 2015 natural resources of Latvia ranked the 93-rd (out of 141) and the cultural resources and business travel ranked the 106-th (out of 141) in the Travel & Tourism Competitiveness Index (WEF Global Travel..., 2015).

There are some researchers, who have explored the competitiveness of tourism in Latvia. For instance, the Competitiveness Model for Latvian Tourism was offered by Ganijeva and Magidenko (Ganijeva, et al., 2011) on the basis of investigated factors of the tourism competitiveness. Especially, they have stressed the importance of marketing in tourism development. The attractiveness of different tourism destination places in Latvia has been investigated by Kleperis (Kleperis, 2012). The attractiveness of Latgale region for tourists has been investigated by many researchers: Dembovska I., Silicka I., Ežmale S. etc. The author's findings of the recent studies (Silineviča, 2009, 2010, 2012, 2013, 2014) have demonstrated that the attractiveness factors of Latgale region for tourists are as follows: cultural and historical heritage (traditions, handicraft, ceramics, Latgalian language, folklore), sacral traditions, natural resources, restful landscapes, hospitality of the local population (see Figure 1).

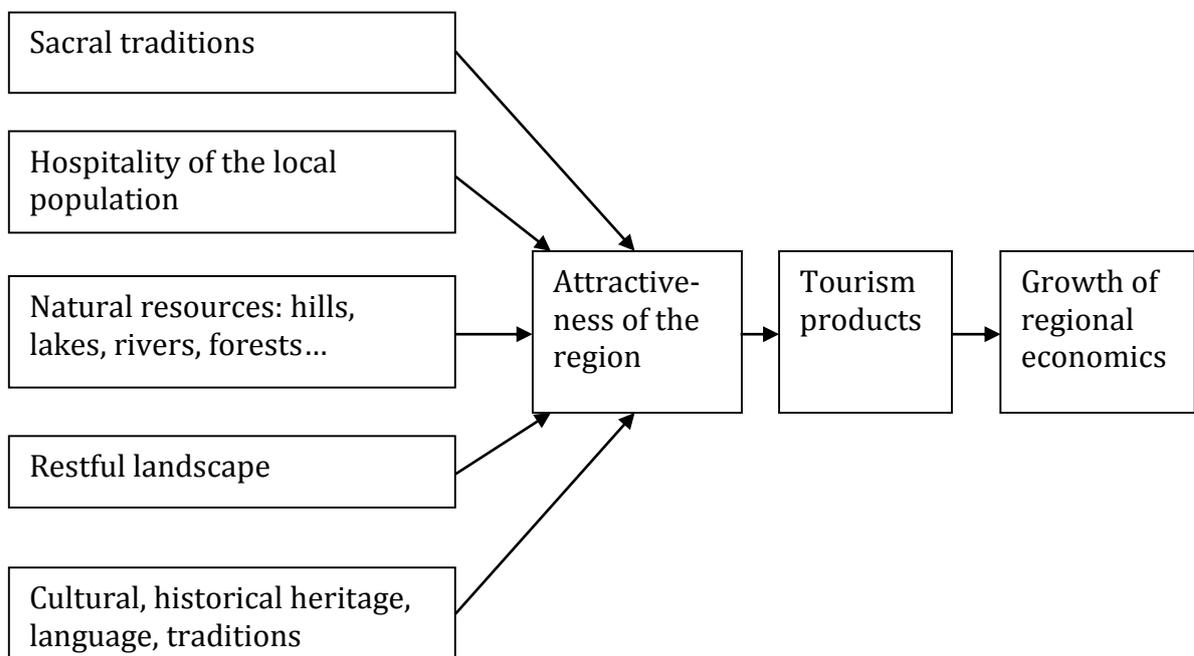


Figure 1. The attractiveness of Latgale region for tourists
(Source: the author's research)

The number of tourists in Latgale region increases annually. It means that Latgale region becomes more attractive to tourists. The data (Table 1) are approximate because some municipalities in Latgale region have not provided information for this period (the references attached to the statistics prove this).

Table 1

Changes in the tourists' flow in Latgale region in 2010 – 2015
(Source: the author's calculations based on (Latgales statistika, 2012-2013, 2014, 2015))

Characteristics of tourists flow	2010	2011	2012	2013	2014	2015
Total number of tourists	502 058	682 615	807 645	1 044 283	1 154 301	1 412 833
Changes, compared with the previous year, %	-	+35.96	+18.31	+29.30	+10.54	+22.40

The competitive advantage development model for tourism products

The attractiveness of tourism products has close links with their competitive advantage. The author offers the competitive advantage development model for tourism products in Latgale region (see Figure 2). The base of competitive advantage of tourism products are tourism resources and capabilities, which are transformed into distinctive competencies. Distinctive competencies allow achieving competitive advantage by using efficiency, quality, innovations, and customers' responsiveness. Quality, innovations, and customers' responsiveness are measured by feedback from tourists.

Latgale is rich in many unique tourism resources. Natural resources in Latgale are unique. Many beautiful hills, covered by forests, are crossed by twisting rivers. Many lakes, embraced by picturesque bays, are rich in many islands. The islands are covered by different broad-leaved species. Two biggest lakes in Latvia (the lake of Lubans and the lake of Razna) are situated in Latgale region. The newest National park in Latvia – Razna National Park – is located in Latgale. This preserved area comprises many rare biotopes and attracts many eco tourists.

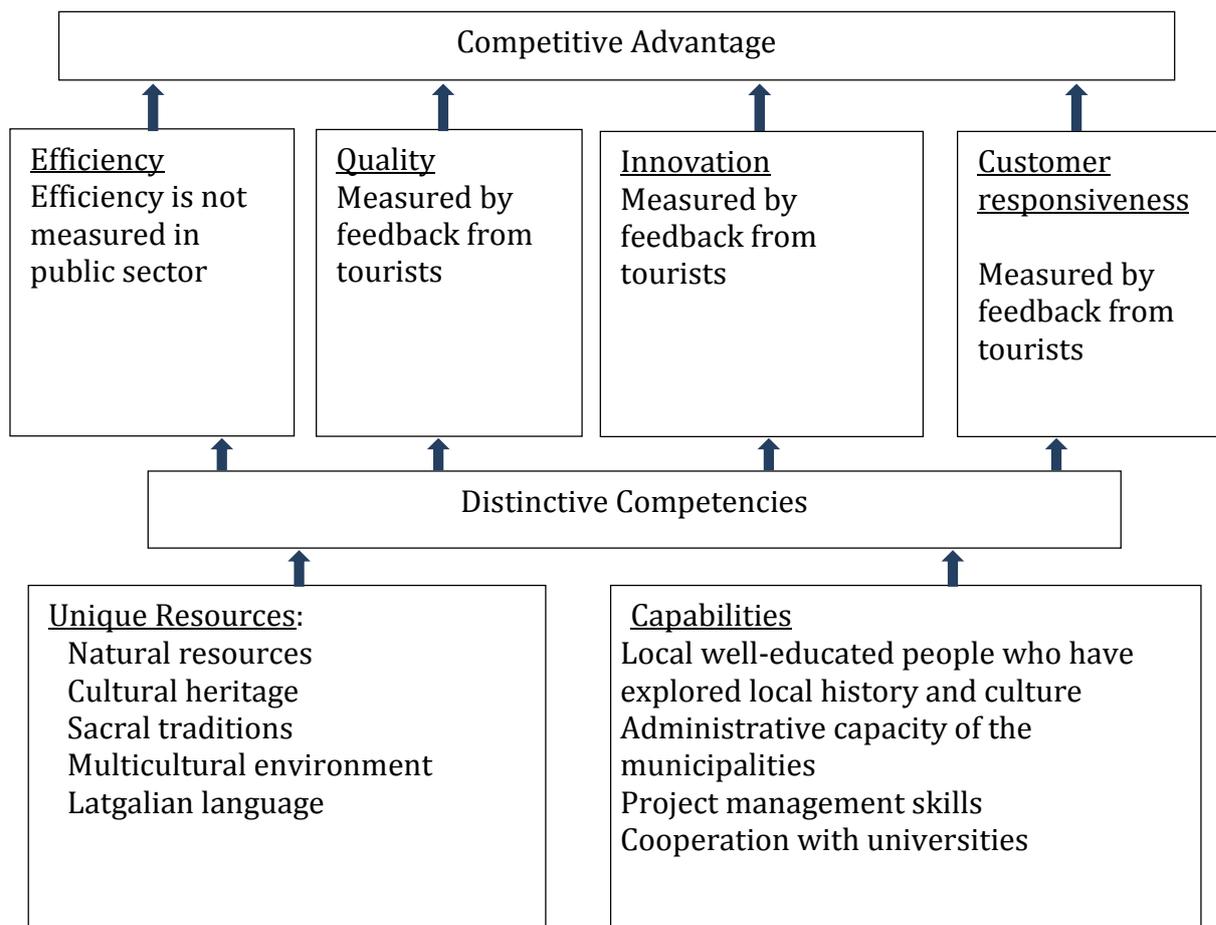


Figure 2. The competitive advantage development model for tourism products in Latgale region (Source: the author's construction based on (Charles et al., 2004))

The history of Latgale has many historical events related to the numerous wars, which have crossed the territory of the region. During centuries, different tribes have had settled in this land. Each of them have influenced Latgalian culture. In this way, Latgalian culture has multicultural character with own uniqueness.

The multicultural character relates to the history of religions in Latgale as well. During centuries, this territory was inhabited by Christians (Catholics, Old believers, Orthodox, Lutherans, Baptists) and by Judaists. Each of the faiths has left their own cultural heritage: the unique sacral buildings and traditions. The Latgalian language is a unique regional language with its own grammar, literature, rich folklore, and traditions. Many Latgalian songs are very popular not just within the region but beyond it. This uniqueness gives great opportunities for the development of unique tourism products.

Capabilities are very important tools for the development of distinctive competencies. Those are necessary for building the competitive advantage of tourism products. Findings of this research show, that in Latgale region these capabilities are strengthened by the following activities:

- contribution of local well-educated people, who have researched the local history and culture; their findings bring new information in local history and culture;
- improvement of the administrative capacity of people, who are engaged in tourism, by training and by their participation in different international projects;
- improvement of project management skills of people, who are engaged in tourism, by their participation in different international projects;
- development of cooperation with the regional universities providing tourism study programmes (in case of Dagda county – cooperation with the Rezekne Academy of Technologies).

Building competitive advantage by efficiency. Tourism destination performance might be evaluated through the measurement of competitiveness in terms of efficiency. Efficiency is a very important indicator in the building of competitive advantage. Efficiency of tourism products would be measured by using the input and output indicators:

- Input indicators (costs for labour, costs of maintenance, advertising costs);
- Output indicators (number of tourists, revenues from tourists).

The easiest way to measure the efficiency of tourism products in a certain area is dividing the outputs by the inputs:

$$\text{Efficiency} = \text{Outputs} / \text{Inputs} \quad (1)$$

In accordance with the research (Cracolici et al., 2014) findings: ‘when a tourist site is not able to produce the maximum possible output, given the inputs, the tourist site is inefficient and will attract relatively fewer tourists compared with competing areas. The reason may be that too many inputs are used, an imbalance between inputs and outputs exists, and/or the input combination is not optimal... that a tourist area should be able to manage its input efficiently; in other words, the territory’s physical and human resources constitute the input of a (virtual) tourist ‘production process’, and the output is then formed by arrivals, bed-nights, value added, employment, customer satisfaction, etc.’ The sustainability of the tourist destination product depends largely on the ability to efficiently

combine and manage input resources to produce the maximum possible output.

The efficiency of the tourism products, which are produced in private sectors, is measured, because each business must be profitable. In relation to the public sector, the situation is different in Latgale. For example, the Cross- Border Cooperation Programme 2007-2013: Support to Tourism Development and Culture Heritage Conservation in Latgale. This programme has promoted the development of tourism in Latgale through separate projects. The water tourism development project "Water Joy" has been one of the projects, supported by this programme. The project's costs were 1.34 MEUR (13). In terms of efficiency 1.34 MEUR is the input. But what about measuring of the output? It is necessary to have a list of offered water tourism products, which are developed on the basis of this project. It is necessary to have information about prices of these products, the number of tourists, who used these products, and the expenses of tourists during their travel. Only this information would allow calculating the outputs. If this information is absent, it makes impossible calculation of the efficiency of this project. The efficiency of those tourism products, which were developed within the frame of international projects, is not measured. After finishing these projects, the sustainability of developed tourism products are not fully controlled and managed. It means that the competitive advantage opportunities are not fully used and developed.

The information about the efficiency of tourism products is very important for analysing and planning a tourism marketing strategy at regional/ municipal level. If the efficiency of tourism products was not measured in some regions, tourism development management would be problematic in these regions.

Tourism marketing strategy, which a region/municipality adopts, can have a major impact on efficiency. Latgale region comprises nineteen counties and two cities. Tourism marketing strategies in Latgale region operate at three levels:

- 1) National level: Latvia Tourism Marketing Strategy 2010-2015 (Latvijas tūrisma..., 2010);
- 2) Regional level: The Tourism Development Marketing Plan of Latgale Region (Latgales reģiona..., 2012);
- 3) Municipal level:
 - Tourism Development Marketing Strategy of Preiļi county 2013-2018 (Preiļu novada..., 2013);
 - Tourism Development Marketing Conception of Daugavpils City (Daugavpils pilsētas..., 2012);
 - Culture Tourism Development Conception of Rēzekne City (Rēzeknes pilsētas..., 2015);

- Tourism Development Marketing Strategy of Riebiņi county 2015-2020 (Riebiņu novada..., 2015);
- Tourism Development Plan of Razna National Park (Rāznas nacionālā..., 2010).

Taking into account the fact, that Latgale region is specialized in tourism, it is necessary to develop a tourism marketing strategy for each municipality. It would allow achieving higher efficiency in the development of tourism in each municipality.

Tourism is a services industry. Employees are the major input into the production of tourism products. Labour productivity mainly influences costs for labour. Labour productivity increases owing to learning in the most efficient way. Production costs decline because of increasing labour productivity and management efficiency.

Building competitive advantage by quality

Tourist destination performance might be evaluated by the measurement of competitiveness in terms of quality. Skilled employees are one of the key factors of quality in the tourism industry. They are the major input into tourism services processes. Highly skilled employees can perform tasks faster and more accurately. Positive attitude to the tourists and environment are provided by the employees. The implementation of innovative processes is provided by the employees. The employees should have attributes that match the strategic objectives of the company. The improvement of labour skills increases the competitive advantage by quality. Cooperation with universities, which deliver tourism management study programmes, with the aim to develop training programmes for the improvement of labour skills in the tourism services is very important.

Tourism quality has a strong connection to the infrastructure. The quality of infrastructure is a significant determinant of the tourism inflows into a destination and, at the same time, an important contributor to development of the other sectors creating important indirect benefits. For example, the construction of new regional roads to improve access to an emerging tourism destination can create economic opportunities for individuals and businesses located in that region. Mobility and accessibility are essential issues for the tourists. The transport infrastructure not only plays a significant role in attracting tourists, but also in improving the quality of life of the local population. Furthermore, it promotes the distribution of socio-economic benefits related to the tourists' expenses (e.g. incomes, jobs) and interactions with the local residents (e.g. cultural heritage diffusion and maintenance) (Albalade et al., 2010).

In the case of Rezekne city, the streets' system, improved and developed in 2013, has a positive impact on the attractiveness of the city

and number of visitors, and has also helped to raise the positive impact on the local hotels, restaurants, and other retailers. Municipalities of Latgale region actively use the opportunities of the EU funds for the development of infrastructure projects. These facts are reflected in the annual public reports of Latgale counties and cities, which are published in the counties'/cities' home pages. The municipalities of Latgale region actively use the opportunities of the Cross - border Cooperation Programme as well.

Building competitive advantage by innovation. Tourist destination performance might be evaluated through the measurement of competitiveness in terms of innovation. Unique tourism products could be developed by using the local unique cultural heritage, the Latgalian language, and nature. The main factor in the development of competitive advantage of these products is human resources, which are engaged in these processes. Innovation requires highly skilled employees. Highly skilled employees can better perform tasks, more likely to learn the complex tasks associated with many modern services and methods than individuals with lower skills.

Cooperation with universities, which deliver tourism management study programmes, is very important for municipalities in many aspects:

- development of training programmes for the improvement of creative labour skills in tourism services;
- development of new tourism products by implementing theoretical knowledge and using the creative approach of students, who perform practical studies in a municipality;
- development of training programmes for people, who are engaged in tourism businesses, for the improvement of their administrative capacity.

Conclusions and suggestions

Latgale region is able to get competitive advantages as an international tourism destination, taking into account its geographical location, its rich natural and cultural resources, and opportunities of international support in the development of tourism products. The efficiency of those tourism products, which are developed by using international projects, is not measured. After the implementation of these projects, their sustainability is not fully controlled and managed. In that way, competitive opportunities are not fully used.

The councils of municipalities must provide and control the sustainability of the all international projects after their end. It is necessary to develop a management plan for project sustainability and

efficiency. It allows increasing competitiveness in regional tourism. The sustainability of the tourist destination product depends largely on the ability to efficiently combine and manage input resources to produce the maximum possible output.

Efficiency is a very important indicator in building the competitive advantage of tourism products. The competitive advantage development model for tourism products in Latgale is offered in this research study. It is necessary to develop a tourism marketing strategy in each municipality. It will allow achieving a higher efficiency of the tourism industry in each municipality.

Skilled employees are one of the key factors of quality in the tourism industry. They are the major input into tourism services processes. Highly skilled employees can perform tasks faster and more accurately, and are more likely to learn the complex tasks associated with many modern services and methods than individuals with lower skills.

Cooperation with the universities, which deliver tourism management study programmes, is very important in the development of training programmes for the improvement of creative labour skills in tourism services, in the development of new tourism products by implementing theoretical knowledge and using the creative approach of students, who perform practical studies in a municipality, and in the development of training programmes for people, who are engaged in tourism businesses, for the improvement of their administrative capacity.

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LATGALES REĢIONA TŪRISMA KONKURĒTSPĒJAS IESPĒJAS

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Kopsavilkums

Pētījuma mērķis ir izanalizēt konkurētspējas uzlabošanas iespējas tūrisma jomā Latgales reģionā. Tūrisma konkurētspēja tiek analizēta, izmantojot tādus faktorus, kā efektivitāte, kvalitāte, inovācijas un atbilstība tūristu vēlmēm. Piedāvāts konkurētspējīga tūrisma produkta attīstības modelis Latgalē. Pētījuma rezultāti parādīja, ka Latgales reģions ir spējīgs iegūt konkurētspējīgas priekšrocības kā starptautiskā tūrisma galamērķis, ņemot vērā tā ģeogrāfisko novietojumu, bagātos dabas un kultūras resursus, kā arī starptautiskā atbalsta iespējas tūrisma produktu attīstībā.

Latgales tūrisma produktu, kas ir izstrādāti, izmantojot starptautiskos projektus, efektivitāte netiek mērīta. Pēc projektu beigām to efektivitāte un ilgtspējība netiek kontrolēta un pārvaldīta. Tādā veidā konkurentspējīgās priekšrocības iespējas netiek pilnībā izmantotas. Ieteikums pašvaldību domēm nodrošināt visu starptautisko projektu ilgtspējību pēc to pabeigšanas. Tam nolūkam ir jāattīsta pārvaldības plāns projekta ilgtspējas un efektivitātes nodrošināšanai, tā ieviešana ļaus palielināt reģionālā tūrisma konkurētspēju.

Analizējot tūrisma attīstības dokumentu esamības ietekmi uz tūrisma attīstību novadā, tika secināts, ka, lai sasniegtu lielāku efektivitāti tūrisma nozarē, ir nepieciešams attīstīt tūrisma mārketinga stratēģiju katrā novadā.

Kvalificēti darbinieki ir viens no galvenajiem faktoriem tūrisma industrijā. Augsti kvalificēti darbinieki ātrāk un precīzāk spēj apgūt sarežģītus uzdevumus, saistītus ar inovatīviem risinājumiem, tāpēc pašvaldībām jāpievērš uzmanība kvalificētu darbinieku sagatavošanai tūrisma nozarē. Sadarbība ar augstskolām, kas piedāvā tūrisma vadības studiju programmas, ir viens no risinājumiem, sagatavojot un īstenojot apmācību programmas radošā darba prasmju uzlabošanai tūrisma pakalpojumu jomā. Izmantojot studentu prakses vietu iespējas novados, viņu teorētiskās zināšanas un radošo pieeju, iespējams attīstīt jaunus konkurētspējīgus tūrisma produktus. Tāpat sadarbība ar augstskolām sniedz iespēju paaugstināt kvalifikāciju cilvēkiem, kas nodarbojas ar tūrisma biznesu, kā arī paaugstināt administratīvo kapacitāti tūrisma speciālistiem.

Atslēgas vārdi: Reģionālā ekonomika, pašvaldības, konkurētspēja, tūrisms.

RESEARCH OF THE NEW PRODUCT DEVELOPMENT PROCESS

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Abstract. *New product development is the main factor of economic progress in building the economic competitive advantage. The life cycle of products becomes very short and it trends to be shorter year by year. It means that innovation becomes the main driver force*

in the economy. The innovation level is not sufficient in Latvia. One of the most significant players in the innovation field are business incubators in Latvia. This research study underlines the role of evaluation of each stage of innovation processes. The authors offer a new model for the evaluation of innovation processes stage by stage. This model allows to identify the main problems that hinder innovation. This model allows to develop concrete proposals for improving the innovative climate in the country. The research is based on the authors' conducted research as a part of scientific grant of Rezekne Academy of Technologies „New product development process modeling and analysis in Latvia – innovation barriers”. The main methods, that are used in this research were as follows: content analysis, comparative analysis, synthesis, abstract and logical construction methods.

Keywords: *innovation, methods, R&D*

JEL code: *0310,0320,C90*

Introduction

New product development is the one of the key factors for progress and competitive advantage in each country. Companies across the world are faced with changes to both the production technology and service organization. The product life cycle has never been so short as now, therefore, new product development is one of the most important business tasks. Using only the traditional methods of increasing competitiveness, for example, cost reduction, it is not possible to remain on the market. Only a consistent approach and the development of creative ideas are the factors, which help a company to successfully operate. In any economy, a new product or service development are essential for economic growth and the welfare development vector. One of the possibilities for the

development of new products in Latvia is the use of business incubators. Innovation development in Latvia is insufficient. This problem has not been established. There is the lack of sufficient quality methodology to investigate the causes of this problem.

The aim of the research study is to develop a model for the assessment of a new product development process.

To achieve this aim several tasks were defined:

- comparison different innovation measurement models;
- development a new model, which allows evaluating every stage of the innovation process;

The research subject: the innovation measurement models.

The hypothesis of this research is the following: It is possible to create innovation measurement model which allows to identify the main problems that hinder innovation.

In order to achieve this objective, the authors conducted theoretical studies, examining the existing innovation evaluation system, by using content analysis, deductive, logical and comparison and others methods. As a result, the authors worked out a new model for the assessment of innovation processes step by step.

Research results

Latvia has a low innovation performance - one of the EU-28, which is based on a small proportion of small innovative companies, investment in research and development (R & D) activities and insufficient cooperation among science, technology and innovation development organisations, higher education and industry sectors. One of the most important public support measures in this area is the Latvian Investment and Development Agency (LIDA) operational programme "Entrepreneurship and Innovation" 2.3.2.1. activity "Business incubators" funded by the European Regional Development Fund (ERDF) (hereinafter – activity). These activities within the tenderers (start-up companies until 2 years of age) could receive business support services (advices and infrastructure support) and specialised services (new product development consultancy, design and prototyping services, laboratories, international marketing services, design services, etc.), by using appropriate agreements with the business incubator operators or / and the service providers. As part of the overall activity until 31 December 2013, the aid was received by 493 companies, prototype development and technological advice and services for new product development are among the most popular ones (Reģionālo biznesa... 2014).

The findings, related to the innovation process, approved -that traditional models of innovation management are directed to new product development that involves resource management, information and knowledge for the development of market demand (Clark, 1992). Product development is defined as the process of market information to create the final product for commercial purposes (Clark, Fujimoto, 1991). Other authors defined the development of a new product as effective organisational and management processes by consuming minimum time and minimum cost to sell these products on a market (Wheelwright, Cklark, 1992). While Cooper (Cooper et. al., 2008), noted that new product development is a formal process with well-defined decision-making criteria. A set of activities that begins with the market research and ends with the production and sales of the product on the market (Ulrich, Eppinger, 2004). The new product development process consists of activities, which results in a new or redesigned product on the market. This process consists of creation opportunities, then selection from these opportunities and their implementation in a concrete product that is offered to consumers (Loch, Kavadias, 2008). Innovation process management is defined (What is..., 2016) as a systematic approach to nurturing the creative capabilities of employees and creating a workplace environment that encourages new ideas for workflows, methodologies, services or products. Scott Berkun (Scott Berkun, 2013) has defined 'innovation' as follows: 'Innovation is a significant positive change' by underlining that: 'It's a result. It's an outcome. It's something you work towards achieving on a project.' Different researchers use distinctive innovation measurement models, like the Diamond Model, the Funnel Model, the Innovation Value Chain Model, e.t.c. Dalia Gamal (*Dalia Gamal, 2011*) summarized different innovation measurement models and their respective focuses, and dimensions (see table 1).

The most applied model, which characterizes innovation, new products, and technological development processes, is a NASA model. This model is adopted by the European Space Agency and the European Commission with minor changes. This approach is also used for the main innovation policy instruments, for example, by implementing Horizont 2020, in innovation support competitions. This model foresees 10 stages of technology readiness levels. They are as follows (Technology readiness..., 2013):

- TRL 0: idea;
- TRL 1: basic research;
- TRL 2: technology formulation;
- TRL 3: applied research;
- TRL 4: small scape prototype;

TRL 5: large scale prototype;
 TRL 6: prototype system;
 TRL 7: demonstration system;
 TRL 8: first of a kind commercial system;
 TRL 9: full commercial application.

Table 1

Summarized comparison among different innovation measurement models (Source: Dalia Gamal, 2011)

Model	Focus	Dimensions	Remarks
Diamond Model	Innovation process Enabling factors Linkage	Strategy process Organization Linkage Learning	Adequate when the innovation process on its infancy. It highlights key dimensions of the innovation process as well as its enabling institutional factor
Funnel Model	Technological innovation Product innovation R&D process as the core activity	Strategic thinking. Portfolio management & metrics Research Ideation Insight Targeting Innovation development Market development Selling	An adequate model when there is a due innovation process in the organization
Innovation value chain (IVC)	Idea Management Output performance	Generation Conversion Diffusion knowledge acquisition Building innovation Commercializing innovation	It emphasizes the assessment of the output of the innovation process
Oslo Manual	Innovation Linkage Output in certain duration	Innovation Linkage Demand Infrastructure and institutional framework Innovation policies	Very beneficial when considering country level international comparisons
Innovation Radar	Innovation output performance	Offerings Customers Processes Marketing	It does not ensure the sustainability of innovation process

However, this model is incomplete because it does not include factors, which characterise targeted interactions between a new product and a market. In other words, the successful commercialisation of innovations does not show in this model. This model just underlines the stages of the technology development processes. B.Hicks, S.Culley, A.Larsson, T.Larsson “A Methodology for Evaluating Technology Readiness during Product Development-”, 2009, pointed to the shortcomings of this model and suggested the TRL model has to be supplemented with columns, which foreseen marketing and product implementation activities, see table 2.

Table 2

Product readiness levels and the product development process
(source: Hicks, et.al, 2009)

PRL	TRL	Marketing	Manufacturing	Other Functions	Develop- ment phase
1	2	Target market identified.	-	Business goals of development effort defined	Mission statement
2	3	Market segments defined. Lead users& their needs identified. Competing products analysed.	Manufacturing cost estimated Production feasibility assesed	Single concept selected for futher development Project justified economically -IPR issues investigated	Concept develop-ment
3	4	Plan for product options and extended product family formulated.	Make-or-Buy analysis performed. Key suppliers identified. Final assembly scheme designed.	-Support Make-or-Buy analysis. -Potential service issues identified.	-System-Level Design
4	5	Marketing plan developed	Standard parts identified. Production processes defined. Tooling designed. Long lead-time tooling procured. Quality assurance processes defined.	-Control documentation issued.	-Detal design

Table 2 continued

5	6	Promotion and launch materials developed. Field testing facilitated.	Supplier 'ramp-up' facilitated.	-Sales plan finalised.	Testing and refine-ment
6	7		Fabrication and assembly processes refined	-Regulatory approval/certification obtained.	
7	8		Commence work force training Quality assurance processes refined.		
8	9	Early 'production ramp-up' products placed with preferred customers.	Work force training completed. Operation of entire production system commenced.	-	Production Rump-Up
9	9	Product promotion.	Full production	Service & support infrastructure.	Product launch

Table 3

Model for research of innovation processes
(Source: own research)

Nr.	Stage	Actions	Development phase of innovation
1	Idea	Basic research, Target market identified, Product references and sketches development, Make-or-Buy analysis performed, Market segments defined	Product concept defined
2	Project	Technology formulation, Key suppliers identified, Product technical project, Product Competitiveness defined, Small scale prototype - alfa prototype	Product detail design completed
3	Prototyping	Prototype validation in the real life environment - beta prototype, Field testing facilitated. Standard parts identified, Marketing plan developed, Promotion and launch materials developed.	Final pattern of product demonstrated
4	Production	Supplier 'ramp- up' facilitated. Fabrication and assembly processes refined Tehnology, equipment and tools refined, Promotion and launch materials developed. Sales plan finalised. Regulatory approval/ certification obtained. Product demonstration. Sales with preferred customers.	Product production demonstrated
5	Sale	Work force training completed. Operation of the entire production system commenced. Aftersales service provided. Advertisement.	Service & support developed

The examination of above mentioned models allowed to work out a new model for research of innovation processes. The authors offer the new model, divided into 5 stages (see Table 3).

Each stage is described taking into account the product design activities, the processes development activities, and the marketing activities. In addition, the phase of the innovation is determined in each stage.

The proposed model allows evaluating every stage of the innovation process, to identify the main problems that hinder innovation. This model allows developing concrete proposals for improving the innovative climate in the country. The next actions of the authors will draw attention to the practical research of innovation processes in firms, which are operated in the business incubators in Latvia, using the proposed model.

Conclusions and suggestions

New product development is the one of the key factors for progress and competitive advantage in each country. Latvia has a low innovation performance in comparison with other EU countries because of the lack of innovative companies, lack of investments in research and development, insufficient cooperation among science, higher education and industry sectors.

Different researchers use distinctive innovation measurement models, like the Diamond Model, the Funnel Model, the Innovation Value Chain Model, e.t.c. More applied model, which characterizes innovation, new products, and technological development processes, is a NASA model. This model is adopted by the European Space Agency and the European Commission with minor changes. The authors of this research study offer an important step in the solution to this problem – to perform an analysis of innovation processes stage by stage. The authors propose a new model, which allows evaluating every stage of the innovation process, to identify the main problems that hinder innovation. This model allows developing concrete proposals for improving the innovative climate in the country.



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JAUNA PRODUKTA ATTĪSTĪBAS PROCESA IZPĒTE

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Kopsavilkums

Jaunu produktu attīstība ir galvenais faktors ekonomikas konkurētspējas priekšrocības attīstībā. Produktu dzīves cikls gadu pēc gada arvien vairāk saīsinās. Tas nozīmē, ka inovācija kļūst par galveno ekonomisko dzinēj spēku. Latvijā ir zems inovatīvo sniegumu salīdzinājumā ar citām ES valstīm, jo trūkst inovatīvu uzņēmumu, trūkst ieguldījumu pētniecībā un attīstībā, nepietiekama sadarbība starp augstākās izglītības, zinātnes un rūpniecības nozarēs.

Šajā pētījumā uzsvērta inovāciju procesu izvērtēšanas nozīme jaunu produktu attīstības veicināšanā. Dažādi pētnieki izmanto atšķirīgu inovāciju novērtēšanas modeļus, kā 'Diamond', piltuves modeli, inovāciju 'Value Chain' modeli, utt. Pētījumā šie modeļi tiek salīdzināti. Vairāk piemērots modelis inovācijām, jauniem produktiem un tehnoloģijas attīstības procesiem ir NASA modelis, ko, ar nelielām izmaiņām, izmanto Eiropas Kosmosa aģentūras un Eiropas Komisija.

Autori piedāvā jaunu inovāciju procesa izvērtēšanas modeli soli pa solim. Šis modelis ļauj identificēt galvenās problēmas, kas traucē jauninājumiem, kā arī izstrādāt konkrētus priekšlikumus, lai uzlabotu inovatīvu klimatu valstī.

Galvenās metodes, kas tiek izmantotas šajā izpētē ir: satura analīze, salīdzinošā analīze, sintēze, abstraktās un loģiskās konstrukcijas metodes. Piedāvātajā rakstā tiek atspoguļoti autoru veiktie pētījumi Rēzeknes Tehnoloģiju akadēmijā realizētajā zinātniskā granta „Jaunu produktu attīstības procesu modelēšana un analīze Latvijā – inovācijas barjēras” ietvaros.

Atslēgas vārdi: inovācijas, metodes, P&A.

Evaluation of Control Methods for Sosnowsky's Hogweed *Heracleum sosnowskyi* in Rezekne Municipality: the Results of a Survey of Experts

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Abstract. *An increasing number of scientists as well as the public discuss the spread of invasive alien species that replace local species. One of such species is Sosnowsky's hogweed that creates problems to land owners and managers as well as local residents in Rezekne municipality.*

The aim of the paper is to assess expert opinions on the application of control methods for Sosnowsky's hogweed in Rezekne municipality. To achieve the aim, the following specific research tasks were set: 1) to describe the situation with the spread of Sosnowsky's hogweed in Rezekne municipality; 2) to identify the most effective methods of control for Sosnowsky's hogweed and their application in Rezekne municipality by employing the expert method.

Research methods used: monographic, descriptive, analysis, synthesis, data grouping and a sociological method – an expert survey/interview. Kendall's W was employed to analyse the extent of agreement among the experts.

The research results showed that in general the experts were quite unanimous ($W=0.59$) and regarded the combined method, chemical control (application of herbicides) and soil tillage as the most effective methods to control Sosnowsky's hogweed. Also, the experts supposed that land owners and managers in Rezekne municipality did not choose the most effective and efficient control methods for Sosnowsky's hogweed.

The paper has been elaborated with the financial support of Rezekne Academy of Technologies provided through a research grant.

Keywords: *Sosnowsky's hogweed, land owners and managers, the most effective methods, expert opinion, Rezekne municipality.*

JEL code: *Q1, Q5*

Introduction

The number of invasive alien species in the flora of Latvia increases from year to year. A lot of such species grow and spread very well in Latvia; as a result, the invasive alien species replace local species and occupy

certain habitats. Aggressive alien species that eliminate local species are called invasive species (Bērziņš et al., 2007).

An increasing number of scientists as well as the public discuss the spread of invasive alien species that replace local species. According to research investigations, the spread of such species has to be limited and it is necessary to disseminate information on the ways of controlling them.

Invasive alien species are one of the most urgent problems to be addressed to maintain biodiversity in the world (Bioloģiskās daudzveidības..., 1996). Sosnowsky's hogweed (*Heracleum sosnowskyi*) has been included in Latvia's list of invasive alien species.

The entry of Sosnowsky's hogweed into Latvia dates back to the late 1940s when it was started to be grown as a prospective feed crop on experimental farms. Sosnowsky's hogweed started gradually invading vast territories in semi-natural habitats (Laiviņš, Gavrilova, 2003). Sosnowsky's hogweed is currently present in vast territories in monodominant stands in Latvia (Priēde, 2008).

A strategy for controlling Sosnowsky's hogweed in Latvia has to be based on three key principles: the botany of the plant (its seeds get ripe and the plant dies), government policy (aimed at promoting the management of land and educating the public) and the availability of practical measures (control methods have to be ease to use and efficient) (Bīstamais iebrucējs..., 2013).

The research aim is to assess expert opinions on the application of methods of controlling Sosnowsky's hogweed in Rezekne municipality.

To achieve the aim, the following specific research tasks were set: 1) to describe the situation with the spread of Sosnowsky's hogweed in Rezekne municipality; 2) to identify the most effective methods of control for Sosnowsky's hogweed and their application in Rezekne municipality by employing the expert method.

Hypothesis: land owners and managers in Rezekne municipality choose the most effective or ineffective control methods for Sosnowsky's hogweed.

Research methods used: monographic, descriptive, analysis, synthesis, data grouping and a sociological method – an expert survey/interview. Kendall's W was employed to analyse the extent of agreement among the experts.

The present research is based on research papers, studies, surveys of experts and other information sources.

The research was elaborated with the financial assistance of Rezekne Academy of Technologies provided through a research grant for the "Investigation into the Information Society regarding the Control and Hazards of Sosnowsky's Hogweed in Rezekne Municipality".

Spread of Sosnowsky's hogweed in Rezekne municipality

In the period 2007-2013, according to land surveys, Sosnowsky's hogweed grew in an area of 10640.99 ha in Latvia (Vilcāne, 2013).

According to the local government of Rezekne municipality, land surveyors identified Sosnowsky's hogweed in an area of 84.39 ha in 16 out of 25 rural territories of Rezekne municipality in 2012. The largest area with this plant, 57.38 ha or 66.42% of the total area of the municipality's area with the plant, was identified in Berzgale rural territory (Table 1) (Rēzeknes novada..., 2016).

In Rezekne municipality's specially protected natural territories as well as outside these territories Sosnowsky's hogweed negatively influences biodiversity as well as the visual values of its landscape, reducing the esthetical and biological quality of the landscape. The invasion of Sosnowsky's hogweed in Razna National Park, which is located in Rezekne municipality, is mainly observed in unmanaged and abandoned areas as well as in habitats with specially protected species (Tripāne, 2013).

Table 1

Spread of Sosnowsky's hogweed (ha, %) in the rural territories of Rezekne municipality in 2012 (*authors' construction based on the information provided by Rezekne municipality*)

No	Rural territory	Hectares	%
1	Berzgale	57.38	66.42
2	Silmalas	7.99	9.25
3	Nagli	7.3	8.45
4	Makonkalns	4.6	5.32
5	Cornaja	3.14	3.63
6	Ozolmuiza	3.12	3.61
7	Ozolaine	0.9	1.04
8	Feimani	0.55	0.64
9	Veremi	0.5	0.58
10	Luznava	0.31	0.36
11	Griskani	0.27	0.31
12	Malta	0.11	0.13
13	Nautreni	0.1	0.12
14	Kaunata	0.06	0.07
15	Lendzi	0.05	0.06
16	Struzani	0.014	0.02
Total		84.39	100

The National Biodiversity Programme refers to Sosnowsky's hogweed as a very expansive species, as it can spread and grow in weedy areas and along roads as well as in natural meadows. According to available research studies on the control of Sosnowsky's hogweed, it is almost impossible to completely eliminate the plant (Bioloģiskās daudzveidības..., 2003).

As Sosnowsky's hogweed spreads, local species are endangered. Hogweed areas are mainly identified in grassland, including natural grassland, which is one of the habitats richest in species in Latvia. The invasion of Sosnowsky's hogweed reduces the quality of habitats and leads to the local elimination of species specific to the habitats, as well as decreases the number of areas with specially protected species (Tripāne, 2013).

It is possible to limit the spread of Sosnowsky's hogweed in Rezekne municipality only if engaging all land owners and managers; therefore, it is necessary to identify experts' opinions on the most appropriate and efficient control methods for Sosnowsky's hogweed in the municipality.

Results of a survey and interviews of experts regarding control methods for Sosnowsky's hogweed and their application in Rezekne municipality

The survey of experts aimed to identify their opinions on the effectiveness and application of control methods for Sosnowsky's hogweed as well as to assess public awareness of it in Rezekne municipality. The survey involved seven experts of relevant fields. The experts were selected based on their education level (Experts A and D had a master's degree in environmental science and Experts C, D and F had a doctor's degree in biology, geography or agriculture) and professional experience in the agricultural industry (Experts B, F and G) or in environmental protection (Experts D and E).

The experts' replies were evaluated with regard to the extent of agreement among the experts. In the case of direct evaluation of parameters, the agreement was identified by means of Kendall's W (Kendall, 1955) according to Equation 1:

$$W = \frac{12 \sum_{i=1}^n \left\{ \sum_{j=1}^m r_{ij} - \frac{1}{2} m(n+1) \right\}^2}{m^2 (n^3 - n)} \quad (1)$$

where, W – coefficient of concordance
n – number of factors to be rated
m – number of experts

r_{ij} – i-th item's rank given by the j-th expert

The value of the coefficient of concordance may vary within a range of $0 \leq W \leq 1$; $W=0$ if there is no agreement among experts and $W=1$ if all the experts are unanimous. It is assumed that a sufficient value of the coefficient of concordance is $W \geq 0.50$, which means that the experts' unanimity is high enough (Kendall, 1955).

The experts evaluated control methods for Sosnowsky's hogweed on a scale from 1 (the highest rank/place) to 5 (the lowest rank/place). The experts' replies are summarised in Table 2.

Table 2

Expert evaluation results
(authors' calculations based on data acquired in April 2016)

	Experts							Rank sum L_i	$d_i = L_i - L_{vid}$	di2	Rank R
	A	B	C	D	E	F	G				
	Ranks										
Soil tillage	3	3	2	3	4	2	2	19	-0.6	0.36	3
Chemical control	2	2	4	2	3	2	3	18	-1.6	2.56	2
Biological control	4	4	5	2	2	3	4	24	4.4	19.36	4
Combined method	1	1	1	1	1	1	1	7	-12.6	158.76	1
Other method	5	5	3	4	5	3	5	30	10.4	108.16	5
n=5	m=7							$\sum_{L_i=98}$	0	S=289.20	-

The calculated coefficient of concordance $W=0.59$ indicates that in general the experts were quite unanimous and considered the *combined method, chemical control and soil tillage* to be the most effective methods to control Sosnowsky's hogweed. Justifying the choice of the combined method as the most effective one for the control of Sosnowsky's hogweed, the experts preferred various combinations of soil tillage, chemical control and biological control. The experts stressed the complexity of control methods for Sosnowsky's hogweed and the individual approach to be applied to their combinations depending on the location of a particular territory.

The experts recommended land owners and managers in Rezekne municipality to use soil tillage, chemical control (application of herbicides), biological control (grazing), the combined method as well as other methods (e.g. moving). However, the experts were almost unanimous (5 out of the 7 experts) in recommending land owners and managers in Rezekne municipality to use the combined method, which

once again confirmed the mentioned method's effectiveness in controlling Sosnowsky's hogweed.

It is important to note that a similar survey was conducted in Poland. According to this survey, 81.8% of the experts preferred digging up the plant's root and 78.2% gave preference to disposing its seeds (Olszańska et al., 2016).

The authors' survey focused also on the experts' opinion about public awareness of Sosnowsky's hogweed. As regards the public awareness of this weed in Rezekne municipality, all the experts agreed or partly agreed with an assertion that the public can recognise Sosnowsky's hogweed in nature (Figure 1).

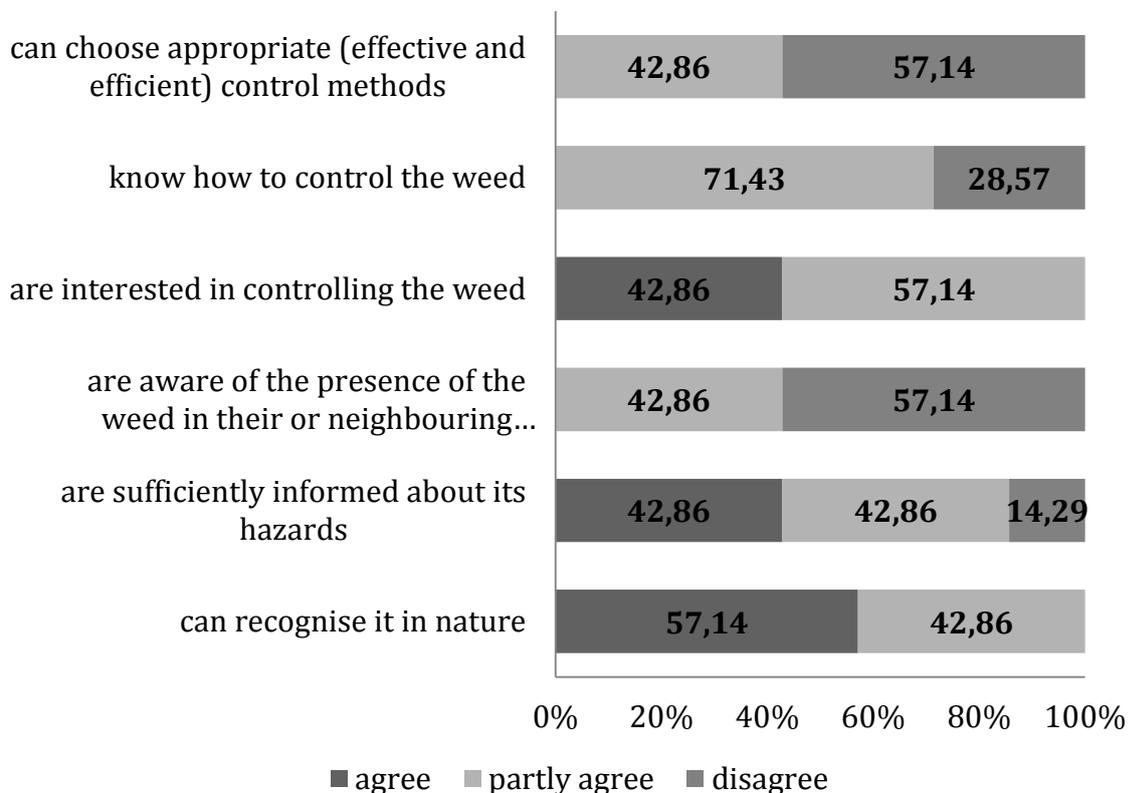


Figure 1. Percentage distribution of the experts' replies regarding the public awareness of the presence of Sosnowsky's hogweed in Rezekne municipality in the survey (n=7) (authors' construction)

The experts believed that the public were well informed about the hazards arising from Sosnowsky's hogweed, as 6 out of the 7 experts or 85.72% agreed or partly agreed with the assertion. Replying to the next assertion regarding whether the public on the whole as well as land owners/managers in particular inform local responsible institutions about the presence of Sosnowsky's hogweed in their or neighbouring territories, the experts' opinions were as follows: partly agree and disagree. This means that the experts believed that land owners/managers often did not

inform their local responsible institutions about the presence of Sosnowsky's hogweed in their or neighbouring territories. The experts agreed or partly agreed to an assertion that the public on the whole as well as land owners and managers are interested in controlling Sosnowsky's hogweed.

As regards the skill of land owners and managers to control Sosnowsky's hogweed, the experts only partly agreed (71.43%) and disagreed (28.57%) with an assertion that land owners and managers know how to control Sosnowsky's hogweed. The experts only partly agreed (42.86%) and disagreed (57.14%) that land owners and managers could choose appropriate (effective and efficient) control methods for Sosnowsky's hogweed.

After analysing the experts' replies regarding the public awareness of the presence of Sosnowsky's hogweed in Rezekne municipality, one can conclude that the public on the whole as well as land owners and managers:

- can recognise Sosnowsky's hogweed in nature and are sufficiently informed about hazards arising from it and are interested in controlling this weed;
- often do not inform their local responsible institutions about the presence of Sosnowsky's hogweed in their or neighbouring territories;
- however, do not know how to control Sosnowsky's hogweed and are not able to choose correct (effective and efficient) control methods.

In the experts' opinion on the ways of informing the public about the control of Sosnowsky's hogweed and the hazards that are caused by this plant in Rezekne municipality, the most effective ways are as follows:

- meeting professionals in person (meetings, seminars, experience exchange activities etc.);
- articles in newspapers and magazines;
- other (e.g. billboards next to hogweed stands along roadsides, where people can acquire basic information, Latvian Rural Advisory and Training Centre specialists disseminate information or give oral advice) (Figure 2).

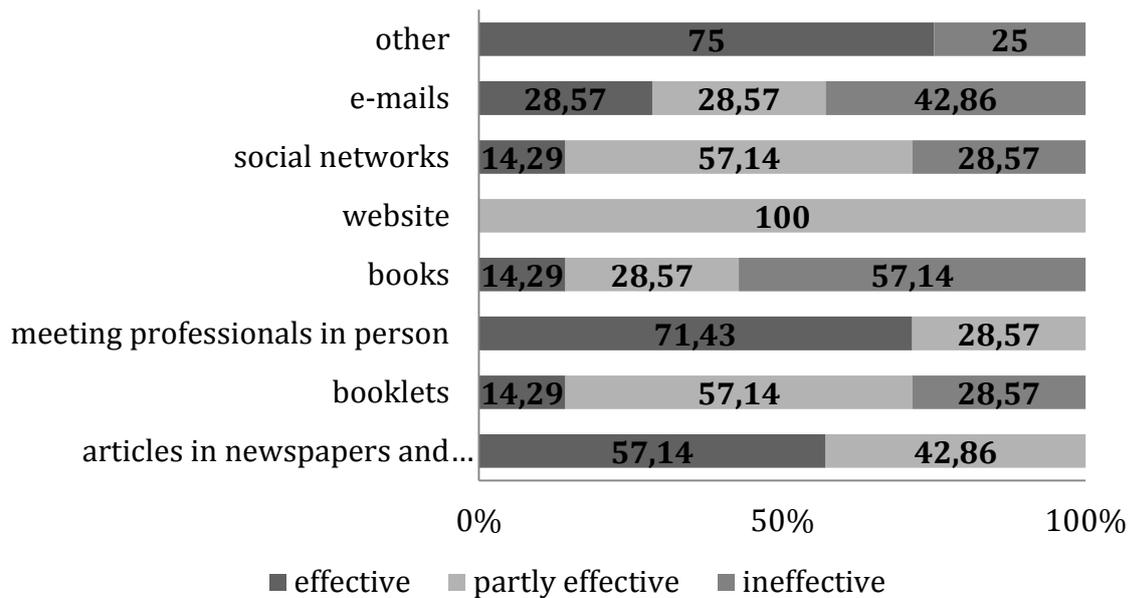


Figure 2. Percentage distribution of the experts' replies regarding the most effective ways of informing the public about the control of Sosnowsky's hogweed and the hazards arising from it in Rezekne municipality in the survey (n=7) (authors' construction)

In Rezekne municipality, in the experts' opinion, a special website on the management of agricultural land, booklets and social networks (facebook.com, twitter.com, draugiem.lv etc.) are the most effective ways to inform the public about the control of Sosnowsky's hogweed and the hazards arising from this plant. Books, which give advice and abundant information, as well as e-mails are the most ineffective ways for informing the public about the mentioned matters, according to the experts.

Conclusions and suggestions

1. Local species are endangered with the spread of Sosnowsky's hogweed. In Rezekne municipality, in 16 out of its 25 rural territories Sosnowsky's hogweed was present in an area of 84.39 ha.
2. The largest areas with Sosnowsky's hogweed in Rezekne municipality were identified in Berzgale rural territory, 57.38 ha or 66.42% of the municipality's total area with this weed, as well as in the rural territories of Silmala (7.99 ha) and Nagli (7.3 ha).
3. The experts recommended land owners and managers in Rezekne municipality to use soil tillage, chemical control (application of herbicides), biological control (grazing), the combined method as well as other methods (e.g. moving). However, the experts

unanimously regarded the combined method as the most effective one.

4. The experts believed that land owners and managers in Rezekne municipality did not choose the most effective and efficient methods to control Sosnowsky's hogweed.
5. The State Plant Protection Service in cooperation with the national institutions supervised by the Ministry of Environmental Protection and Regional Development should use the most effective (in the experts' opinion) way of informing the public about control methods for Sosnowsky's hogweed, holding in-person meetings and seminars with professionals for land owners and users.



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SOSNOVSKA LATVĀŅA *HERACLEUM SOSNOWSKYI* APKAROŠANAS METOŽU IZVĒRTĒJUMS RĒZEKNES NOVADĀ: EKSPERTU APTAUJAS REZULTĀTI

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Kopsavilkums

Pētījums tika veikts, risinot ne tikai aktuālu problēmu Rēzeknes novadā, bet visā pasaulē kopumā. Arvien vairāk zinātnieku un pētnieku vidū rodas diskusijas par svešo sugu naturalizācijas un izplatību, kas izspiež vietējās sugas. Viena no šādām sugām ir Sosnovska latvānis, kas rada problēmas zemju īpašniekiem/apsaimniekotājiem, kā arī vietējiem iedzīvotājiem Rēzeknes novadā.

Raksta mērķis ir izvērtēt ekspertu viedokli par Sosnovska latvāņa apkarošanas metožu pielietojumu Rēzeknes novadā. Pētījuma mērķa sasniegšanai izvirzītie uzdevumi: 1) raksturot Sosnovska latvāņa izplatības situāciju Rēzeknes novadā; 2) pielietojot ekspertu metodes, noskaidrot efektīvākās Sosnovska latvāņa apkarošanas metodes un to pielietojumu Rēzeknes novadā.

Pielietotās pētījuma metodes: monogrāfiski aprakstošā metode, analīze, sintēzes, datu grupēšanas un socioloģiskā pētījuma metode - ekspertu aptauja. Ekspertu aptaujas datu vienprātības analīzē pielietots Kendela konkordācijas (*W*) koeficients.

Pētījuma rezultāti parāda, ka eksperti kopumā bijuši vienoti savos uzskatos ($W=0.59$) un vienprātīgi atzinuši par Sosnovska latvāņa apkarošanas efektīvākajām metodēm kombinēto metodi, ķīmisko metodi (herbicīdu izmantošana) un augsnes apstrādes metodi. Kā arī eksperti uzskata, ka zemju īpašnieki un apsaimniekotāji Rēzeknes novadā neizvēlās efektīvākās un lētākās Sosnovska latvāņa apkarošanas metodes.

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Atslēgas vārdi: Sosnovska latvānis; zemju īpašnieki un apsaimniekotāji; efektīvākās metodes; ekspertu viedoklis; Rēzeknes novads.



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