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SOCIOLOĢIJA

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RURAL SCHOOLS AS MULTIFUNCTIONAL CENTRES: ALTERNATIVE FOR SCHOOL SURVIVAL AND FLOURISHING COMMUNITIES

In the context of school network optimizing, the fate of small rural schools in Latvia has been a topical issue for politicians at the national and local level for almost a decade. As one of the main reasons talking about the depopulation of rural areas and the reduction in the number of students on formal education programs, that each new school year begins with news about the closure of several rural schools. At the same time, documents of political planning, scientific publications and research emphasize the special role of rural schools in further development, implementing state and local government obligations to provide residents with access to vital services, including education, to make attractive rural communities existence and to discover opportunities for their sustainable development. In recent decades theoretical approaches has also emphasized the role of local communities and their participation in rural development processes (the endogenous development model), while also taking into account the specific regional needs (the neo-endogenous model). The actions of various agents involved in the education system and the activity of rural communities aimed at preserving schools and the creation of multifunctional centres as one of a schools survival strategies are analysed in this article, based on the empirical data obtained in the framework of the international comparative project "Rural depopulation and the governance of education: comparative study of Latvia and Norway": a survey of Latvian municipality education field specialists (n = 103) and quantitative survey data and the study of specific characteristic cases of representatives of small rural school administration (N = 200). The results of local governments and school administrations survey point to a direct link between the level of development of the territory (for analysis purpose all state municipalities have been grouped according to territorial development index (TDI)) and the accessibility of education, as well as the degree of activity of education agents and local communities in decision-making processes. Closure of small schools during the last 5 years most often affected economically less developed, poor municipalities. Analysis of empirical evidence suggests that the smaller the economic and social resource of municipality is – the smaller is the social capital of its inhabitants. In municipalities with the lowest TDI, there is comparatively weak activity of local population, a desire to take part in decision-making in support against the closure of schools. In this situation, every local government, administration/teachers of schools, as well as local residents, are forced to take responsibility for finding solutions that are based not only on economic calculations or received as direct instructions from higher

institutions. Many municipalities together with schools administration search and find solutions due to expansion of functions of schools, cooperation with other municipalities and in other ways.

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Key words: rural schools, regional development, education system, decision-making.

Lauku skolas kā multifunkcionālie centri: alternatīva skolu izdzīvošanai un kopienu attīstībai

Skolu tīkla optimizācijas procesa kontekstā Latvijai raksturīgo mazo lauku skolu liktenis jau gandrīz desmit gadus ir aktuāls jautājums nacionālā līmeņa izglītības politikas veidotāju un pašvaldību dienaskārtībā. Kā vienu no galvenajiem iemesliem minot lauku depopulācijas rezultātā aizvien sarūkošo skolēnu skaitu formālās izglītības programmās, katrs jaunais mācību gads sākas ar ziņām par vairāku skolu slēgšanu. Vienlaikus politikas plānošanas dokumentos, zinātniskajās publikācijās un pētījumos uzsvērta lauku skolu nozīme lauku teritoriju tālākajā attīstībā, tostarp īstenojot valsts un pašvaldību pienākumu nodrošināt vietējiem iedzīvotājiem pieejamību būtiskākajiem pakalpojumiem, tai skaitā izglītībai, padarīt pievilcīgu pašu lauku kopienu pastāvēšanu un atklāt iespējas to ilgtspējīgai attīstībai. Arī teorētiskās pieejas pēdējās desmitgadēs uzsver vietējo kopienu lomu un līdzdalību lauku attīstības procesos (endogēnais lauku attīstības modelis), vienlaikus ievērojot reģionālo vajadzību specifiku (neoendogēnais modelis). Dažādu izglītības sistēmā iesaistīto aģentu un lauku kopienas aktivitāte skolas saglabāšanā, multifunkcionālu centru izveide, kā viena no skolas izdzīvošanas stratēģijām, šajā rakstā tiek analizēta, balstoties uz starptautiskā salīdzinošā projekta "Izglītības pārvaldība lauku depopulācijas apstākļos: Norvēģijas un Latvijas salīdzinājums" empīrisko datu bāzes – Latvijas lauku novadu pašvaldību izglītības speciālistu (n=103) un mazo lauku skolu administrācijas pārstāvju (n=200) kvantitatīvās aptaujas datiem un gadījumu izpētes rezultātiem. Latvijas lauku reģionu pašvaldību un skolu administrācijas aptaujas dati parāda tiešu saistību starp teritorijas attīstības līmeni (analīzes nolūkos visas novadu pašvaldības tika sagrupētas pēc teritoriālās attīstības indeksa (TAI)) un izglītības pieejamību, kā arī izglītības aģentu un vietējās kopienas aktivitāti lēmumu pieņemšanas procesā. Arī mazo skolu slēgšana pēdējo 5 gadu laikā visbiežāk skārusi tieši ekonomiski mazāk attīstītās, nabadzīgākās pašvaldības. Empīrisko datu analīze liecina, ka jo mazāka ir pašvaldības ekonomiskā un sociālā kapacitāte, jo mazāks ir tās iedzīvotāju sociālais kapitāls. Pašvaldībās ar zemāko TAI vērojams arī salīdzinoši zemāka vietējo iedzīvotāju aktivitāte, vēlēšanās un līdzdalība lēmumu pieņemšanā par skolas saglabāšanu vai slēgšanu. Šajā situācijā katra pašvaldība, skolas administrācija/ skolotāji, kā arī vietējie iedzīvotāji, tai skaitā skolēnu vecāki ir spiesti uzņemties atbildību, meklējot risinājumus, kas nav balstīti tikai ekonomiskajos aprēķinos vai saņemti kā direktīvas no augstākstāvošām institūcijām. Daudzas pašvaldības kopā ar skolu meklē un atrod risinājumus, paplašinot skolas funkcijas kopienā (multifunkcionālie centri), aktīvāk sadarbojoties ar citām pašvaldībām, kā arī citos veidos.

Projekts Nr. NFI/R/2014/014 īstenots ar Norvēģijas finanšu instrumenta līdzfinansējumu laikā no 09.2015. – 02.2017.

Atslēgas vārdi: lauku skolas, reģionālā attīstība, izglītības sistēma, lēmumu pieņemšana.

Сельские школы как мультифункциональные центры: альтернатива для выживания школ и развития местных сообществ

В контексте оптимизации сети школ судьба маленьких сельских школ в Латвии уже почти в течение десяти лет является актуальным вопросом для политиков на национальном и местном уровне. На фоне информации о депопуляции сельских территорий и уменьшении количества учащихся на программах формального обучения, каждый новый учебный год начинается новостями о закрытии нескольких сельских школ. Одновременно с этим в документах политического планирования, научных публикациях и исследованиях делается ударение на особую роль сельских школ в дальнейшем развитии, в том числе и в рамках обязательств государства и самоуправлений обеспечить жителям доступ к жизненно важным услугам. Образование является одной из базовых услуг, которая наравне с другими создаёт условия для стабильного развития территорий в будущем. В последние десятилетия и в теоретических подходах акцент делается на роль местных сообществ и их участии в процессах развития села (эндогенная модель развития), одновременно учитывая и специфику региональных потребностей (неоэндогенная модель).Действия различных вовлечённых в систему образования агентов и активность сельских сообществ, направленная на сохранение школ, и создание мультифункциональных центров как стратегия выживания анализируются в этой статье, основываясь на эмпирических данных, полученных в рамках международного сравнительного проекта “Управление сельскими школами в условиях депопуляции: сравнительный анализ Латвии и Норвегии”: опросе специалистов самоуправлений Латвии отвечающих за вопросы образования (n=103), опросе представителей администраций маленьких школ (n=200) и изучении конкретных характерных случаев. Результаты опросов самоуправлений и администраций школ указывают на прямую связь между уровнем развития территории и доступности образования, а также степенью активности агентов образования и местных сообществ в процессах принятия решений. Закрытие маленьких школа в течение последних 5-ти чаще всего затронуло именно экономически менее развитые, бедные самоуправления. Анализ эмпирических данных свидетельствует о том, что чем меньше экономический и социальный ресурс у самоуправления, тем меньше и социальный капитал его жителей. В самоуправления с самым низким индексом развития населения (TAI) наблюдается и сравнительно слабая активность местного населения, желание принимать участие в принятии решений и реальные шаги в поддержку или против закрытия школ. В такой ситуации каждое самоуправление, администрации и учителя школ, равно как и местные жители вынуждены принимать на себя ответственность за поиск решений, которые основаны не только на экономических расчётах или получены в виде прямых указаний от вышестоящих институций. Многие самоуправления вместе со школами ищут и находят решения за счёт расширения функций школ, сотрудничества с соседними волостями и другими способами.

Проект Nr. NFI/R/2014/014 реализован с софинансированием Норвежского финансового инструмента в период с 09.2015.–02.2017.

Ключевые слова: сельские школы, региональное развитие, система образования, принятие решений.

Introduction

Within the long-term strategic development documents of Latvia, educated inhabitants are named as the main driver of sustainable development and growth of the country. Access to quality education for all children is an imperative in the 21st century, since offering differentiated opportunities and "sorting" pupils into categories of suitability for professional, semi-professional or low qualification occupations is not acceptable from neither moral, nor social or economic perspectives (Barber 2014).

The strategy "Latvia 2030" and a number of other European Union and Latvian national-level development and education policy planning documents emphasize the need for balance between the support for economic growth and the efforts towards improving quality of life of all society members, social cohesion, sustainable development of resilience.

The Latvian National development plan of Latvia for 2014–2020 as the top-level document in the hierarchy of national mid-term development planning determines mid-term priorities also in the fields of education and science, and stresses such action directions as: development of competences and research, innovations and development of tertiary education. Among the main tasks there are: quality pre-school education, inclusive education, curriculum development, training of creative and qualified teachers, development of professional education in accordance with the labour market trends, the availability, capacity, competitiveness and consolidation of higher education, improved participation in non-formal education and voluntary work, promotion of youth employment, inclusion of career development in the educational system etc.

At the same time, it has to be taken into account that statistics shows visible depopulation trends in Latvia – the size of population in Latvia decreased by 656 thousands or 25% between 1991 and 2014, and especially fast during the last 15 years (CSB 2015). Concentration of population in urban agglomerations (particularly around Riga) continues. The share of Riga planning region kept increasing by the average of 0.3% a year, reaching 50.8% of the population at the beginning of 2015. Distinctly monocentric settlement system speeds up depopulation in other Latvian regions, especially fast reduction of population – among rural areas.

These depopulation trends give significant effect on the education system and the network of educational institutions. The proportion of school-age children in Latvia has decreased by almost one half since 2000, reaching the lowest point in 2013. It is expected that it will slightly increase (by 3%) until 2024, but then another slow decline is expected resulting in 4% below the current level by 2030. Because of demographic and socio-economic situation, set of educational institutions in Latvia consists of schools with a small number of students. Now in Latvia, there is a significant share of schools with the number of pupils below 100, where cost per pupil is much higher than in schools with a larger number of pupils. Therefore, the question of small schools that are so characteristic and traditional of Latvia, with small and declining numbers of pupils in formal education programmes, are in the focus of national agenda of all stakeholders involved in the education system.

On the one hand, policy planning documents, publications and studies emphasize the role of rural schools in the future development of territories, which includes an

obligation by both national and municipal levels to provide the population with access to essential services, education among others, and to foster attractiveness of rural communities that would support their sustainable development. On other hand lack of effectiveness of education expenditures and insufficient quality of education in rural schools are main arguments supporting optimization of schools in Latvia.

According to the Education development guidelines for 2014–2020 and an action stream 5.11. "Improvement of the network of education institutions and access to services" defined therein, during the next planning period it is expected to implement a functional enhancement of the small school network. Policy document contain notions of direct and primary connection of the process of school network optimisation which assumes provision of pre-school and primary education as close to child's place of residence as possible, and regardless of geographic or administrative criteria; the approach is envisaged to result in a unified offer of education services though the country (IZM 2014). Finally, notions of small schools' development were included in the MoES Action plan of reform implementation in general education, which later was considered in new education development guidelines. The objective of this reform direction is to develop an effective school network in regions of Latvia and to ensure access to quality and diverse education, including hobby and informal education, on pre-school and primary education levels; as well as to create environment for modern, decentralised education and employment solutions within the frame of lifelong learning.

In March 2016, mass media distributed yet another article that informed about an agreement between several municipalities and the Ministry of Education and Science on closing 11 small schools in the coming school year due to insufficient number of children. The news were accompanied by the results of a public opinion poll carried out by TNS that provided an overview of the views on the problem from the standpoint of general population. Considering the problem described above, the result seems to be less important as more than one half (58%) of economically active population in Latvia see school closures as a negative process, and relatively smaller group (33%) are positive about it. What is more important here is the question wording that, in fact, blends two questions together: "Do you support closures of small schools and optimization of the school network?" A counter-question would be whether school closures really mean and lead to a more optimal school network? And the next question: thinking about the optimization of school system guided by primarily economic calculation, are the interests of all stakeholders in the system – children, teachers, parents, rural communities, and the society in general – taken into consideration?

While the Regional development guidelines for 2013–2019 state that Latvian regional policy until 2019 is directed towards activation of local governments and their abilities to shape the development based on the potential of resources. Despite of increasing concentration of all types of resources in regional and national centres, the new regional policy paradigm foresees to build territorial development upon activated and strengthened local resources, which would result in higher level of local autonomy and responsibility for own welfare and the future.

According to previously mentioned the regional policy (at least on declarative level) is directed towards activation of local powers and utilization of territory's

resources and potential, which should lead to more locally driven decisions. We see that in rhetoric it is acknowledged that schools are important elements of local communities and their transformation into multi-functional centres might result into "one stop agencies" for local inhabitants in territories with low density of population (VARAM 2013). Shrinking national targeted funding and continued view on schools as providers of traditional functions leads to difficulties for municipalities, who are the formal founders of the schools, in ensuring operation of small schools. In this situation, each municipality and school representatives (school administration, teachers, school staff) as well as local citizens (including local government, the pupils' parents, civil society) have to take responsibility and seek solutions, based not only on economic calculations or centralized administrative, but on more holistic perspective on community development (Medne 2010). Is task to smart shrinking and joining of recourses is applicable for all municipalities despite socioeconomic status of their inhabitants, previous experience of cooperation or some other factors?

Research aim and hypothesis

The aim of this article – to compare municipalities with different territory development index 1) to understand the capacity of different agents to cooperate for improvement of life quality in different municipalities and with this 2) to assess possibility of sustainable development of schools as multifunctional centres as alternative for school survival and flourishing communities.

Research hypothesis to be putted forward – municipalities with lower territory development index has higher proportion of inhabitants not only with a relatively lower socioeconomic capital, but also – with lower social capital than municipalities with higher territory development index. Therefore, the capacity and willingness to cooperate among different agents in such municipalities in the overall is lower, that gives negative impact on innovative development of public services, including educational institutions, e.g. schools as multifunctional centres that could provide an alternative for school survival and flourishing community.

Rural schools in the education system, their place and role in rural communities was the central object in the comparative project "Rural Depopulation and the Governance of Education: Comparative Study of Latvia and Norway" which overall objectives were to provide scientifically reliable information on processes in rural communities in Latvia and Norway, particularly on education governance in shrinking communities. Among the aims of project were: to explore and compare different models of education governance, and to evaluate their efficiency in adequately ensuring the education needs of children and needs of communities in shrinking rural areas. Empirical data analysis characterized experiences of rural schools as a multi-functional centres, challenges and stakeholders' attitude to this model of schooling, and the variety of strategies for survival. The study is conducted with the support of funding from the EEA / Norwegian Financial Mechanism 2009–2014 under Project Contract n° NFI/R/2014/014.

In frame of research, different municipalities are compared according to their territory development index (TDI) – indicator that has been used for the assessment of development of different territorial units for more than fifteen years already in Latvia (State Regional Development Agency 2017). Its calculation methodology has been developed by the Latvian Statistical Institute in 2000. TDI is a generalised indicator which is calculated with determined weight coefficients by summing up standardised values of the most important basic indicators of statistics which characterise the development. It demonstrates higher or lower development of the territories from the average social economic development level of the state in the relevant year.

Theoretical framework

The theoretical approach of this article particularly and project in general is based on regional development theories, multi-level governance analysis and endogenous community development by social capital as the recourse for community flourishing.

At the core of the contemporary regional policy is reduction of adverse social and economic disparities among regions and local municipalities. According to theoretical assumptions it is possible to divide the regional macro level policies and regional micro level policies and coordination mechanisms (Vaidere, Vanags, Vilka 2006; Armstrong, Taylor 2000). The first of these includes the state-level measures of fiscal and monetary policy, coordination of migration flows, and stimulation of investment. In opposite – regional micro policy includes territorial location of labour and entrepreneurship. It is associated with the transfer of resources, coordination of public services, including education, etc. It has been suggested to foster regional development by the support to "development centres", which are 21 in Latvia (plus 9 biggest cities). A development centre is understand as a territory where there is the concentration of resources (including human resources), social and economic activities and which facilitates the development of the surrounding territory. It has been expected that the availability and accessibility of services (education, health, social, culture, entertainment etc.) and work places to rural inhabitants will be ensured, thus creating attractive environment for living in rural territories.

However, as mentioned previously recent developments and statistics of population in Latvia show that the economic growth in Latvia is concentrating within Riga city and the tendency of depopulation of rural areas, villages and towns continues. The incongruity between the declared aims of regional development – polycentric development – and de-facto monocentric development is highly visible and has been revealed also in doctoral study of Inese Haite "Polycentric development in Latvia and its evaluation" (Haite 2013). The continuing depopulation in Latvia fosters also shrinking of all services provides by the state and municipalities, including, education.

Regional development in parallel can be seen as a certain self-determination, ensuring that everyone is able and willing to participate in regional development processes. According to these authors, regional development is an ongoing short-term or long-term social, cultural and demographic process which has concrete spatial impact or

spatial consequences (Enyedi, Tosza 2004). These effects occur by implementing decisions of individuals, households, businesses, national and international institutions. Unfortunately, many of these decisions are guided by different interests and not necessarily are they related to regional development. Therefore, regional development is always partly spontaneous and is reflected in the territory in an unbalanced way, because human and natural resources, as well as the location of infrastructure in each territory are different.

It can be concluded that to a large extent regional policy aims to ensure sustainable development across the country, while paying particular attention to the necessity to reduce socio-economic disparities between regions. In this context, it is important to stress the significance of financial resources for investment and redistribution, a provision of necessary basic public services at an adequate level, especially in rural areas. In each country and in every region, regional policy solutions will vary depending on the level of economic development, development potential, infrastructure quality and other factors.

Two contrasting theoretical models of rural development – exogenous and endogenous – historically identify rural development policy and the role of community in development processes. The exogenous model defines the rural development as a process driven by an external influence, whereas the endogenous model holds that the territorial development is initiated from "the inside" rather than provided and nudged from the outside. At the core of this approach are self-reliance and rural sustainability (Baldock et al. 2001).

There has been a growing awareness that rural areas must be socially viable and therefore dependent on the vitality of rural communities. Local resources (natural resources, human resources, cultural resources) should be involved in sustainable development of territory, and local initiatives and enterprises are considered to be the main driving force of the development. Great emphasis is placed on local capacity building (skills, institutions, and infrastructure) in order to facilitate participation and prevent exclusion (Shucksmith 2000; Lowe, Murdoch, Ward 1995).

Sociological interpretation of the 'endogenous development' concept is more related to social rather than economic growth – local control and self-determination, people's rights to express their views on matters that affect their lives are crucial aspects of endogenous development. Ray (1998) uses the term "cultural economy" to describe interaction among local and external social agents (interrelations between endogenous and exogenous forces) within processes of production and consumption (Ray 1998 p. 4).

At the same time, the endogenous model is criticized for being relatively impractical in contemporary Europe. Exogenous and endogenous processes must be balanced, because local communities can never be free from outer influences. Rural areas should interact with urban areas and be affected by external forces, including government regulations (Ray 2001). Sometimes a top-down support is needed to facilitate bottom-up initiatives and development (Narayan, Woolcock 2000).

As a result of previously mentioned critique, K. Ray introduced the concept of neo-endogenous development (Ray 2001), where significance of an external factors are identified, but potential of local area to guide its development remains (Ray 2000;

Ray 2001; Ray 2006). Consequently, exogenous and endogenous development can be seen as a dualism of ideal types that flows into the regional development strategies without being mutually exclusive.

According to theoretical assumptions and experience in other countries, one of alternatives for rural school survival is development of community schools as multifunctional centres (Tuna 2016). In this case, schools become central for communities and are open to everyone, also in evenings and weekends (Jakobson et al. 2013). Thus, schools become the visible result of endogenous development of a territory.

This approach has been supported by Soros Foundation – Latvia (SFL) when more than 50 schools received support to develop into multifunctional community centres in Latvia. The basic features characterizing a developing community school in Latvia have been defined as a) maintaining formal education as a basic function of a school; b) extended educational, social, cultural, etc. functions of a school, with an emphasis on interest education for all the age groups (from pre-school to seniors), life-long learning, leisure and personality development activities; c) wide range of target groups involved in school activities, covering all groups of population; d) school as a civil society development centre where pre-conditions and possibilities for active cooperation on various levels were provided: inner networking within the community, the school and local inhabitants, the school and NGOs, the school and other municipality administration institutions (BISS 2011; BISS 2013; Klave, Tuna 2014).

Principles of reciprocity, subsidiarity, equality and capacity, which all are very important in endogenous development, characterize schools as multifunctional centres through the development of social capital.

Social capital is a concept formulated by Pierre Bourdieu in 1970s and further developed to include links to cultural, economic and symbolic capitals. Understanding of social capital has evolved from an economic explanation to the wider social context. Initially, social capital was understood as a number of people from whom one could expect the support and resource provision. It was a kind of resource for creating better living conditions (Boxman et al. 1991). Social capital for Bourdieu was individuals' any resources that affected their opportunities in all spheres of life (Burd''e 1993).

Meanwhile, Robert Putnam stress out importance of social organizations (networks, norms and social trust), that promote coordination and cooperation to facilitate the mutual benefit (Putnam 1993) to come to the links between individuals and social networks and result of interactions among them – reciprocity and reliability (Putnam 2000). Social capital is existing or potential resources that are associated with lasting, more or less institutionalised networks of relations. Mutual acquaintance, trust and interaction becomes a unifying element for inclusive society in a single body and allow it to function quickly adapting to conditions and achieving more (World Bank 2008). Putnam sees social capital in functioning and development of social interaction and social networks, that goes in line with the civil society and participatory approach (Daugavietis 2014).

Atherley (2006) argues that social capital is important to rural community everyday life. At the same time, author emphasizes that, even though all municipalities can develop social capital, not all of them are aware of strengths from social relationships.

The most common co-operation limitations inherent in those municipalities where there is a higher proportion of people with socially and economically lower status.

Data

This article is based on data collected within the project "Rural Depopulation and the Governance of Education: Comparative Study of Latvia and Norway" co-funded by NFI/EEZ grant scheme and implemented by the University of Latvia and Norwegian Institute for Urban and Regional Research. The survey of municipality representatives included: 103 respondents from local administration in Latvia and 159 in Norway. Target group were education and/or development managers in local municipalities. The study also included a quantitative survey of small (up to 120 pupils) schools in Latvia (n=200). The fieldwork of municipalities' survey took place from March till May 2016, field work of school administration survey was carried out in April–June, 2016. Among the survey respondents there were directors of municipality education departments, education municipality development specialists, members of education committees or local government deputies. In the frame of quantitative analysis, municipalities were grouped according to respective TDIs.

Additionally, an elaborate qualitative research was conducted to achieve in-depth understanding on the research problem. Altogether 15 case studies where realized, including 12 in Latvia and 3 in Norway. Information was collected by integrating document analysis, in-depth interviews with stakeholders, group interviews, and site visits. It should be noted that the information has been collected to characterize four types of municipalities/communities. Firstly, municipalities with ordinary schools, secondly, communities with closed rural schools – to assess the impact of closing of the schools on sustainable development of municipalities, thirdly, rural municipalities with private schools in Norway. Qualitative data analyses in this article is mainly based on those municipalities with schools that attempted transformation into multi-functional centres.

Results

Empirical data analysis characterizes experience of rural schools as a multi-functional centres, challenges and stakeholders' attitude to this model of schooling and strategy for survival.

Experience and arguments for school closure

Since the maintenance of small schools is very much dependent on the economic capacity of the local municipality, it could hypothetically be assumed that access to education could be a bigger problem particularly in poorest municipalities. To evaluate hypothesis in comparison of municipalities Territory development index (TDI) were used (1). For each municipality calculated TDI value (according to 2015 economic

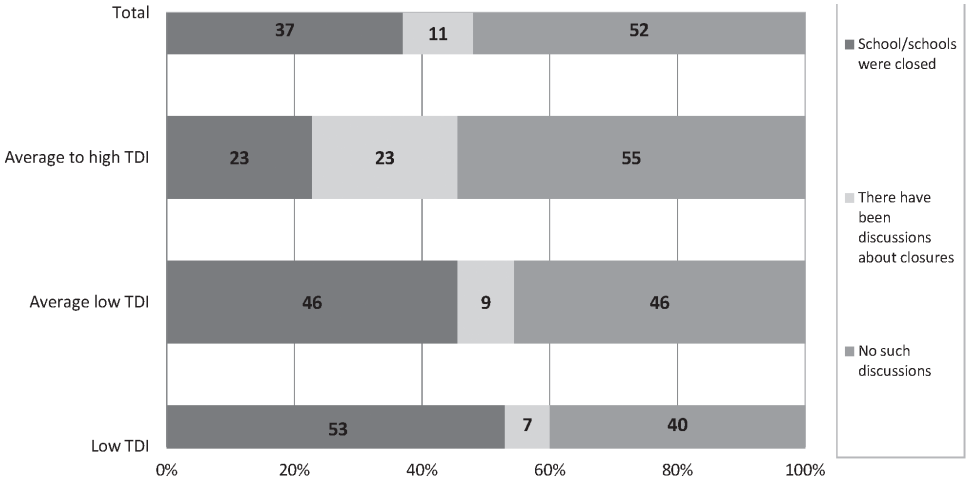
indicators) varies from -1.516 to 2.609. To compare the school network optimization experience and its impact on community life, all rural municipalities included in the survey were divided into 4 groups according to TDI values: low (< -1.000), moderately low (-0.913 to -0.001), moderately high (0.001 to 0.999) and high (> 1.000).

Results of survey point to a correlation between these indicators. Currently, it is common that the poorest municipalities with low and medium-low TDI has also lower availability to education: at least one primary school (students in grades 1 to 9) is available in 89% of municipalities with high TDI, while in the group of municipalities with low TDI only 50% have primary educational institutions.

In fact, it is already the result of schools' optimization realised in 2004, which most significantly affected less developed, poorer municipalities. Municipalities with low and medium-low TDI significantly more frequently experienced school closures in the last five years. In rural communities with the highest TDI has not been closed or reorganized no one of primary educational institutions in last five years, while in half of municipalities with medium-low or lower TDI has been closed for at least one or more schools.

Figure 1

Changes in the number of schools in relation to TDI



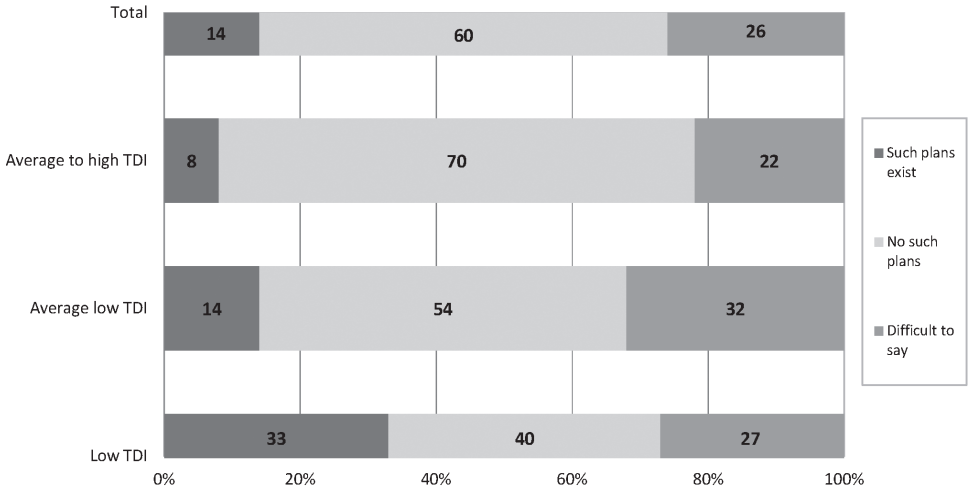
Source: elaborated by the authors.

Future projections provide the same correlation between the municipal economic capacity and evaluation of the changes in the school system – one third of the poorest local governments predicts that for at least another one or even several elementary schools will be closed in next two years. While none of the municipalities the highest TDI administration currently has plans to close any schools. A similar ratio between the economically developed and less developed municipalities could be observed thinking of plants to reorganize/ merge schools, which is also one of the school network

optimization measures. According to research, there are large part of municipal authorities who are responsible for education who do not have a clear idea of the future school development. This is declared by the answer "do not know" (26% on average). Ignorance and uncertainty have a negative impact on the municipal development plans and capacity.

Figure 2

Plans to close primary schools in the next two years



Source: elaborated by the authors.

Main arguments on school closure

In all discussions about school closures the most powerful argument, of course, is the number of pupils. The number of pupils in schools at the moment of closure differs significantly in each of municipalities: from 17 up to 150 children.

On a 5-point scale (where 1 means "not important at all" and 5 means "very important") the reduced number of pupils is the dominating argument (average rating 4.86) (see Table 1; the table shows only the most significant factors mentioned by municipalities). The second most significant factor is the economic one – need to save municipality's funds (average rating 4.29). If the municipality has lower socio-economic situation, this argument is more important in discussions about the school closure. A significant role is played by the argument about securing a good learning environment for the pupils (average rating 4.0). The least significant argument in support of small schools is a possibility of establishing another, alternative school (average rating 1.75), and decision makers' personal interest (average rating 2.37).

Table 1

Importance of arguments were given weight in discussions about school closure

	Total average	Low TDI	Average low TDI	Average high TDI
Number of pupils in the school	4.86	4.89	4.78	5.0
Secure a good learning environment for the pupils	4.0	3.63	4.09	4.10
Secure a good work and professional environment for teachers	3.56	3.33	3.60	3.70
Effect on the community life (for the community to stay an active and attractive place)	3.71	3.89	3.65	3.70
A need to save money in the municipality	4.29	4.56	4.26	4.1

Source: elaborated by the authors.

Even though municipality is the last and the main authority that makes a decision, the majority of local municipalities' representatives defend small schools and at least of the individual level "vote" against closures: 84% believe that smaller school gives a better social environment for the pupils and teachers at small schools have more opportunities to give individual support to each pupil (81%).

A significantly smaller share of the respondents agree with the statement that a bigger school offers better learning environment for the pupils (44%).

Table 2

Attitudes towards small rural schools

	Fully agree	Tend to agree	Tend to disagree	Fully disagree	DK
A bigger school gives a better learning environment for the pupils	13	31	39	14	2
A smaller school gives a better social environment for the pupils	21	63	8	2	5
Young families will not settle in small villages if there are no schools	49	35	8	5	4
Teachers at small schools have more opportunities to give individual support to each pupil	36	45	13	2	4
The municipality should do everything possible to maintain small rural schools	31	33	13	1	21

Source: elaborated by the authors.

Largest part of representatives from municipalities (64%) think that the municipality should do everything possible to maintain small rural schools. Perhaps this belief is based on several arguments.

The school has remained as the sole centre of social life in many municipalities. Different level local government are united in their views about the fact that after school closure environment gradually die and in the long-term perspective such a

scratch will not give contribution to regional development: *"[..] I think this village will eventually disappear. he will disappear more or less, people will go away. Well, life will not be there! That has already proven than it happen in parishes where schools have already been closed. There is a school, it is the life! Children are busy, something happens. The school also engages in maintenance of territory, all people together engage. If the parish has one or two people, it hardly [..]"* (quotation from an interview with the local government representative, a municipality with low TDI).

The quantitative survey data show that most local government representatives (83%) are convinced that young families will not settle in small villages if there are no schools. Of course, school closure is not the only factor that will affect the family's decision to stay or move, but additionally to economic factors that play a crucial role. Pessimistic picture of the school closure and its negative impact on life in community illustrates words of one representative from municipalities: *"What would happen? The same thing that happens everywhere – young people disappear. [..] He is not motivated to live here, all young parents will go away, they will look for [places] where the jobs are, and they will go to look for different place of residence. Of course, that this place will remain empty. And only we will stay – 50, 60 years olds"* (Municipality of medium TDI).

Community and stakeholder activity in maintaining of schools

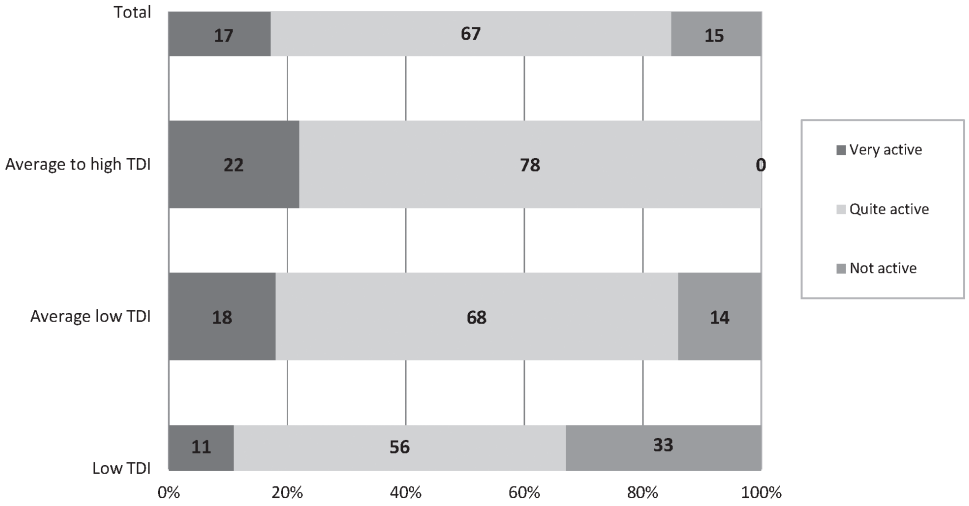
Contemporary integrated approach to sustainable rural development in Europe requires greater community involvement in the development process. Viable rural areas could not be imagined without flourishing communities in rural areas. Economic and social situation has significant impact on individual decisions of rural inhabitants and families (especially young families with children) to stay and build their lives in the countryside. At the same time, economic opportunities alone are not so unique to attract citizens to rural areas, especially young people. Other aspects of daily life such as organized infrastructure, available education, health care and cultural activities are crucial.

The experience of other countries suggests that interested and active local communities play tremendous role when it comes to preserving small schools. Case studies show that commitment of municipality representatives accompanied by the activity of local community has effect on both decision-making process and opportunities to save schools.

Surveyed municipality representatives see the activity of local population as relatively high (67%, and 17% as very high). However, significant differences by TDI where observed when compare assessment of community activities in various groups of municipalities. In municipalities with lower socio-economic situation inhabitants level of activity is lower (see Figure 3; only those representatives of municipalities who have experience of schools closure during last 5 years responded to questions about school closure process and activities of all stakeholders in order to maintain the school).

Figure 3

Community activity to influence the decision on school closure (%)



Source: elaborated by the authors.

Considering different social groups which take the most active position in favour of saving schools, the emphasis is on teachers (54%) and parents/parents organisations (49%). To a lower extend, although still actively, school preservation was advocated by principals (37%). Activity level of other groups/communities is significantly lower (28%). However, to a certain extend it contradicts the previous statement about the perceived high rate of activity among locals. The least efforts towards saving schools was from municipality administration, local politicians, pupils and organisations of them. It appears that education-related sector of non-governmental organisations is underdeveloped in Latvia, because the level of interest and participation of NGOs in decision-making in this area is very low. There were no municipalities in the survey reporting engagement of non-governmental organisations in defending schools Comparing assessment of activity level of stakeholders in municipalities, significant differences can be observed in assessment of local community activities.

In places where local government is more strong and higher or average are TDI, level of trust and loyalty to municipality is stronger as well. Besides if the Head of school and teachers live in the same place/village where school is located, they are mostly patriots and with much greater extent interested in the development of social capital in community to fight for their schools and pupils. It is brightly characterized by a teacher's words: *"It is great patriotism to our community in the first place. All of us teachers are local teachers. We do not have those who come only on lessons. So, everyone here has a family house. [..] motivated purely because of their family, of their own, because we must maintain this place and we have to educate our children. [..] And for me it is important that this place stays alive"* (teacher's interview from the case studies, the municipality of middle TDI).

Conversely, in areas where the municipal economic and social capacity according to TDI is lower, lower is residents' and parents' activity in the fight for school retention.

Table 3

Involvement of local actors actively trying to keep the school open (%)

	Total	Low TDI	Average low TDI	Average high TDI
Director of the school	37	22	50	20
Teachers	53	56	58	40
Parents / parents' organisation	49	44	42	70
Pupils / pupils' organisation	12	11	13	10
Local politicians	12	0	17	10
Municipal administration	2	0	4	0
NGO's/civil society	0	0	0	0
Local community	28	11	33	30
Others	5	11	0	10
No-one	7	11	8	0

Source: elaborated by the authors.

The lower is economic and social capacity of municipality, the lower is social capital, willingness and ability to participate in decision-making of its population. It is common that population is more passive and less involved in important community issues including the discussion and the struggle for the preservation of the school in less developed municipalities.

The situation is illustrated by a quotation from an interview in one of the economically poorest municipalities: *"In our parish most of the problematic families, social risk families have remained. High unemployment is in our parish, serious families are just in farms, we have a lot of young farmers, but we cannot particularly be proud of children in these families [..]. We also have many families coming to live here, but they are social risk families. They live only on social benefits, they have no garden, no cattle and children also do not do anything. [..] big strong families have gone away – either abroad or just – moved to work in different place. In fact, we have 48 pupils in school. 24 of children are so called problem children from problem families [..] many of them are alcoholics. [..] Of course, there are people who grow up normally amid all this, but it is a battle with windmills. It is necessary to be aware of contingent of small schools. And only then to evaluate the quality of work and education."*

This opinion is based on data from a quantitative survey as well. There is a significant correlation between the municipal welfare indicators and the parents' interest and participation in school life – 43% of the poorest municipalities' characterize pupils' parents as passive, with low interest and participation level in school life. While only 13% from economically most developed municipalities group think that parents of pupils are passive to participate in school's life.

A kind of vicious circle can be observed: in places where there are already limited resources available, school/school closures reduces it further. 23% of municipalities

believed that school closures had a negative effect on the life of local communities, reducing the chance of this place to attract new residents, especially – young families with children, which in turn further increases poverty and social exclusion risks in specific municipality.

Possible solutions

Whether there is and what is the way out of this vicious circle? Regardless of demographic situation and forecasts of further decline of the number of pupils, which is one of the objective preconditions for the optimization of school system, the possibilities for municipalities to attract new families with school age children depend largely on the resources at municipalities' disposal, as well as motivation to come up with such strategies. And many municipalities try to do just that.

More than a half of surveyed officials (56%) reported that their municipalities on a regular basis implement programmes aimed at increasing the number of pupils in small schools. Described initiatives and actions can be classified in several groups: 1. Free transportation for children, incl. from other municipalities, 100% compensation of travel expenses if pupils attend school in municipality; 2. Material rewards for pupils: monetary awards, scholarships, grants, rewards for successful participation in competitions and outstanding grades; 3. Special programs for integrated pupils; 4. Diverse proposals for informal education without charge (incl., sports and music schools, visits to swimming pool); 5. Free lunches for children in pre-school groups and all pupils (grades 1 to 12); 6. Pre-school education groups located in general education schools and many separate, non-regular activities.

As shown by the case study results, schools pro-activity plays an essential role in survival of school existence: *"[..] Our school is doing everything to exist. Looking for opportunities to children. I think that many of the large rural school children do not get [such opportunities] what our school gives additionally in educational process. [..] We are writing both – the county level and the region's projects to get support... everything is going now. The gym very much used. [..] now there are many things that we did previously and we are doing without money."*

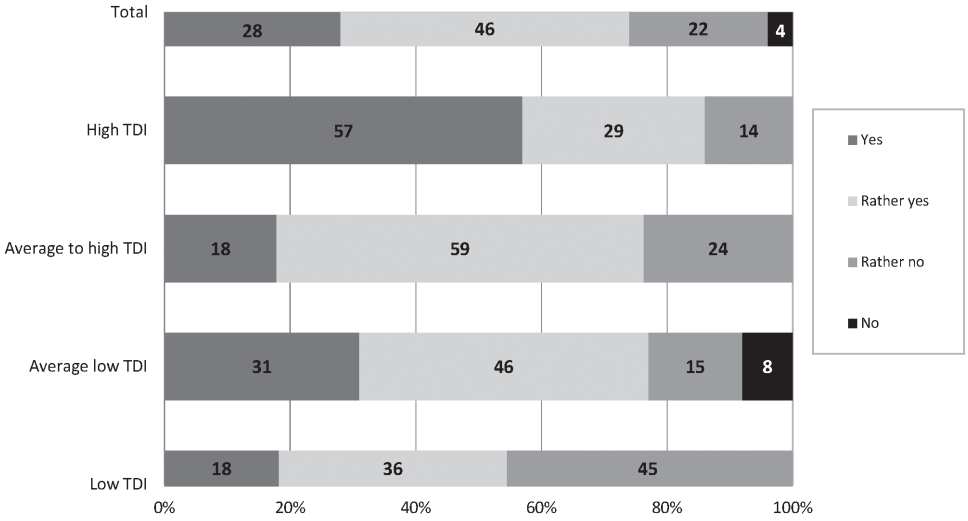
According to the endogenous model of rural development that describes development as "internally driven", the main development highlights are related to maximizing the involvement of local resources. In this context, the emphasis is on the role of schools as community centres (multi-functional centres). The majority of municipality representatives (86%) point out that schools try to identify the needs of their communities in order to arrange activities and provide services accordingly, and one of opportunities for saving small schools is their extension based on teaching staff resource, as well as use of premises for conducting business or for other community needs. On one hand, it could reduce economic pressure put on municipalities by small schools; on the other, expanded functions increase the role of schools in communities' life. The idea of school as multi-functional centre is not new neither in the world, nor in Latvia. Among the answers to the question about possible alternatives that were discussed in municipality in order to preserve small schools there also was the idea of expanding school functions in parallel to the formal education.

It should be noted that now this resource is already in use, because in 84% of municipalities there is at least one or several schools which, besides the formal education, implement other functions, such as kindergarten, hobby education, lifelong learning, etc. Schools as multi-function centres are not directly related to TDI of municipality. Slightly more such schools are in municipalities with medium TDI, less – in the poorest municipalities.

A large share (74%) of municipality representatives believe that such school model – where school provides additional services, thus functioning as a multifunctional community centre – provide a significant argument for keeping small schools open (see Figure 4.). Even greater number of the respondents (87%) personally express support for schools implementing both formal education and extended functions, such as offering adult further education, leisure time activities, preschool education etc. It should be noted that municipalities with the lowest TDI have more sceptical attitude towards expansion of school functions as a strategy to prevent closure of school. Perhaps such a belief is related to the passivity of the local community, lower interest in maintaining the school and its resources. Although inhabitants' activity depends on the specific location of municipality, but in overall representatives of the poorest local governments evaluates their citizens' participation and interest in school activities significantly lower than in municipalities with middle and high TDI (see Table 4).

Figure 4

Could such school model where a school provides additional services, thus functioning as a multifunctional community centre, provide a significant argument for keeping the small school open



Source: elaborated by the authors.

Table 4

Participation of the local population in the offered school activities by municipalities

	Total	Low TDI	Average low TDI	Average high TDI	High TDI
Very high	4	0	5	0	14
Rather high	31	30	24	47	29
Rather low	30	31	29	29	28
Very low	4	23	0	0	0
Varies by location	30	15	42	24	29

Source: elaborated by the authors.

From additional functions most often, schools get extended by adding pre-school groups that provide compulsory pre-school education for 5 of 6 years olds (85%), as well as pre-school education for even younger children (63%) (see Table 5.). Among popular functions that are offered by many rural schools there is hosting or organizing winter and summer camps (62%). The data shows as well that rural schools and the teachers working there ensure: further education of adults, incl. vocational training, languages, ICT skills; parental education and family support functions hobby activities for adults (including sports) and (spending) the leisure time. The least common use of schools' infrastructure is in relation to services supporting the local population (e.g., access to showers, washing machines). In addition, there is no significant difference in diversity of functions realized by municipalities with different TDI, except for further education of adults, incl. vocational training, which often are provided by the municipality with the lowest TDI.

Table 5

Functions which the schools perform or services they provide (or could provide) besides formal education

	Municipalities, with existing multifunctional community centres
Further education of adults, incl. vocational training, languages, ICT skills	41
Hobby activities, including sports, for adults and (spending) the leisure time	40
Compulsory pre-school education (5 to 6 years olds)	85
Pre-school education of younger children	63
Parental education and family support functions	58
Services supporting the local population (e.g., access to showers, washing machines)	3
Summer/winter camps	62
Other functions	5
Difficult to say	4

Source: elaborated by the authors.

In the dominating share of municipalities (74%), school premises are open to community members without any restrictions, which means that school resources and premises, such as sports hall classrooms, are accessible to the whole community. However, the use of school premises for unrelated to education activities and business activities is not seen as economically effective – only in 20% of the cases the income generated in this way was perceived as significant. The use of school premises has non-tangible, non-measurable with economic indications symbolic value, which translated into the stronger community identity and sense of belonging.

In almost all municipalities school premises are used for various courses, festivities, concerts, etc. The most frequently mentioned events are: sports competitions, sports clubs unrelated to school (68%), summer/winter camps (67%), after school activity for pupils (66%), further education for adults (53%), kindergarten/preschool education (52%), open activities for the village such as the celebration of the national day, Christmas celebrations, etc. (42%) (see Table 6). School premises of economically more developed municipalities more often have been used for sports competitions (perhaps because they are more appropriate for that purpose) and for camps as well as for private business needs. While school buildings of the poorest municipalities more often arrange preschool education, opportunities to organize concerts as well as they are rented for private parties.

Table 6

Activities for which school premises are being used including letting/renting out, during off-school hours and which are not provided directly by the school

	Total	Low TDI	High TDI
Private businesses such as hairdresser, dentist, lawyer, etc.	10	0	13
Concerts	32	20	13
Private parties	15	33	0
Summer/winter camps	67	53	63
Sports competitions, sports clubs unrelated to the school	68	40	88
Civil society groups (leisure and hobby groups) unrelated to the school	40	33	38
Open activities for the village such as the celebration of the national day, Christmas celebrations, etc.	42	47	37
Further education for adults	53	40	38
After school activity for pupils (SFO)	66	67	50
Kindergarten/preschool education	52	53	38
No, school premises are only used	5	13	0

Source: elaborated by the authors.

Conclusions

Schools and the surrounding community relations are not created in a vertical hierarchy and they should not be an isolated. They should become a single ecosystem with common needs and resources through regular involvement in two-way cooperation. In addition, the borders should not be closed or defined too strictly. Social conventions should remain flexible and be created on the daily bases.

With targeted expansion of cooperation partners network, including creation a new kind of relationship with the municipalities, school could become a coordinating point for the up-to-date information, coordination of financial resources and human resources for the coordination of activities, provision of services, any meaningful leisure activities and civil activities in relation to education.

In this way pupils are given an opportunity to see the relationship between school and life outside the school and to accumulate the experience of participation and co-responsibility. In addition, school as a community centre will become a place where existing fragmented resources are united. School will transform into a multifunction community learning and professional training, cultural, social support centre, and in such a manner it acquires a higher value to local people, including decision-makers and the executive side.

Unfortunately, study approves the defined research hypothesis – municipalities with lower TDI have higher proportion of inhabitants not only with a relatively lower socioeconomic capital, but also with lower social capital compared to municipalities with higher TDI. Therefore, the capacity and willingness to cooperate among different agents in such municipalities on overall is lower. This results in a negative impact on the development of innovative public services, including educational institutions and the concept of schools as multifunctional centres – an alternative for schools survival and flourishing communities.

Note:

(1) Territory development index is complex assessment of a national socio-economic development disparities. The initial data for calculations of development index shall be taken from the Central Statistical Bureau, Treasury, State Land Service, State Employment Agency and Office of Citizenship and Migration Affairs using the statistical eight indicators (unemployment rate, GDP per capita, personal income tax per capita, non-financial investments per capita, the dependency age ratio, population changes, density in the resident population, number of individual merchants and commercial companies per 1000 inhabitants).

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EKONOMIKA

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COMPARATIVE ANALYSIS OF ORGANIZATION AND FINANCING CAPITAL REPAIRS (RENOVATION) IN MULTI-APARTMENT BUILDINGS IN THE CITIES OF LATVIA AND RUSSIA (CASES OF RIGA AND SAINT PETERSBURG)

The article presents general conditions of the housing stock in Latvia and Russia by the example of the cities of Riga and Saint Petersburg and presents analysis of conducting capital repairs (renovation) in multi-apartment buildings of typical design built during the Soviet era in both countries. The article draws attention to the necessity of forwarding capital repairs and implementation of energy efficiency programs for residential buildings. The authors implemented methods of statistical and economic analysis and expert evaluation. In conclusion, the authors justified presence of high potential growth for labor market that can be achieved by developing process of housing stock renovation. As the result of this research, the authors have concluded that investigation of Latvia's and Russia's experience in the field of conducting capital repairs and implementing energy efficiency programs for residential buildings can create conditions for making optimal choices in this field for both countries. This work can be of interest to the cities of all the post-Soviet countries where residential districts were built up by the Soviet multi-apartment buildings of typical design.

Key words: multi-apartment buildings, renovation, energy efficiency, Latvia, Russia, Saint Petersburg, Riga.

Latvijas un Krievijas pilsētu daudzdzīvokļu māju kapitālā remonta (renovācijas) finansējuma un organizācijas salīdzinošā analīze (Rīgas un Sanktpēterburgas piemērs)

Šajā zinātniskajā rakstā autori parāda vispārīgo dzīvojamā fonda stāvokli Latvijā un Krievijā uz Rīgas un Sanktpēterburgas piemēra, kā arī veic abu valstu padomju sērijveida daudzdzīvokļu māju kapitālā remonta (renovācijas) veikšanas procesa analīzi. Rakstā akcentē uzmanību uz nepieciešamību paātrināt kapitālā remonta veikšanu un daudzdzīvokļu māju energoefektivitātes projektu apgūšanu. Autori izmantoja statistiskās un ekonomiskās analīzes metodes, kā arī ekspertu vērtējuma metodi. Noslēguma daļā autori pamatoja darba tirgus attīstības augstu potenciāla esamību, ko var nodrošināt dzīvojamā fonda renovācijas procesa attīstība. Pētījuma rezultātā autori secināja, ka Latvijas un Krievijas pieredzes kapitālo remontu veikšanā un daudzdzīvokļu māju energoefektivitātes paaugstināšanas projektu apgūšanā pētīšana spēj radīt priekšnoteikumu optimālai risinājumu izvēlei šīs jomas ietvaros abās valstīs. Šis darbs var būt aktuāls visās postpadomju valstīs, kur guļamrajonu apbūvei izmantoja tipveida padomju projektu daudzīvokļu mājas.

Atslēgvārdi: daudzdzīvokļu mājas, renovācija, energoefektivitāte, Latvija, Krievija, Sanktpēterburga, Rīga.

Сравнительный анализ организации и финансирования капитального ремонта (реновации) многоквартирных жилых домов в городах Латвии и России (на примере Риги и Санкт-Петербурга)

В представленной научной статье авторы раскрывают общее состояние жилищного фонда в Латвии и России на примере городов Санкт – Петербург и Рига, а также проводят анализ процесса капитального ремонта (реновации) многоквартирных жилых домов советских проектов типовых серий в обеих странах. В статье акцентируется внимание на необходимости ускорения проведения капитальных ремонтов и освоения проектов повышения энергоэффективности многоквартирных жилых домов. Авторы использовали методы статистического и экономического анализа, метод экспертных оценок. В заключительной части авторы обосновали наличие высокого потенциала роста рынка труда, который заключается в развитии процесса реновации действующего жилищного фонда. В результате своего исследования авторы пришли к заключению, что изучение опыта Латвии и России в проведении капитальных ремонтов и освоения проектов повышения энергоэффективности многоквартирных жилых домов помогут создать предпосылки для выбора оптимальных решений в этой области для обеих стран. Данная работа может быть актуальна для городов всех постсоветских стран, в которых спальные районы застраивались многоквартирными домами советских проектов типовых серий.

Ключевые слова: многоквартирные жилые дома, реновация, энергоэффективность, Латвия, Россия, Санкт-Петербург, Рига.

Introduction

It is generally known that capital repair of multi-apartment buildings (MABs) is an important form of housing stock reproduction alongside housing construction and renovation. Therefore, improvement of the renovation's organizational and financing process is a significant and topical task.

During the Soviet era, the state was responsible for the MABs major repairs that were financed through budgetary resources. In several major cities, including Leningrad and Riga, capital repair plans were developed and in some cases, a science-based approach to forward planning was employed. Although critical issues of the MABs maintenance at the technically functional state did not always get resolved properly.

In transition to new reality alongside with the establishment of independent states, the Soviet system of organizing capital renovation in fact collapsed. In early 2000s, attempts to create a new system for capital renovation were made because the lack of capital repairs accelerated ageing of the residential housing.

The issues of housing stock capital repair in Russian cities are widely explored in several scientific and applied research papers. In the field of the MABs capital repair, considerable contribution was made by such authors as E. Blekh, V. Buzyreva, N. Vasilyeva, E. Smirnov, V. Chekalin (Blekh 1995; Buzyreva 2016; Vasilyeva 2012; Smirnov 1997; Chekalin 2010). Research made by young authors is of notable interest: V. Bogatov (Bogatov 2014) examined various possibilities of implementing a system of planned-preventative repairs in modern conditions, and E. Golosova and V. Checalin (Golosova, Chekalin 2015) in details examined issues of energy efficiency of the current housing stock being dealt with in the process of conducting housing repairs.

Therefore, it is of academic interest to compare organizational experience of the housing stock capital repairs (renovation) in two countries, Latvia and Russia, based on the cases of Riga and Saint Petersburg. Both cities have rich history and significant housing stock built in 60s, 70s and 80s that strongly demands to be repaired.

In the process of compiling this article, the authors have concluded that the amount of scientific papers on the subject is very small both in Russia and in Latvia. Taking into consideration the fact that the range of housing stock problems is similar for both countries, this article can serve as a valuable contribution for further application of experience in bringing forward the housing stock renovation processes.

It should be noted that in Latvia, the term "renovation" is used for describing residential housing repair, and it quite corresponds to a notion of capital repair and modernization used in Russia.

In their work, the authors have implemented methods of statistical and economic analysis as well as expert evaluation.

Analysis of the Housing Stock Conditions and Assessment of the Capital Repair Necessity in Multi-Apartment Buildings in Latvian cities

Characteristics. In comparison to developed countries of Europe, housing conditions in Latvia are very low as the service life of many residential buildings is long while its technical state and functional properties are far from the modern demands. For example, heat stability of majority of the buildings is not sufficient. More than half of the residential buildings (58 percent) were built before 1940, while 26.5 percent were built during 1941–1980s. All of these building require renovation. Considering 72 percent of population living in residential houses built in 1946–1990, it is obvious to highlight the terms, scope and quality of repair and construction work as well as measures of heat insulation (LR Labklajibas Ministrija 2011).

One must note that one and two bedroom apartment buildings and private households of mostly poor technical state constitute a major part of the housing stock. According to the research conducted by the Central Statistical Bureau of Latvia (CSB) in 2010, one quarter of the residential buildings have such issues as leaking roofs, ceilings and foundations, poor condition of window frames and floors. Furthermore, within a considerable part of the households, separate bathrooms, shower rooms as well as indoor flushing toilets are absent (LR Labklajibas Ministrija 2011).

Throughout Latvia, in Latgale and Vidzeme, housing conditions are the worst. The most favourable conditions are in Riga and its adjacent areas. For instance, in Vidzeme, 38.9 percent of the households suffer from leaking roofs, damp walls, ceilings, floors and foundations (as of 2009). (LR Labklajibas Ministrija 2011)

For more detailed picture on the residential buildings, its structure, parameters and territorial distribution, refer to Table 1.

In absolute terms, according to the data of the Ministry of Economics of Latvia, total housing stock is represented in Table 2.

Table 1

Dwelling type (%)

	2014					
	Total	**Detached house**	**Semi-detached or terraced house**	**Residential building with max. 9 apartments**	**MABs with 10 apartments and more**	**Other type of dwelling**
All households	100	26.2	3.5	7.9	62.2	0.1
Urban	100	13.5	2.5	7.2	76.7	0.1
Rural	100	58.1	5.8	9.8	25.9	0.3

Source: Latvijas Centrala Statistikas Parvalde 2015.

Table 2

Residential building structure in Latvia

Building type	Number, thousand pcs	Floor space, million m²
One or two bedroom apartment houses	313	32
Multi-family apartment buildings with 10 apartments and more	39	55
TOTAL	352	87

Source: LR Ekonomikas Ministrija 2013.

According to the CSB data for 2015, the total average useful living space per person is 38 m². As Table 2 shows, around 72 percent of Latvian population lives in serial multi-apartment buildings (MABs). Therefore, the standard-design MABs built during the Soviet era that account for more than 80 percent of all standard MABs are of particular research interest. There are 39.1 thousand MABs in Latvia, while in Riga, there are 11.9 thousand buildings comprising to almost 30 percent of the total residential housing and accommodating half of Latvia's population.

Thereby, the author's view is that the MABs are of the greatest academic interest as they form a body of housing and utilities, important economy sectors, since the MABs are inhabited by the majority of population and connected to the public service companies that provide heating, water, electricity and household garbage disposal.

According to the Cabinet Regulation No 907 of September 28, 2010, all buildings can be divided in solidity groups in accordance with used materials and constructions for which an average lifetime is calculated. The average lifetime of a standard panel MAB for standard residential building projects No 316, 318, 119 is 70 years, for projects No 103, 104, I-464, I-467A, I-602, 602P–60 years, meaning that the overall average lifetime is 65 years. In other words, lifetime for all standard MABs build during the Soviet era is 65 years (MK noteikumi 160). Herein, is should be noted that residential districts were mainly built up with the standard multi-family residential buildings. This lifetime can be considered approximate given the fact that these terms are defined as permitted and have not been put to test. In is necessary to consider that

one building design can differ from the other by construction quality as well as by the following maintenance quality (MK noteikumi Nr. 907). It is obvious that quality construction and timely repair and maintenance that ensures timely elimination of the detected defects can significantly increase lifetime of such building. However, it is important to understand that according to data, operating life of internal engineering communications and installations as well as certain building structure elements is significantly shorter and depend on the specific material used. For instance, the average determined heating system lifetime is 10–20 years; water piping and sewage system lifetime is 15–30 years, while the lifetime of for gas installations is 20 years (MK noteikumi Nr. 160). Note that in Latvian cities, including Riga, a unified registration log database for physical housing stock depreciation is absent.

In their 2015 research, the Institute of the Civil Engineering and Real Estate Economics at RTU in cooperation with the Latvian Real Estate Association (LANĪDA) indicate that according to the State Land Service of Latvia there were only 2164 MABs built during 1992–2014 (only 6 percent of the total housing stock) (Sakovskis 2016). At the same time, the useful life of 3000 multi-family residential apartments ends in 2020–2040, while the useful life of a number of engineering infrastructure facilities, utility networks in particular, is already complete.

In accordance with the state-owned development finance institution ALTUM (www.altum.lv) that is responsible for allocation of the EU funds for the MABs renovation, around 10000 residential houses in Latvia (more than 25 percent of the total MABs) are in critical state. While according to Riga Energy Agency (www.rea.riga.lv), 6000 MABs are in urgent need of renovation. The total floor space of these is 12 million m² comprising 20 percent of the total housing stock available floor space in the city (Latvijas Centrala Statistikas Parvalde 2015)

It is generally obvious that the renewal of Latvia's housing stock is very slow: the market can offer only 0.3 percent of the new required housing stock. According to independent experts, a significant part of Riga housing stock is worn and in need of capital repair, including heating insulation works and change of utility networks (Sakovskis 2016). Moreover, the useful life of a number of MABs ends soon, which is a serious safety problem that must be solved at the state level. Therefore, in the author's opinion, there are currently no alternatives to the MABs renovation.

Renovation possibilities. Since the state-run multi-apartment buildings' energy efficiency program (MABsEE) for co-allocation of the EU funds was opened in 2016, Riga City Council increased its support of the MABs renovation projects. The support is the following:

- free consultations on energy efficiency provided by Riga Energy Agency (REA),
- co-funding up to 80 percent of expenses for performing energy audit, but not more than EUR 426.86 per one building,
- 90 percent discount on real estate tax for the MABs that have already performed renovation on the terms of the Energy efficiency program (SIA "ARHO" 2006).

However, at the end of 2009, in Riga, there were only 56 renovated MABs, eight of which are Riga City Council social houses (Latvijas Centrala Statistikas Parvalde 2011).

Table 3 and Table 4 represent generalised data on the MAB energy efficiency program implementation, available on the web page of the Ministry of Economics of Latvia, by regions of Latvia and in Riga (Rigas energetikas agentura 2016).

Table 3

Number of submitted renovation projects by region

	2009	2010	2011	2012	2013	Total
Kurzeme	27	62	125	104	83	401
Vidzeme	41	30	96	105	42	314
Riga district	21	26	97	105	58	307
Zemgale	10	28	97	61	33	229
Riga	13	17	40	39	23	132
Latgale	5	7	15	21	9	57
Total	117	170	470	435	248	1440

Source: LR Ekonomikas Ministrija 2013.

As seen in Table 3 and Table 4, the number of submitted projects for MABs renovation is quite small, while Riga has the total of 132 projects from the overall 1440 projects submitted throughout Latvia, showing very low interest in performing capital repairs among the apartment owners. The situation with project implementation is even worse.

Table 4

Number of implemented renovation projects by region

	2010	2011	2012	2013	2014	2015	2016	Total
Kurzeme	4	13	24	44	54	62	32	232
Vidzeme	2	8	24	42	50	31	10	168
Riga district	4	11	22	37	38	38	12	162
Zemgale	1	3	7	29	24	26	11	102
Riga	3	5	5	11	7	10	3	46
Latgale	0	2	5	8	8	5	1	30
Total	14	42	87	171	181	172	44	740

Source: LR Ekonomikas Ministrija 2016.

In general, throughout Latvia, the number of implemented renovation projects is only half the number of the project submitted, in Riga this number is three times less of that. That shows that the state support system for the renovation projects is quite ineffective.

In value terms, the following is the housing stock renovation project financing by the EU structural funds in Latvia:

Table 5

Housing stock renovation projects funded by the EU structural funds in Latvia

Performance	2010	2011	2012	2013	2014	2015	2016	Total
Number of projects	14	42	87	171	181	170	80	745
Total investment, EUR	1562659	5086750	11910669	32560748	40112412	39273899	20241645	150748781

Source: LR Ekonomikas Ministrija 2016.

Table 6 shows growth in the number of implemented renovation projects until 2014, after that a decrease is seen, and in 2016, the number of projects implemented reached the level of 2012. In part this can be explained by the EU new financing conditions that became more strict, as well as weak promotional measures taken by the state. The headline is currently obvious: the renovation pace of the Soviet era MABs is insufficient. For instance, in six years, only 745 out of 39 thousand buildings were renovated, comprising only 2% of the total number of the MABs buildings. Based on the EU dedicated financing for 2016–2023 in the amount of EUR 166.4 million and EUR 150.7 million from the last period, one can expect that the number of renovated MABs in 2023 will reach 1600–1700 buildings at maximum. That will comprise around five percent of the total number, which is obviously low.

According to the Ministry of Economics of Latvia (LR Ekonomikas Ministrija 2016), total housing stock renovation investment in Latvia is around EUR 3.5 billion. While according to a non-governmental organization "Ēku saglabāšanas un energotaupības birojs" (ESEB), EUR 8 billion are necessary for performing renovation of the total housing stock, built during the Soviet era and half of which is located in Riga (Sakovskis 2016). According to the expert assessment of the residential housing renovation costs, an average full renovation cost of one square meter is EUR 100–170 or around EUR 140 per m². Data from Riga Energy Agency (Rigas energetikas agentura 2016) shows that 6000 MABs in Riga are in urgent need of renovation, comprising a total floor space of 12 million m² and requiring an investment of around EUR 1.2–1.6 billion.

Despite changes in housing and public utilities terminology that occur after gaining independence in 1991, the heart of the problem remains. As noted previously, the notion of "capital renovation" has been replaced by a term "renovation". The official definition of renovation is as follows: "repair of the structure or part thereof with an aim to reconstruct the structure or its part by substituting the wore-off bearing elements or constructions as well as improvement of functional and technical state of the structure without changing its volume and function" (Latvijas Centrala Statistikas Parvalde 2011). In Latvia, renovation is often also understood as the MABs energy efficiency improvement programs.

Renovation is a trend popular not only in Latvia, but all around Europe. Initiatives for the housing stock heat insulation are only consequence of the EU substantially financed common policy in the area of energy efficiency. Renovation provides a set of

solutions for all main problems: heat insulation of outer walls, attics, basements, pedestals, replacement of common doors and windows, renewal of general utilities, installation of modern metering devices and so forth. Such measures not only allow to renew the building internally and externally (renovated buildings look like newly built constructions), but also to save on utility services, heating in particular.

Heating in the renovated building apartments is 32–62 percent cheaper on average (Smehova 2016). There is a significant decrease in hot water bills. Additionally, residents of the renovated buildings are offered a 90 percent real estate tax discount. Certain city councils spur the renovation process offering maintenance discounts. For instance, residents of the renovated buildings under Riga City Council supervision enjoy a 10 percent discount for the building maintenance services (Rigas Dome 2013).

According to the Cabinet of Ministers of the Republic of Latvia Regulation No 160 of March 15, 2016 (Ministru Kabineta noteikumi 160), a new program for increasing the MABs energy efficiency was adopted for the period of 2016–2023, and EUR 166 470 588 are expected to be allocated (Golunovs 2014). According to the Ministry of Economics data (LR Ekonomikas Ministrija 2016), that will allow to renovate 1700 buildings in Latvia and will provide real savings for 13.5 thousand families (Smehova 2016).

ALTUM is a state-run public company, created for the purposes of energy efficiency program management in Latvia, and is trusted with public spending allocation in the housing area and with provision of consultations for obtaining renovation financing from the EU funds. The renovation project funding system is based on compensating part of the expenses needed for renovation through certain grants. Here, ALTUM experts review the documents submitted by the MABs representatives for obtaining the European funds: conclusion of the energy audit, engineering and construction project. Residents are allowed to choose their crediting institution: bank or ALTUM itself. Should the residents choose to borrow from ALTUM, they receive a certain amount of co-funding.

The main difference between the crediting sources is interest rate. ALTUM interest rate is minimal, around 1.75–2 percent plus EURIBOR (AS "Attistibas finansu institucija Altum" 2016), while a bank's rate is around four percent. The real estate itself does not serve as security. For ALTUM, the guarantee is a 0.65 percent annual interest rate calculated from the remaining amount of warranty obligations. Meanwhile, solvency of the residents who wish to participate in renovation is rigorously evaluated. It is expected that the total debt of the building must not exceed 10 percent of all utility payments for the last 12 months.

Moreover, the residents can expect a 25–50 percent discount for the following works performed for improving energy efficiency (AS "Attistibas finansu institucija Altum" 2016):

- construction works in the common property, including new windows in selected apartments;
- renovation, reconstruction or substitution of the building utility networks;
- purchasing and installation of heating generating sources that use renewable energy resources.
- construction design and construction supervision, project management.

The EU (with exception of energy audit, engineering and construction project) is not financing technical documentation preparation. For this purposes city and regional councils are expected to come in. For instance, in Riga, Riga City Council undertakes 80 percent of these expenses (Rigas dome 2013).

It is important to note that the residents will not be fined in case the renovation will result in less savings than the renovation project proposed. Meaning, when planned annual costs of heating is 70 kWh/m², while an actual consumption is 85 kWh/m², nobody will demand for the EU money to be returned (SIA "ARHO" 2006). The Ministry emphasizes that participation requires the building to prove using the prepared documentation that the annual energy consumption will not exceed 90 kWh/m² after the renovation is finished (LR Ekonomikas Ministrija 2013). General savings due to the renovation works must constitute at least 30 percent of the initial energy consumption, while an obligatory is the following: the project must be economically viable.

According to the authors' evaluation, at least two thirds of the registered apartments' owners at the building must participate in order to launch the renovation project mechanism. Following that, a representative is elected for taking care of the paperwork and procedures. Despite this existing support system, the housing stock renovation pace in Latvia is still rather slow.

Analysis of the Housing Stock Conditions and Assessment of the Capital Repair Necessity in Multi-Apartment Buildings in Russian cities

As of the end of 2015, the housing stock in Russian Federation (Russia) was 3581 million m² of useful floor space, including 2612 million m² of useful floor space in cities (Federalnaja sluzhba gosudarstvennoj statistiki 2016). Table 6 represents the housing stock structure, showing that privately owned residential premises constitute the main part of the stock (85.5 percent).

Size of the dilapidated and dangerous housing stock is insignificant, amounting to only 2.5 percent (Gosudarstvennaja Duma Rossijskoj Federacii 2004), while the necessity for capital repairs is quite high (see Table 7).

Experts suggest that around 40–50 percent of the city housing stock needs capital repairs to be preformed. At the same time, the MABs capital repair fund size in most of the cities is obviously insufficient. Recently, strong measures were taken in order to create a new organizational scheme for the housing stock capital repairs.

The total volume of dilapidated and dangerous housing stock is generally inconsiderable and is 2.5 percent (Gosudarstvennaja Duma Rossijskoj Federacii (2004). Zhilishnij kodeks Rossijskoj Federacii), but the need for capital repair is quite urgent (Table 7). According to experts, around 40–50 percent of the city housing stock requires capital repair. Meanwhile, the total volume of conducted capital repair in majority of the cities is obviously insufficient. Therefore, lately, serious measures were taken on order to formulate new scheme for conducting housing stock capital repairs.

Table 6

Housing Stock in Russian Federation (as of the end of the year; total floor space of the residential premises; million m²)

	1990	2000	2010	2011	2012	2013	2014	2015
Housing stock, total	2425	2787	3231	3288	3349	3359	3473	3581
including:								
privately owned	791	1819	2765	2838	2915	2950	2999	3232
from which owned by citizens	641	1620	2657	2725	2795	2840	2873	3118
public	1011	177	139	133	125	114	116	116
council-owned	611	739	321	311	302	258	233	205
other	12	52	6	6	7	11	12	13
City housing stock, total	1720	2020	2333	2374	2426	2444	2522	2612
including:								
privately owned	353	1163	1951	2006	2071	2107	2117	2328
from which owned by citizens	260	1022	1872	1922	1980	2020	2015	2234
public	765	143	121	116	109	102	105	105
municipal	594	673	256	247	240	201	178	154
other	8	41	5	5	6	8	9	10
Rural housing stock, total	705	767	898	914	923	915	951	969
including:								
private	438	656	814	832	844	843	882	904
from which owned by citizens	381	598	785	803	815	820	858	884
public	246	34	17	17	16	12	11	11
municipal	17	66	66	64	62	57	55	52
other	4	11	1	1	1	3	3	3

Source: Federalnaja sluzhba gosudarstvennoj statistiki 2016. Rossijskij statisticheskij jezhegodnik.

Table 7

Dilapidated and dangerous housing stock (as of the end of the year; total floor space of the residential premises; million m²)

	1990	2000	2010	2011	2012	2013	2014	2015[2)]
Total size of the dilapidated and dangerous housing stock, in million m²	32.2	65.6	99.4	98.9	99.9	93.9	93.3	88.0
including:								
dilapidated	28.9	56.1	78.9	78.4	77.7	70.1	69.5	68.4
critical	3.3	9.5	20.5	20.5	22.2	23.8	23.8	19.6
Relative share of the dilapidated and dangerous housing stock in total size of the housing stock, in percent	1.3	2.4	3.1	3.0	3.0	2.8	2.7	2.5

1) Due to absence of respective regulations for the state record-keeping for housing stock in Russia, including state technical record-keeping and technical cataloguing, the official statistics for 2013–2015 do not fully reflect all accounting units.

Source: Federalnaja sluzhba gosudarstvennoj statistiki 2016. Rossijskij statisticheskij jezhegodnik.

We shall examine the housing stock specification based on one of the biggest cities of Russia, Saint Petersburg.

Currently, the size of the housing stock in Saint Petersburg is 123 million m² of useful living space. It grew by 30 million or 32 percent m² during 2000–2015 (Gosudarstvennaja Duma Rossijskoj Federacii 2004, part 2, Table 2.1). More than 90 percent of the housing stock ir privately owned, nine percent is owned by the city, that approximately represents the division of housing stock in the country. (Gosudarstvennaja Duma Rossijskoj Federacii 2004, part 2, Table 2.2).

Main part of the city housing stock (86.3 percent) was built during the post-war period, and 24.3 percent of that was built in 1946–1970. These buildings in particular, as well as the old pre-revolutionary housing stock that amounts to 6940 buildings with the total floor space of 15 million m², require priority capital repair and modernization (see Table 8). Standard-type buildings developed in 1970–1980 must also be considered in this group as most of them haven't undergone a capital repair. Therefore, the necessity for capital repair in the housing stock of Saint Petersburg can be assessed at not less than 38 million m² of living floor space that under even minimal costs require around RUB 40–50 billion of funds. This amount is comparable with the city budget, therefore a serious screening for selection of the most worn buildings will be needed.

Table 8

Housing stock description in Saint Petersburg by period of construction (calculated based on data book 13, Table 2.13 and 2.14)

Construction periods, years	Number of MABs, pcs	Percent of total	Total useful living space, million m²	Percent of total
until 1920	6940	30.2	14.7	12.0
1921–1945	735	3.2	2.1	1.7
1946–1970	8263	36.0	29.7	24.3
1971–1995	4167	18.2	42.5	34.8
after 1995	2844	12.4	33.3	27.2
Total	22949	100.0	122.3	100.0

Source: Compiled by the authors.

The issue of the capital repair organization in Russia is regulated by the current legal provisions: The Housing Code of Russia (Gosudarstvennaja Duma Rossijskoj Federacii 2004), the Town Planning Code of Russia (Zakon Sankt-Peterburga N 690-120 2013), and regional laws on the housing stock capital repairs passed, for instance, in Saint Petersburg.

In 2013, a new system for capital repair organization in the housing area was decided upon. Each region develops a new structure – a regional operator – responsible for organizing the MABs capital repairs in the buildings of a given territory. Short-term and long-term repair programs developed by the regional administration according to the current legal provisions define sequence and type of the capital repair. For instance, in Saint Petersburg, the Committee for Housing Policy is responsible for

developing these programs. In Saint Petersburg, the long-term program for the MABs capital repairs is developed for a period of 25 years ending in 2038. Short-term programs are developed for a period of three years (currently, 2017–2019). The housing stock capital repair fund is created for the purposes of funding the repair works. The fund is financed both by the apartment owners at the MABs and by the regional public subsidies.

In a number of regions, the public financing is quite limited due to the budget deficit, while in Saint Petersburg the share of public funding of the capital repair fund is relatively big. For instance, the CEO of the NGO "Fund – a regional capital repair operator for common property in multi-apartment buildings" Denis Shaburov noted that in 2016 over RUB 3 billion were transferred by the inhabitants of Saint Petersburg for the purpose of financing capital repairs, while the public subsidies amounted to around RUB 6 billion in total. The main part of the funds is deposited on the regional operator's account (92.6 percent), while the rest is deposited on the specially created building accounts that belong to homeowners associations, housing construction co-operatives and other managing organizations (Telekanal Sankt-Peterburg 2017).

The amount of the capital repair dedicated monthly payments transferred to the respective funds is defined on a regional level in accordance with the current methodology (Prikaz Ministerstva Regionalnogo Razvitija RF No 288 2013). Moreover, the regional differences are considerable. For instance, in 2016, the individual monthly capital repair payment in Saint Petersburg was RUB 2–3 per m², while in Moscow it amounted to RUB 15 per m² of useful living space.

The role of the apartment owners in the current scheme of performing MABs capital repairs is quite passive. The payment amount as well as the scope and terms of capital repairs are defined by city administration. The regional operator is responsible for organizing the works. The citizens are left to comply with the regional administration regulations. Regional organizations responsible for maintenance and minor repairs are de facto suspended from the MABs capital repairs. Though the residents still can organize a separate account and promote their own preferences in terms of the building repair policy, this path demands considerable consolidation on the part of residents, which is challenging and brings certain risks, in particular, a possible limitation of public subsidies. Although for the residents alone, it is fairly difficult to accumulate the necessary capital repair funding. According to calculations, even in a period of over 10 years, it is almost impossible to collect the necessary amount of funds for performing capital repairs in accordance with the current pricing rates. At minimum, 20–30 years are needed for this task. Although, no one can guarantee that during this period the collected means will not depreciate. At the same time, no activity is required from residents in order to include the collected MABs funds in the regional capital repair fund. In reality that means the money collected in a certain building will most probably be used for performing repairs of another building. Therefore, the variety of owner decisions can be described as "both are worse", since both decisions do not allow for the capital repairs to be performed in time and in the amount necessary.

A possible solution can be a transfer from simple administrative decisions to more complex financial and economical mechanisms that are being partially applied in other cities and countries, for examples, in Riga. Here, one does not offer a mindless

"copy-paste" of a foreign experience, the more so, it would be impossible to implement it since, as already mentioned above, in Latvia, certain EU programs are in motion. The main task is to create favourable conditions for attracting investment from various sources, including available credit financing for performing MABs capital repairs in the amount and time necessary. By a majority of votes (at least 67–75 percent), the MAB apartment owners can themselves decide on attracting credit financing on favourable terms, while public (regional) structures would cover crediting interest rates. For implementing energy efficiency improving measures credit financing would be available to majority of the apartment owners. Moreover, the necessary equipment such as an automated heat supply unit can be acquired on lease, and an energy service contract can be carried out expenses for which would be covered by the energy saved and not by the apartment owners.

Currently in Russia, certain measures are taken for utilizing financial and economical leverage for the purpose of improving the MABs capital repair system and increasing the role of the apartment owners. For instance, in January 2017, the Russian government adopted new rules for provision of financial support for the MABs capital repairs by the public corporation – the Fund for promoting housing sector reforms – according to which the funds allocated would partially cover the interest rates or be used for performing energy-saving measures during capital repair process (Postanovlenie pravitelstva RF No 18 2017). Meanwhile, the financial support is provided in a range of the total non-allocated means for capital repairs and directed partially to cover expenses for performing energy-saving works conducted within the scope of capital repairs listed in the Housing code of Russia.

The financing aid for one MAB cannot exceed 50 percent of the total capital repair costs for this building and cannot exceed RUB 5 million in total. The amount of the financial aid for covering energy-efficiency expenses is defined for each MAB individually and can make up two to four times of the total planned savings on annual utility payments and in consideration with the size limit for the financial aid for one MAB (RUB 5 million). In should be noted that the limit described is unreasonably severe since it does not account neither for the building size nor for the scope of capital repair. Nevertheless, the decision itself to organize financing aid for capital repairs is certainly a positive one.

Comparison of the Organizational Systems for the City Housing Stock Capital Repairs (Renovation)

Let us attempt to compare objectively the organizational systems for city housing stock capital repairs (renovation) in the context of two cities: Riga and Saint Petersburg. The comparison criteria are the following:

- maintenance level of the city housing stock;
- availability of a rational system for projected and current work plan for the housing stock capital repairs;
- housing capital repair policy impact: scope and content of capital repair works (renovation);

- ability for the apartment owners to participate in creation of the housing capital repair policy;
- ability to use financial and economic mechanisms for planning and organizing the MABs capital repairs, and others.

Table 9 represents comparison results for two housing stock capital repair organizational and funding systems implemented in Riga and Saint Petersburg.

Table 9

Comparison of the MABs capital repair organizational systems in Riga and Saint Petersburg

Parameters	Riga	Saint Petersburg	Note
Housing stock maintenance level	Not fully acceptable.	Not fully acceptable.	A major part of the typical-design MABs in both cities demands repair and modernization.
Necessity for the MABs capital repair	High necessity for the MABs capital repair	High necessity for the MABs capital repair	In Saint Petersburg, capital repair and reconstruction of the old housing stock built before 1917 is of particular significance.
Forward planing system for the housing stock capital repairs	Absent	Short-term and long-terms capital repair programs developed	In Saint Petersburg, a system for forward and current planning for the MABs capital repair is implemented
Ability for the apartment owners to participate in creation of the city housing stock capital repair policy	Relatively high	Not high	In Riga, apartment owners have real influence mechanisms in terms of the capital repair policy, while in Saint Petersburg these mechanisms are significantly limited.
Degree of influence on the MABs capital repair policy by the city administration	Not high	High	In Riga, the EU energy-efficiency programs have great influence, while in Saint Petersburg, such influence have city programs
Administrative leverage predominance in the housing capital repair policy implementation	No	Yes	In Saint Petersburg, the MABs capital repair administration level is high
Financial and economic leverage predominance in the housing capital repair policy implementation	Yes	No	In Riga, financial and economic mechanisms prevail, while in Saint Petersburg, the first implementation opportunities of such mechanisms only begin to appear
Results of the city housing stock capital repair policy	Acceptable	Acceptable	Compelling need for improving capital repair policy impact in both cities

Source: Compiled by the authors.

The analysis performed shows that an active MABs capital repair policy is in place in Riga and Saint Petersburg, although there are significant differences in content. In Riga, a major emphasis is made on the implementation of financial and economic leverage by using the EU programs, while in Saint Petersburg, administrative leverage yet prevails. The results of the implemented policy in both cities can only be assessed as acceptable since a significant need in repair works is considerably greater than the current possibilities.

Conclusions

The performed research results are presented below.

It is established that the MABs housing stock built in 1960–1991 is very similar in Riga and Saint Petersburg in terms of both technical specification and the necessity to solve problems of the deteriorating housing stock.

It is well pleaded that a deep research of Latvia's and Russia's experience in the current problem solving can lay the groundwork for choosing the optimal solution.

It is defined that for Riga, it is appropriate to implement experience of Russia in terms of the forward and current planning of the housing stock capital repairs and active support of the city administration for performing repair works at the city and city district level.

It is evident that for Saint Petersburg, it is highly recommended to draw on the experience of Riga in terms of implementation of the financial and economic leverage for performing capital repairs as well as increasing resident participation in decision-making regarding the faith of their own buildings.

It is evident that a deep study of both Latvia's and Russia's experience in the current problem solving can lay the groundwork for choosing the optimal solution.

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APPROACHES TO DETERMINATION OF TIME SERIES FOR CALCULATION OF NORMS OF FINANCIAL RATIOS AND THEIR APPLICATION IN LATVIA

Important question is determination of time series for calculation of norms of financial ratios. This question in modern economic literature is almost not analysed and not solved. And therefore the purposes of this article are development of approaches to determination of time series for calculation of norms of financial ratios and practical application of these approaches in Latvia. Gross domestic product (GDP) influences the development of dynamic row of financial ratios necessary for calculation of sectors' normative value. The more indicators will be included into the dynamic row during years of GDP fall, the lower usually are the final normative sector values. In 2008–2010, in Latvia GDP fall was observed that is why for calculation of norms, it would be incorrect to form dynamic rows with prevalence of indicators of these years. Approaches to determination of time series developed by the authors are suggested for calculation of norms of financial ratios: by the arithmetic average value of the moving average of GDP growth, by the percent of years of GDP downfall and by the median value of GDP growth. Schemes, the description of stages of these approaches are submitted, and also practical application of approaches is given. For understanding of approaches the term "expanded times series under analysis" is entered. Definition of the term is given: "expanded times series under analysis is the time series, which has typical equal economical conditions of national economy development in a long-term, usually, in recent years". Common privileges of these approaches are: simplicity of calculation, the accuracy of the norms due to the proximity to the dynamics of the expanded time series, economy of financial costs of carrying out research, economy of time expenditure on carrying out research, taking into account the dynamics of recent years. It is better to apply these approaches in a complex with the aim to determine the time series for calculation of norms of financial ratios correctly by a resulting effect of the majority of the approaches. Destination of these approaches is to help researchers in development of norms of financial ratios.

Key words: approach, determination, time series, calculation, norm, ratio, gross domestic product.

Laika rindas noteikšanas pieejas finanšu koeficientu normatīvu aprēķināšanai un to pielietošana Latvijā

Finanšu koeficientu aprēķināšanā svarīgs jautājums ir laika rindas noteikšana. Šis jautājums mūsdienu ekonomiskajā literatūrā praktiski nav apgaismots un nav atrisināts. Un tāpēc šī raksta mērķi ir laika rindas noteikšanas pieeju izstrāde finanšu koeficientu normatīvu aprēķināšanai un šo pieeju praktiskā pielietošana Latvijā. Iekšzemes kopprodukts (IKP) ietekmē finanšu koeficientu dinamisko rindu, kas nepieciešamas nozaru normatīvo vērtību aprēķināšanai, izveidi. Jo vairāk rādītāju tiks iekļauts dinamiskajā rindā IKP krituma gados, jo zemākas sanāks galīgās normatīvās nozares vērtības. 2008.–2010. gadā Latvijā bija vērojams IKP kritums, tādēļ normatīvu aplēsei būtu nekorekti veidot dinamiskās rindas ar šo gadu rādītāju pārsvaru. Tiek piedāvātas autoru izstrādātās laika rindas noteikšanas pieejas finanšu koeficientu normatīvu aplēsei: pēc IKP slīdošās vidējās vidējās aritmētiskās vērtības, pēc IKP krišanas gadu procenta un pēc IKP mediānas vērtības. Dotas shēmas un šo pieeju posmu apraksts, kā arī aprakstīta pieeju praktiskā pielietošana. Pieeju saprašanai ieviests termins "paplašinātā analizējamā laika rinda".

Dota termina definīcija: "Paplašinātā analizējamā laika rinda ir laika rinda, kurai ir raksturīgi vienādi nacionālās ekonomikas attīstības ekonomiskie apstākļi ilgstošā laika posmā un, parasti, pēdējos gados". Šo pieeju kopīgās priekšrocības: vienkāršā aprēķināšana, normatīvu precizitāte dēļ pietuvinātības paplašinātās analizējamās laika rindas dinamikai, pētījuma veikšanai nepieciešamo izmaksu optimizācija, pētījuma veikšanai nepieciešamā laika patēriņa ekonomija, pēdējo gadu dinamikas ievērošana. Lietderīga kompleksa pieeju pielietošana, lai pēc pieeju rezultātu galīgā vairākuma pareizi noteiktu laika rindu finanšu koeficientu normatīvu aprēķināšanai. Šo pieeju uzdevums – palīdzēt pētniekiem izstrādāt finanšu koeficientu normatīvus.

Atslēgas vārdi: pieeja, noteikšana, laika rinda, aprēķināšana, normatīvs, koeficients, iekšzemes kopprodukts.

Подходы к определению временного ряда для расчета нормативов финансовых коэффициентов и их применение в Латвии

При расчете нормативов финансовых коэффициентов важным вопросом является определение временного ряда. Этот вопрос в современной экономической литературе практически не освещен и не решен. И поэтому целями этой статьи являются разработка подходов к определению временного ряда для расчета нормативов финансовых коэффициентов и практическое применение этих подходов в Латвии. Валовой внутренний продукт (ВВП) влияет на построение динамических рядов финансовых коэффициентов, необходимых для расчета нормативных отраслевых значений. Чем больше будет взято в динамический ряд показателей за годы спада ВВП, тем, как правило, ниже получатся итоговые нормативные отраслевые значения. В 2008 – 2010 годах в Латвии произошло падение ВВП, поэтому для расчета нормативов было бы некорректно формировать динамические ряды с преобладанием показателей за эти годы. Авторы предлагают подходы к определению временного ряда для расчета нормативов финансовых коэффициентов: по среднеарифметическому значению скользящей средней ВВП, по проценту лет падения ВВП и по медианному значению ВВП. Представлены схемы, описание этапов этих подходов, а также приводится практическое применение подходов. Для понимания подходов введен термин «расширенный анализируемый временной ряд». Дано определение термина: «расширенный анализируемый временной ряд – характеризующийся одинаковыми экономическими условиями развития национальной экономики временной ряд за длительный период и, как правило, за последние годы». Общими преимуществами этих подходов являются: простота вычисления, точность нормативов из-за приближенности к динамике расширенного анализируемого временного ряда, экономия финансовых затрат на проведение исследования, экономия расходов времени на проведение исследования, учитывание динамики последних лет. Целесообразно комплексное применение подходов, чтобы по итоговому большинству результатов подходов правильно определить временной ряд для расчета нормативов финансовых коэффициентов. Назначение этих подходов – помочь исследователям в разработке нормативов финансовых коэффициентов.

Ключевые слова: подход, определение, временной ряд, расчет, норматив, коэффициент, валовой внутренний продукт.

Introduction

One of pressing problems for researchers is the problem of determination of time series for calculation of norms of financial ratios. This problem in modern economic literature is almost not analysed and not solved.

The norms of financial ratios must take the tendency of the national economy development into account. According to the opinion of the authors the best measure for this development for calculation of norms of financial ratios is the dynamics of gross domestic product growth.

It is known that the gross domestic product (GDP) or gross domestic income is one of the measures of national income and output for a given country's economy. GDP is defined as the total market value of all final goods and services produced within the country in a given period of time – usually in a calendar year.

The GDP growth rate is the indicator expressed as a percentage showing how much more the economy produced than in the previous year. The healthy GDP growth rate is one that is sustainable so that the economy stays in the expansion phase of the business cycle as long as possible.

Gross domestic product influences the development of dynamic row of financial ratios necessary for calculation of sectors' normative value. The more indicators will be included into the dynamic row during years of GDP fall, the lower usually are the final normative sector values.

For example, in 2008–2010, in Latvia GDP fall was observed that is why for calculation of norms, it would be incorrect to form dynamic rows with prevalence of indicators of these years.

Approaches to determination of time series developed by the authors are suggested for calculation of norms of financial ratios: by the arithmetic average value of the moving average of GDP growth, by the percent of years of GDP downfall and by the median value of GDP growth.

Approach to determination of time series for calculation of norms of financial ratios by the arithmetic average value of the moving average of gross domestic product growth

First of all, the authors suggest approach to determination of time series for calculation of norms of financial ratios by the arithmetic average value of the moving average of gross domestic product growth. Scheme, description of stages and practical application of the approach for Latvia are presented (see Figure 1).

1. Determination of expanded time series under analysis.

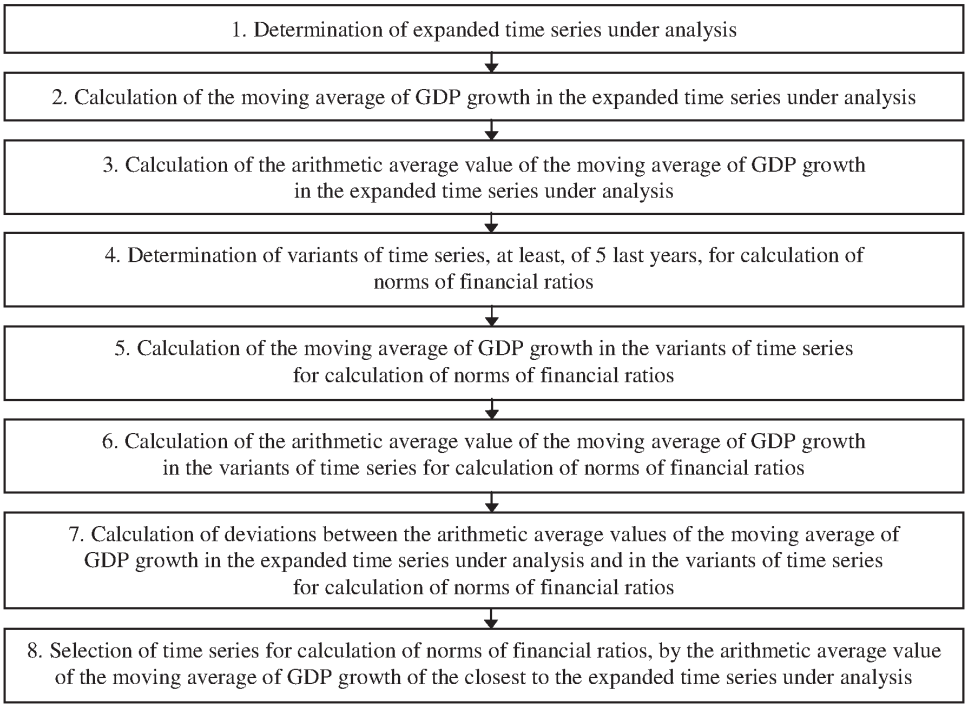
The expanded time series under analysis must be determined. It is desirable to take the recent years. It is important for years of these time series to be characterized by similar economical conditions of the national economy development.

Thus, it is possible to formulate such definition: "Expanded times series under analysis is the time series, which has typical equal economical conditions of national economy development in a long-term, usually, in recent years".

It is obvious that for Latvia it would be better to take the last period as expanded time series – 13 years of Latvia's participation in the European Union – from 2004 to 2016.

Figure 1

Approach to determination of time series for calculation of norms of financial ratios by the arithmetic average value of the moving average of GDP growth



Source: elaborated by the authors according to Vergina, Karklina 2004; Krastins, Ciemina 2003; Gosa 2007; Kassalis E., Kassalis J. 2004.

2. Calculation of the moving average of gross domestic product growth in the expanded time series under analysis.

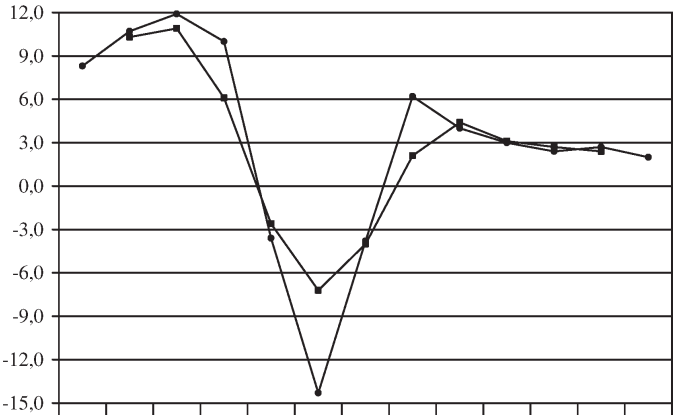
The norms of financial ratios must take the tendency of the national economy development into account. It was already emphasized above that according to the opinion of the authors the best measure for this development for calculation of norms of financial ratios is the dynamics of gross domestic product growth.

And here it makes sense as one of options to apply a method of moving averages. A moving average is a time series constructed by taking averages of several sequential values of another time series. It is a type of mathematical convolution. Moving averages are also called running means or rolling averages. They are a special case of "filtering", which is a general process that takes one time series and transforms it into another time series. The number of data points in each average remains constant. The average eliminates some of the randomness in the data, leaving a smooth trend component. The simple moving average requires an odd number of observations to be included in each average. This ensures that the average is centered at the middle of the data values being averaged (Hyndman 2009). Thus, moving averages are used to "smooth" the time series.

That is why the calculation of the moving average of GDP growth in the expanded time series under analysis must be done. Below (see Figure 2), the dynamics of GDP growth in Latvia is presented, according to the Eurostat data (2004–2016). Also the results of calculation of the moving average of GDP growth in the expanded time series under analysis in Latvia are given. Smoothing interval size – 3.

Figure 2

The dynamics and moving average of gross domestic product growth in Latvia



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
GDP growth, %	8,3	10,7	11,9	10,0	-3,6	-14,3	-3,8	6,2	4,0	3,0	2,4	2,7	2,0
Moving average of GDP growth, %		10,3	10,9	6,1	-2,6	-7,2	-4,0	2,1	4,4	3,1	2,7	2,4	

Source: elaborated by the authors according to Eurostat data 2004–2016; Vergina, Karklina 2004; Krastins, Ciemina 2003; Gosa 2007; Kassalis E., Kassalis J. 2004.

3. Calculation of the arithmetic average value of the moving average of gross domestic product growth in the expanded time series under analysis.

Smoothing by moving averages is based that in average values casual deviations are mutually repaid. Therefore for the moving average it is possible to use the arithmetic average value. Next task – calculation of the arithmetic average value of the moving average of GDP growth in the expanded time series under analysis. This value in Latvia is 2,6%.

4. Determination of variants of time series, at least, of 5 last years, for calculation of norms of financial ratios.

It is desirable to take the recent years as time series for calculation of norms of financial ratios. Latvian scientists E. Kasalis and J. Kasalis (Kasalis, Kasalis 2004) recommend the dynamics of financial analysis for Latvia within the interval of, at least, 3 years, and for developed countries – 5–7 years. However, for calculation of norms, it is better to take the interval of, at least, 5 years. Selection of time series, at least, of 5 last years, for calculation of norms of financial ratios, by the arithmetic

average value of the moving average of GDP growth of the closest to the expanded time series under analysis must be made. The Central Statistical Bureau of Latvia on the website provides financial ratios till 2015 inclusive. But soon data for 2016 will be available. For this reason for the forthcoming research purposes as variants of time series it is best of all to take 7 years from 2010 to 2016, 6 years from 2011 to 2016 and 5 years from 2012 to 2016.

5. Calculation of the moving average of gross domestic product growth in the variants of time series for calculation of norms of financial ratios.

Here calculation is similar because moving averages in the variants coincide with moving averages in the expanded time series under analysis.

6. Calculation of the arithmetic average value of the moving average of gross domestic product growth in the variants of time series for calculation of norms of financial ratios.

If 7 years from 2010 to 2016 are taken as time series for calculation, then the arithmetic average value of the moving average – 2,9%, if 6 years from 2011 to 2016 – 3,2% and if 5 years from 2012 to 2016 – 2,7%.

7. Calculation of deviations between the arithmetic average values of the moving average of gross domestic product growth in the expanded time series under analysis and in the variants of time series for calculation of norms of financial ratios.

In the time series from 2010 to 2016 the deviation is 0,3%, from 2011 to 2016 – 0,6%, from 2012 to 2016 – 0,1%.

8. Selection of time series for calculation of norms of financial ratios, by the arithmetic average value of the moving average of gross domestic product growth of the closest to the expanded time series under analysis.

It is obvious that by the deviation of the arithmetic average value of the moving average with 0,1%, the series from 2012 to 2016 are as close as possible to the 2,6% of the arithmetic average value of the moving average of GDP growth in the expanded time series under analysis, than the series from 2010 to 2016 by deviation with 0,3% and from 2011 to 2016 by deviation with 0,6%.

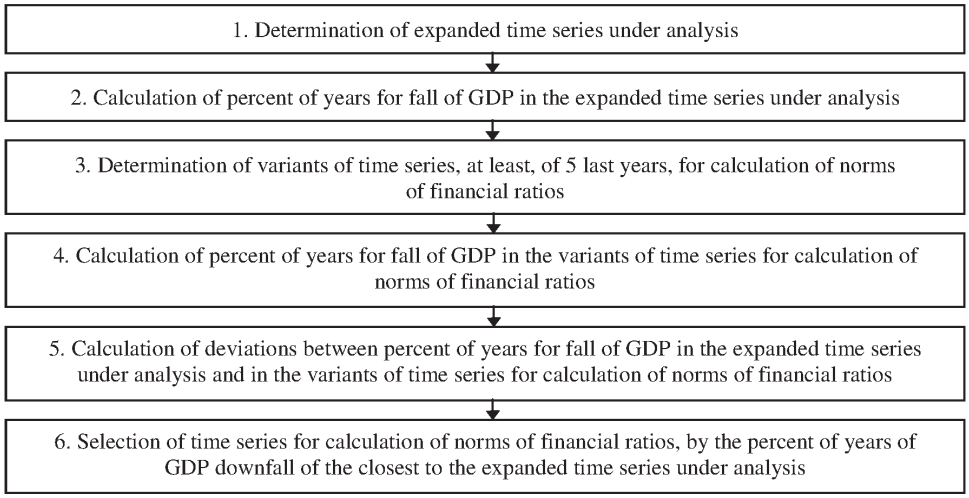
Thus, the advantages of the abovementioned approach are as follows: simplicity of calculation, the accuracy of the norms due to the proximity to the dynamics of the expanded time series, smoothing of casual fluctuations, economy of financial costs of carrying out research, economy of time expenditure on carrying out research, taking into account the dynamics of recent years.

Approach to determination of time series for calculation of norms of financial ratios by the percent of years of gross domestic product downfall

Next, the authors suggest approach to determination of time series for calculation of norms of financial ratios by the percent of years of gross domestic product downfall. Below (see Figure 3), scheme and description of stages of this approach are presented, as well as practical application of the approach for calculation of Latvian norms of financial ratios is presented.

Figure 3

Approach to determination of time series for calculation of norms of financial ratios by the percent of years of GDP downfall



Source: elaborated by the authors according to Kassalis E., Kassalis J. 2004.

1. Determination of expanded time series under analysis.

The expanded time series under analysis must be determined. About it was written above already. As well as in the previous approach, it is obvious that for Latvia it would be better to take the last period as expanded time series – 13 years of Latvia's participation in the European Union – from 2004 to 2016.

2. Calculation of percent of years for fall of gross domestic product in the expanded time series under analysis.

As it was already written, the norms of financial ratios must take the tendency of the national economy development into account. And the best measure for this development is the dynamics of GDP growth.

In determining the norms it is possible to be guided by percent of years for fall of GDP. That is why the calculation of percent of years for fall of GDP in the expanded time series under analysis must be done. Above (see Figure 2), the dynamics of GDP growth in Latvia is presented, according to the Eurostat data (2004–2016). As it is seen, of all 13 years, there are 3 crisis years of GDP fall or these are 23%.

3. Determination of variants of time series, at least, of 5 last years, for calculation of norms of financial ratios.

According to the argument given above as variants of time series it is best of all to take 7 years from 2010 to 2016, 6 years from 2011 to 2016 and 5 years from 2012 to 2016.

4. Calculation of percent of years for fall of gross domestic product in the variants of time series for calculation of norms of financial ratios.

If 7 years from 2010 to 2016 are taken as time series for calculation, then 1 crisis year of 7 – 14% of years of GDP downfall; if 6 years from 2011 to 2016 or 5 years from 2012 to 2016 – 0% of years of GDP downfall.

5. Calculation of deviations between percent of years for fall of gross domestic product in the expanded time series under analysis and in the variants of time series for calculation of norms of financial ratios.

In the time series from 2010 to 2016 the deviation is 9%. In the time series from 2011 to 2016 and from 2012 to 2016 the deviation is 23%.

6. Selection of time series for calculation of norms of financial ratios, by the percent of years of gross domestic product downfall of the closest to the expanded time series under analysis.

Selection of time series, at least, of 5 last years, for calculation of norms of financial ratios, by the percent of years of GDP downfall of the closest to the expanded time series under analysis must be made. It is obvious that by the deviation of crisis years with 9%, the series from 2010 to 2016 are as close as possible to the 23% of years of GDP downfall of expanded time series under analysis, than the series from 2011 to 2016 and from 2012 to 2016 by deviation with 23%.

The advantages of this approach are as follows: simplicity of calculation, the accuracy of the norms due to the proximity to the dynamics of the expanded time series, economy of financial costs of carrying out research, economy of time expenditure on carrying out research, taking into account the dynamics of recent years.

Approach to determination of time series for calculation of norms of financial ratios by the median value of gross domestic product growth

As the last authors suggest approach to determination of time series for calculation of norms of financial ratios by the median value of gross domestic product growth. Below (see Figure 4), scheme, description of stages and practical application of the approach for calculation of Latvian norms of financial ratios are presented.

1. Determination of expanded time series under analysis.

The expanded time series under analysis must be determined. Definition of this concept was already given above. As well as in the previous methods, it is obvious that for Latvia it would be better to take the last period as expanded time series – 13 years of Latvia's participation in the European Union – from 2004 to 2016.

2. Calculation of median value of gross domestic product growth in the expanded time series under analysis.

Will be pertinent to repeat once again that the norms of financial ratios must take the tendency of the national economy development into account. The best measure for this development is the dynamics of GDP growth. And the best way for finding of the middle of the time series is the median.

The median is the value separating the higher half of a data sample, a population, or a probability distribution, from the lower half. The median is a commonly used

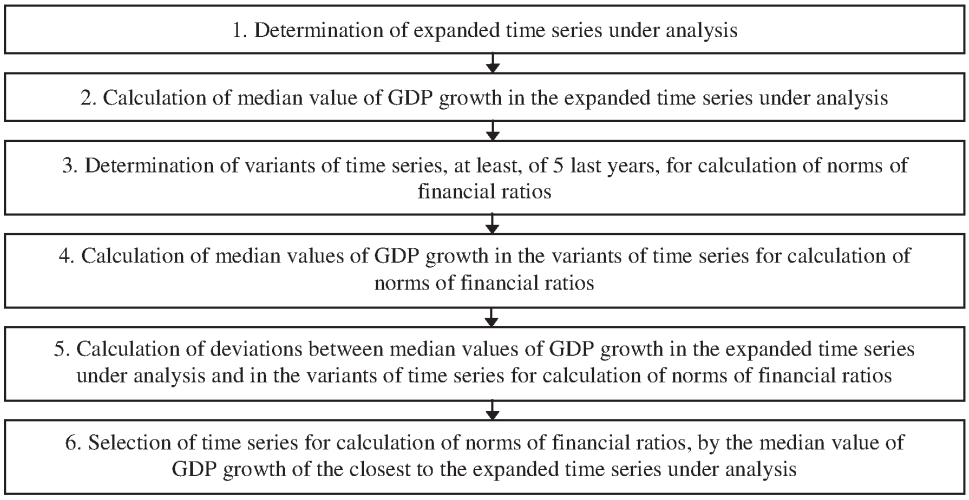
measure of the properties of a data set in statistics and probability theory. The basic advantage of the median in describing data compared to the mean is that it is not skewed so much by extremely large or small values, and so it may give a better idea of a "typical" value.

For example, in understanding statistics like household income or assets which vary greatly, a mean may be skewed by a small number of extremely high or low values. Median income, for example, may be a better way to suggest what a "typical" income is. Because of this, the median is central importance in statistics, as it is the most resistant statistic, having a breakdown point of 50%: so long as no more than half the data are contaminated, the median will not give an arbitrarily large or small result.

That is why the calculation of median value of GDP in the expanded time series under analysis must be done. Above (see Figure 2), the dynamics of GDP growth in Latvia is presented, according to the Eurostat data (2004–2016). As it is seen, for all 13 years, the median value of GDP growth is 3,0%.

Figure 4

Approach to determination of time series for calculation of norms of financial ratios by the median value of GDP growth



Source: elaborated by the authors according to Kassalis E., Kassalis J. 2004; Vergina, Karklina 2004.

3. Determination of variants of time series, at least, of 5 last years, for calculation of norms of financial ratios.

In this approach also as variants of time series it is best of all to take 7 years from 2010 to 2016, 6 years from 2011 to 2016 and 5 years from 2012 to 2016.

4. Calculation of median values of gross domestic product growth in the variants of time series for calculation of norms of financial ratios.

If 7 years from 2010 to 2016 are taken as time series for calculation, then the median value of GDP growth – 2,7%; if 6 years from 2011 to 2016 – 2,85%; if 5 years from 2012 to 2016 – 2,7%.

5. Calculation of deviations between median values of gross domestic product growth in the expanded time series under analysis and in the variants of time series for calculation of norms of financial ratios.

In the time series from 2010 to 2016 the deviation is 0,3%, from 2011 to 2016 – 0,15% and from 2012 to 2016 – 0,3%.

6. Selection of time series for calculation of norms of financial ratios, by the median value of gross domestic product growth of the closest to the expanded time series under analysis.

It is obvious that by the deviation of the median value with 0,15%, the series from 2011 to 2016 are as close as possible to the 3,0% of years of GDP growth of expanded time series under analysis, than the series from 2010 to 2016 and from 2012 to 2016 by deviation with 0,3%.

The advantages of the approach are as follows: simplicity of calculation, the accuracy of the norms due to the proximity to the dynamics of the expanded time series, use of median unresponsive to influence of extreme values, economy of financial costs of carrying out research, economy of time expenditure on carrying out research, taking into account the dynamics of recent years.

Thus, according to the approach to determination of time series by the arithmetic average value of the moving average of GDP growth for calculation of norms of financial ratios it is best of all to take 5 years from 2012 to 2016, according to the approach to determination of time series by the percent of years of GDP downfall – 7 years from 2010 to 2016 and according to the approach to determination of time series by the median value of GDP growth – 6 years from 2011 to 2016.

It is necessary to make the conclusion that for calculation of norms of financial ratios it is possible to use all or any of three abovementioned time series. And still authors would give bigger preference in this disputable case to the approach to determination of time series by the median value of gross domestic product growth because this method provides more degree of accuracy in the solution of this problem according to abovementioned argument.

Of course, it is possible in various ways to approach the determination of the time series for calculation of norms. And therefore the above described approaches have the right for existence. It is better to apply these methods in a complex with the aim to determine the time series for calculation of norms of financial ratios correctly by a resulting effect of the majority of the approaches.

Thus, destination of the abovementioned approaches is to help researchers in development of norms of financial ratios.

Conclusions

One of pressing problems for researchers is the problem of determination of time series for calculation of norms of financial ratios. Gross domestic product influences the development of dynamic row of financial ratios necessary for calculation of sectors' normative value. The more indicators will be included into the dynamic row during years of GDP fall, the lower usually are the final normative sector values.

Approaches to determination of time series developed by the authors are suggested for calculation of norms of financial ratios: by the arithmetic average value of the moving average of GDP growth, by the percent of years of GDP downfall and by the median value of GDP growth. Common privileges of these approaches are: simplicity of calculation, the accuracy of the norms due to the proximity to the dynamics of the expanded time series, economy of financial costs of carrying out research, economy of time expenditure on carrying out research, taking into account the dynamics of recent years.

For understanding of approaches the term "expanded times series under analysis" is entered. Definition of the term is given: "expanded times series under analysis is the time series, which has typical equal economical conditions of national economy development in a long-term, usually, in recent years".

It is better to apply these approaches in a complex with the aim to determine the time series for calculation of norms of financial ratios correctly by a resulting effect of the majority of the approaches.

Results of approbation are offered. According to the approach to determination of time series by the arithmetic average value of the moving average of GDP growth for calculation of norms of financial ratios it is best of all to take 5 years from 2012 to 2016, according to the approach to determination of time series by the percent of years of GDP downfall – 7 years from 2010 to 2016 and according to the approach to determination of time series by the median value of GDP growth – 6 years from 2011 to 2016. For calculation of norms of financial ratios it is possible to use all or any of three abovementioned time series. And still authors would give bigger preference in this disputable case to the approach to determination of time series by the median value of GDP growth because this method provides more degree of accuracy in the solution of the problem of determination of time series for calculation of norms of financial ratios.

Destination of the abovementioned approaches is to help researchers in development of norms of financial ratios.

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Ludmila Sinica

INFORMATION TECHNOLOGY SECTOR IN THE EUROPEAN UNION: THE DIRECT ECONOMIC IMPACT

Information technology (IT) sector is one of the most dynamic and innovative sectors with the highest growth potential, due to the constant automation of global manufacturing processes and growing popularity of e-commerce and e-services. The development of technologies is rapidly changing modern economic processes at the micro and macro levels, automating and upgrading all areas of national economies. Besides the direct benefits in forms of the sector contribution to gross domestic product, employment, investments and other economy indicators, the emergence and subsequent development of IT has a significant impact on the progress of all sectors of the economy. The overall development and use of IT is followed by significant costs reduction for the implementation of new technologies. The positive effect is achieved through synergy and multiplier effect of the use of IT in all spheres of economy and in everyday life. To analyze the overall impact of the IT sector on the economy, it was decided to carry out two studies about each effect separately. The first effect to research, which is more tangible and measurable, is the direct effect of IT sector on economy. Thereby the main purpose of the article is to analyze the direct effects of information technology on economy in a context of the sector development in the European Union. In the first part of the article, trends of the main economic impact factors of IT sector in the European Union were explored. Comparing the average growth rate of the main IT sector's economic indicators with the average indicators across all sectors, an extremely rapid growth rates of IT sector's indexes were discovered. To compare situation across all European Union countries a ranking method was used, that let to figure out leader countries in terms of different IT sector's economic indicators in the region. Finally, a correlation method has helped to discover that IT sector indicators are not necessarily linked with each other and all 4 observed indicators are important and characterize the different aspects of the IT sector impact on the economy. In the second part of the article, an analysis of the main economic indicators of the IT sector was carried out to determine the direct impact of the sector on economy. The data analysis let to clarify the sector's impact on innovations, employment and international trade balance of the European Union. The statistic data about the turnover, value added and personnel costs across different service sectors was examined, that led to conclusion that the information technology sector is an undisputed leader in terms of economic efficiency and is one of the highest-paying sectors in the region.

Key words: information technology, IT, information technology sector, role of IT, economic impact.

Informācijas tehnoloģiju sektors Eiropas Savienībā: tiešā ekonomiskā ietekme

Informācijas tehnoloģiju (IT) nozare ir viena no dinamiskākajām un inovatīvākām nozarēm ar lielāko izaugsmes potenciālu, kas ir saistīts ar pastāvīgu globālo ražošanas procesu automatizāciju un e-komercijas un e-pakalpojumu augošo popularitāti. Tehnoloģiju attīstība strauji maina mūsdienu ekonomiskos procesus mikro un makro līmenī, automatizējot un modernizējot visas valsts ekonomikas jomas. Ārpus tiešajiem sektora labumiem, kas rodas no ieguldījumiem iekšzemes kopproduktā, nodarbinātībā, investīcijās un citos ekonomikas rādītājos, IT rašanai un turpmākai attīstībai ir nozīmīga ietekme uz progresu visās tautsaimniecības nozarēs. Vispā-

rējai IT attīstībai un izmantošanai seko ievērojams izmaksu samazinājums jaunu tehnoloģiju ieviešanai. Pozitīvais efekts tiek panākts, pateicoties sinerģijas un multiplikatora efektam visās ekonomikas sfērās un ikdienas dzīvē. Izanalizējot vispārējo IT nozares ietekmi uz ekonomiku, tika nolemts veikt divus pētījumus par katru efektu atsevišķi. Pirmais pētāmais efekts, kas ir vairāk acīmredzams un izmērāmi, ir tieša IT sektora ietekme uz ekonomiku. Tādējādi galvenais raksta mērķis ir analizēt tiešo informācijas tehnoloģiju ietekmi uz ekonomiku nozares attīstības Eiropas Savienībā kontekstā. Pirmajā raksta daļā tika izpētītas galveno IT nozares ekonomisko ietekmes faktoru tendences Eiropas Savienībā. Salīdzinot galveno IT nozares ekonomisko rādītāju vidējos pieauguma tempus ar vidējiem rādītājiem visās nozarēs, tika atklāti īpaši strauji IT nozares rādītāju pieauguma tempi. Lai salīdzinātu situāciju visās Eiropas Savienības valstīs tika izmantoti ranžēšanas metode, kas ļāva noteikt līdera valstis reģionā dažādo IT sektora ekonomisko rādītāju ziņā. Visbeidzot, korelācijas metode ir palīdzējusi atklāt, ka IT sektora rādītāji ne vienmēr ir savstarpēji saistīti un visi 4 pētījumā apskatīti rādītāji ir svarīgi un raksturo dažādus IT nozares ekonomiskās ietekmes aspektus. Otrajā raksta daļā tika veikta galveno IT nozares ekonomisko rādītāju analīze, lai noteiktu tiešo nozares ietekmi uz ekonomiku. Datu analīze ļāva precizēt sektora ietekmi uz inovācijām, nodarbinātību un starptautisko tirdzniecības bilanci Eiropas Savienībā. Rakstā bija apskatīti statistiskie dati par apgrozījumu, pievienoto vērtību un personāla izmaksām dažādās pakalpojumu nozarēs, kas noveda pie secinājuma, ka informācijas tehnoloģiju nozare ir neapstrīdamais līderis attiecībā uz ekonomisko efektivitāti un ir viena no augstāk apmaksātajām nozarēm reģionā.

Atslēgas vārdi: informācijas tehnoloģijas, IT, informācijas tehnoloģiju nozare, IT loma, ekonomiskā ietekme.

Сектор информационных технологий в Европейском Союзе: прямое экономическое влияние

Сектор информационных технологий (ИТ) является одним из самых динамичных и инновационных секторов с наибольшим потенциалом роста, из-за постоянной автоматизации глобальных производственных процессов и роста популярности э-коммерции и э-услуг. Развитие технологий стремительно меняет современные экономические процессы на микро и макро уровнях, автоматизируя и модернизируя все сферы национальной экономики. Помимо прямых выгод в формах вклада сектора в валовой внутренний продукт, занятость, инвестиции и другие показатели экономики, появление и последующее развитие ИТ оказывает существенное влияние на прогресс всех секторов экономики. Общее развитие и использование информационных технологий сопровождается значительным снижением затрат на внедрение новых технологий. Положительный эффект при использования ИТ достигается за счет синергии и эффекта мультипликации во всех сферах экономики и в повседневной жизни. Для анализа общего влияния ИТ сектора на экономику было решено провести два исследования о каждом эффекте отдельно. Первый эффект исследования, который является более очевидным и измеримым, это прямой эффект ИТ сектора на экономику. Таким образом основная цель статьи состоит в том, чтобы проанализировать прямое влияние информационных технологий на экономику в контексте развития сектора в Европейском Союзе. В первой части статьи были изучены тенденции основных факторов экономического влияния ИТ сектора в Европейском Союзе. Сравнивая средний темп роста основных экономических показателей ИТ сектора со средними показателями по всем секторам, были обнаружены чрезвычайно быстрые темпы роста показателей ИТ сектора. Для сравнения ситуации во всех странах Европейского Союза был использован метод ранжирования, который позволил выяснить стран лидеров с точки зрения различных экономических показателей ИТ сектора в регионе. И, на-

конец, метод корреляции помог обнаружить, что показатели ИТ-сектора не обязательно связаны друг с другом, и все 4 наблюдаемых показателя являются важными и характеризуют различные аспекты влияния ИТ-сектора на экономику. Во второй части статьи был проведен анализ основных экономических показателей ИТ сектора для определения прямого воздействия сектора на экономику. Анализ данных позволил уточнить влияние сектора на инновации, занятость и международный торговый баланс Европейского Союза. В статье были рассмотрены статистические данные об обороте, добавочной стоимости и уровне зарплат в различных секторах услуг, которые привели к выводу о том, что сектор информационных технологий является бесспорным лидером с точки зрения экономической эффективности и является одним из самых высокооплачиваемых секторов в регионе.

Ключевые слова: информационные технологии, сектор информационных технологий, роль ИТ, экономическое воздействие.

Introduction

Information technology (IT) sector is one of the fastest growing sectors in the world and in the European Union. The global IT market growth amounted to an average of 5% until 2016 that puts it among the fastest-growing major markets in the world. It occupies a special place in the economy and its status is determined by a great impact on productivity growth and quality of life. The sector is mobile, dynamic and does not require significant investments in fixed assets. All these factors characterize need to support and develop the sector, as well as to trace current trends of its condition in the country and region.

The development of information technologies allowed the society to approach the global problem of informatization related to the rapidly increasing integration processes, penetrating into all areas of activities: education, science, culture, production, management. Nowadays IT goods and services have become so accessible and popular, that are used in all sectors of the economy and in everyday life. Information technology allow to expand the labor market and to use skilled labor more effectively, enhance the competitiveness of enterprises, increase administrative efficiency, make it possible to automate production methods, gives opportunities for international marketing. Automation of information processes fundamentally transforms the economy and society. There is an extension of IT penetration in the business processes in a wide variety of organizations, governance mechanisms and people's daily lives. Rapid modernization and automation of production processes is taking place with the development of information society and information technologies, new industries appear accelerating the pace of economic growth.

The potential impact of IT on the economy significantly increases year by year, opening up new possibilities for organizing employment and production in both individual corporations and society as a whole. Modern IT can make a decisive contribution to strengthening the relationship between the growth of labor productivity, production volumes, investment and employment. The development of IT is rapidly changing industrial structure of countries and regions, developing a knowledge-based, high-tech and high added value sectors.

In connection with this remarkable sector growth and increase of its impact on the industrial structure of countries and regions, it is important to determinate the sector's impact on the economy. The overall information technology influence on the modern economy may be expressed in two different ways: directly and indirectly. In the first case the positive effect on the economy is connected with the sector developments itself – the contribution of the sector to gross domestic product, employment, investments and other economy indicators. The indirect way is more complicated and more difficult to measure. This is the effect, which is formed from the use of information technology sector products and services in other sectors of economy. The indirect and direct spheres of influences are both important engines of modern progress in economic and social spheres of regional development. To analyze the overall effect on economy, it was decided to carry out two studies about each effect separately. The first effect to research, which is more tangible and measurable, is the direct effect. Thereby the main purpose of the article is to analyze the direct effects of information technology on economy in a context of the sector development.

The subject of the IT sector's economic impact has been investigated by many world researchers. William J. Kramer, Beth Jenkins and Robert S. Katz analyzed the role of modern technologies in the economic development of individual economic entities and proposed various business strategies for the effective use of ICT (Kramer, Jenkins, Katz 2007). Dr. Catherine L. Mann addressed the employment dynamics of establishments of different sizes, in different sectors, and of different intensity of use of information technology hardware, software and IT-services. She used three approaches to quantify the direct and indirect IT sector gains to the US economy (Mann 2012). William D. Nordhaus made an unique research, which was based on the idea that rapid growth in computation and artificial intelligence will cross some boundary or Singularity after which economic growth will accelerate sharply as an ever-accelerating pace of improvements cascade through the economy. The author developed a growth model that features Singularity and presented several tests of whether we are rapidly approaching Singularity. The tests suggested that the Singularity is not near (Nordhaus 2015).

Thomas Barnes examined the impact of IT sector on the economy on the example of one country. The article is of interest in that vein, which refutes the criticism of the assumption about the insignificant contribution of the IT sector to the economy of the country and proves the need for state support in the development of the sector (Barnes 2013). An example of India, the economic miracle of the IT sector, has been explored by many authors, for example, Mohit Dubey and Moradabad Aarti Garg analyzed the growth and performance of information technology sector in India and sectors' contribution to India's economic development in a holistic and broader way (Dubey, Garg 2014). Similar studies have been conducted in other countries too. For example, Robert J. Shapiro of Sonecon presented a rigorous empirical analysis of economic effects arising from the extraordinary diffusion of software across businesses and households throughout the American economy (Shapiro 2014). The authors Jorgenson Dale and Kazuyuki Motashi compared sources of economic growth in Japan and the United States from 1975 through 2003, focusing on the role of inform-

ation technology. The results of the research showed an increasing importance of the IT sector, which often playes a decisive role in the overall economic development of the country (Jorgenson, Kazuyuki 2005).

In 2016, in collaboration with Professor Vladimir Menshikov, the author conducted a study on the role of the information technology sector and its development in Latvia, which initiated further research in this topic. The results of the research showed a significant contribution of ICT to the economy of the country. It also revealed that Latvia has great potential for attracting foreign investments and for the creation and development of local enterprises. However, it was concluded that the country does not use its full potential in terms of ICT sector development and this issue requires further in-depth study (Mensikovs, Sinica 2016). Further, in the article "Network capital and Information and Communication Technologies: opportunities in the era of e-society", the authors continued to develop the topic of economic impact of ICT and evaluated the relationship of economic development and ICT development of a country (Menshikov, Sinica 2016). Correlation analysis showed that there is a very strong positive relationship between ICT Development Index (IDI) and economic development: the higher the IDI is, the higher is the level of the country development. However, this relationship is not linear, but logarithmic: with the increase in coefficients the positive effect decreases, what designates reaching a certain high point.

The results of the earlier studies show the relevance of the topic. The development of technology is taking place at an incredible pace, changing our lives, habits, the way we conduct our everyday affairs and our perception of the world around us. This pace of development and changes of technology is difficult to track and measure, as information, statistics and data very quickly become obsolete and lose relevance. Therefore, IT and its economic impact research is complex, but at the same time interesting and necessary task.

The main IT sector economic impact factors' trends in the European Union

The information technology sector is one of the most dynamic, innovative sectors with the highest growth potential, due to the constant automation of global manufacturing processes and growing popularity of e-commerce. According to the Statistical Office of the European Communities (Eurostat) almost 3/4 (74%) of all the EU enterprises had their own web page or used the services of a third-part provider in 2014 (Eurostat 2015). Additionally, the "OECD Internet Economy Outlook 2015" data shows that in the countries of the Organization for Economic Cooperation and Development (OECD), in 2015 95% of businesses had broadband connection up from 86% in 2010 (OECD 2015). This phenomenon of rapid development and overall use of internet services is historically unique, especially taking into account that the internet technologies became available for the masses only in the late 1990s and the possibility to create an affordable webpage, customized for individual needs and targeted on commercial purposes, appeared only in 2004 with the development of Web 2.0.

To observe this phenomenal development of the IT sector and to discover the main trends of IT sector's main economic indicators, the first part of the article is devoted to statistic data trends analysis. This analysis includes main IT sector indicators' growth rate dynamics research and comparison with the average values across all sectors of the economy in the European Union and the same indicator's examination by country of the region.

The growth rate of productivity and employment in the IT sector is the most rapid in the European Union. According to the survey "Tech Nation Report" for 2016, IT sector is growing 32% faster than the rest of the economy in the UK (Tech City 2016). Using data from the EUROSTAT database, the main IT sector indicators` average growth rate in the European Union was calculated and the results are presented in the Table 1.

The data analysis showed that the average growth rate of the number of enterprises in the sector in the period from 2006 to 2014 was 6%, growth rate of turnover – 5,5%, growth rate of value added – 5%, employment – 4,5% and the average growth rate of wage and salary expenditures per 1 employee in the period from 2009 to 2014 amounted to 3%, which are very high indicators for a sector of economy. If such indicators as turnover and salary expenditures, which are absolute and presented in euros, can be partially attributed to the effect of inflation, than the share in GDP is a very objective index. Very interesting trend in the sector is a growing rate of employment in terms of escalating demographic crisis in Europe. Comparing the average growth rate of the IT sector indicators with the average indicators across all sectors, the radical difference can be seen. If average growth rate of turnover in the IT sector in the study period was 5,5%, than the same indicator for all sectors was only 1,1%. The same trend is observed in all other study indicators.

Table 1

IT sector indicators' growth rate in the European Union in the period 2006–2014 (% change)

	2006/ 2005	2007/ 2006	2008/ 2007	2009/ 2008	2010/ 2009	2011/ 2010	2012/ 2011	2013/ 2012	2014/ 2013	Average in IT sector (2006–2014)	Average in all sectors (2008–2014)
Number of enterprises	5,5%	6,6%	4,0%	0,5%	10,7%	5,1%	5,9%	7,6%	8,3%	6,0%	1,4%
Turnover	7,6%	10,8%	5,0%	-5,6%	7,3%	6,7%	6,6%	3,5%	7,2%	5,5%	1,1%
Value added	5,5%	10,6%	2,7%	-5,9%	5,8%	7,1%	7,2%	4,3%	8,0%	5,0%	–
Employ-ment	3,5%	8,6%	3,2%	-1,5%	3,9%	7,0%	3,1%	3,8%	8,9%	4,5%	-0,2%
Wages & Salaries per employee	–	–	–	-2,0%	0,7%	-0,8%	5,5%	0,0%	-0,4%	–	–

Source: author's calculations, data source: EUROSTAT 2016.

Apart from a small decline in 2009, there has been a steady growth in the dynamics of the IT sector indicators over the whole period. It is important to note that in 2009, due to the global financial crisis, all sectors of the economy experienced a downturn, whereas the decline in the IT sector was the smallest one and the number of enterprises even continued to grow. It can also be positively estimated that the sector has quickly recovered from this downturn. Comparing the situation in the IT sector and across all economic sectors as a whole, it was noted that the drop in turnover in all sectors averaged 11% and the indicator returned to the level of 2008 only in 2011, when the decline in the IT sector was more than twice smaller (5%) and the next year (2010) turnover exceeded the level of 2008. This observation points to elasticity and relative independence of the sector so it can be more resistant to stressful situations than other sectors. This can be explained by the fact that there are no substitutes for IT goods and services. The next factor is other sectors dependence on IT services and goods, which does not allow demand to drop rapidly and does not let IT sector to give up for a time of financial difficulties.

The next task of the research was to compare a situation across all European Union countries. For this purpose ranking method was used. Calculations were made using Eurostat data and in a result 4 indicators on a comparable basis were produced. These 4 indicators describe development of the IT sector in the EU countries and show sector's impact on the region development by country. Indicators were ranked from 1 (the best result) to 28 (the worst result). The results are displayed on the maps in the Figure 1, where the first place is indicated with the lightest color and the last, respectively, with the darkest.

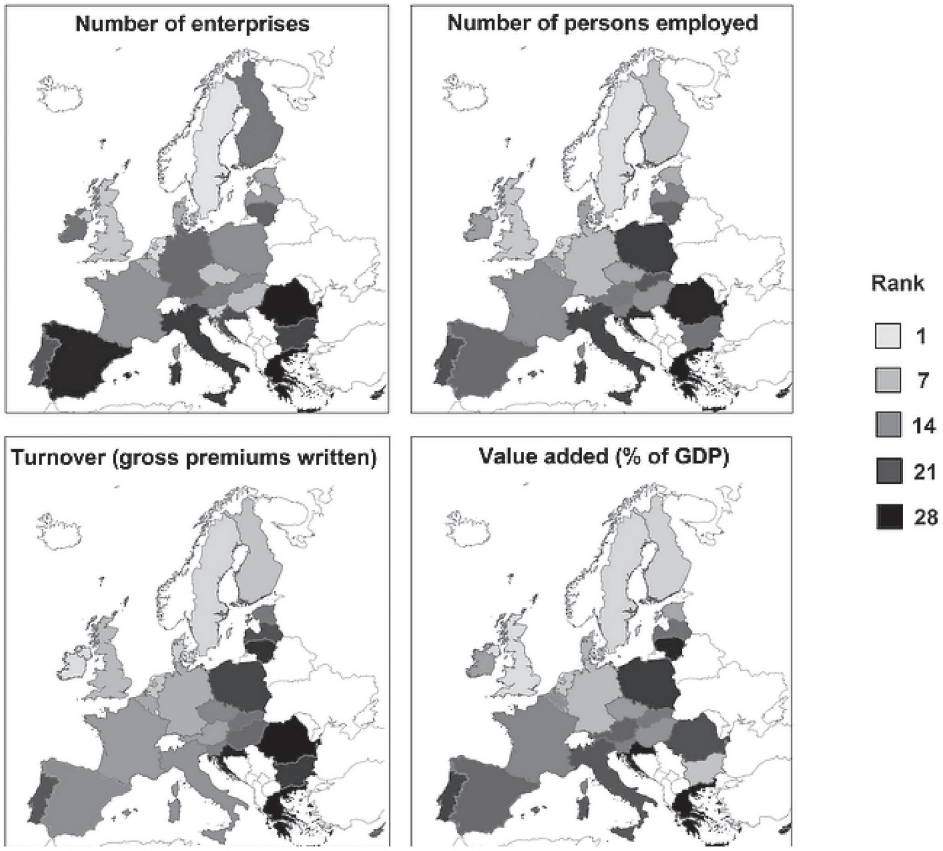
Data on the Figure 1 suggests that the leader countries in terms of number of IT sector enterprises are Sweden, Netherlands and Luxemburg; number of persons employed in IT sector – Luxemburg, Sweden and Denmark; turnover of IT sector enterprises – Luxemburg, Ireland, Sweden and, finally, the leader countries in terms of value added are Malta, United Kingdom and Sweden. In turn, the EU countries, which showed the worst results for number of IT sector enterprises are Greece, Romania, Spain; for number of persons employed in IT sector – Greece, Cyprus, Romania, for turnover of IT sector enterprises – Greece, Romania, Croatia and the worst results for value added in 2014 showed Greece, Croatia and Lithuania.

It was conducted, that Latvia takes the 12th place in the EU in the number of IT companies per 1 inhabitant, which is above average. In addition, Latvia ranks 15th in the number of persons employed in the sector. However, in relation to a turnover of the IT sector, expressed on a comparable basis, Latvia ranks only 22nd out of 28 countries. Moreover, the proportion of IT sector in the country's GDP at current prices in Latvia is only 18th highest in the EU.

These ranking results helped to get interesting conclusions about differentiation of the main IT sector indicators by countries. To check these observations a correlation method was used. All three indicators were tested on existence and strength of relationship and the correlation analysis results are displayed in the Table 2.

Figure 1

Main IT sector indicators' ranking in the European Union countries, 2014



Source: made by author, calculations are based on EUROSTAT data 2016.

Table 2

IT sector indicators' correlations

Correlations					
		Turnover	% in GDP	Number of enterprises	Employment
1	2	3	4	5	6
Turnover	Pearson Correlation	1	,760**	,841**	,665**
	Sig. (2-tailed)		,000	,000	,000
	N	28	28	28	28
% in GDP	Pearson Correlation	,760**	1	,531**	,490**
	Sig. (2-tailed)	,000		,004	,008
	N	28	28	28	28

Sequel to Table 2 see on the next page

Sequel to Table 2

1	2	3	4	5	6
Number of enterprises	Pearson Correlation	,841**	,531**	1	,553**
	Sig. (2-tailed)	,000	,004		,002
	N	28	28	28	28
Employment	Pearson Correlation	,665**	,490**	,553**	1
	Sig. (2-tailed)	,000	,008	,002	
	N	28	28	28	28

**. Correlation is significant at the 0,01 level (2-tailed).

Source: authors' calculations, datasource: EUROSTAT 2016.

The observations, noted earlier graphically, have been confirmed in spite of the statistically significant correlation (see Table 2), IT sector indicators are not necessarily linked with each other. For example, a high number of businesses per capita does not guarantee a high contribution to GDP and so on. The example of this observation is Slovenia with the 4th result in the EU in the number of IT companies, but at the same time the country ranks only 16th in all other indicators. An interesting situation is in Bulgaria, which ranks 23rd in the number of enterprises, the 24th in terms of turnover, the 18th in employment, but takes the 6th place in terms of IT sector contribution to GDP. In other words, IT sector in Bulgaria is well developed and makes a great contribution to GDP, but the IT sector turnover per 1 inhabitant is relatively low. This situation is described by the fact, that Bulgaria is a country with one of the lowest GDP in the EU. This suggests that the number of companies does not characterize the scope of the IT sector and its contribution to the economy, in turn, turnover per 1 inhabitant is not comparable with a share of GDP, as it does not display the difference in the level of income. Therefore, all 4 indicators are important and characterize the different aspects of IT sector development.

The main IT sector economic performance indicators' tendencies analysis has helped to reveal the amazing pace of the sector development and has showed its potential for further progress.

The direct impact of information technology sector on the economy in the European Union

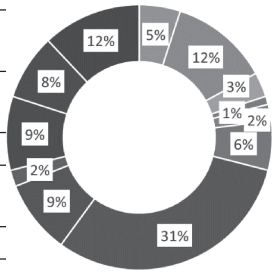
In the second part of the article the analysis of the main IT sector's indicators was conducted to analyze the direct impact of IT to the modern economy. These observations will help to explore the quantified impact of IT and estimate this effect in dynamics. Table 3 presents the distribution of global innovation in the world economy by industry. Calculations of the indicator are based on the Derwent World Patents Index. According to the "2016 State of Innovation" by Reuters, 31% of the world innovation belongs to IT sector, as the next largest share is only 12% (at the same level in the automotive industry and communications sector) (The Reuters 2016). It is important to note that the index is characterized by a positive trend – in 2015, compared

with the previous year, it rose by 13% and by 1 percentage point increased its proportion in the total share in all industries. This observation directly points to the progress and the potential of IT sector.

Table 3

Overall view of world innovation by sectors in 2014 and 2015

Industry	2014 Volume	2015 Volume	Share in Total 2014	Share in Total 2015
Aerospace & Defence	61162	71633	5%	5%
Automotive	153872	166867	12%	12%
Biotechnology	42584	41624	3%	3%
Cosmetics & WellBeing	11017	11307	1%	1%
Food, Beverage & Tobacco	26333	26605	2%	2%
Home Appiliances	71278	86301	6%	6%
Information Technology	380325	429806	30%	31%
Medical Devices	93462	118658	7%	9%
Oil&Gas	24158	27556	2%	2%
Pharmateuticals	111479	116286	9%	9%
Semiconductors	110761	114488	9%	8%
Telecommunications	161739	166601	13%	12%



Source: made by author, data source: The Reuters 2016 "State of innovations" 2016.

To analyze the direct IT sector's impact on the economy, the main IT sector's indicators were calculated and the results were compared with other European Union service sectors' indicators, except financial and insurance activities. The data about number of enterprises and persons employed by service sector in the European Union is displayed in the Table 4.

The data very clearly represents the volume of IT sector in the European Union. It suggests that in 2014 IT sector (represented by NACE Rev.2 activity "Computer programming, consultancy and related activities") employed 10 times fewer people than wholesale and retail and repair service sector and 3–4 times fewer people than other sectors. The same trend shows the data on the number of enterprises in the sector. 3,17 million employed people made only 1,5% of total employment in the European Union in 2014, nevertheless, 3,17 million persons employed is a very high number for a relatively new sector, whose development based on mass use of personal computers and the Internet by individuals can be attributed to the end of 80s and the beginning of the 90s. Thus, the sector has a significant positive impact on region`s employment levels. In turn, the indicator "number of persons employed per 1 enterprise" reflects the average size of enterprise in a sector. Thereby, IT sector in the European Union is characterized by enterprise size smaller than average in observed service sectors.

Table 4

Number of enterprises and persons employed by service sector in the European Union, 2014

	Number of enterprises (million)	Number of persons employed (million)	Number of persons employed per 1 enterprise
Wholesale and retail trade; repair of motor vehicles	6,22	32,34	5,20
Transportation and storage	1,13	10,40	9,17
Construction	3,39	12,46	3,67
Professional, scientific and technical activities	4,21	12,00	2,85
Administrative and support service activities	1,42	14,08	9,94
Accommodation and food service activities	1,85	10,65	5,75
Computer programming, consultancy and related activities	0,66	3,17	4,82

Source: author's calculations, data source: EUROSTAT 2016.

It is worth noting the level of workers' skills and education, which characterize the IT sector employment. As a knowledge-based, high-tech and high added value sector, it develops a middle class, so-called intellectuals, thereby increasing not only quantitative employment indicators, but also qualitative. For example, in 2015 the Bureau of Labor Statistics of United States has carried out a study about required level of education for representatives of various professions in IT sector (Bureau of Labor Statistics of United States 2015). For 8 positions, considered of the 10 different professions, the minimal education requirement is Bachelor Degree and for two other professions (Web Developers and Computer Support Specialists) entry-level education is Associate's degree. The quality of workforce plays a crucial role in the economic competitiveness of a country and a region. However, these high standards of qualification and professional education cause labor shortages in the sector and generates competition between countries and regions for IT professionals. This tendency provokes an active emigration and increased geographical mobility of the sector's professionals.

Regarding the competition between regions for IT professionals, one of the most interesting examples are Canadian and US immigration policies, providing lightweight conditions of emigration and assistance in integration and employment for IT professionals. One more example is the policy of Holland, where emigrated IT engineers have 30% tax discount on the gross salary that allows them to be in a better position than local workers. Many European companies offer a complete package of services for IT engineers who come from abroad, like search and arrangement of housing, registration of documents, language courses, school search for children etc. That means that the overall economic impact on the employment is strongly connected with a region and country immigration politics, ability to attract IT professionals from abroad and ability to motivate local workers to stay in a country.

On the issue of employment, it is worth to mention innovative methods of cooperation that develop due to the progress of IT technologies and particularly specific to the IT sector's specialists. An excellent example of such cooperation is freelance or, in other words, remote work outside the company state, like a private practice. Professionals of different professions, who are able to carry out their work in electronic format or deliver it to another country, organize special online communities and look for customers in digital environment. One of the most popular communities is Upwork service (former oDeck) and their statistics show that in early 2015 they had 9,7 million registered freelancers and 3,8 million firms offering work (Upwork 2015). Analyzing search results about registered users offering their services in Upwork in December 2015, it was found that 2,3 million active and long-time registered freelancers on the website are representatives of different IT sector professions. In turn, freelancers from other occupation (including translators, lawyers, financiers, writers, and other specialists) all together amounted to only 1,8 million people. In other words, 56,1% of registered freelancers on the largest world freelance web-service are representatives of different IT sector professions.

Another example is an outsourcing or in other words the possibility to transmit certain enterprise processes and functions to other organization. Outsourcing became possible due to the development of technologies and is very common practice for cooperation between two IT companies. Despite the fact that income from the final product belongs to the customer country, taxable administrative and personnel costs, as well as the performer company's profit, bring significant revenue to economy. These types of remote cooperation are particularly relevant for IT sector professionals in times of shortage of skilled IT developers.

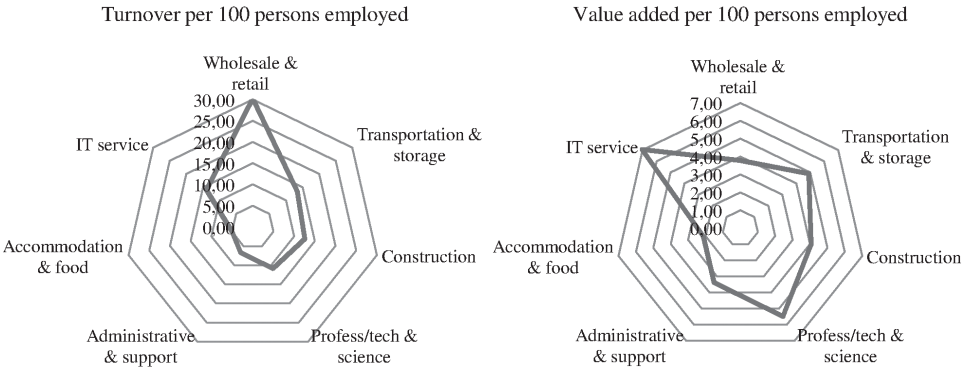
Next indicators, which show the direct material contribution of the sector to the economy in monetary terms, are the turnover of enterprises and the value added. These indicators are very interesting to consider by comparison of all service sectors together, especially graphically (see Figure 2).

The data displayed on the Figure 2 shows that service sector with the highest turnover per person employed in 2014 was wholesale and retail trade; repair of motor vehicles and motorcycles sector, with turnover 30,3 thousand euro per 100 persons employed, in turn, second place went to IT sector, with 13,9 thousand euro and a very small gap from other sectors. However, this indicator is not effective enough for characterizing the real economic success of the company and thus the sector as a whole, as it does not exclude any costs, connected with production or service provision. That is why attention should be paid to the indicator "value added thousand euro per 100 persons employed", which shows the sectors' companies' output at market prices minus intermediate consumption. Thus, this figure more accurately characterizes the contribution of each sector to the economy. On the Figure 2 the difference between these two indicators can be seen, which is formed taking into account intermediate consumption. Thereby the situation has radically changed – namely the IT sector in 2014 was the sector with the highest value added among the services sectors in the European Union with 7 thousand euro per 100 persons employed, while the next highest indicator is only 5,5 thousand euro in professional, scientific and technical service sector. The next highest rate in 2014 had transportation and storage sector

(4,9 thousand euro per 100 persons employed) and construction sector (4,1 thousand). Thus, wholesale and retail trade; repair of motor vehicles and motorcycles sector occupies only 5th place with 3,8 rate.

Figure 2

Turnover and value added thousand euro per 100 persons employed by service sector in the European Union, 2014



Source: author's calculations, data source: EUROSTAT 2016.

This large gap between added values indicators of IT sector from other service sectors makes information technology sector the undisputed leader among service sectors in terms of added value and economic efficiency. This observation proves the importance of the sector and directly indicates its contribution to the development of regional economy.

The next important factor to be considered is expenditures on wages and salaries of employees in all observed sectors. The indicator expresses the proportion of employed persons money in the national income, which is used for the purposes of personal use. Thus, this personal income stimulate domestic demand, and affects the purchasing power of the population. The data about wages and salaries by service sectors in the European Union is displayed on the Figure 3.

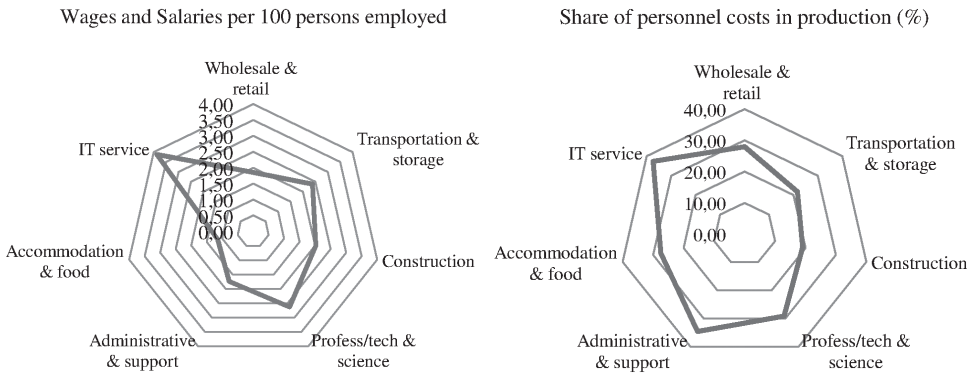
Statistical sources prove that IT sector is one of the highest-paying sectors of economy. The data of the Latvian Central Statistical Bureau shows that in 2015 the average gross salary in the IT sector in Latvia was 1 444 euros, when the average national salary was only 818 euros (43% smaller) and the difference is not reducing significantly with the passage of time. The average salaries growth rate in the sector over the past 10 years was 6,4% and the average salary in the sector increased by 178% (Central Statistical Bureau of Latvia 2016).

Figure's 3 data confirms this observation: in 2014 IT sector enterprises spent 3,9 thousand euro on wages and salaries per 100 persons employed, which is almost 2 times higher than the average rate for all service sectors (2,2 rate). With a large backlog from IT sector next follows professional, scientific and technical service sector with 2,6 thousand euro wage expenditures per 100 persons employed. The lowest spending

on wages are in the sector accommodation and food service activities (1,1 thousand euro per 100 persons employed). This observation of extremely high wage level directly points to the lack of specialists and high value added of IT products, in addition to its importance both at the state level and at the level of private enterprises.

Figure 3

Expenditures on wages and salaries in thousand euro per 100 persons employed and share of personnel costs in production in percent by service sector in the European Union, 2014



Source: author's calculations, data source: EUROSTAT 2016.

An interesting indicator is also a "share of personnel costs in production", which shows that more than a third (37,4%) of costs of enterprises in IT sector falls on expenditures associated with the personnel. Again, this is the largest indicator among all observed service sectors, however, there is no such as big difference between sectors, as it was conducted in terms of expenditures on employees' wages.

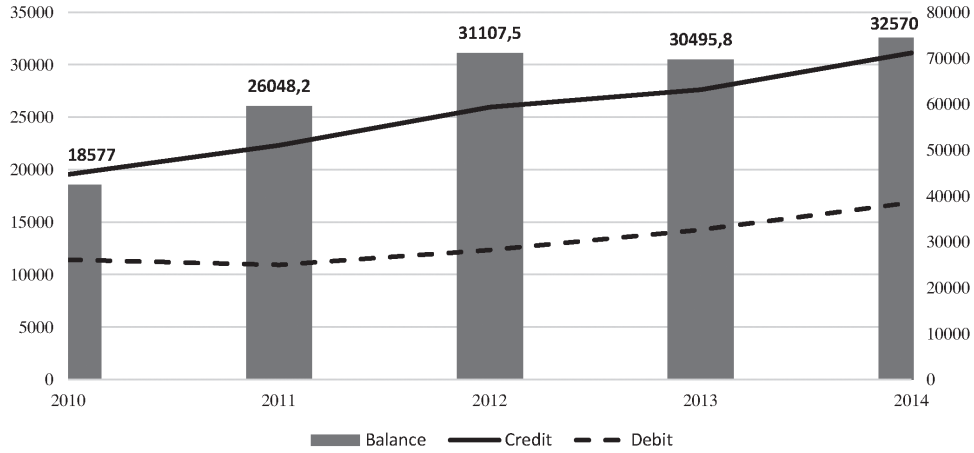
Another factor, which is one of the main sector's economic effectiveness indicators is international trade balance. Positive international trade balance contributes to the replenishment of the budget, facilitates an increase in resources of the region and develops its economy. Figure 4 represents data about international trade in computer services in the European Union.

EUROSTAT data shows that total computer services export in 2014 amounted to 32 570 millions euro, that makes 20% of total service export and that makes IT sector the biggest contributor to positive trade balance among all service sectors in the European Union. The positive value of the trade balance has significant positive effect to the region's economy and is the most important indicator, which characterizes international economic relationships. It is worth noting, that not all service sectors had a positive balance in 2014, what has significantly affected sector's contribution to total service trade balance. For example, computer services trade credit in 2014 amounted only to 9,3% of total services trade credit. A gradual increase in international trade credit and balance may be evaluated very positively, which indicates a progress and growing positive impact on region's economy. Comparing with the year 2010, in

2014 international trade balance of computer services has grown 1,6 times. Countries with the highest positive international trade balance are Ireland, Sweden and Germany. And only three countries in the region had a negative result in computer service international trade in 2014: Netherlands, France and Malta.

Figure 4

International trade in computer services in the European Union in the period 2010–2014 (million euro)



Source: made by athor, calculations are based on EUROSTAT data 2016.

The data analysis let to clarify the sector's impact on innovations, employment and international trade balance of the European Union. The statistic data about the turnover, value added and personnel costs across different service sectors was examined, that led to conclusion that the information technology sector is an undisputed leader in terms of economic efficiency and is one of the highest-paying sectors in the region.

Conclusion

Information technology sector plays an increasingly important role in the modern economy. The larger the scope of IT is becoming, the more urgent is the need for the economic analysis of the sector development trends and its economic impact.

In the first part of the article the main impact factor's trends in the European Union were explored. It was found, that IT sector's economic indicators has showed a very rapid growth rate in the period from 2006 to 2014. Comparing the average growth rate of the IT sector indicators with the average indicators across all sectors, was noted the radical difference. If average growth rate of turnover in the IT sector in the study period was 5,5%, than the same indicator for all sectors was only 1,1%. The same trend is observed in all other study indicators. It is important to note that in 2009, due to the global financial crisis, all sectors of the economy experienced a downturn, whereas the decline in the IT sector was the smallest one and the number of enterprises

even continued to grow. It can also be positively estimated that the sector has quickly recovered from this downturn. This observation points to elasticity and relative independence of the sector so it can be more resistant to stressful situations than other sectors.

To compare situation across all the European Union countries a ranking method was used, that let to figure out leader countries in terms of different IT sector's economic indicators in the region. The EU countries, which showed the best results in all IT sector's economic indicators are Sweden, Luxemburg, Netherlands and Denmark. A correlation method has helped to discover that IT sector indicators are not necessarily linked with each other. This suggests that the number of companies does not characterize the scope of the IT sector and its contribution to the economy, and turnover per 1 inhabitant is not comparable with a share of GDP, as it does not display the difference in the level of income. Therefore, all 4 observed indicators are important and characterize the different aspects of IT sector economic impact.

In the second part of the article an analysis of the main IT sector's economic indicators was carried out to determine the direct impact of the sector on the economy. Analyzing the distribution of global innovation in the world economy by sector, it was found that IT sector creates 31% of the world innovation that makes it the most innovative world sector. Research of employment indicators in the sector helped to clarify that the sector has a significant positive impact on region employment levels and makes 1,5% of total employment in the European Union. In addition, on the issue of employment, a significant impact on the quality of labor force and development of innovative cooperation methods in the sector have been marked.

Next in the article the data on the turnover and the value added of service sector's enterprises was analyzed. The results of the analysis led to the conclusion that the information technology sector is an undisputed leader among service sectors in terms of added value and economic efficiency. This observation proves the importance of the sector and directly indicates its contribution to the development of regional economy. Review of statistical resources has proven that IT sector is one of the highest-paying sectors. This conclusion of extremely high wage level directly points to the lack of specialists and high value added of IT products, in addition to its importance both at the state level and at the level of private enterprises.

Another factor, analyzed in the article is an international trade balance. EUROSTAT data showed that total computer services export in 2014 amounted to 20% of total service export, what makes IT sector the biggest contributor to positive trade balance among all service sectors in the European Union. The positive value of trade balance has significant positive effect to the region economy and contributes to the replenishment of the budget, facilitates an increase in resources of the region and develops its economy. A gradual increase of international trade credit and balance in the sector may be evaluated very positively, what indicates a progress of the sector and growing positive impact on region's economy.

IT sector goods and services are characterized by a high value added, this is a knowledge-based sector and it does not require a large capital investment to start a business. Therefore, efficient use of resources in the sector can make a significant positive impact on economic development.

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Marina Slonimska

NETWORKS DEVELOPMENT AS A FORWARD-LOOKING BUSINESS STRATEGY OF ENHANCING THE GLOBAL COMPETITIVENESS

The article deals with the theoretical and empirical research in the field of business networks development, including systematization of factors and results of the process, their impact on global competitiveness. The role of information technology as a key factor of networks development and their role in global competitiveness were analyzed on the basis of regression analysis method. It was concluded, that information and communication technology development is not only a prerequisite for networking and essential for innovative development, but is an important factor for global competitiveness. To identify the most important factors of that affect the global competitiveness, a linear regression analysis was conducted for 140 countries of the world. It was concluded, that the most effective direction of the network economy development from the point of view of its impact on the level of country competitiveness is the creation of new models of business organization in the sphere of innovation activity. The system of services for stimulating interaction among businesses for business networks development is proposed with participation of Living Labs.

Key words*:* business networks, modern business organization, global competition, supply chain management, Living Labs.

Tīklu attīstība kā tālredzīga biznesa stratēģija globālās konkurētspējas paaugstināšanai

Rakstā ir izskatīti teorētiskie un empīriskie pētījumi biznesa tīklu attīstības jomā, tostarp faktoru un procesa rezultātu sistematizācija un to ietekme uz globālo konkurētspēju. Informācijas tehnoloģiju loma un to nozīme globālajā konkurētspējā kā galvenais tīklu attīstību noteicošais faktors tika pētīti balstoties uz regresijas analīzes metodi. Tika secināts, ka informācijas un komunikācijas tehnoloģiju attīstība ir ne tikai būtisks priekšnoteikums tīklu veidošanai un inovatīvajai attīstībai, bet arī svarīgs globālās konkurētspējas faktors. Lai identificētu svarīgākos faktorus, kas ietekmē globālo konkurētspēju, tika paveikta lineārās regresijas analīze 140 pasaules valstīm. Pētījuma gaitā tika secināts, ka visefektīvākais tīkla ekonomikas attīstības virziens, no tās ietekmes uz valsts konkurētspēju skatījuma, ir jaunu uzņēmējdarbības organizācijas modeļu radīšana inovāciju jomā. Ar Living Labs piedalīšanos tika ierosināta pakalpojumu sistēma ar mērķi stimulēt biznesa tīklu attīstību un sadarbību starp uzņēmumiem.

Atslēgas vārdi: biznesa tīkli, moderna biznesa organizācija, globālā konkurence, piegādes ķēžu vadība, Living Labs.

Развитие сетей как дальновидная бизнес-стратегия повышения глобальной конкурентоспособности

В статье рассматриваются теоретические и эмпирические исследования в области развития бизнес сетей, в том числе систематизация факторов и результатов процесса, их влияние на глобальную конкурентоспособность. Роль информационных технологий как ключевого фактора развития сетей и их роль в глобальной конкурентоспособности была проанализирована на основе метода регрессионного анализа. Был сделан вывод о том, что развитие информационных и коммуникационных технологий является не только необходимым условием для создания сетей и имеет важное значение для инновационного развития, но и является важным фактором глобальной конкурентоспособности. Чтобы

определить наиболее важные факторы, влияющие на глобальную конкурентоспособность, был проведен линейный регрессионный анализ для 140 стран мира. В ходе исследования был сделан вывод, что наиболее эффективным направлением развития сетевой экономики, с точки зрения ее влияния на уровень конкурентоспособности страны, является создание новых моделей организации бизнеса в сфере инновационной деятельности. При участии Living Labs была предложена система услуг для стимуляции взаимодействия между предприятиями и развития бизнес сетей.

Ключевые слова: бизнес сети, современная бизнес-организация, глобальная конкуренция, управление цепями поставок, Living Labs.

1. Introduction

At the present time companies are facing a radical, worldwide change. No company is safe from competition anymore even in domestic or regional markets, since interaction among producers and customers is easer due to Internet and everybody may do an individual order anywhere in the world and get it in couple of days. So in order to prosper in such circumstances, every company even small one needs to *have* a special *strategy*. In recent years, interest in the use of collaborative business networks with SMEs' participation as a strategy of enhancing the global competitiveness has increased significantly in the world. Collaborative business networks of organizations provide a basis for competitiveness, world-excellence, and agility in turbulent market conditions. They have the potential to support SMEs in identifying and exploiting new business potential, boosting innovation, and increasing their knowledge. Networking of SMEs with large-scale enterprises also contributes to the success of the big companies in the global market. Reinforcing the effectiveness of collaborative networks, mostly based on SMEs, and creating the necessary conditions for making them an endogenous reality in the European industrial landscape, are key survival factors (Camarinha-Matos, Afsarmanesh and Marti 2005).

A large variety of organizational forms of collaboration have emerged during the last years as a result of the many socio-economic challenges faced by society and enabled by the new ICT developments. Advanced and highly integrated supply chains, virtual enterprises, virtual organizations, professional virtual communities, value constellations, virtual institutes, and collaborative virtual laboratories, represent only the tip of a major trend in which enterprises and professionals seek complementarities and joint activities to allow them participate in competitive business opportunities, in new markets and / or reaching scientific excellence for innovative developments.

2. Literature review on factors of networks development and their advantages

The theory of networks began to develop quite a long time ago. For example, the development of graph theory, which is an integral part of it, dates back to 1736, when the German and Russian mathematician Leonhard Euler solved the "problem of Koenigsberg bridges". Although the term "graph" was introduced by the Hungarian mathematician Dénes Kőnig 200 years later (in 1936) (Burlakov 2004, p. 4). Further,

the theory of networks developed as an interdisciplinary theory, including sociology, economic and mathematical methods, digital technologies and communication, ergonomics, marketing, management, logistics and supply chain management.

At present, networks are becoming a characteristic feature of the new economy, which is associated with: the proliferation of digital and Internet technologies, mobile phones, new operations-management tools, based on the rapid progress of computer processing and analysis methods (Kastels 1999, Derjabina 2014, Radajev 2008); the sharply increase in dynamic of environmental changes (Man 2004); high level of interdependence and uncertainty (Man 2004); increased competition in foreign markets (Hamel, Prahalad 1994); rapid technological change (Hamel, Prahalad 1994); reducing the cost of interaction (Hagel, Singer 1999); the need to integrate many people's efforts, various scientific disciplines, owners of variety resources, including knowledge resources (Derjabina 2014).

Collaborative business networks provide the following advantages:

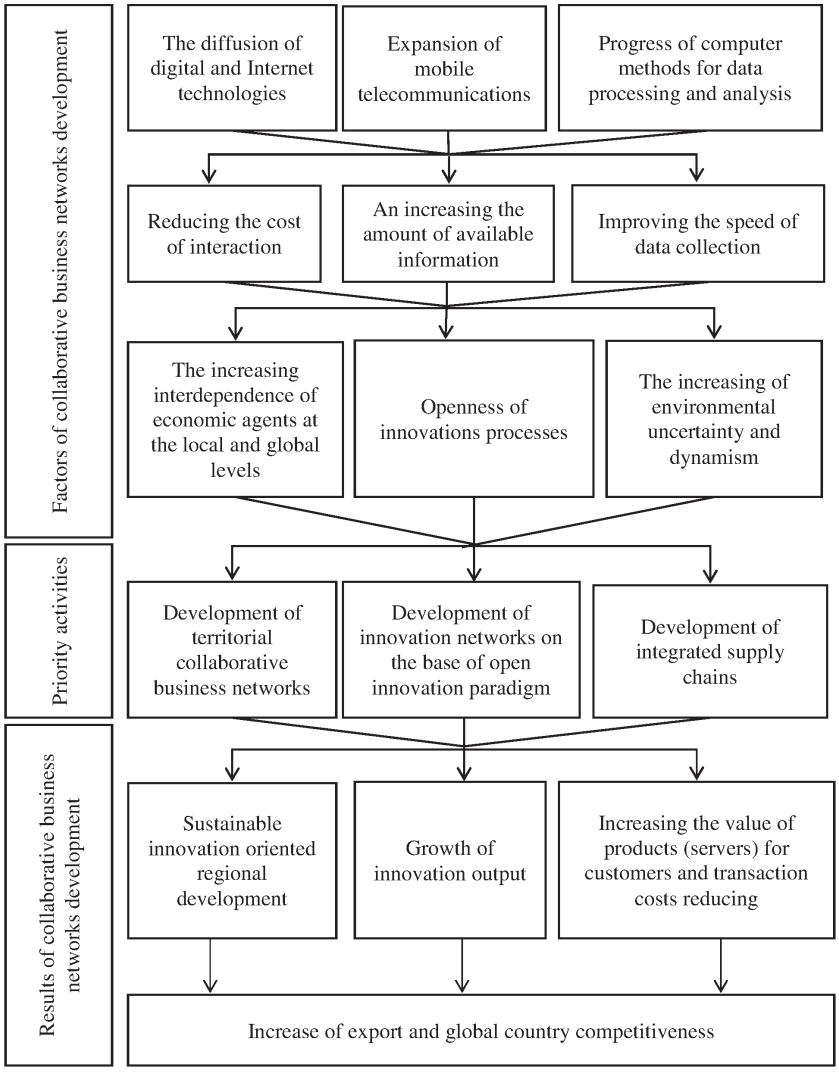
- they permit to survive and thrive in a rapidly changing environment, since they are more flexible, work better in a changing demand (Miles, Snow 1992), to reduce the uncertainty of its constituent economic entities (Castells 2001);
- the economic efficiency of activities at the territorial and sectoral level is increased due to transaction costs reduction with the growth of the network size (Trett'iak, Rumianceva 2003), the optimization of the management model (Novikov 2003), the formation of social capital in the form of accumulated mutual obligations (Radaev 2008), trust and business reputation, access to partner resources and achieving the synergistic effect from their use (Iuldasheva, Katenev, Polonskii 2016). Firms involved in networks are able to coordinate an important part of the business without increasing in-house costs associated with the growth of the company (Sheresheva 2014);
- innovation activity and efficiency of innovation activity on the territorial and at the industry level are growing due to access to external complementary resources, better coordination of the innovation process (Trett'iak, Rumianceva 2003), accelerating the incorporation of knowledge and using them in the most profitable market segments (Petropavlov 2007); the formation of a specific innovation space as a space of mutual understanding and consensus (Deriabina 2014). Networked organizational forms makes an economy's ability to self-development on the basis of continuous updates, ie make economic growth innovative-oriented and more sustainable (Smorodinskia 2015);
- they allow the product creation that has the highest possible and economically justified value for consumers by speeding up the response of enterprises to changing market conditions (Vertakova 2009) and the emergence of new opportunities found in the interaction with customers (Sheresheva 2014).

Figure 1 presents factors and results of collaborative business networks development.

In this way, information and communication infrastructure is a prerequisite for networking and essential for innovative development. It includes hardware and software, telecommunications networks, as well as innovative resources.

Figure 1

Factors and results of collaborative business networks development



Source: Author's own elaboration.

There are different types of indexes, which are used for measuring the preparedness of nations for the networked world; among them are the Networked Readiness Index (NRI), the E-Government Development Index (EGDI) and the Information and Communication Technology (ICT) Development Index (IDI).

World Economic Forum's NRI reveals important information about how well a country can "transition to a new set of systems, bringing together digital, biological and physical technologies in new and powerful combinations." This transition, as

Web Economic Forum describes, is the dawn of the Fourth Industrial Revolution. The Networked Readiness Index, which was originally developed by Harvard's Center for International Development, has been published since 2002 and is a key indicator of how countries are doing in the digital world (World Economic Forum 2016).

The EGDI has been updated annually by the United Nations Public Administration Programme (UNPAP) since its creation in 2003. The E-Government Development Index presents the state of E-Government Development of the United Nations Member States. Along with an assessment of the website development patterns in a country, the E-Government Development index incorporates the access characteristics, such as the infrastructure and educational levels, to reflect how a country is using information technologies to promote access and inclusion of its people. The EGDI is a composite measure of three important dimensions of e-government, namely: provision of online services, telecommunication connectivity and human capacity. The EGDI is not designed to capture e-government development in an absolute sense; rather, it aims to give a performance rating of national governments relative to one another (United Nations 2016).

The IDI, which has been published annually since 2009, is a composite index that combines 11 indicators into one benchmark measure. It is used to monitor and compare developments in ICT between countries and over time. The main objectives of the IDI are to measure: the level and evolution over time of ICT developments within countries and the experience of those countries relative to others; progress in ICT development in both developed and developing countries; the digital divide, i.e. differences between countries in terms of their levels of ICT development; and the development potential of ICTs and the extent to which countries can make use of them to enhance growth and development in the context of available capabilities and skills (International Telecommunication Union 2016).

The Global Competitiveness Index (GCI) attempts to quantify the impact of a number of key factors which contribute to create the conditions for competitiveness, with particular focus on the macroeconomic environment, the quality of the country's institutions, and the state of the country's technology and supporting infrastructure The Global Competitiveness Report ranks countries based on the GCI since 2004 (World Economic Forum 2016).

The research has shown (Slonimskaia 2016, p. 120) that every of the indexes which are used for measuring the preparedness of nations for the networked world closely correlate with the GCI. The highest correlation we can see between GCI and NRI (correlation coefficient is 0,929).

So we can conclude that ICT development is not only a prerequisite for networking and essential for innovative development, but is an important factor for global competitiveness. It is important to know what contribution individual components of NRI make to GCI in order to choose the priority directions of ICT development. This problem can be solved if the components of the NRI index are chosen as factors, and the result is GCI.

3. Research methodology, empirical data and analysis

The research approach that was followed for the purposes of this research was the regression analysis. Regression analysis is a quantitative research method which is used when the study involves modelling and analysing several variables, where the relationship includes a dependent variable and one or more independent variables. One of the main occasions where such analysis is used is to understand the relationship between independent variables and a dependent variable. The basic form of regression models includes unknown parameters (ß), independent variables (X), and the dependent variable (Y).

Empirical basis for the calculations in this study: dataset contains proprietary and non-proprietary data used in the computation of the World Economic's Forum NRI and GCI.

The NRI results are a composite made up of four main categories, 10 subcategories, and 53 individual indicators distributed across the different pillars. The main categories include an Environment subindex, a Readiness subindex, a Usage subindex and Impact subindex. About half of the individual indicators used in the NRI are sourced from international organizations (e.g. the International Telecommunication Union, UN agencies, the World Bank). The other half of the NRI indicators are derived from a survey of over 14,000 business executives across more than 140 countries used to measure concepts that are qualitative in nature or for which internationally comparable statistics are not available for enough countries. In other words, the data behind the NRI appears remarkably robust and comprehensive.

Each of the NRI individual indicators are closely related to the GCI by countries, and also in pairs with each other, which leads to the problem of multicollinearity and does not allow using them for constructing a multiple regression model.

Factor analysis divides the array of source variables into a small number of groups. In this case, several variables are combined into one factor, having a close correlation between themselves and a weak correlation with variables that are combined by other factors. The results of the factor analysis can be considered valid if the value of the Kaiser-Meyer-Olkin test (KMO) is more than 0,5. The usefulness of the initial 53 indicators forming the NRI for factor analysis is indicated by the value of the KMO test = 0,803.

As a result of factor analysis of the initial indicators of NRI, 6 unrelated factors were extracted. Further, to identify a combination of online availability factors that affect the GCI, a linear regression analysis was conducted for 140 countries of the world, the results of which are given in the table. The high value of the coefficient of determination (R^2 = 0,811) indicates the quality of the model.

Thus, based on the presented model of multiple regression, the most effective direction of the network economy development from the point of view of its impact on the level of country competitiveness is the creation of new models of business organization in the sphere of innovation activity.

The development of the information society is one of the national priorities of the Republic of Belarus and is considered to be a national task that requires joint efforts

of government, business and civil society. Meanwhile, information and communication technologies (ICT) play a role of the tool necessary for the development of highly technological sector of the economy, improvement of institutional and creation of a favorable business environment. Over the last decade, as a result of government programs implementation, including the projects of the State program of informatization of the Republic of Belarus for 2003–2005 and until 2010 "Electronic Belarus", and the National Program of Accelerated Service Development in the field of ICT for 2011–2015, developed for the implementation of the Strategy for Information Society Development in the Republic of Belarus for the period up to 2015, a number of multifunctional national and departmental information systems have been developed. In the report of the United 2016 the value of e-Government Readiness Index of the Republic of Belarus corresponds to 49th place out of 193 countries. In a similar report of the UN in 2012 Belarus was ranked 61st.

The priorities of the industry for 2016–2020 will be increasing ICT sector share in GDP, increase in domestic demand for information technologies especially on the part of the public sector; the development of the information and communication infrastructure, with the help of cloud technologies, the creation on its basis of new electronic services; the implementation of ICT in the real sector of economy, social sphere, including the informatization of public health services, education, and housing and communal services.

Regression

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,930[a]	,865	,845	,16838

a. Predictors: (Constant), REGR factor score 10 for analysis 1, REGR factor score 9 for analysis 1, REGR factor score 8 for analysis 1, REGR factor score 7 for analysis 1, REGR factor score 6 for analysis 1, REGR factor score 5 for analysis 1, REGR factor score 4 for analysis 1, REGR factor score 3 for analysis 1, REGR factor score 2 for analysis 1, REGR factor score 1 for analysis 1

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12,529	10	1,253	44,193	,000[a]
	Residual	1,956	69	,028		
	Total	14,485	79			

a. Predictors: (Constant), REGR factor score 10 for analysis 1, REGR factor score 9 for analysis 1, REGR factor score 8 for analysis 1, REGR factor score 7 for analysis 1, REGR factor score 6 for analysis 1, REGR factor score 5 for analysis 1, REGR factor score 4 for analysis 1, REGR factor score 3 for analysis 1, REGR factor score 2 for analysis 1, REGR factor score 1 for analysis 1

b. DependentVariable: Индекс глобальной конкурентоспособности

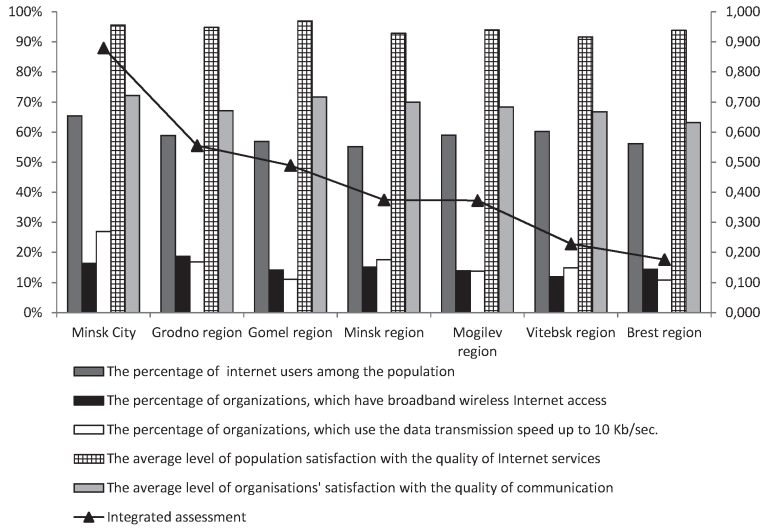
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4,218	,019		224,075	,000
	Impact of ICTs on new organizational models, on new services & products	,300	,019	,700	15,812	,000
	Use of ICT by households	,208	,019	,485	10,971	,000
	Internet speed	,050	,019	,116	2,617	,011
	Legal environment	,072	,019	,169	3,818	,000
	Complexity the procedure for starting business	,005	,019	,012	,281	,780
	The development of online public services and the e-participation of the population in governance	,070	,019	,164	3,703	,000
	The quality of education	,057	,019	,133	2,998	,004
	Number of procedures required to contract	,061	,019	,143	3,229	,002
	Time required to resolve disputes under the contract	,078	,019	,182	4,105	,000
	General tax burden on enterprises	,005	,019	,011	,249	,804

a. Dependent Variable: GCI

Figure 2

Development of the Internet technology by Belarus regions, 2014



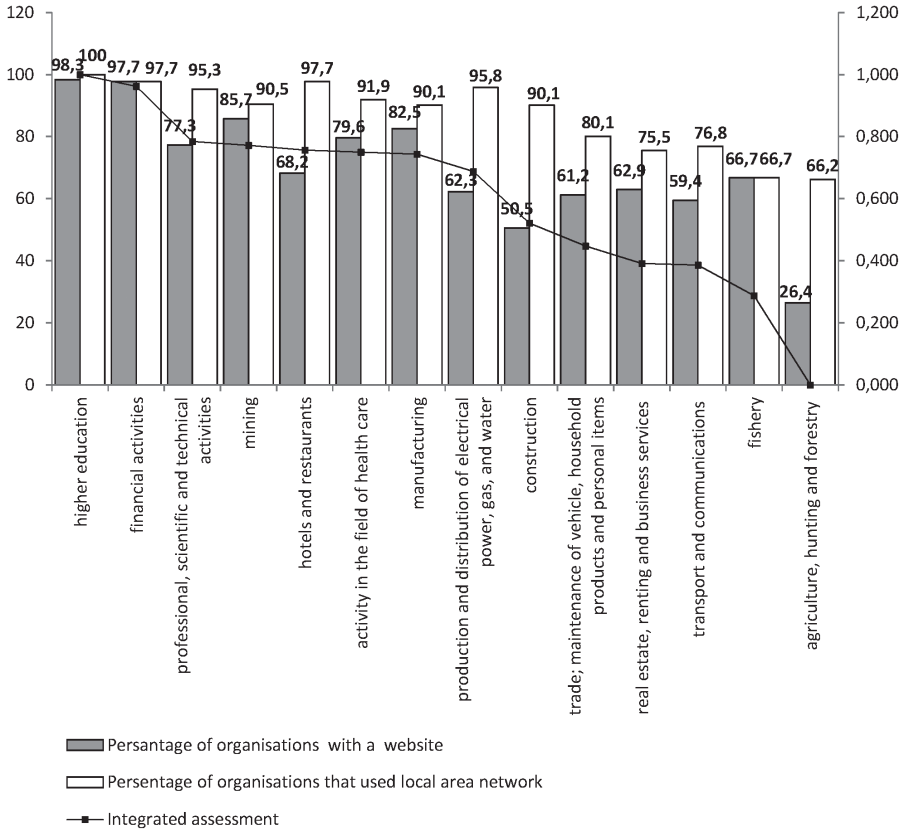
Source: Author's own elaboration.

At the same time, information and communication infrastructure development is not an end in itself but have to be linked with meeting the needs in information products and services. Analysis shows uneven information and communication infrastructure development regionally and among industries in Belarus. Regionally, the best possible conditions for e-business are in Minsk, the least favourable environments for this activity are in Vitebsk and Brest regions (see Figure 2).

Among industries, higher educational and financial institutions are the best prepared to use modern information technologies, agricultural enterprises are the least equipped from this point of view (see Figure 3). From the system approach point of view, low level of e-readiness of at least one element of a system don't give possibility to ensure that the objectives of entire system will be achieved. Thus, it may be concluded that it's actual to develop a mechanism of integration of domestic firms into global networks, ensuring a level playing field for companies working in various sectors and establishing effective mechanisms at national and regional levels.

Figure 3

Development of the Internet technology by Belarus regions, 2014



Source: Author's own elaboration.

4. Conclusions and possible solutions

Living Labs, in our view, could be used as an effective instrument for such integration. Response to the question about what are Living Labs is can be found on the web site of the European Network of Living Labs (ENoLL) (http://www.openlivinglabs.eu/aboutus). ENoLL is the international federation of benchmarked Living Labs in Europe and worldwide. Founded in November 2006 under the auspices of the Finnish European Presidency, the network has grown in 'waves' up to this day. Living Labs (LLs) are defined there as user-centred, open innovation ecosystems based on systematic user co-creation approach, integrating research and innovation processes in real life communities and settings. LLs are both practice-driven organisations that facilitate and foster open, collaborative innovation, as well as real-life environments or arenas where both open innovation and user innovation processes can be studied and subject to experiments and where new solutions are developed. LLs operate as intermediaries among citizens, research organisations, companied, cities and regions for joint value co-creation, rapid prototyping or validation to scale up innovation and businesses. LLs have common elements but multiple different implementations. Thus, LLs should coordinate and bring together science, education, governmental authority, business and civil society in order to collaborative business networks development.

Supply Chain Management (SCM) concept is based on the premise that the only entity, who pay money in SCM is a final consumer (Henfild, Nikols 2003). SCM, therefore, shall be designed in order to ensure the maximum satisfaction of consumers' needs, through improving supply reliability and quality, rising service level and minimization of the risk for damaged goods delivered. And all this has to be done at optimum cost. The first time the term SCM was used for the first time in 1982. The widespread implementation of the SCM concept started in the second half of the 1990s. There is talk now of the beginning of another stage of SCM concept development – electronic Supply Chain (eSC). The term refers to a group of companies, which are linked through computer network, that allows to develop jointly new products, to forecast demand, to use shared resources flexibly, to respond to customer requests faster (Ciesielski et al. 2011).

The analysis of some successful cases of the SCM concept implementation has highlighted the effectiveness of LLs' services when used them during the logistics system's design phase, adapting the system to the supply chain partners' demands. For example, Wageningen UR initiated the Living Lab 'Information Management in the Agri-Food Supply Chain Networks (AFSCN)' to create and maintain an environment in AFSCN (Verloop 2014). The most important characteristic of a Living Lab is that innovation from start to end is embedded in the context of the users. The purpose is to facilitate a structural and independent environment were companies and other AFSCN parties meet and cooperate around information integration topics. The Living Lab is facilitated by an ICT environment based on currently available information systems and applications. The knowledge and expertise obtained cause the Living Lab to become a Centre of Excellence on information management in AFSCN. The Living Lab is a node in the network of students, teachers, business people and scientists.

Several parties cooperate in the Living Lab: Agri-Food business partners deliver the information integration issues in real-life business, LEI Wageningen UR brings in her knowledge and overview on the Agri-Food domain, and ICT business partners deliver licenses of their relevant software applications.

LLs' key to success is a prerequisite virtual Internet-based integration of supply chain participants. The following enabling factors for integrating can be called: receiving information on prices, details on suppliers and buyers, results from market researches and analyses, possibility of communicating and other useful functions for enterprises operating in a particular product category.

A Finland government website aitojamakuja.fi is an example of such virtual Internet-based integration, where everyone can find information about local food businesses and their products. The portal is supported by 'The True Flavours' (Aitoja makuja) project running from 2012 to 2014, which is part of the Rural Development Programme for Mainland Finland and is funded by the Centre for Economic Development, Transport and the Environment for Häme as a nationwide project. The project is coordinated by the University of Turku's Brahea Centre for Training and Development and it is supported by strong regional activity. Regional actors promote the issues in their own areas while simultaneously working together with other regional partners. The search results show the name of the company, contact details and product groups. Clicking on *Info* produces more detailed information on the company. Organic produce is labeled with the "E" sign and displayed in green. The website also contains information about becoming a food entrepreneur, local and organic food, food tourism, actors in the sector and topical news. A special mobile application, that allows to define the nearest shop or restaurant en route, were developed for the site additionally.

Thus, three related objectives of networking can be identified:

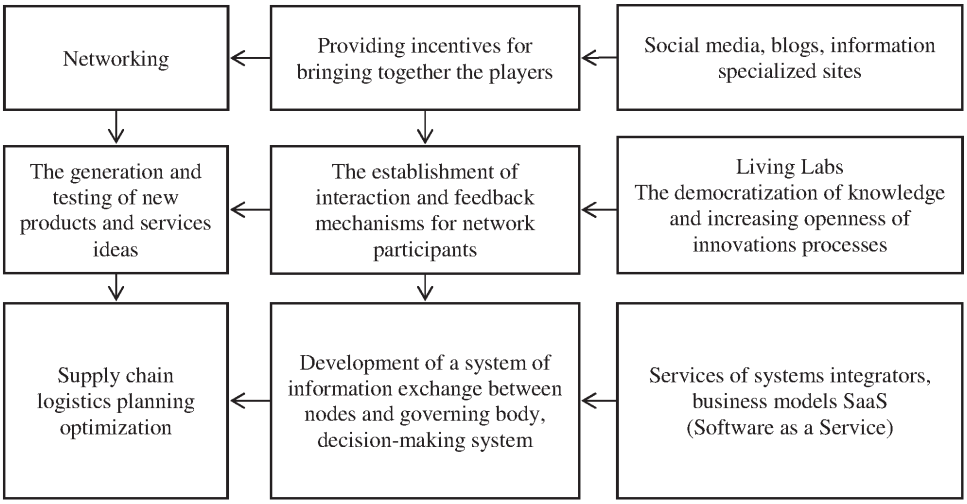
- the bringing partners together;
- the generation and testing of new products and services ideas (the creation of innovation networks) based on the open innovation concept;
- supply chain logistics planning optimization based on SCM concept.

The most difficult for achieving is the third goal of networking since supply chains become global and complex recently (see Figure 4).

Such system of services, which is designed to promote diversity of linkages between firms can be seen as a step towards collaborative business network development in Belarus. For example, the formation of Agri-Food Supply Chain Networks can be started from LL's drafting when electing stakeholders and actual R&D topics at forums on the internet platform farming.by, the website agroforum.by and other virtual communities, bringing Belarus farmers together. Such LLs can be organized at leading special scientific and educational organizations involving IT specialists. Such collaborative business network would let to direct the creative capacities of research and education institutions on the decision of actual agribusiness's problems and to identify innovation areas of Agri-Food Supply Chain integration.

Figure 4

The objectives of participants' interactions in collaborative business networks and related services



Source: Author's own elaboration.

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TIESĪBZINĀTNE

Dalia Prakapienė, Romas Prakapas

EVALUATION OF THE MILITARY CAREER STRUCTURE IN LITHUANIA

The aim of the paper is to analyze the military career structure in the National Defence System (NDS) as well as its improvement in the context of modern developments. The aim of the research is to provide guidelines for the improvement of the structure after the assessment of the military career structure of professional military officers in the Lithuanian Armed Forces. The article is prepared using the following methods: meta-analysis of scientific and specific literature, comparison, generalization and the survey of the professional military officers from the NDS. The target group was 332 professional military officers. A research revealed that the management of career processes of modern statutory bodies is still based more on the concept of a traditional rather than modern career. A career is seen here as career advancement, moving to a higher level and being rewarded a higher military rank. The military career structure and its management are regulated by law. However, due to the abundance of legislation we face with too much information and too many procedures in different normative documents, long bureaucratic procedures which do not ensure the efficiency of the military career structure and may violate the basic management principles, i.e. complexity, equality, competition, impartiality, transparency and consistency. A quantitative research revealed that the majority of Lithuanian officers are dissatisfied with the existing military career structure, which is formal, fragmented and focused on the organization rather than the person as a valuable element of the organization. After analyzing managerial aspects of the career structure, was identified that the military career structure applies only individual career planning and organizing tools. Also, the research revealed key problematic areas: officers lack information with respect to career opportunities, they are not included in career planning, request forms regarding their career or qualifications are rarely filled in, the potential of a career manager is not explored and prepared individual career plans are purely a formality. This is in conflict with the procedures and requirements found in the Officer Career Concept and other legislation.

Key words: military career, military career structure, career management, training system.

Militārās karjeras struktūras novērtēšana Lietuvā

Rakstā tiek analizēta Lietuvas Nacionālā aizsardzības dienesta profesionālo karavīru karjeras sistēma. Raksta sagatavošanā ir izmantota zinātniskā literatūra, metaanalīze, salīdzinošā analīze un datu apkopojums. Tika veikta Lietuvas Nacionālā aizsardzības dienesta profesionālo karavīru anketveida aptauja. Kopumā veiktajā pētījumā piedalījās 332 profesionālie karavīri. Pabeidzot pētījumu, tika atklāts, ka mūsdienu normatīvajās organizācijās karjeras procesu vadība vairāk pamatojas uz tradicionālajām, nevis modernajām koncepcijām. Karjeru skaidro kā kāpumu pa dienesta kāpnēm, pārejot uz augstāku līmeni un saņemot augstāku kara dienesta pakāpi. Karavīru karjeras sistēma un tās pārvaldība ir reglamentēta, bet nav vienota dokumenta, kas apvienotu visu sistēmu. Līdz ar to ir jāsaskaras ar birokrātiskām procedūrām, kuras karavīriem negarantē efektīvu karjeras sistēmu un rada priekšnosacījumus tam, lai tiktu pārkāpti pamata

pārvaldības principi: kompleksums, vienlīdzība, konkurence, taisnīgums, caurskatāmība un secīgums. Veiktā kvantitatīvā aptauja atklāja, ka liela daļa karavīru nav apmierināta ar spēkā esošo Karavīru karjeras sistēmu, kura ir formāla, fragmentāra un vērsta uz organizāciju, nevis cilvēku kā vērtīgu organizācijas elementu. Analizējot karjeras sistēmas vadības aspektus, konstatēts, ka Karavīru karjeras sistēmā tiek izmantoti tikai atsevišķi karjeras plānošanas un organizēšanas pasākumi. Ir atklātas galvenās problēmu jomas: informācijas trūkums par karjeras iespējām; karavīri nav iesaistīti karjeras plānošanā; nav īpašas veidlapas-dokumenta, ar kura palīdzību karavīri varētu nodot savas vēlmes saistībā ar karjeru vai kvalifikāciju, vispār netiek izmantots karjeras vadītāja amats, bet izstrādātie individuālie karjeras izaugsmes plāni ir tikai formāli. Tas ir pretrunā ar likumdošanas dokumentos paredzētās Karjeras sistēmas procedūrām un prasībām.

Atslēgas vārdi: karavīru karjera, karjeras sistēma, karjeras pārvaldība, kvalifikācijas paaugstināšana.

Оценка структуры военной карьеры в Литве

В статье проводится анализ карьерной системы профессиональных военнослужащих службы Литовской национальной обороны. Статья подготовлена с использованием научной литературы и мета-анализа, сравнительного анализа и обобщения данных. Был проведен анкетный опрос среди профессиональных военнослужащих службы Литовской национальной обороны. В общей сложности в проведенном исследовании участвовало 332 профессиональных военнослужащих. Выполнив исследование, было выявлено, что в современных нормативных организациях управление карьерными процессами основывается более на традиционных, чем на современных концепциях. Карьера объясняется как продвижение по службе, переходя на более высокий уровень и получая более высокое военное звание. Карьерная система военнослужащих и управление ею регламентировано, но единого объединяющего всю систему документа нет. В связи с этим приходится сталкиваться с бюрократическими процедурами, которые не гарантируют эффективной карьерной системы военнослужащим и создают предпосылки к нарушению основных управленческих принципов: комплексности, равенства, конкуренции, справедливости, прозрачности и последовательности. Проведенный количественный опрос выявил, что большая часть военнослужащих не довольна действующей Карьерной системой военнослужащих, которая формальна, фрагментарна и направлена на организацию, а не человека, как ценного элемента организации. Анализируя управленческие аспекты карьерной системы, установлено, что в Карьерной системе военнослужащих используются только отдельные меры по планированию и организации карьеры. Выявлены ключевые проблемные области: отсутствие информации о карьерных возможностях; военнослужащие не вовлечены в планировании карьеры; нет специальной формы-документа, с помощью которой военнослужащие могут передать свои пожелания по поводу карьеры или квалификации, вообще не используется должность карьерного менеджера, а разработанные индивидуальные планы карьерного роста имеют чисто формальный характер. Это противоречит процедурам и требованиям концепции Карьерной системы, предусмотренной законодательными документами.

Ключевые слова: карьера военнослужащих, карьерная система, управление карьерой, повышение квалификации.

Introduction

Challenges of the modern society, such as the rise of the information society and knowledge-based economy, economic instability, changes in the labor market, competition and other processes, are constantly bringing fundamental changes in the management of human resources. As a result, organizations are undergoing constant changes where performance is being optimized and new strategies developed. In this context, the attitude towards human resources and their related processes is changing, too. A very special importance in the personnel policy is now given to career management. Recently there has been a transformation of the concept *career*, associated with an individual's ability to learn and progress in various areas and life. This includes not only formal but also informal learning. It is argued that normally a person develops his/her career in individual and social spheres, thus a particular career depends on both individual efforts and the surroundings. In this way it is possible to make not only a vertical career, which is considered to be traditional, but a career in a broad sense, to acquire new skills and abilities, to move from one organization to another one, to change the position or even profession. The lifelong learning principle is becoming the most important criterion for achieving success in the working environment.

The analysis of career management processes in statutory organizations requires exceptional attention as Lithuania is a member of the European Union and NATO, its officers are involved in international missions and other international operations and a few years ago the country returned to compulsory military service. It is claimed that only an advanced, high-quality and timely career management system, corresponding to aspirations and abilities of statutory officers, will improve the quality of given tasks, help effectively reconcile service goals set for the officers with their interests.

Proper career planning and management is one of the ways to optimize the entire process of organizational management because employees' qualifications, initiative, motivation and tolerance levels determine the efficiency of processes in organizations. This helps to both ensure mutual interaction between career expectations and the needs of the organization and use workers' skills and their inner potential more productively to reach organizational goals, thus enabling personal development and self-realization as well as ensuring greater motivation and loyalty to the organization and defining the conditions for workers' career. All of this is directly related to the organization's efficiency, quality services and the satisfaction of employers, employees, and customers. Therefore, innovative staff management solutions are relevant not only in the business environment but also in military organizations, thus the efficiency improvement of their management processes together with proper career planning and management would ensure work effectiveness and contribute to the development of the modern environment and harmonious society.

The analysis of the scientific literature related to the system of career planning and management revealed that the system is mostly related to the business environment or the public sector. In Lithuania these problems have been analyzed by a number of researchers. Orenienė (2006) analyzed career development paradigms through the prevention of social exclusion; Čiutienė (2006) focused on the problems of reconciling interests of the organization and its employees when shaping a career; Amudson (2006)

analyzed the concept of a career in the context of a change; Higgins, Dillon (2007) evaluated the impact of career development processes on the effectiveness of human resource management and the final results of the organization; De Vos and Soens (2008), Gubler et al. (2014), Greenhaus and Kossek (2014), Direnzo et al. (2015) examined the aspects of a flexible career; Rosinaitė (2010) analyzed the construction of the career concept in Lithuania; Clarke (2013) highlighted the problem of the concept of an organizational career; Korsakienė and Smaliukienė (2014) revealed the aspects of a modern career from an individual perspective.

However, there is a lack of systematic research related to military or statutory organizations. In most cases, studies are fragmented or incomprehensive, overlooking the holistic approach. It is most often isolated research related to motivation, where a career is one of its components. These issues were analyzed by Palidauskaitė (2008); models of employee motivation were studied by Šavareikienė (2008) and Žaptorius (2007); Prakapienė and Neifaltienė (2014) evaluated the internal and external motivation factors of Lithuanian military personnel. Career issues of customs, police and other statutory officers were addressed fragmentary by Laurinavičius (2002[a], 2002[b]), Laurinavičius, Jovaišienė (2003) and Balčiūnaitienė, Adamonienė, Svolkinaitė (2016); career development problems in the civil service were analyzed by Valickas, Gražulis (2011). Palidauskaitė and Segalovičienė (2008), Vitkauskas (2012) studied motivation of Lithuanian civil servants and police officers; however, they did not focus on the concept of a career, i.e. it is only mentioned as one of the possible motivational factors in the civil service. Gruževskis et al. (2014) analyzed job search of the officers who at some point had worked in statutory bodies, their re-entry into the society and other problems. Gražytė-Miliukienė and Prakapienė (2012), Prakapiene and Petronis (2015) focus on the development of officers' professionalism which has a direct link with a career structure. For this reason, a conclusion can be drawn that the latter has never been analyzed systematically, thus presenting a scientific problem that there is a need for the analysis of the military career structure in the National Defense System (hereinafter referred to as NDS) as well as its improvement in the context of modern developments.

The research object – the military career structure in the NDS.

The aim – to provide guidelines for the improvement of the structure after the assessment of the military career structure of professional military officers in the Lithuanian Armed Forces.

The career concept

The career concept in scientific literature is analyzed quite extensively, but it is still understood differently. Recently it has been claimed that career research should not be limited to one career path or a narrow theoretical discipline (Baruch 2006). Career theories have been analyzed from various aspects by De Vos (2008), Glaser (2010), Greenhouse (2014), Crawshaw, Game (2015) and others. The analysis of the career concept has been carried out by Stancikienė (2009) and Rosinaitė (2010). However, in most cases the focus was on traditional definitions of the concept *career*

which were limited to professional activities such as promotion and the pursuit of better pay and higher position. Lately, the career concept has been developing, resulting in new approaches. This is confirmed by Danilevičiaus (2008) who extended the definition of the concept saying that a career is a process of professional development, authority, management influence, status, prestige growth, rise in hierarchy, qualifications, salary. Jasiūnienė (2006) evaluated its importance in a broader sense as opposed to the total number of jobs a person has had through the whole life. She expanded the definition with individual social roles, learning and individual activities.

Korsakienė and Smaliukienė (2014) introduced a broader approach. Analyzing the concept of a modern career, the authors argue that a career is considered to be a person's, who is influenced by new social norms, property even though it is mainly planned and managed by organizations. This modern approach sees a career as a lifelong process which consists of self-realization, gratification, and satisfaction, the maximum exploitation of employees' potential to achieve organizational goals. Due to modern developments, a one-job stereotype has been changed into a personal career script resulting in changing jobs quite often, learning new and upgrading existing competencies and, if necessary, changing profession. Therefore, this modern approach is no longer identified with the professional success or failure.

When constructing the concept of a career in Lithuania, Rosinaitė (2010, p. 168) stated that in academic as well as public policy discourses and in practice the concept is understood differently. There is a variety of meanings which are associated with the concepts of professional guidance as well as organizational and individual careers. However, it is important to emphasize that the career concept in Lithuania is often taken from publications by Western researchers or public policy makers rather than formulating a unique concept, corresponding to Lithuanian context.

The Officer Career Concept (2012) defined the concept in line with the traditional approach. A career here is treated as a serviceman's career advancement, moving to a higher level and (or) obtaining a higher rank.

Lithuanian military career structure and career management

The military career structure is an integral part of the human resource management system in the NDS which motivates officers to serve in the professional military service and stay in the active reserve, gives them an opportunity to actively participate in planning their careers as well as use personal qualities and professional skills in the most efficient and rational way. According to the Officer Career Concept (2012, p. 1), career management is a systematic, consistent and continuous process, starting from the beginning of an officer's service and lasting until the discharge. It is also closely and directly related to the assessment of an officer's activities, personal qualities and potential because only in this way his/her skills can be used effectively. Proper career management, training and appointment to posts, which would help to effectively realize officers' personal qualities and professional skills, have a significant impact on the effectiveness of the military.

According to Rosinaitė (2010), Korsakienė and Smaliukienė (2014), Armstrong and Taylor (2014), Paradnikė et al. (2016), it can be claimed that a person's career in an organization of any type is successfully pursued by reconciling career expectations with the goals of the organization while the effectiveness of career planning is directly dependent on the degree of compatibility between the expectations and goals of the organization. Dromantaitė (2012) argues that a career begins when a person understands what it is he/she wants to do in life, after the evaluation of possible ways of self-realization and the importance of a job. A career itself continues throughout an individual's working life and each relevant working experience is its integral part.

Analyzing the military career of the Lithuanian Armed Forces, it is worth mentioning that the career process here consists of three main stages: entry into the National Defense System (basic professional training); personal training, career progress, career development (promotions, transfers, training); end of the career, discharge. However, implementing these structural components it is necessary to ensure efficient functioning of the entire system. In the Guidelines of the Minister of National Defense (2012–2017), the emphasis is put on the following highly relevant areas:

- The reform of officers' career planning and organization that would allow pursuing a career according to their skills and professional potential.
- The reform of training and qualification in the NDS which would focus on the superiors and the improvement of their competence as well as their administrative, management, teamwork, negotiation and language skills; the involvement of the staff in their career planning.

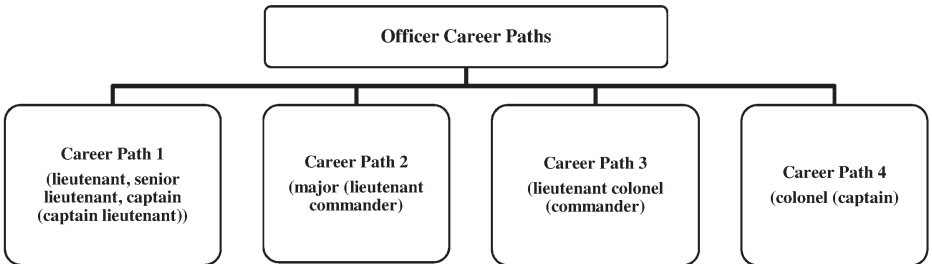
In the military career structure a special attention is given to the officer training system which aims to train officers who, using personal qualities, knowledge and skills, would be able to properly carry out assigned duties and make decisions in difficult and rapidly changing circumstances (Officer Career Concept 2012). This system includes basic training of officers (L1); officer career courses (tactical (L2), operational (L3) and strategic (L4) levels); specialty courses; qualification courses, etc. As for career directions, there are two main groups: general military specialties (graduates of higher military education institutions) and specific military specialties (functional specialists with higher education).

Paragraph 3 of Article 56 of the Law on Organization of the National Defense and the Military Service (1998) sets a military rank system for the officers of the Lithuanian Armed Forces and puts them into three groups: junior officers (lieutenant, senior lieutenant, captain), senior officers (major, lieutenant colonel, colonel), generals and admirals (brigadier general, major general, lieutenant general). According to the current rank system, the Officer Career Concept (2012) recognizes the following officer career paths (see Figure 1):

Accordingly, it is important to meet education, military training, experience and general requirements of each path, which are regulated by existing legal documents, when making a transition from one career path to the other one and applying for a higher military rank.

Figure 1

Officer Career Paths



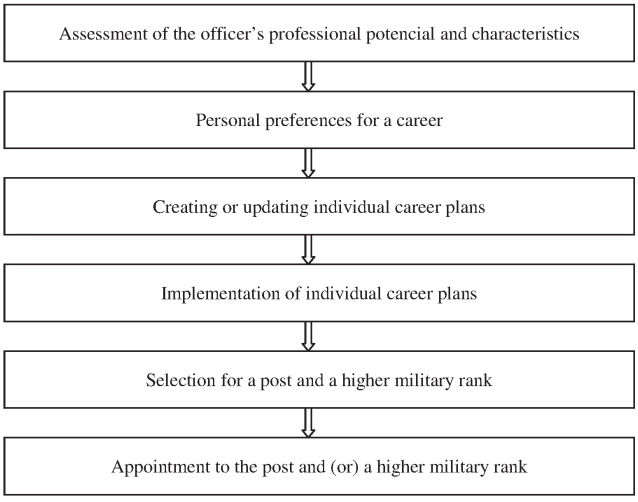
Source: elaborated by the authors according to Officer Career Concept 2012.

The Officer Career Concept (2012) defines the aspects of career management in considerable detail. It points out that its aim is to create conditions for the officers in the NDS to pursue a career so that every one of them could reveal, explore and develop their potential as well as to ensure the effective utilization of human resources in the system. Moreover, officers with a military rank of a captain (captain lieutenant) or a major (lieutenant commander) are usually appointed as career managers. Military career management should be carried out taking the following into account: officers' personal characteristics, their professional potential and skills; recommendations from direct and higher commanders on the further career; needs and possibilities of the NDS; individual needs and aspirations.

Military career management must be carried out in accordance with the provided steps in an integrated and coherent way (see Figure 2).

Figure 2

Career Management Steps



Source: elaborated by the authors according to Officer Career Concept 2012.

Summarizing education, military training, experience and general requirements imposed on the officers as well as management principles declared in the Officer Career Concept, we can state that the military career structure is regulated by provisions, secondary legislation and procedures of the Law on the Organization of the National Defense System and Military Service. However, the abundance of legislation presents a number of threats to the military career management system and raises doubts about the feasibility of this system and the level of its applicability and flexibility.

The article is prepared using the following methods: meta-analysis of scientific and specific literature, comparison, generalization and the survey of the professional military officers from the NDS.

Research methodology

In scientific literature various studies related to the phenomenon of a career can be found. They would analyze and assess the concept from the scientific perspective which, in turn, is special because of its complexity and relative closeness. Considering methodological recommendations (Creswell 2009), our survey "The Evaluation of the Military Career Structure" was developed on the basis of research (Gražytė-Miliukienė and Prakapienė 2012; Sakalauskas 2015), the model of quantitative research design as well as the following documents regulating military career: the Law on Organization of the National Defense and the Military Service, clauses 10, 11, 14, 15, 16 of Article 10, paragraph 2; the Guidelines of the Minister of National Defense (2012–2017); the NDS Personnel Policy Concept (2007); Management Procedures of Military Career regarding Professional Military Service (2010); Officer Career Concept (2012); Requirements of Officers' Career Directions, Education, Career Paths (2014). They all define the main components of the military career structure.

The research instrument was constructed of several blocks, enabling to divide the phenomenon in question into a number of notional units at the theoretical level: military career concept; the status of an individual career; officer qualification and its improvement; military career management. In addition to the above mentioned blocks, when constructing the instrument, an in-depth data analysis, which is common in social studies, was used, too.

The research organization and sampling. The study was conducted between last year's April and June. The survey was carried out in structural units of the NDS, on officers' free time. The study population consisted of all military ranks (except for generals due to their relatively small population). At the time of the study, the population size was 1,720 officers. The sample size was calculated using Jadov's sample calculation formula (Kardelis 2016). Therefore, the sample was minimum 325 respondents. Simple random sampling was used as a sampling method. 332 questionnaires appropriate for the statistical data analysis were collected.

The data processing. The statistical analysis of the research data was performed using SPSS 21.0 while Microsoft Excel 2007 was chosen for the graphic data illustration. The correlation analysis was used to determine the strength and significance of data association (linear (Pearson r) correlation coefficient was calculated (Bilevičiūtė, Jonušaskas

2011)). To measure the correlation coefficient, we followed the levels of correlation strength where 0–0.20 means that the association is very weak, 0.20–0.40 as weak, 0.40–0.60 as moderate, 0.60–0.80 as strong, 0.80–1 as very strong correlation (Bitinas 2006).

The findings are not analyzed separately by gender due to the low number female officers in the study.

Quantitative research ethics. The study was conducted in accordance with basic requirements of research ethics (Iltis 2006); therefore, to provide security and ensure anonymity all confidential information in the initial research material was arranged in such a way that it was impossible to identify a single study participant who expressed his/her personal opinion. All study participants were introduced to the study aim, its structure, their rights and so on. All of them took part in the study voluntarily.

Respondents' attitude to the organization of the military career in the Lithuanian Armed Forces

Respondents' socio-demographic characteristics. The distribution of the survey respondents by gender in part reflects the structure of the Lithuanian Armed Forces, where female officers make only 10–11%. Thus, 93% of men and 7% of women took part in the study. The majority of the officers (68%) are captains (captain lieutenant), 5% – lieutenants, 15% – senior lieutenants, 14% – majors, 1% – colonels. The distribution among the officers shows the real situation in the Lithuanian Armed Forces, which is dominated by officers with the rank of a captain.

Most of the surveyed officers are 31–35 and 36–40 years old, 36% and 30% respectively. After analyzing the length of service, it became clear that most of the officers (35%) have been serving for 16–20 years, 30% for 11–15 years and only 5% for up to 5 years.

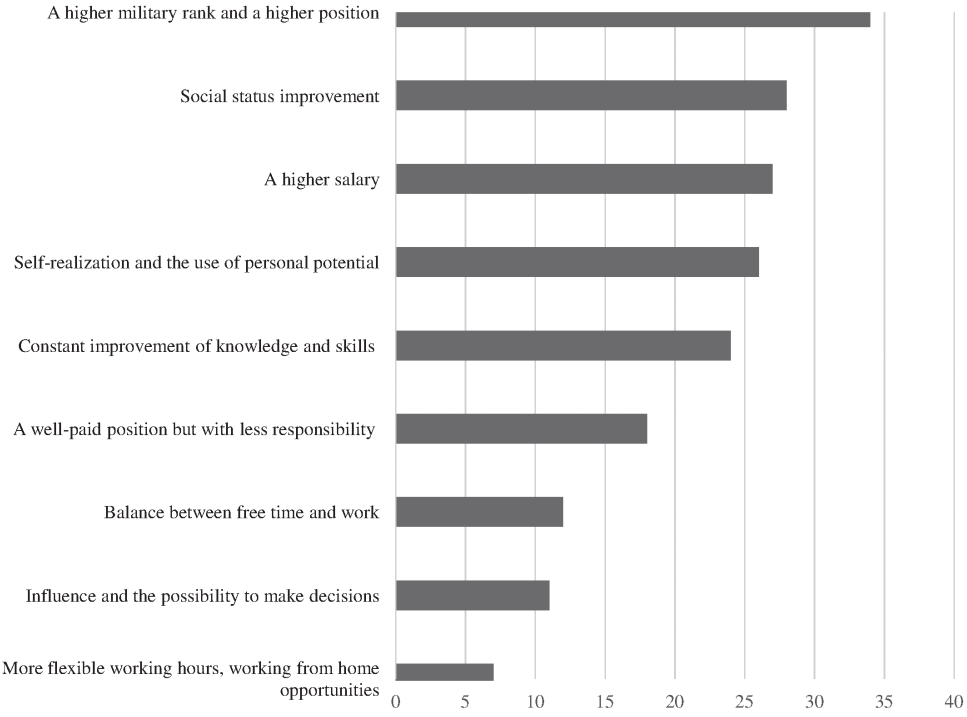
As for their qualifications, it was found that the overwhelming majority (97%) has a university degree, 34 percent of which have completed a master's degree.

In order to identify how officers understand a career, different career concepts were given to them to be evaluated. The analysis of the findings shows that more than half of the respondents chose the traditional definition of a career, which emphasizes the organization's obligation to take care of the career process and its progress. This is also reflected in the definition given in the Officer Career Concept (2012) as well as in the conclusions of the study by Gruževskis et al. (2014, p. 15) that said that in the armed forces and police, unlike other organizations, psychological contracts prevail, namely, the belief that the organization is responsible for the career management and the career itself is perceived as an organization.

Analyzing the components of a successful career (see Figure 3), we see that the greater part of the respondents fully agrees that a successful career means a higher rank (34%), a higher position (27%), a higher salary and the improvement of social status (28%), thus confirming the predominance of the traditional career concept in a military organization. However, it should be noted that quite a big part of the officers emphasizes the importance of self-realization (26%), continuous knowledge improvement (24%). This suggests that the concept of a modern career can become the dominant one at some point in the future.

Figure 3

Officers' Attitudes to the Concept of a Successful Career (by %)



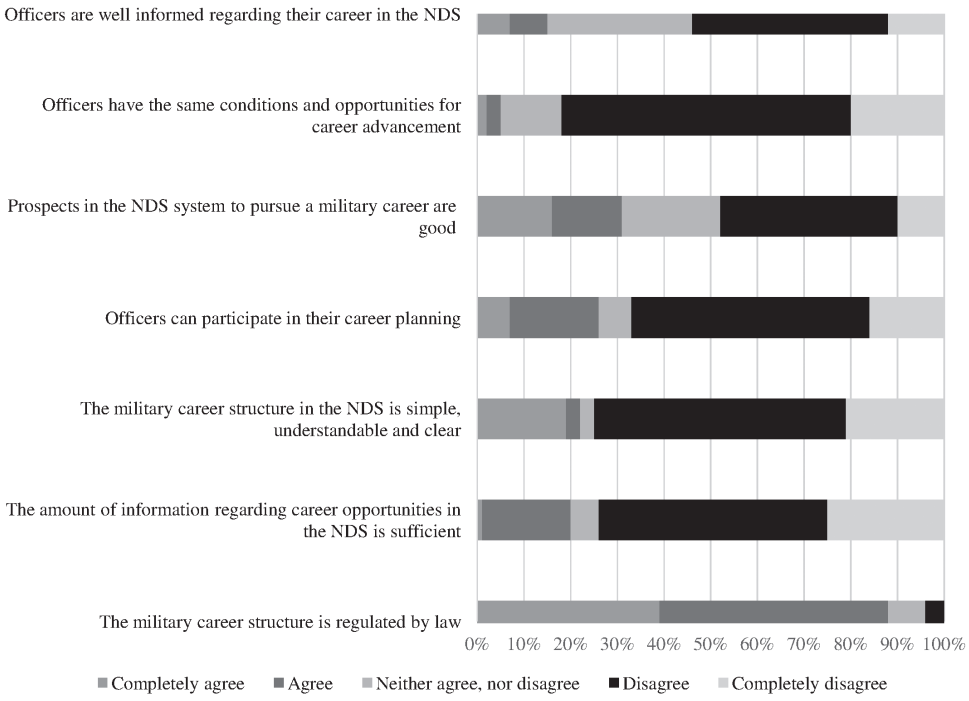
Source: elaborated by the authors.

Respondents' attitude to a personal career in the NDS. Despite the fact that many respondents comply with the traditional approach to a career, the study results show that the majority is aware of the importance of personal contribution. Therefore, assessing the current career situation in the NDS, 48% of the respondents assess the situation as good or very good and only 15% see it as bad or very bad. A strong correlation is seen between the military rank and the career satisfaction ($r = 0.602$, $p < 0.001$). It can be claimed that officers with a higher rank assess the current career situation much more positively than officers with a lower one.

The findings (see Figure 4) show that there are fairly sharp differences in assessing the military career structure. 74% of the respondents indicate that they lack information regarding career opportunities in the NDS and only 7% say that they are well informed regarding their career in the NDS. The data analysis shows that almost half (48%) of the officers are skeptical about the prospects to pursue a military career and even 67% say that they themselves do not have real opportunities to participate in planning their careers. 75% see the system as complex and confusing. All of this contradicts the principle of equal opportunities for officers' career advancement stated in the Officer Career Concept (2012) (82% of the respondents point out this as a problematic area).

Figure 4

Officers' Opinion on the Military Career Structure in the NDS (by %)



Source: elaborated by the authors.

The evaluation of the military training system. When asked about the opportunity to participate in different training, 93% of the officers indicate that the officer education system makes it possible for them to improve their qualification. Assessing the system itself from a personal perspective, 88% state that the current system gives them the opportunity to personally acquire new as well as update the existing knowledge and skills. The majority of the respondents as the most important motive for their participation in the training system say that these courses is a great tool for competence development (72%). However, as much as 38% indicate that the current courses are not relevant and act only as a formality to take higher positions. This opinion dominates among those with the military rank of a captain ($r = 0.371$, $p < 0.01$). It can be assumed that junior officers in part lack motivation and awareness of the importance of personal training in relation to their daily professional activities. However, a deeper analysis of this issue was not carried out and additional and more detailed research is needed to substantiate the claim.

As for the training organization, the respondents point out that a particularly relevant question here is the impartiality principle. As much as 60% of them indicate that transparency is missing in the existing system where specialized, professionally relevant courses are available only through acquaintance and interpersonal relations.

Assessing this in terms of statistical criteria, differences between different groups of respondents are not revealed.

In order to compare officers' opinions on how to improve the existing military career structure, we used the study by Gražytė-Miliukienė and Prakapienė (2012). Individual statements related to the improvement of the military career structure were evaluated and compared (see Table 1). The comparison of the research data from 2012 and 2016 show that the situation is very similar although there are some differences. The data analysis of 2016 shows that the respondents feel the need for more systematic and regular training, there is a lower demand for the creation of qualification courses in Lithuania and the emphasis is put on the importance of even opportunities to learn and improve.

Table 1

Officers' Opinion on the Improvement Opportunities of the Officer Training System (by %)

	Agree		Partially agree		Disagree	
	2012	2016	2012	2016	2012	2016
To improve the selection to courses system	68	70	31	28	1	3
To provide comprehensive individual career plans and follow them	75	79	25	21	0	0
To improve and expand the system of courses organized in Lithuania	54	43	39	48	7	9
To create the same conditions for all officers to learn and improve	65	84	30	24	5	2
To improve and expand the remote (independent) learning opportunities when in service	62	65	28	26	10	9
To ensure that officers would be sent to courses regularly	88	90	12	10	0	0

Source: elaborated by the authors.

The evaluation of military career management aspects. To assess the status of the military career structure in the NDS, the respondents were asked to evaluate the following managerial components of a military career: the transparency of the selection to career courses, the motivation and reward system, equal opportunities when pursuing a career, the opportunity to gain additional qualifications and the work of advisory committees related to career policy formation and decision-making, etc. The research data shows that the motivation and reward system needs most improvement (73%) while 78% think that another problematic area is the work of committees that make decisions regarding a military career. Also, half of all the respondents (49%) criticize the existing system of career management as all its evaluative features the respondents assessed negatively.

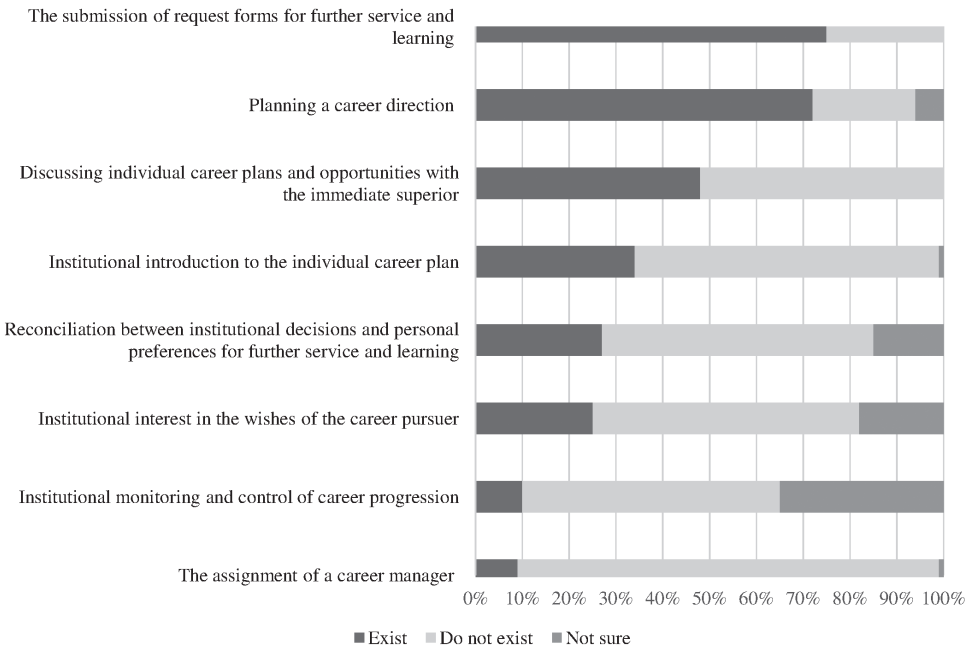
Assessing the military career structure, the officers stress the importance of career planning. They argue that it is necessary to create an adequate officer selection system which would be linked to their professional potential and an effective use of human

resources. The Officer Career Concept (2012, p. 13) states that in order to ensure the most effective and rational use of officers' personal qualities and professional skills, it is necessary to create opportunities for them to participate actively in the planning of their career. In fact, each officer can submit a request regarding his/her further service and learning by filling a certain form prescribed by the Defense Minister, on account of which the career plan is drawn up, taking into consideration the results of the officer's assessment. Even though more than two-thirds of the officers (75%) have filled the documents and submitted their requests for their future career, career and qualification courses to their immediate superior at the time of a conversation or appraisal, requests have been granted only to 25% of the respondents. Thus, it can be assumed that filling these forms is rather a formality instead of improving the quality of the military career structure.

Certain contradictions are observed in understanding the problems of drawing up individual career plans (see Figure 5). Only 34% of the officers say that they are familiar with their individual career plan, which sets short-term, medium-term and long-term career goals, provides the measures to achieve these objectives as well as sets the deadline for when they should be reached. On the other hand, 48% state that they have discussed their career plan with their immediate superior. It is evident that officers understand the individual career plan and the need for it differently.

Figure 5

The Assessment of Career Planning Elements (by %)



Source: elaborated by the authors.

Planning a career direction is perhaps one of the best realized managerial components which is planned until the military rank of a colonel (captain) is reached. Each career direction includes certain military specialties as well as education and career requirements. The vast majority (82%) of the respondents indicate that they have been given a career direction. According to the study findings, a career manager, i.e. the person responsible for the formulation of an officer's career goals in the NDS as well as the coordination between the needed measures and the implementation of the aims, is a completely vague and ineffective element in the system in question. Even 90% of the officers state that they have not been assigned a career manager.

After analyzing and assessing officers' interest in vacancies in the NDS or internal mobility of posts, we find quite striking passivity and the lack of initiative. 34% indicate continuously following the process and only 10% have experienced internal mobility of posts. In addition, some of the officers with lower military ranks assess the procedures of granting military ranks, the selection to courses as well as the assignment to posts a bit skeptically, noting missing transparency ($r = -0.513$; $p < 0.01$). While analyzing the trends of transferring officers to other posts and internal mobility, we can see that the latter is quite high – 28% of the respondents have been transferred to other positions 5–6 times, 17% – 7–9 times, 8% – more than 10 times. However, as pointed out by the respondents, most often it is not done on their own initiative. This indicator is directly related to the results of the study of how the concept of a career is perceived by the officers which suggest that they perceive it as an organization and tend to relinquish the responsibility for their own personal career to the organization. This reflects the traditional concept of a career.

In military career management considerable significance is given to the assessment of personal characteristics and career development. Summarizing the opinions on the objectivity regarding career development, the results show that it is assessed objectively (44%); however, 29% of the officers state that their own assessment is not objective and the system itself has problems. The greatest dissatisfaction is recorded among the officers with the lowest military ranks – even 55% of the lieutenants question the objectivity ($p < 0.01$). They point out that the assessment methodology does not provide reliable criteria or the formulation of the proper scale and the values for the assessment. This is opinion is held by 55% of the lieutenants, 26% of the senior lieutenants, 33% of the captains and 35% of the respondents with the military rank of a major. Thus, officers with higher ranks in terms of a career assess the existing NDS system better ($r = 0.691$; $p < 0.001$) and see greater prospects to pursue a career here ($r = 0.482$; $p < 0.01$).

Even 62% of the respondents see the assessment of personal characteristics and career development as a formality that determines very little. In addition, the assessment result is often determined by the human factor, which violates the transparency and impartiality principles, according to which, at the time of the certification of an officer, the superior has to assess his/her personal qualities, skills, the level of professionalism and potential in an objective and principled manner and, taking personal goals into account, outline specific proposals concerning the possible career path and the opportunity to be promoted.

Conclusions

1. The analysis of scientific literature revealed that the management of career processes of modern statutory bodies is still based more on the concept of a traditional rather than modern career. A career is seen here as career advancement, moving to a higher level and being rewarded a higher military rank.
2. The military career structure and its management are regulated by law. However, due to the abundance of legislation we face with too much information and too many procedures in different normative documents, long bureaucratic procedures which do not ensure the efficiency of the military career structure and may violate the basic management principles, i.e. complexity, equality, competition, impartiality, transparency and consistency.
3. For the military career structure to function efficiently, the current Officer Career Concept should be revised and supplemented with elements and procedures of a career structure found in other legislation.
4. A quantitative research revealed that the majority of Lithuanian officers are dissatisfied with the existing military career structure, which is formal, fragmented and focused on the organization rather than the person as a valuable element of the organization. This determines officers' passive attitude to greater involvement in organizing their own career and showing initiative.
5. After analyzing managerial aspects of the career structure, we see that the military career structure applies only individual career planning and organizing tools. Also, the research revealed key problematic areas: officers lack information with respect to career opportunities, they are not included in career planning, request forms regarding their career or qualifications are rarely filled in, the potential of a career manager is not explored and prepared individual career plans are purely a formality. This is in conflict with the procedures and requirements found in the Officer Career Concept and other legislation.

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SOCIĀLĀ PSIHOLOĢIJA

Olga Valtere, Vitālijs Raščevskis

ALTRUISMA UN EMPĀTIJAS IZTEIKTĪBA PERSONĀM, KAS NODARBINĀTAS ATŠĶIRĪGĀS PROFESIONĀLAJĀS ORIENTĀCIJĀS

Personības iezīmes, iespējams, veido kādus priekšnosacījumus tam, kādu profesionālo orientāciju izvēlas, tai skaitā nozīme varētu būt arī tādām iezīmēm kā empātijai un altruisma izteiktībai, neskatoties uz to, ka to izteiktība mēdz mainīties vecuma ietekmē, kas arī tiks ņemts vērā un pētīts. Pētījuma mērķis ir pētīt saistību starp altruisma un empātijas izteiktības īpatnībām personām, kas nodarbinātas atšķirīgās profesionālajās orientācijās. Pētījuma izlasi (N = 125) veidoja darbspējas vecuma vīrieši (*M* = 35,19; *SD* = 10,918) un sievietes (*M* = 38,98; *SD* = 12,611). Pētījumā tiek izmantotas sekojošas metodes: Pašatskaites altruisma skala (SRA, The Self-Report Altruism scale) (Rushton, Chrisjohn, Fekken 1981); Sabalansētas emocionālās empātijas skala (BEES, Balanced Emotional Empathy Scale) (Mehrabian, Epstein 1997). Pētījuma pirmās daļas analīzes rezultātā tika atklāts, ka pastāv saistība starp altruisma un empātijas izteiktību profesionālajā grupā, kas balstās uz cilvēks – cilvēks attiecībām. Šī pētījuma rezultāti ļauj vilkt paralēles ar citiem empātijas un altruisma pētījumiem, kā arī parāda saikni starp abām šīm parādībām un to saikni ar pētāmo profesionālo orientāciju.

Atslēgas vārdi: altruisms, empātija, profesionālā orientācija.

Severity of altruism and empathy among persons employed in different professional fields of activity

There can be supposed that some personal traits can make preconditions in choosing the professional orientation, so altruism and empathy expressiveness also could, despite the fact that their expressiveness can change depending from age, what also was observed in this study. The aim of the research is to study the connection between altruism and empathy expressiveness particularities in persons, who work in different professional orientation. The study selection (N = 125) consisted of working-age men (*M* = 35,19; *SD* = 10,918) and women (*M* = 38,98; *SD* = 12,611). In the study are used the following methods: The Self-Report Altruism scale, SRA (Rushton, Chrisjohn, Fekken 1981), Balanced Emotional Empathy Scale, BEES (Mehrabian, Epstein 1997). In the research found that the correlation between altruism and empathy expressiveness is significant in profession group that is based on person – person relationships. This study allows to draw parallels with other empathy and altruism researches, and also is observed the link between phenomena's and their relationship with the studied professional orientations.

Key words: altruism, empathy, professional orientation.

Выраженность альтруизма и эмпатии у лиц, трудоустроеных в различных профессиональных ориентациях

Можно предположить, что некоторые личные качества создают предпосылки для выбора профессиональной ориентации, в том числе такие качества как альтруизм и эмпатия, несмотря на то, что их выразительность может меняться в зависимости от возраста, что также наблюдалось в этом исследовании. Цель исследования изучить связь между особенностями выразительности альтруизма и эмпатии у людей, которые работают в различных профессиональных ориентациях. Выборка исследования (N = 125) состояла из мужчин (M = 35,19, SD = 10 918) и женщин (M = 38,98, SD = 12,611) трудоспособного возраста. В исследовании используются следующие методы: Шкала альтруизма (SRA, The Self-Report Altruism scale) (Rushton, Chrisjohn, Fekken 1981); Шкала сбалансированной эмоциональной эмпатии (BEES, Balanced Emotional Empathy Scale) (Mehrabian, Epstein 1997). В исследовании было установлено, что существует корреляция между альтруизмом и эмпатии в профессиональной группе, которая основана на отношениях типа человек – человек. Это исследование позволяет проводить параллели с другими исследованиями эмпатии и альтруизма, а также наблюдается связь между этими явлениями и их взаимосвязью с профессиональной ориентацией испытуемых.

Ключевые слова: альтруизм, эмпатия, профессиональная ориентация.

Ievads

Ikviena sabiedrība, valsts ir balstīta uz to, ka katram tās loceklim ir sava nodarbe, sava profesionālā niša, kuru tas pārstāv un pilda savus pienākumus. Ir profesijas, kas saistītas tieši ar priekšmetisku dabu, piemēram, ražošana vai profesijas, kas saistītas ar tiešu mijiedarbību starp cilvēkiem. Pie pēdējām var pieskaitīt, piemēram, tādas būtiskas profesijas, kas attiecināmas uz izglītības sfēru vai palīdzošajām darbības sfērām. Iespējams jābūt kādiem konkrētiem priekšnosacījumiem kādēļ kāda noteikta persona izvēlas iesaistīties kādā konkrētā profesionālā ievirzē – piemēram, darbos, kas saistīti ar cilvēkiem hipotētiski varētu iesaistīties personas, kas ir empātiskas un altruistiskas.

Iepriekš jau ir veikti līdzīga veida pētījumi citās valstīs. Daudzos pētījumos ir ticis aplūkots empātijas jēdziens, tā dažādās puses, kā arī aplūkotas empātijas izteiktības atšķirības atkarībā no dažādiem mainīgajiem (Mehrabian, Epstein 1972; Abbott 1983; Kliszcz, Hebanowski, Rembowski 1998; Barnsley, Williams, Cockerill, et al. 1999; Hojat 2007 u.c.). Altruismu, tā pamatus un būtību pētījusi virkne autoru un aprakstījuši saikni starp šo parādību un virkni citu mainīgo (Rushton 1976; Batson, Duncan, Ackerman, et al. 1981; Cialdini, Schaller, Houlihan, et al. 1987; Nelson 1999; Batson 2008; Dambrun, Ricard 2011; Goodyear-Smith 2014 u.c.).

Dotā darba ietvaros aplūkotas tādas personības iezīmes kā empātija un altruisms, pētot personas, kas nodarbinātas atšķirīgās profesionālās orientācijās. Šī tēma ir aktuāla saistībā ar to, ka nereti parādās viedoklis – sarunās cilvēku starpā, masu medijos – ka personām nodarbinātām, piemēram, medicīnas sfērā nereti trūkst līdzjūtības un cilvēcīguma pret saviem pacientiem un šāda veida diskusijas sastopamas masu medijos starp valsts iedzīvotājiem komentējot dažādas situācijas. Šī problēma raisīja interesi pētīt altruisma un empātijas izteiktību respondentiem, kas pārstāv profesijas, kas balstītas uz cilvēks – cilvēks attiecībām, salīdzinot ar respondentiem, kas pārstāv profesijas,

kas balstītas uz cilvēks – priekšmets attiecībām, neaizskarot konkrētas profesijas. Darba mērķis ir pētīt saistību starp altruisma un empātijas izteiktības īpatnībām personām, kas nodarbinātas atšķirīgās profesionālās orientācijās.

Pētījuma jautājumi

1. Kāda saistība pastāv starp altruisma un empātijas izteiktību personām, kas nodarbinātas cilvēks – cilvēks tipa profesijās un cilvēks – priekšmets tipa profesijās?
2. Kāda ir atšķirība starp altruisma un empātijas izteiktību personām, kas nodarbinātas cilvēks – cilvēks tipa profesijās un cilvēks – priekšmets tipa profesijās?
3. Kā tādi mainīgie kā profesijas orientācija, darba stāžs, dzimums un vecums saistīti ar altruisma izteiktību?
4. Kā tādi mainīgie kā profesijas orientācija, darba stāžs, dzimums un vecums saistīti ar empātijas izteiktību?

Teorētiskais pamatojums

Altruisms kalpo, kā darbību virzošs princips un mūsdienu mērķiem autori ir definējuši cilvēka altruisma īpatnības, kā tīšas un brīvprātīgas rīcības, veiktas citas personas labā, kas arī ir šīs rīcības galvenā motivācija, un dotās rīcības tiek veiktas bez apbalvojuma gaidām, kas ir altruistiska pieeja vai ar apzinātām vai neapzinātām apbalvojuma gaidām, kas ir pseido altruistiska pieeja (Feigin, Owens, Goodyear-Smith 2014).

Altruisms tiek skaidrots kā sociālās uzvedības veids, tā kā no evolucionārā skatupunkta, uzvedība ir sociāla, ja tā ietekmē kā pašu cilvēku, kurš veic darbību, kā arī to, uz kuru šī uzvedība ir vērsta. Sociāla uzvedība var tikt kategorizēta atkarībā no tā, vai uzvedības sekas abām pusēm ir izdevīgas. Altruisms izpaužas tad, kad uzvedība samazina savu labklājību, bet palielina tās personas labklājību, uz kuru šī uzvedība vērsta. Pastāv altruisma kontrasts ar citām sociālās uzvedības formām: savtīgumu, abpusēju izdevīgumu, spītīgumu, piemēram, uzvedība, ir abpusēji izdevīga, ja persona, pret kuru uzvedība vērsta, arī gūst labumu, bet egoistiska, ja šī persona gūst zaudējumus (West, Gardner, Griffin 2006).

Viens no zināmākajiem altruisma iedalījumiem attiecas uz motivāciju, kura ir altruisma pamatā. Daži autori apgalvo, lai noteiktu altruismu ir nepieciešams atdalīt to no pretējā – egoisma (Dambrun, Ricard 2011). Altruisms un egoisms ir divi atsevišķi motivācijas stāvokļi un ir atšķirīgi balstoties uz virzienu kādā norit uz mērķi virzīta motivācija (uz sevi vai uz citu), kad altruisma galējais mērķis ir paaugstināt cita labklājību (Batson, Duncan, Ackerman et al. 1981; Batson 2008). Kamēr egoisms un altruisms ir potenciāli attāli motīvi, tie var darboties līdztekus.

Mēdz apgalvot, ka altruisms ir egoistiski motivēts (Cialdini et al. 1987), bet autori uzskata, ka altruisma pazīmes ietver sevī darbības, kas tiek pildītas brīvprātīgi un apzināti, ar pamatmērķi vērstu citas personas labā. Pamatā esošā motivācija ir tā, kas noteiks vai akts tika veikts bez vai ar gaidām gūt personīgo labumu, kas ir kā iekšēja vai ārēja atlīdzība, tādēļ kritisks kritērijs altruisma noteikšanā ir tā motivācijas pamats (Feigin, Owens, Goodyear-Smith 2014). Arī pašas personas labklājība var tikt uzlabota

ar altruistiski motivētas palīdzības sniegšanu, piemēra, tas var radīt personiskās apmierinātības vai atvieglojuma sajūtas, bet šim personiskajam labumam jābūt kā neparedzētam rezultātam, nevis kā uzvedības mērķim (Batson, Duncan, Ackerman, et al. 1981).

De Vals (De Waal 2008) ir iedalījis trīs veidus, kādos virzienos var noritēt altruisms:

1. Altruistiski impulsi. Spontāna, nesavtīga palīdzēšana un rūpes, reaģējot uz distresa signāliem vai redzot cita veida sāpes un vajadzības.
2. Iemācīts altruisms. Palīdzības sniegšana kā izraisīta reakcija, ko pastiprina izpildītāja pozitīvi rezultāti.
3. Tīšs altruisms. Palīdzība balstīta uz uzvedības efektu prognozi. Viena prognoze var būt tāda, ka palīdzība būs atgriezeniska, attiecīgi akts producēs tīru ieguvumu. Tā kā izpildītājs cenšas gūt labumu sev, to var dēvēt par tīšu egoistisku altruismu. Otra iespēja ir palīdzība, balstīta uz tā izvērtēšanu, kā paša uzvedība palīdzēs citam. Tā kā izpildītājs meklē labumu citam, tad to var dēvēt par tīšu nesavtīgu altruismu.

Empātijas jēdzienu mēdz izmantot, lai apzīmētu dažādas parādības, kuras saistītas ar emocijas apmaiņas veidu. Empātijas jēdziens kopumā mēdz tikt asociēts ar vismaz trīs nozīmēm – rūpes par citiem, citu saprašana, citas personas emociju apstiprināšana. Procesi, kas var radīt šos iznākumus, tiek zināmā mērā uztverti kā empātiski, piemēram, ja tie noved pie dalīšanās ar emocijām un rūpēm par citiem (Decety 2011; Zaki 2014).

Batsons un līdzautori (Batson, Early, Salvarani 1997) definējuši empātiju, kā uz citiem orientētu emoconālu atbildi kongruentu ar citas personas labklājības uztveri, kā arī, formulējis empātijas altruisma hipotēzi, kā citu autoru ideju pārskatu. Gadsimtiem tika uzskatīts, ka visa cilvēka uzvedība, ieskaitot palīdzēšanu citiem, ir egoistiski motivēta. Egoisma jēdziens attiecas uz motivāciju, kuras gala mērķis ir uzlabot savu labklājību. Lai gan ir maz šaubu saistībā ar to, ka egoisms ir spēcīgs palīdzošas uzvedības motivātors, ir aktualizējies jautājums vai visa cilvēku uzvedība ir motivēta ar pašinteresi un tiek ierosināts, ka cilvēki varētu palīdzēt, jo tie izjūt empātiju attiecībā pret citu cilvēku labklājību, kas var novest pie altruisma.

Majers un Salovejs (Mayer, Salovey 1997) apraksta empātiju kā spēju identificēt citu cilvēku, mākslas darbu u.c. emocijas; spēja atšķirt starp tiešām un netiešām vai godīgām un negodīgām jūtu izpausmēm. Dotais skaidrojums ir interesants ar to, ka tas empātijā iekļauj izpaužamo jūtu tiešuma un godīguma izpratni, kas norāda uz dziļāku cita cilvēka emociju analīzes līmeni, nevis vienkārši šo emociju iemeslu vērtējumu.

Kad empātija tiek skaidrota caur paralēlu emociju jēdzieniem, empātija tiek izskatīta kā emocionālās izpratnes forma. Empātiska persona redz citas personas vajadzības vai sāpes, vai dzird par tās neveiksmi, novēro citas personas situāciju no tās personas perspektīvas un, izrietot no tā, empātiska persona arī izjūt šīs jūtas. Tādēļ, ka šīs emocijas ir paralēlas, empātiska persona, vispārīgi izsakoties, emocionāli (iekšēji) saprot, ko pārdzīvo cita persona (Eisenberg, Strayer 1987). Ticis skaidrots, ka sevis kā personības iemiesojumu pasaulē apzināšanās, ir pamatota uz empātiju – personas empātiska izziņa par citiem un citu empātiska izziņa par personu (Thompson 2001).

Pētījumos ir uzrādīts (Prinz 2007), ka pastāv pozitīva korelācija starp to cik izteiktas empātiskas rūpes persona izjūt pret citu personu (vai grupu) un tās vēlmi palīdzēt citiem pat tad, kad palīdzība paredz kādu personīgo upuri (laiks, pūles, nauda utt.). Daudziem cēlākajiem cilvēka uzvedības piemēriem, tai skaitā palīdzībai svešiniekam, ir empātiskas saknes (cilvēku suga nav vienīgā, kas sniedz palīdzību citiem, tiem nonākot ciešanu situācijā). Iejūtīguma pētījumi izsauca debates par to vai iejūtīgums un empātiska palīdzība ir patiesi altruistiskas vai, savtīgu atlīdzību motivētas, piemēram, samazinot savu personīgo diskomfortu, ko izraisa citas personas situācijas, vai stāvokļa redzējums vai nodrošinot sabiedrības cieņu vai cerību savstarpējai palīdzībai nākotnē. Mēģinājumi atrisināt to, vai palīdzība citam ir nesavtīga vai egoistiska rīcība, sarežģī tas faktors, ka personīgā interese un izdevīgums var ņemt virsroku. Empātijas kognitīvā puse centrējas uz citas personas prāta problēmas ideju, kas balstās uz to, ka personas domas ir tikai konkrētās personas domas un nevar tieši piekļūt cita prāta saturam. Kognitīvā empātija attiecas uz to, kādā mērā tiek uztverts un vai ir pierādījumi, ka persona veiksmīgi nojauta kādas citas personas domas un jūtas.

Tātad empātijas būtības pamatā, ko atbalsta lielākā daļa empātijas pētnieku, ir spēja just citas personas jūtas (Wondra, Ellsworth 2015). Persona var justies skumji kopā ar kādu, kurš jūtas skumji (empātija) un arī just raizes (līdzjūtība) un var justies priecīgi, jo kādam ir priecīgi (empātija) un nejust raizes, jo nekas slikts nav noticis. Dotajā gadījumā empātijas termins neiekļauj kognitīvo empātiju (Preston, de Waal 2002). Empātiju traktē tāpat kā emocionālo atbildi, kas notiek dēļ citas personas emocionālā stāvokļa, vai tā ko tas pieļaujami varētu just, izpratnes (Eisenberg 2002). Tādā veidā empātijā iekļauj cita cilvēka jūtu paredzēšanu, secinājumi par kuriem tiek veikti uz situācijas un citas personas īpatnību analīzes pamata, kas pēc paša domām atbilst realitātei, atbilstoši tam, empātija ir būtisks elements dažādu profesiju ietveros.

Pētījumos ir atklātas empātijas izteiktības atšķirības starp dažādām palīdzošajām profesijām, kur sievietes uzrādīja augstāku empātijas līmeni, nekā vīrieši (Mehrabian, Epstein 1972; Kliszcz, Hebanowski, Rembowski 1998; Barnsley et.al. 1999; Abbott 1983; Hojat 2007). Tika atklāts, ka vīriešu dzimuma respondentu vidū palielinoties vecumam tiek novērots, ka samazinās empātijas līmenis, savukārt sieviešu dzimuma respondentu vidū tika konstatēta pretēja sakarība – empātiskuma pieaugums saistīts ar vecuma pieaugumu (Michalska, Kinzler, Decety 2013). Balstoties uz sabiedrībā pieņemtiem stereotipiem, sievietes ir pieņemts uzskatīt par emocionālākām, salīdzinot ar vīriešiem, un attiecīgi arī empātijai sievietēm būtu jābūt izteiktākai.

Ir veikti pētījumi, kas ietver gan altruisma, gan empātijas pētniecību, kā arī ietver saiknes pētīšanu starp abām šīm parādībām. Pastāv nozīmīgi empīriski pierādījumi, kas atbalsta ideju, ka nesavtīga, altruistiska uzvedība eksistē – šis "tīrais" altruisms ir saistīts ar empātijas jūtām pret cietušo. Kad palīdzošās personas mērķis ir paaugstināt personīgo labklājību, sasniegt sava veida pašapbalvojumu vai izbēgt no soda, tad palīdzošā uzvedība ir egoistiski motivēta. Empātija ir cēloniski saistīta ar tīro altruismu, bet ne ar egoistisku palīdzošo uzvedību (Nelson 1999). Atklāts, ka morālais piepildījums un citu cerību attaisnošana izrādījās kā altruistiskas personības faktori (Bierhoff, Rohmann 2004).

Iepriekš pētīta saikne starp emocijām un motivāciju jeb empātiju un altruismu, kā rezultātā tika apgalvots, ka daudzas, ja ne visas, emocijas parādās uz mērķi orientētas

aktivitātes kontekstā un specifiskas emocijas var tikt diferencētas pēc sasniedzamā mērķa un emocijas pozīciju attiecībā pret mērķi (Batson, Shaw 1991).

Pētījumā par bērnu empātijas un altruistiskas uzvedības attīstību (Harrington, Bramham, O'Connell 2015) tika atklāts, ka emocionālā empātija pozitīvi korelē ar altruismu, kā arī kognitīvā empātija un emocionālā empātija pozitīvi korelēja kā savā starpā tā arī ar vecumu. Nedaudz augstāka šī korelācija ir starp vecumu un tieši emocionālo empātiju. Atklājās arī atšķirības starp emocionālo empātiju atkarībā no dzimuma. Pētījumā atklājās, ka emocionālā empātija un vecums nozīmīgi prognozē altruismu. Pētījumā atklātā korelācija starp emocionālo empātiju un altruismu nodrošina zināmu atbalstu empātijas altruisma hipotēzei (Batson, Polycarpou, Harmon-Jones, et. al. 1991), kura pamatojas uz to, ka cilvēka altruisma motivācijas pamatā ir empātiskas raizes par citiem. Arī kognitīvai empātijai ir būtiska loma šajā hipotēzē, jo tā atvieglo fokusēšanos uz otru personu kā uz centrālo aspektu.

Ruštona un līdzautoru (Rushton et al. 1986) pētījumā noskaidrots, ka pastāv negatīva korelācija starp agresiju un altruismu, kā arī starp agresiju un empātiju. Pašpārliecība arī negatīvi korelēja ar šīm iezīmēm. Dotajā pētījumā tika uzrādītas atšķirības atkarībā no dzimuma un vecuma jeb altruisms un empātija nozīmīgi pieauga līdz ar vecumu un sievietēm tika konstatēts augstāks vidējais rādītājs empātijas izteiktībai, salīdzinot ar vīriešiem, bet zemāks agresijas vidējais rādītājs nekā vīriešiem.

Amerikā veiktā altruisma un empātijas pētījumā (Smith 2006), kas veikts divu gadu garumā, tika atklāts, ka sieviešu vidū altruisms ir izteiktāks. Pētot citus demogrāfiskos rādītājus, tika atklāts arī tas, ka altruisms ir izteiktāks starp vecākiem pieaugušajiem un starp personām, kuras ir izglītotākas jeb vismaz absolvējušas koledžu. Sievietes dotajā Amerikā veiktajā pētījumā izrādījās empātiskākas nekā vīrieši, bet vīrieši vairāk izpauduši altruistiskas mīlestības jūtas, kas uzrādīja to, ka dotajā pētījumā dzimumam nav nozīmīgas saistības ar altruistisku uzvedību. Vecums lielākoties netika saistīts ar empātiju, bet vecāki pieaugušie uzrādījuši izteiktāku altruistisku mīlestību un altruistiskas vērtības. Ilgstošākā altruistiskas uzvedības skalā jauni cilvēki uzrādīja vairāk palīdzošas rīcības. Ienākumi izrādījās nesaistīti ar empātiju un altruismu, toties laulātā statusam izrādījās neliela saikne ar empātiju.

Dažādu profesionālo orientāciju pārstāvji ne tikai atšķiras savā starpā kā personas, bet arī dažādas nodarbes paredz dažādas un pat pretējas psiholoģiskas iezīmes. Darbā tiek pielietota Klimova (Klimov 2004) profesionālo orientāciju tipu klasifikācija, akcentējot tieši cilvēks – cilvēks tipu, bet citus tipus jeb cilvēks – mākslinieciskais tēls, cilvēks – zināma sistēma, cilvēks – tehnika un cilvēks – daba, apvienojot vienā grupā ar nosaukumu cilvēks – priekšmets. Personām, kas pārstāv profesiju tipu cilvēks – cilvēks, pasaule tiek aplūkota no apkārtējās vides piepildījuma ar daudzveidīgiem, atšķirīgiem cilvēkiem, grupām, organizācijām un to mijiedarbības un attiecību puses. Dotā tipa profesiju pārstāvji galvenokārt vadās pēc tādām kopībām, ko raksturo cilvēku uzvedība, dzīvesveids, aktivitātes formas, kā arī veidi kā sakārtot un uzlabot sarežģīto cilvēka un sabiedrības dzīvi.

Ir veikti pētījumi, kas saistīti ar personu palīdzības meklēšanas vēlmi un to, kā tie novērtē personu, pie kuras jāvēršas. Piemēram, respondenti, kuru novērtējums attiecībā uz palīdzošo personu bija pozitīvs, saistībā ar tā iemaņām, spējām un uzticību šai personai, tad arī respondentiem izpaudās pozitīva noskaņa pret palīdzības meklēšanu,

salīdzinot ar respondentiem, kas negatīvi novērtēja un arī noskaņojums pret palīdzības meklēšanu izpaudās negatīvāks (Cash, Salzbach 1978). Balstoties uz iepriekšminēto, var spriest, ka dotā profesiju tipa pārstāvjiem, ļoti būtiska ir māka klausīties un sadzirdēt citus, saprast tos un izprast citu iekšējo pasauli – būtisks ir vērīgums attiecībā uz jūtu, prāta un rakstura izpausmēm. Klimovs (Klimov 2004) atzīmē arī to, ka būtiska ir spēja līdzpārdzīvot citam cilvēkam – spēja atkal un no jauna pārdzīvot tos notikumus, par kuriem jau iepriekš ir runāts, un piedāvāt savu attieksmi pret tiem.

Kopumā empātijas altruisma hipotēze nosaka to, ka empātijas jūtas pret citu personu rada altruistisku motivāciju, lai uzlabotu šīs personas labklājību. Dotajā hipotēzē empātijas jēdziens attiecas uz līdzjūtību, simpātiju, jūtīgumu un citām līdzīgām jūtām. Altruisma jēdziens attiecas uz motivāciju, kuras mērķis pats par sevi ir uzlabot citas personas labklājību (altruistiskus aktus ierasti dēvē par "labiem darbiem"). Dotā altruisma definīcija atšķiras no ierastā termina, kurš apzīmē palīdzēšanas aktu, kas iesaista palīdzības sniegšanu, ko pavada nozīmīgi personīgie tēriņi un zaudējumi pašai personai, kas sniedz palīdzību. Kopumā empātijas altruisma hipotēze ir iesaistījusi lielu pētījumu apjomu, kas atbild uz būtiskiem jautājumiem, piemēram, kāpēc cilvēki palīdz vai atsakās palīdzēt, un piedāvā ieskatīties lomās, kuras spēlē dažādi motīvu tipi, kas ir cilvēka sociālās uzvedības pamatā (Lishner, Stocks 2007).

Metodes

Dalībnieki

Pētījumā piedalījās 125 respondenti (82 sievietes; 43 vīrieši), nodarbinātie vecumā no 20 līdz 62 gadiem (M = 37,67; SD = 12,146). Pētījuma dalībnieki bija anonīmi, bet tie norādīja vecumu, dzimumu, profesiju, kā arī darba stāžu.

Procedūra un instrumentārijs

Lai pētītu altruisma un empātijas izteiktību tika organizēts pētījums, kura gaitā tika veikta altruisma un empātijas izteiktības noteikšana katram izlases respondentam, kas nodarbināti dažādās profesijās, attiecīgi pētījums tika veikts dažos etapos. Pētījumā tika pielietotas divas metodes: empātijas līmeņa novērtēšanai – Sabalansētas emocionālās empātijas skala (Balanced Emotional Empathy Scale (BEES), Mehrabian, Epstein 1972) dotajā aptaujā par empātijas objektiem kalpo sociālas situācijas ar cilvēkiem, kuriem pētāmais var līdzpārdzīvot ikdienas dzīvē. Altruisma izteiktības konstatēšanai pielietota Altruistiskas personības skala (The Self-Report Altruism scale (SRA), Rushton, Chrisjohn, Fekken 1981).

Pētījuma rezultāti

Izmantojot Kolmogorova – Smirnova (One – Sample Kolmogorow – Smirnov Test) testu tika konstatēts, ka pētījumā iegūtie rezultāti tādiem mainīgajiem kā vecums, empātija un altruisms atbilst normālam sadalījumam, jo $p > 0,05$, savukārt tādi mainīgie kā dzimums, darba stāžs un profesijas orientācija neatbilst normālam

sadalījumam, jo $p < 0,05$, kā rezultātā tika pielietots U Manna – Vitneja kritērijs un Spirmena korelācijas koeficients.

Atbildot uz pētījuma jautājumu "Kāda saistība pastāv starp altruisma un empātijas izteiktību personām, kas nodarbinātas cilvēks – cilvēks tipa profesijās un cilvēks – priekšmets tipa profesijās?" pielietojot Spirmena korelāciju, tika atklāts, ka starp šīm parādībām pastāv statistiski nozīmīga saistība ($r = 0,262$; $p = 0,034$) un pozitīvā korelācija norāda uz to, ka augstāks empātijas līmenis ir saistīts ar augstāku altruisma līmeni un otrādi. Savukārt cilvēks – priekšmets tipa profesiju grupā statistiski nozīmīga saistība starp altruismu un empātiju dotās pētījuma izlases ietvaros netika atklāta ($r = 0,159$; $p = 0,230$).

Atbildot uz otro pētījuma jautājumu "Kāda ir atšķirība starp altruisma un empātijas izteiktību personām, kas nodarbinātas cilvēks – cilvēks tipa profesijās un cilvēks – priekšmets tipa profesijās?" tika konstatēts, ka nepastāv statistiski nozīmīgas empātijas izteiktības atšķirības ($U = -1,807$; $p = 0,071$) starp respondentiem, kas nodarbināti cilvēks – cilvēks tipa profesijās un kas nodarbināti cilvēks – priekšmets tipa profesijās. Savukārt pētot to vai pastāv altruisma izteiktības atšķirība starp respondentiem, kas nodarbināti atšķirīgos profesiju tipos tika konstatēts, ka pastāv statistiski nozīmīgas atšķirības ($U = -2,979$; $p = 0,003$) starp altruisma izteiktību respondentiem atkarībā no to profesionālās orientācijas tipa (skat. 1. tabula).

Tabula 1

Empātijas un altruisma izteiktības atšķirības starp respondentiem nodarbinātiem atšķirīgos profesiju tipos

Atkarīgais mainīgais	Grupa	Vidējais rangs	U
Altruisms	cilvēks – priekšmets	52,81	2,979**
	cilvēks – cilvēks	72,11	
Empātija	cilvēks – priekšmets	56,85	1,807
	cilvēks – cilvēks	68,50	

** *p<0,01*

Avots: autoru izstrādāta tabula

Atbildot uz pētījuma jautājumu "Kā tādi mainīgie kā profesijas orientācija, darba stāžs, dzimums un vecums saistīti ar altruisma izteiktību?", tika iegūti sekojoši rezultāti (skat. 2. tabula). Pētot saistību starp altruisma izteiktību un vecumu, izmantojot Pīrsona korelācijas koeficientu, tika konstatēts, ka nepastāv statistiski nozīmīgas saistības starp pētāmajiem rādītājiem ($r = 0,140$; $p > 0,05$). Pētot saistību starp altruisma izteiktību un respondentu profesiju, izmantojot Spirmena korelāciju, tika konstatēta statistiski nozīmīga saistība ($r = 0,267$; $p < 0,01$). Pētot saistību starp pētāmo parādību un dzimumu, tika konstatēta statistiski nozīmīga saistība jeb korelācija ($r = 0,559$; $p < 0,01$), savukārt pētot saistību starp altruismu, un respondentu darba stāžu netika konstatēta statistiski nozīmīga saistība ($r = 0,169$; $p > 0,05$), kas norāda, ka nepastāv korelācijas starp mainīgajiem.

Tabula 2

Spirmena un Pīrsona korelācijas koeficienti starp altruisma izteiktību un dzimumu, vecumu, profesijas orientāciju, darba stāžu

Mainīgie	1	2	3	4
1. Altruisms	–			
2. Dzimums	0,559**	–		
3. Vecums	0,140[a]	- 0,128	–	
4. Profesijas orientācija	0,267**	0,179*	0,042	–
5. Darba stāžs	0,169	- 0,153	0,951**	0,032

[a] Saistības pārbaudei starp altruismu un vecumu pielietota Pīrsona korelācija

* *p<0,05.*

** *p<0,01.*

Avots: Autoru izstrādāta tabula

Atbildot uz pētījuma jautājumu "Kā tādi mainīgie kā profesijas orientācija, darba stāžs, dzimums un vecums saistīti ar empātijas izteiktību?", tika iegūti sekojoši rezultāti (skat. 3. tabula). Pētot saistību starp empātijas izteiktību un vecumu, izmantojot Pīrsona korelāciju, tika konstatēts, ka pastāv statistiski nozīmīga saistība starp pētāmajiem rādītājiem (r = 0,239; p < 0,01) un dotā saistība ir pozitīva, kas norāda uz to, ka, jo lielāks respondentu vecums, jo augstāka ir empātijas izteiktība. Turpmāk, izmantojot Spirmena korelāciju, tika pētīta saistība starp empātijas izteiktību un respondentu profesiju, netika konstatēta statistiski nozīmīgas saistības (r = 0,162; p > 0,05). Pētot saistību starp pētāmo parādību un dzimumu tika konstatēta statistiski nozīmīga saistība (r = 0,401; p < 0,01), un šī korelācija izrādījās pozitīva, savukārt pētot saistību starp empātiju un respondentu darba stāžu tika konstatēta statistiski nozīmīga saistība (r = 0,185; p < 0,05), attiecīgi augstāka empātijas izteiktība ir saistīta ar augstāku darba stāžu.

Tabula 3

Spirmena un Pīrsona korelācijas koeficienti starp empātijas izteiktību un dzimumu, vecumu, profesijas orientāciju, darba stāžu

Mainīgie	1	2	3	4
1. Empātija	–			
2. Dzimums	0,401**	–		
3. Vecums	0,239[a]**	-0,128	–	
4. Profesijas orientācija	0,162	0,179*	0,042	–
5. Darba stāžs	0,185*	-0,153	0,951**	0,032

[a] Saistības pārbaudei starp altruismu un vecumu pielietota Pīrsona korelācija

* *p<0,05.*

** *p<0,01.*

Avots: Autoru izstrādāta tabula

Iztirzājums

Šī pētījuma rezultāti radīja priekšstatus par saistību starp tādām psiholoģiskām parādībām kā empātija un altruisms kopumā. Pētījuma gaitā tika atklāts, ka respondentu vidū, kas nodarbināti cilvēks – cilvēks tipa profesijās empātija un altruisms ir saistīti savā starpā. Šāda veida rezultāti ļauj paredzēt to, ka, iespējams, pētāmās parādības attiecas pie tām psiholoģiskajām iezīmēm, kas ietekmē un iespējams pat nosaka profesionālo orientāciju, pie kuras pieturās personas darba meklēšanas procesā.

Tika atklāts, ka altruisms ir saistīts ar profesijas orientāciju, kas skaidrojams ar to, ka cilvēks – cilvēks tipa profesiju pārstāvjiem dotajā izlasē ir raksturīga augstāka altruisma izteiktību. Altruisma izteiktība izrādījās saistīta ar dzimumu, kas netika konstatēts citu autoru pētījumos (Smith 2006; Rushton 1976; Chou 1998) un tika atklāts, ka pētījuma respondentu vidū augstāks altruisms izrādījās raksturīgāks vecāko un jaunāko vecuma grupu ietvaros, kas sakrīt ar cita autora veiktiem secinājumiem tā pētījuma rezultātā (Smith 2006).

Dotajā pētījumā tika konstatēts, ka augstāks vecums un lielāks darba stāžs ir saistīti ar izteiktāku empātijas rādītāju. Šādu empātijas un vecuma saistību ir konstatējuši arī citi autori (Harrington, Bramham, O'Connell 2015; Michalska, Kinzler, Decety 2013), kas var būt saistīts ar to, ka emocionālā sfēra ar gadiem un ar pieredzi paliek attīstītāka un personas lielākā mērā spēj izprast citu jūtas.

Pētījumos, kas tika analizēti teorētiskajā daļā, nereti tika secināts tas, ka sievietes ir empātiskākas nekā vīrieši (Rushton et al. 1986; Smith 2006), ka sievietēm ir raksturīgs arī izteiktāks altruisms (Stamps, Boley Cruz 1994), bet dotajā pētījumā tika atklāts pretējais, par labu vīriešu dzimuma respondentiem, kas nonāk pretrunā ar citu autoru pētījumu rezultātiem. Šādas atšķirības var skaidrot, pirmkārt, ar pētījuma metožu atšķirīgumu, otrkārt, ar to, ka, salīdzinot ar sievietēm, vairums vīriešu dzimuma respondentu norādīja savu profesionālo piederību tieši cilvēks – cilvēks tipa profesijām, kas ļauj domāt, ka tieši profesijas orientācija kalpo kā nozīmīgs faktors, kas nosaka pētāmo parādību izteiktības atšķirības starp dzimumiem.

Dotajā pētījumā atklātā saistība starp altruismu un empātiju kopumā ir nozīmīga tā kā, par to iepriekš ir rakstījusi virkne autoru (Batson, Polycarpou, Harmon-Jones, et. al. 1991; Batson, Early, Salvarani 1997; Nelson 1999; Prinz 2007; Lishner, Stocks 2007; Troickaia 2011; Harrington, Bramham, O'Connell 2015). Šādi rezultāti var tikt attiecināti uz citu autoru aprakstīto empātijas altruisma hipotēzi, kuras ideja balstās uz to, ka altruistiskas motivācijas pamatā, ir empātiskas jūtas pret citu personu un atklātā saikne kalpo kā pamatojums tam, ka šāda hipotēze pētnieciskā veidā var būt apstiprināma, bet šī pētījuma ietvaros, šī hipotēze attiecināma tikai uz respondentiem, kuri nodarbināti cilvēks – cilvēks tipa profesijās.

Pētījuma gaitā tika konstatēts zinātnisko pētījumu trūkums saistībā ar altruisma un empātijas pētniecību dažādu profesionālo orientāciju kontekstā, kā starp Latvijas iedzīvotājiem, tā arī starp citu valstu iedzīvotājiem. Dotais pētījums ļauj iedziļināties jaunā pētāmo parādību plaknē, to saisībā ar virkni sociāli demogrāfiskiem faktoriem un to savstarpējā saiknē, izvirzot attiecīgu pētījuma mērķi un četrus pētījuma jautājumiem, kas ļauj sasniegt pētījuma mērķi. Šis pētījums ļauj dziļāk izprast empātijas un altruisma būtību, saskatīt pētāmo parādību saistību, kā arī izprast šo parādību izteiktības saistību ar profesionālās orientācijas tipiem.

Secinājumi

1. Atbildot uz pirmo pētījuma jautājumu "Kāda saistība pastāv starp altruisma un empātijas izteiktību personām, kas nodarbinātas cilvēks – cilvēks tipa profesijās un cilvēks – priekšmets tipa profesijās?", tika konstatēts, ka pastāv saistība starp altruismu un empātiju respondentu grupā, kas nodarbināti cilvēks – cilvēks tipa profesijās (r = 0,284; p < 0,05), savukārt saistība starp pētāmajām parādībām cilvēks – priekšmets tipa profesiju ietvaros netika konstatēta (r = 0,096; p > 0,05). Cilvēks – cilvēks profesiju tipa pārstāvju vidū tika atklāta arī augstāka empātijas un altruisma izteiktība, salīdzinot ar respondentiem, kas pārstāvēja cilvēks – priekšmets tipa profesijas. Šādi rezultāti var liecināt par to, ka pētāmo parādību mijiedarbībai ir lielāka nozīme tieši cilvēks – cilvēks tipa profesijās.
2. Atbildot uz otro pētījuma jautājumu "Kāda ir atšķirība starp altruisma un empātijas izteiktību personām, kas nodarbinātas cilvēks – cilvēks tipa profesijās un cilvēks – priekšmets tipa profesijās?" tika konstatēts, ka altruisma izteiktībai pastāv statistiski nozīmīga atšķirība atkarībā no profesionālās orientācijas (U = -2,979; p < 0,01) un altruisms ir izteiktāks respondentu vidū, kas nodarbināti cilvēks – cilvēks tipa profesijās, bet empātijas izteiktībai nepastāv nozīmīgas atšķirības (U = -1,807; p > 0,05) atkarībā no profesionālās orientācijas.
3. Atbildot uz trešo pētījuma jautājumu "Kā tādi mainīgie kā profesijas orientācija, darba stāžs, dzimums un vecums saistīti ar altruisma izteiktību?", tika secināts, ka profesijas orientācija ir saistīta ar altruisma izteiktības līmeni (r = 0,267; p < 0,01) jeb personām, kas nodarbinātas cilvēks – cilvēks tipa profesijās raksturīgs ir izteiktāks altruisms, kā arī tika secināts, ka starp altruismu un dzimumu konstatēta nozīmīga saistība (r = 0,559; p < 0,01), kas norāda uz to, ka altruisma izteiktība ir augstāka vīriešu vidū. Ar citiem mainīgajiem nozīmīgas saistības netika konstatētas.
4. Atbildot uz ceturto pētījuma jautājumu "Kā tādi mainīgie kā profesijas orientācija, darba stāžs, dzimums un vecums saistīti ar empātijas izteiktību?", tika secināts, ka starp empātijas izteiktību un dzimumu konstatēta statistiski nozīmīga saistība (r = 0,401; p < 0,01), kas norāda uz to, ka empātijas izteiktība pētījuma izlasē ir augstāka vīriešu dzimuma respondentu vidū. Tika konstatēta arī saistība starp empātiju un vecumu (r = 0,239; p < 0,01), kā arī empātiju un darba stāžu (r = 0,185; p < 0,05), šie rezultāti saistīti ar to, ka augstāks respondentu vecums un augstāks darba stāžs korelē ar augstāku empātijas izteiktību respondentu vidū. Ar citiem mainīgajiem nozīmīgas saistības netika konstatētas.

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