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## POWER GRIDS AS A PREREQUISITE FOR EFFICIENT ENERGY MARKETS

Alena BAŠOVÁ

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### **Abstract**

*Smart grids and management of demand are primarily envisioned as a huge jump in development communication and information technologies with aim to increase grid reliability and to allow integration of production of various smart grid resources of electricity such as renewable resources, demand response, electricity storage and electricity transportation. Based on many researches aimed at of the reliability impacts of these resources, it is concluded that an ideal mix of the smart grid resources leads to a flatter net demand that developed reliability issues further. An architectural approach of this smart grid net is essential to the transformation of the grid to a "smarter grid" similarly as was, for example, with the iPhone architectural.*

### **Key words:**

*Smart grid, management of demand, liberalized electricity market.*

**JEL Classification:** O12, O25, O44

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### **Introduction**

Energy management plays a crucial role in securing the necessary system flexibility for dealing the ongoing integration of simple energy market in EU. Demand Response (hereinafter DR) programs are the important flexibility tool for market price volatility to the end-consumers. In such conditions, this energy management system helps in using of flexible end-equipment's, which make possible the individual consumer's personal preferences and beliefs. We apply the one of the first large scale natural experiments, with multiple dynamic pricing schemes for the end consumers. The energy sector is going through many of quick and radical transformations to meet the growing energy demands. The future of the energy sector will be formed by a transformation in the electricity and natural gas sectors, which will be as challenges for traditional electrical and gas power systems. This movement of changes have a complex nature, but it requires a great support of the transition of the electricity grid faces decentralized production from renewable sources, electric mobility, and related innovations. These are at opposite from traditional power systems, where central large-scale generation of electricity faced inelastic consumer demand. (Cullen, J, M.

Allwood , J.M.2009). The European Union's efforts to create an integrated single market for electricity using the market coupling method as a basic mechanism for distribution transfer interconnection capacity.

### **Objective and Methodology**

The aim of paper is to demonstrate the impact of market coupling on the convergence of prices in related markets and the effects on the energy sector. Market coupling achieves the highest efficiency in the allocation of transfer capacity when the single market. Negative feature of electricity energy is it's the non-storability and volatile aspect to provide of sustainable energy sources. The future requests the shift from a demand-driven to a supply-driven market. On the retail side, end-consumers can offer demand flexibility on the grid by shifting their energy consumption to other times of the day, not on moments of peak demand.

### **SWOT analyse of Slovak energy sector**

EU member states have already approved investments to key infrastructure projects in the energy sector, so-called Projects of Common Interest (hereinafter PCI), and the funds will

come from the Connecting Europe Facility (hereinafter CEF). "The CEF is the one of important instrument, by which shows that the Energy Union could become a more efficient and greener community," stated Maroš Šefčovič. EU for improving electricity markets and building of smart grids EU has about 500 million Euros. The whole package will support 14 different projects - seven in the electricity sector, three in the gas sector, two in smart grids, and two project for reducing CO<sub>2</sub> emissions. EU in its evaluating Slovak energy sector stated increasing of interconnection capacity with neighbouring countries, market coupling with the Czech Republic, Hungary and Romania, as positive feature, which improved the stability of electricity prices. At same time EU shovd on reducing greenhouse gas emissions and increasing the share of renewables (RES) in line with targets set for 2020.

But on the other hand, EU as weakness stated a high share gas, oil and coal imports, as well as a high carbon intensity of the economy, especially in industry. Negatively evaluates the regulated final prices of electricity and gas for households and small businesses, what are still barriers for creating more competitive markets.

The EC states as opportunities in SR the building various north-south pipeline projects for example - Eustream, putting into operation reverse natural gas flow from the Czech Republic, Hungary, Poland and Austria, what will contribute to the increase energy safety. As well as a wide ranges of cost-effective investments in buildings with aim reduce energy intensity. As opportunities are listed RES programs, which can reduce import of energy sources from almost the only one gas source - from Russia. Positive feature are developing the transparency and predictability of the regulatory framework and increasing the attractiveness of the Slovak energy sector for investors, namely in gas storage capacity.

In addition to positive reports, the EU has critical views, especially on increasing electricity consumption in the summer months or unplanned circular flows. These facts can have a negative impact on the security of the transmission system. The heat affects the electricity transmission system and even the control of the electricity system by several ways. Weather with high temperatures is usually accompanied by an

increase in electricity consumption due increased use of air conditioners. Some power plants have subsequently great problems with drought and heat, what cause the negative effect of reducing their production. In summer, at the same time, due to law of physics the conductors and cables, are stretched and subsequently fall near to the ground. The Slovak Energy and Transmission System (hereinafter SETS) constantly monitored and data are collected in a central management information system (CIS) to ensure it 's safety and ability to distribute electricity to all consumers.

In a liberalized electricity market, it is necessary to create contracts for the supplies of electricity, which companies in grid will then provide. This is often not a problem in the single market, as the network is designed with sufficient capacity and there is usually no risk of congestion. In the case of two interconnected countries, at least two their transmission system operators shall be involved in the transmission line management. The electricity lines in the network consists of a fixed transport capacity through which electrical energy can be exchanged. Double congestion can occur on these lines:

- Physical overload, when it is technically impossible to meet energy demand. There are insufficient funds available for the production of electricity or its transmission, which leads to outages in the short term. However, the problem of outages can only be solved in the long term by investing in generation or transmission capacity.
- Economic congestion, is a situation when it is technically possible to satisfy the demand for electricity everywhere, but the planned financial transactions are not sufficient to protect load on the network, which in one place of the network will exceed its capacity. In order to meet the demand, the volume of electricity have to be sent by the generator must be adjusted, according to the required market conditions. The management of such congestion consists of operational interventions regulating the volume of electricity production. (Kurzidem, M. J. 2010).

The flow of electricity from the producer to the final consumer passes through a number of

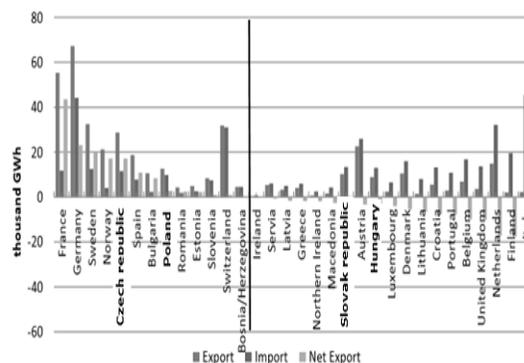
parallel routes. In a highly interconnected European network, the transactions between interconnected countries do not necessarily flow directly among countries, but the transfer of electricity will follow through different route. Transfer processes are controlled through individual methods to avoid overload. This problems with management of demand and flows of electricity are another negative problems, so called the circular flows of electricity, this a phenomenon is caused by the insufficient infrastructure within the interconnected system. This problems is caused by the common German-Austrian trade zone, where the capacity is allocated automatically, regardless of the impact on the surrounding, neighbouring countries, which are suffered with this problems. (Bryce, R. (2010)). Agency for Cooperation of Energy Regulators (hereinafter ACER) has already proposed the division of these zone. In countries of V4 countries have gradually put into operation phase shift transformers (hereinafter PST), that divert part of the electricity power.

### 1. Management of Demand

Management of demand allows consumers to reduce their high prices conditions in the electricity grid, mainly during peak load or congested operation. If a part of their consumption could be “consumed” at a more appropriate time, so we have a flatter, less risky load. (Koolen, 2017)

In Europe, the cross border electricity trade is deferent among regional interconnected markets. This diversity is shown in the chart below. Providing an overview of the amount of electricity in GW / h that is exported and imported in countries across Europe. The chart is a summary of monthly data for 2016 and its focus is on the physical, real flows of energy. European Network Of Transmission System Operators For Electricity (hereinafter ENTSO-E) defines the physical flow of energy as the real movement of electricity between neighbouring countries on foreign routes.(European Network Of Transmission System Operators For Electricity, 2015).

Figure 1: Import and export of electricity in EU



Source: (Entso-E. 2015)

The chart shows that the largest exporters of electricity in Europe are France (net exports around 43.516 GW / h), the source of production is mainly nuclear power plants. In second place is Germany (net exports of approximately 23,096 GW / h) from Eastern European countries, the Czech Republic is a major exporter.

The electricity supply chain begins with its production. The methods of electricity generation are highly dependent on the geographical location, mineral wealth but also on the legislative - political framework. Energy policy, as part of national economic policy, can dampen certain energy sectors (fossil fuels) or support the development of new advanced ways of producing clean, green energy in line with the Europe 20-20-20 strategy. Energy sources we obviously divide fossil fuel sources (coal, oil, gas), nuclear power plants, hydroelectric power plants, renewable sources including hydropower, wind, photovoltaic systems, solar and thermal, and some others such as geothermal or tidal energy.

Countries with access to the sea, such as France, Germany and Denmark, have a high proportion of offshore wind farms. Their share in the total volume of energy produced - the energy mix - has rapidly increased in recent years. Due to the electricity cannot be stored, the remaining energy is diverted through regional interconnected markets. Germany and Switzerland have already stopped production of nuclear power plants. In contrast, in France, nuclear energy still accounts for a significant share of energy production. There is a unique energy mix for each country.

The market coupling method brings more efficiently complementary methods for energy generation. If, for example, a storm occurs in Germany during the night and more electricity is produced than is necessary, this electricity has to be rerouted to power plants in the Alps or in Norway or it is an opportunity to move this electricity to a place where volume of electricity is insufficient.

In most countries, thanks to the liberalization of energy markets, energy is produced by a wide range of companies of different sizes.

The markets coupling method and the development towards a single integrated market affects the situation of producers towards to increasing competition in the energy market. (Mirza, F. M., & Bergland, O. 2012) . Management of demand and supply has not been widely adopted yet, because contract based participation has been typically below 5% of peak load. Due this fact there is a network load, as we mentioned above. (Baltagi, 2013).

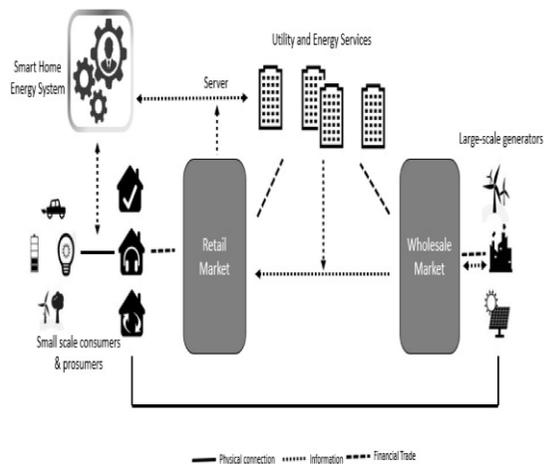
**Map 1: Management of Demand**



Source: (Geleen, D., Reinders, A., Keyson, D., 2013)

In a smart grid, management of demand is implemented automatic or manual response through price signals, or through a bidding process based on direct communications between the consumer and the market. (Ketter, W.; Collins, J.; Reddy, P. 2013). The demand can serve to flatten the load or it's can serve as an additional resource and it's management provides such schemes, which could improve reliability in smart grid.

**Figure 2: Management of demand in smart grid**

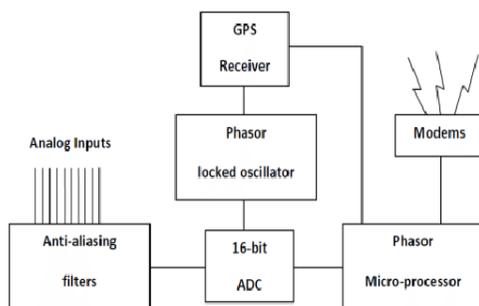


Source: (Gottwalt, S.; Ketter, W.; Block, C.; Collins, J.; Weinhardt, C. 2010)

Realization of the smart grid vision requires meeting goals with increasing reliability challenges by reliability of modern communication and information technologies to enable an advanced IT infrastructure. IT infrastructure provides coordinated monitoring and control of demand in smart grid.

Such IT infrastructure should be able to provide bidirectional communications among the individual loads in the grid-wide control centres including all important equipment at the distribution and transmission levels. Such system is able to solve almost all failures or interruption of electricity supply, so called black outs. This involves processing a great number of data transactions, which a high performance IT infrastructure capable provides fast intelligent local responses to prevent of rapidly evolving adverse events, above mentioned blackouts. (Greene, 2008). A smart-grid can connect the high performance infrastructure with local intelligent grid using modern IT technologies based on answer in second. (Dorsey, P.2018). This technology is utilizing phasor measurement (hereinafter PMU) for faster time-stamped, higher accuracy, sub-second scanning to enable timely grid-wide situational awareness.

Figure 3: PMU technology



Source: (Alcott, H. 2011)

Time synchronization is usually ensured by GPS or IEEE 1588 Precision Time Protocol, which make possible synchronized real-time measurements of multiple distant points in the grid. These time synchronized measurements in grid are very important because the grid's supply and demand are not perfectly matched and frequency imbalances could cause stress in the grid, which is a potential cause for power outages. PMUs can be used to measure the frequency in the power grid, what helps to engineers in their analysing dynamic events. Such measures could not be possible to realize with traditional SCADA measurements, because those realised one measurement each 2 or 4 seconds, what is not enough quick. (Phadke, 2002).

Thus, the PMUs are equipped with monitoring and control capacities and are considered as the one of the most important measuring instruments in the future of power systems - smart grids. (Kassakian, J. G. - Schmalensee, R. 2011).

There are several negatives of above described system, too, (LaCommare, K.H. and Joseph H. Eto, J.H. (2006).

- Overload of smart grid is driven by uncertainty, diversity and distribution of energy supplies due to environmental and sustainability concerns. The power flow patterns in real-time can be significantly different from those considered in the design PMU,
- More numerous and larger distributions on longer distances are increasing volatility and reducing reliability,
- The smart grid, which is being operated at its "edge" of more locations, we mean in several places of grid, at the same

time is not so safe and reliable due insufficient investment of infrastructure,

- Still increasing energy consumption and demand in peak creates limited transfer capacity,
- Aging infrastructure.

### Conclusion

It was not due of a few specific applications that "smarter grid" revolutionized the "grid" but for its architecture that led to an explosion of functionality. (Bichler, Gupta, Ketter, 2002).

This approach "Demand Response I or Management of Demand" is using a spectral clustering approach to show distinct groups of households with using the most dynamic pricing schemes: Time-Of-Use and Real-Time Pricing. The results indicate that a more effective design of smart home energy management systems can lead to a better fit between customer and electricity tariffs to reduce costs, to increase predictability and stability of demand flexibility by such systems.

Energy Management Systems (EMS), used in energy grids, can control the use of end-appliances and optimize the flexible range, based on the end consumer's personal preferences. Demand Response builds on the behavioural features of energy consumers through their communication through home energy systems. The effectiveness of such programs is largely affected by the willingness of end-users to be involved in such programs. Implementing customers to this system requires systematic communication and interaction between the energy provider and the people it serves, with the intent of building trust, respect, and achieving optimal **energy usage**<sup>1</sup>. It was not due of a few specific applications that "smarter grid" revolutionized the "grid" but for its architecture that led to an explosion of functionality.

In Smart grid is possible to manage Demand Response is using a spectral clustering approach to show distinct groups of consumers with using the most dynamic pricing schemes: Time-Of-Use and Real-Time Pricing. The results indicate that a more effective conception of smart home energy

management systems can lead to a better match between customers and electricity grids, which brings reduction of costs, led to increase predictability and stability of demand flexibility by such systems.

Energy Management Systems (EMS), which are used in energy grids, can control the use of end-equipment's and thus to optimize the flexible range, based upon the end consumer's personal preferences Demand Response is built on the behavioural features of energy customers through their home energy systems. (Darby, S., 2010). The effectiveness of such processes is mostly affected by the willingness of end-users - customers to be involved in such programs. (Victor, Pugh, T., 2013).

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The Single European Market should be to involve the contracts on the price of electricity and the transfer contracts in order to increase the efficiency of the overall process. Market coupling leads to increased competition in the

electricity markets as it facilitates the entry of new competitors on the market. After the introduction electricity grid the market power of producers can be reduced, price level declines and will improve the social situation of the population and other customers.

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## CHALLENGES OF DIGITAL TRANSFORMATION IN THE AGRI-FOOD SECTOR

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Žaneta SIMANAVIČIENĖ, Katarzyna KOWALSKA

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### **Abstract**

Technology has been completely revolutionizing the present era and digital transformation is expected to have a major impact on almost any industry. Agri-food industry SMEs which face everyday problems and which could be possibly solved by digitalization. Considering the fact that other industrial sectors are often more advanced in digitalization than the agricultural sector, this article aims to analyze the challenges existing in the process of digital transformation by SMEs in the agri-food sector in Lithuania. Considering that, hackathons have become increasingly popular in recent years as a modern tool for innovation, the research is based on HackAgriFood'19 hackathon use case. It has attracted the attention of more than 60 SMEs acting in the Agri-food industry actively. As a result, challenges of adaptation of digitalized products and services by Agri-food sector SME's were identified and they are presented in this article.

### **Key words:**

Digitalization, digital transformation, agri-food, hackathon SMEs, Industry 4.0.

**JEL Classification:** F63, O13, O32, O33

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### **Introduction**

A number of important technological and organizational trends leads to digital transformation that gradually permeates all sectors, including the agri-food sector. The digital transformation has the potential to empower small-scale farmers (CEPS, 2019), but lack of skills, time, competences and resources connected with management, financial resources, market information and digital capabilities are only some examples of internal and external challenges connected with digital transformation.

European economy is driven by more than 25 million SMEs representing 99.8% of all EU enterprises (EASME, 2019) and digital transformation can bring new opportunities for SMEs, not only for big enterprises. Companies need to rapidly learn and incorporate innovative ideas into new products and services. According to Powell (2017) digital technologies will lead to the next agricultural revolution, potentially reversing some of the most negative effects of the "green revolution" witnessed by the sector a few decades ago.

The article aims at identifying the challenges existing in the process of digital transformation by SMEs in agri-food sector in Lithuania which were identified during the hackathon.

### **Industry 4.0 and Digital transformation**

Technology has been completely revolutionizing the present era and digital transformation is expected to have a vast impact on almost any industry, digitalization can bring new opportunities for SMEs by improving the entire value chain (Kilimis, 2019). In scientific literature, authors emphasize the importance of industry digitization (Wang, 2016; Qin & Liu, 2016). They state that companies need to implement the latest technology. The fourth industrial revolution will have a monumental impact on the global economy, so vast and multifaceted that it makes it hard to disentangle one particular effect from the next (Schwab, 2016).

Digital transformation can be defined as a "a change in all job and income creation strategies, application of a flexible management model standing against competition, quickly meeting changing demands, a process of reinventing a

business to digitalize operations and formulate extended supply chain relationships; functional use of internet in design, manufacturing, marketing, selling, presenting and data-based management model” (Schallmo et al, 2018).

Digital transformation can significantly contribute to improvement of products and/or services, management of operations in a more efficient way. It can also trigger costs reduction or can help to a gain competitive advantage in the market. Ulas (2019) pointed out several driving factors expediting digital transformation that include, among others, globalization, advancement of technology and innovation, electronic commerce and social media. The idea of an interconnected world has also gained attention from the industry sector, and the vision of a fourth industrial revolution is emerging, popularly known as Industry 4.0 (Kang et al. 2016).

Experts highlight four areas for which digitization technologies will have the greatest impact: productivity, revenue growth, employment and investment (Rußmann et al. 2015). The development of Industry 4.0, artificial intelligence, Internet of Things (IoT), blockchain, cloud computing, augmented reality, 3D Printers, chatbots, Big Data and nanotechnology have been speeding up the process of digitalization.

Industry 4.0 is referred to the fourth industrial revolution where manufacturing process is digitized, machines are directly connected to each other and personalized manufacturing is possible (Ulas, 2019). Experts highlight four areas for which digitization technologies will have the greatest impact: productivity, revenue growth, employment and investment (Rußmann et al. 2015). The increasingly affordable hardware and software solutions accelerate the transition towards the smart and interconnected factory envisioned by Industry 4.0 (Almada-Lobo 2016).

Stoldt et al (2018) highlights that companies can implement two strategies to digitalize their business - transform their processes and production sites incrementally or implement radical change by exchanging entire processes and systems with fully digitalized ones. According to Stoldt (2018) SMEs typically do not have the economic strength to sustain such a revolution but are eager to employ novel technologies in their factories to raise their competitiveness.

### **Industry 4.0 in Lithuania**

Despite efforts, Europe’s role in the global data and platform economy is limited and the uptake of digital technology by SMEs is low: 90 % of SMEs and 60% of large companies are lagging behind (Berger, 2015). While Lithuanian manufacturing industry is enjoying a period of dynamic growth, rapidly rising labour costs and lagging productivity as well as dominance of low value-added technology sectors in manufacturing systems in Lithuania’s put considerable pressure on the competitiveness of the Lithuanian manufacturing sector. Strengthening automation processes in EU industry can lead to additional competitive pressure on Lithuanian manufacturing companies.

Lithuania stands quite high in the size of the manufacturing sector (Eurostat, 2014) and occupy leading positions (higher than the EU average 15%). Lithuania managed to sustain or increase the share of manufacturing in GDP (Eurostat, 2017). In regard to the structure of the manufacturing sector, Lithuanian manufacturing is heavily dominated (80% of total production) by the medium-low and low-tech sector (Eurostat, 2014), while in many other countries’ economies, half of their manufacturing output is generated by the medium-high and high-tech sectors.

Obviously that situation of the lowest share of high-tech industry in manufacturing output in the whole EU has to change and manufacturing sector has to improve this by investing in business structure improvements and reorienting to this type of enterprise creation (Bickauske, 2020)

There are signs that businesses in Lithuania underinvest in digitalization processes. However, in order to remain competitive, companies will have to rethink their strategies concerning future investments.

### **Challenges faced by SMEs in their digital transformation**

Digital transformation can bring new opportunities for SMEs and open up new growth paths for development. According to Sommer (2015), only big enterprises will be able to reap the benefits from Industry 4.0 and that small and medium-sized enterprises (SMEs) can quickly become the victims of Industry 4.0. Many of SMEs find it difficult to know in which

technologies to invest and how to secure financing for their digital transformation. One of the most substantial contributions to future sustainability must come from a radical transformation of the agriculture and food (agrifood) value chain (CEPS, 2019).

Peillon and Dubrue (2019) propose a classification of possible barriers to digitalization for SMEs that include:

1. technical/technological barriers – related to financial limitations, lack of technical resources readily available that could easily upgrade and adopt digital technologies;
2. organizational barriers – connected to people’s unwillingness to change and need to change innovation management of key business operations, products, processes, organizational structures that require new competencies, resources, and collaborations
3. human resources-oriented barriers – linked to lack of qualified employees and lack of digital competences
4. customer-related barriers – associated with customers fear of a loss of control over information, such as privacy violations, security concerns and security of access to production and corporate systems.

Raymond (2005) listed the performance indicators that an SME can hope to improve after investing in new technologies: lower costs, improved quality, improved flexibility, improved productivity. Likewise, in his study of new technologies adoption in enterprises, Bayo-Moriones (2013) proposed a list of similar indicators with the addition of the criterion of reducing delivery lead times to this list. We therefore use the following performance indicators to measure the impact of Industry 4.0 on SMEs: flexibility, costs, productivity, quality and lead times. Despite that, SMEs feel lagging behind in digital innovation, its implementation process remains slow, and thus SMEs are at a risk of being left out from the digital supply chains. SMEs also tend to have misconceptions about the complexity and expense of digitalization (Kilimis, 2019).

Smaller enterprises will suffer because of the high investments needed, and the increased flexibility introduced by Industry 4.0 will allow bigger enterprises to steal market shares for customised products, a market segment now usually

dominated by SMEs (Rüttimann and Stöckli 2016).

Moeuf (2018) mention these industrial performance objectives of SME’s: flexibility, cost reduction, improving productivity, improving quality and delivery time reduction. According Moeuf (2018), flexibility is the most observed performance objective targeted by researchers, that could be surprising for practitioners, as flexibility is a common characteristic of SMEs that allows them to be differentiated from other firms.

### **Digital Transformation of Agri-food sector**

The application of digital and Industry 4.0 solutions in agri-food is very diverse – it can help to extend shelf life, monitor freshness, display information on quality, improve safety, and improve convenience - SMEs find it challenging to design new, digitalized business models adjusted to current economic realities. Rotz et al. (2018) focused on the technical and organizational challenges of digitalization in the agri-food. Moreover, they have problems in knowing which technology would be suitable for their business and how and where to find the right technology suppliers. SMEs of Agri-food sector are often located in rural areas with slow internet access and insufficient power supply. Lack of awareness, especially among the rural farmers, low level of digitalization of agri-food companies and low incomes of rural farmers, together with high costs of ICT infrastructure, insufficient personnel to handle ICT facilities and the absence of local content of language on internet are making digital transformation a challenge (Salampasis, 2013). On the other hand, the ICT companies are often located in urban areas, do not know technological needs of the agri-food sector and suffer the lack of knowledge on how to translate the benefits of digital solutions in an easy and understandable way.

Concerning the agricultural sector, multiple problems exist in the domain of agriculture, such as irrigation, the application of pesticides and fertilizers, and the monitoring of crops, land, and livestock (López-Morales, 2020). According to Brewster et al. (2012), a key challenge for ICT implementation in the agriculture industry is information management related to heterogeneity and very large number of actors along the supply

chain. Potential applications of ICT solutions in agri-food are very diverse, including, among others, software for supply chain or financial management, mobile applications for farm management, agricultural land use optimization, precision agriculture applications and other which fall into other categories of ICT-enabled services (Salampasis, 2013). Motivated by the digital transformation, the agricultural sector is providing its farms with new devices and services (sensors, actuators, weather information, drones, and satellite images) that allow for the optimization of the resources, to improve productivity and simultaneously reduce the impact on the environment (López-Morales, 2020).

Given that other industrial sectors are often more advanced in digitalization than the agricultural sector, it is useful to review innovations in other sectors as well. Cross-industry innovation, already existing solutions from other industries are creatively imitated and retranslated to meet the needs of the company's current market or products (Enkel, 2010).

This article aims to analyze the challenges faced by agricultural companies in Lithuania. In order to identify challenges in the agricultural sector in Lithuania, the hackathon method was used.

### **Hackathon - a method for challenge identification**

Recently, the necessity of interdisciplinary teams to address concrete challenges has become more and more apparent and hackathons are one of them. According to Oxford University Press (2020), hackathon is an event at which a large number of people work together developing computer programs, usually over several days. Hackathons are considered as emerging approach to supporting multidisciplinary innovation (Iqbal et al, 2018) and seen as an interdisciplinary experience where knowledge and skills gained could be applied in real world settings (Lyndon et al, 2018). Innovation requires extensive collaboration between a diverse group of stakeholders from disparate fields (Iqbal et al, 2018) and hackathon is a proper way to achieve this.

These events became widespread during the 2000s as software companies and venture capitalists used them to quickly develop new

software technologies, and to locate new areas for innovation and funding (Briscoe, 2014). The increasing application of digital tools in various environments have, and still are, reconfiguring organizational structures (Soltani, 2014).

Nowadays, hackathons can be implemented in many different ways. The most common elements that characterize hackathons are: (a) participants are organized into small groups that work intensely (sometimes around the clock), (b) a short time frame in which the project is taken from concept to prototype, (c) a centralized location where teams meet, work, and share resources and (d) support (technical, food, mentoring, etc.) provided by organizers and sponsors (Lara, 2016). Usually, the result of the hackathon is a created prototype for an innovative product, service or business model. One of the reasons for the popularity of hackathons is their symbiotic nature: everyone involved in a hackathon has the potential to benefit from it, including organizers, sponsors, and participants. (Lara, 2016). Innovation requires extensive collaboration between a diverse group of stakeholders from disparate fields (Iqbal et al, 2018) and hackathons provides a great opportunity for collaboration. Hackathons seduce and interpellate by enticing participants 'to subscribe to and desire their logic and to willingly and voluntarily participate in their ideology and practice' (Kitchinm 2011) through appealing to their sense of altruism and offering rewards, as opportunities, networks, friendship or prizes (Pernga, 2018). Being a part of the application of idea management and/or establishment of an ideation system, these ideation contests can be regarded as an early phase in the larger innovation processes undertaken by the firm (Cooper, 2008).

### **Methodology**

Hackathons have become increasingly popular in recent years as a modern tool for innovation. Therefore the research is based on HackAgriFood'19 hackathon use case. The case was chosen because it was the first hackathon, exclusively dedicated to Agri-food sector, in Baltic States. The event has attracted the attention of more than 60 SME's actively acting in Agri-food industry. This basically shows that the innovations and digital transformation definitely is a priority and the field of interest for the Agri-

food companies. The study was carried out between August and November in 2019.

The research has an exploratory character due to its novel topic and lack of similar studies in Baltic States. The studied companies were SME's from Agri-food industry based in Lithuania, but many of them having their offices in other Baltic states.

The information was gathered using expert interview method. Semi-structured interviews are a qualitative approach to collecting data. This method could also be described as an organized conversation that is guided by new information obtained. This case study is based on data collected during semi-structured interviews. These type of interviews helped to gather detailed and specific information from multiple perspectives on what challenges arise for the Agrifood SME's traveling the digitalization road. This research method is useful for understanding viewpoints of key stakeholders within an Agri-food sector because it allows the respondent to participate in the process and discuss concerns related to the research questions that are of primary importance to people acting in that particular environment. By digging deep into topic areas generated by participants, semi-structured interviews can help researchers understand how something occurs. The interviews were conducted with HackAgriFood'19 organizers, mentors and SME's owners, general managers, innovation and product managers. In total 100 experts have participated in the research.

### Empirical Data

"Digital agricultural revolution" is a new term explaining the changes as the traditional approach of the Agri-food industry is undergoing a fundamental transformation. As stated by Schwab (2016), by no doubt it offers significant opportunities through the availability of highly interconnected and data intensive computational technologies as part of Industry 4.0. Within it comes new struggles and challenges in adopting new ways.

HackAgrifood'19 stated main objective was to create new brake through innovations in Agrifood sector. To be the most efficient in pursuing the hackathon goal, it was decided to contact the most active Agri-food industry SME's which face everyday problems and which could be possibly solved by digitalization. More than 60 SME's

agreed to participate in the event and provide the teams with the challenges which need to be addressed. After gathering the information from companies there where six challenge topics created: data driven Agri-food; automatization, sensing and engineering; sustainability and efficiency; crowdfarming and sharing economy; post-harvesting; aquaculture. Based on these topics, during the interviews experts provided the challenges they think are faced the most.

### Agri-food sector SME's challenges

During the interviews almost all experts underlined the same global obstacles which arise no matter the type of Agri-food company during the process of adaptation of digitalized products and services.

Even though digital transformation of Agri-food sector is a highly prioritized topic, *the lack of understanding and picking the right digital skills* needed for the certain business is still a big deal. In many cases digital transformation is neglected simply because there is a low and in some cases even no understanding how digitalization should become the part of the business. How and where the technologies might help not only directly the SME's, but also to their end users, whom products and services are provided. Experts have pointed out that some SME's are more adaptable and easy transformable than others. It mainly depends on the business direct compatibility with digitalization. It is crucial to understand the potential of the digitalization for the SME's. Because in many cases it could lead to undesirable results or in worst case scenario cost the company more harm than good. So for successful transition careful analysis of processes should be performed by SME's decision makers to evaluate which digitalization steps would bring the biggest value for the company. Such a self-assessment could indicate the potential digital opportunities which could be directly applied to the company's structure.

*Recognition of the importance of digitalization* as such is another challenge. Experts agree that even though it seems very unlikely that one would not understand the role of the technology, the problem exists. It seems that Agri-food companies are very conservative in digital transitioning. In many cases for a company is quite hard to describe what digitalization should

really be. And it is not surprising since market is overfilled with different solutions, all being presented as digital transformation. Experts pointed out that it is in many cases forgotten that digitalization is not only about technology. For businesses it is important to remember that their customers' technologies usage increases rapidly every day. By saying that it should be pointed out that following everybody's direction to go digital, for SME' it is not a question of "if" anymore, it is rather a question of "when".

Agri-food industry players agree that they can be considered conservative towards technology. While mobile, social media, precision agriculture and remote sensing technologies are not new in Agri-food sector and have been used for a while. Big Data, cloud analytics, blockchain, deep learning, machine learning, Artificial Intelligence, robotics and autonomous systems bring meaning of the word "technology" completely to another level. The level where all the companies start to be concerned about how secure their data is and how can it be protected. So overcoming *the cybersecurity issue* becomes quite a challenge. This challenge is not easily handled for couple of reasons stated in the interviews. First of all it has always been quite a bit of distrust in Agri-food industry on cybersecurity. And now as the world becomes more and more digital, cyber-attacks are very common and by no means they bring much greater damage. So the consultation or even hiring the cybersecurity expert becomes a must for SME's. Which right away raises concerns not only on increasing expenditure, but the trust which must be built between a cyber expert and an SME. The data which must be protected is very sensitive since the business needs to be moved to the clouds. And another reason is that the most of the decision makers still do not except cybersecurity as a competitive tool that company could have. It is not yet seen as an advantage against competitors.

Lack of human (for example digital experts) and financial resources and the possibility of rising costs are one of the biggest fares for SME's aiming for digitalization in Agri-food sector. For many years agritech solutions have been seen as being expensive and in many cases they were. The perception of expensiveness and lack of trust in technology providers (which comes from not understanding the actual calculated costs) has created the thriving environment for such a

conception to grow. Despite overall mobile and internet services decreasing, affordability of technology products and services are still considered to be key barriers for digitalization adoption by most of the SME's. Experts agree that it needs to be put much effort to change that.

### Conclusion

There is no argument that AgriFood digital transformation is not easily achievable. SME's face many changes when pursuing the digitalization. The main challenges, as lack of understanding and picking the right digital skills needed for the certain business, recognition of the importance of digitalization and lack of human and financial resources were identified as the biggest challenges for digitalization in Agri-food sector during the research. Also, experts highlighted the importance of cybersecurity due to its growing importance related with Big Data, cloud analytics, blockchain, deep learning, machine learning, Artificial Intelligence, robotics and autonomous systems.

Digital Agri-food revolution, among all the sectors, is expected to deliver the highest impact in transforming the industry. It not only changes the way SME's handle their business, but also will transform the industry from the ground. The agrifood value chain is expected to change fundamentally. It will definitely affect market and change the way processing, retail, pricing and sales works. Consumer behavioural digitalization leaves no other choice for business but to adopt the technologies. Without moving forward, some SME's might not make it all.

There is no argument that AgriFood digital transformation is not easily achievable. SME's face many changes when pursuing the digitalization. With every change also come challenges for such a transforming strategy. SME's agree that the lack of understanding and picking the right digital skills are one of the most important bottle necks in digitalization. As the recognition of the importance of digitalization yet is one more very hard obstacle to overcome. Conservative view on technologies significantly slows down the chance to resolve the issues with cybersecurity, which might bring a lot of harm if unresolved. And finally the scarcity of the resources either human or financial brings out the fare of high technology costs. There is no doubt

that SME's which will remain the same and will not embrace the changing industry, sooner or later they will be disrupted themselves.

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## ENTREPRENEURIAL MOTIVATION AND THEIR IMPACT ON WORK COMPETENCY IN INDIAN RURAL AREA

*Dhanashree Katekhaye, Robert MAGDA, Farheen Naz*

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### **Abstract**

*The aim of this research is to analyse various barriers and problems faced by rural Indian entrepreneurs, as well as to find the impact of these problems on the working efficiency of those entrepreneurs who are living in rural area. This research also focus on to reconnoitre various aspects of rural entrepreneurship and its emphasized on the profile of rural entrepreneurs, identifying the motivation behind their entrepreneurial career, and pinpointing the problems they are facing with Indian perspective.*

### **Keyword**

*Rural, entrepreneurship, motivation, challenges, Maharashtra, India.*

**JEL classification:** *M1,R0,O1.*

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### **Introduction**

The formation of dynamism and wealth of a country depends on the competitiveness of their enterprises, and this is primarily based, with this regards, on the capability of the entrepreneurs and managers (Cuervo et al., 2008). An entrepreneur is a person who undertakes and operates a new enterprise and assumes accountability for some inherent risks (Gough, J. 1969). Entrepreneurship is a process of creating new wealth. This process focuses on discovery, creation, and profit exploitation of markets for goods and services. Therefore, entrepreneurship entails activities of an individual or a group aimed at initiating an economic enterprise, under legal form of business (World Bank 2010). Nearly 73 % of the total Indian population live in rural areas where agriculture and agriculture associated activities are the main sources of their living. The economic growth of the country mainly depends on the progress of rural areas and the standard of peoples living in this area.

Entrepreneurship play a vital role in the overall economic development of the country. On the contrary, many rural entrepreneurs are

facing various problems and challenges due to non-availability of essential amenities in the rural part of developing country like India. There is a rising need for rural entrepreneurs for industrial sector commenced by rural entrepreneurs are giving many employment opportunities to peoples. Institutions and peoples who promoting rural development now see entrepreneurship as a strategic development interference that could fasten the rural development process (Saxena, S. 2012). Due to lack of confidence level and decisiveness also affect rural entrepreneurship (Hookoomsing, D., and Essco, P. 2003).

### **Literature review**

“Necessity is the mother of invention “; likewise, motivation is the driving force for innovation behind invention. Starting from the 1950’s a huge amount of research work has been done to investigate the key factors driving motivation to entrepreneurship. Although, a lot of research work has been done nothing conclusive yet has been found. According to cited literature, there are two main factors/components pulling individuals in the

field of entrepreneurship are the “pull “and the “push factors. The principal push factors are dissatisfaction regarding current job status, lack of ample job opportunities, poor work schedule and salary returns. The push factors are individuals seeking self-employment, independence, developing confidence etc. (Segal, G, Borgia, D and Schoenfeld, J et al., 2005). Another dimension added to entrepreneurship motivation is analyzing the impact of environmental factors on motivation. Environmental factors like job instability, financial crisis may also act as the pulling force to self – employment. However, Shane et al 2003 cited that other than environmental factors the human mind plays the biggest role in undertaking motivation towards entrepreneurship. The risk to undertake the business, the uncertainties associated with it are evaluated by individuals based on their perspective understanding and evaluation of the situation (Reviewed by Shane, S., Locke, E and Collins, C. et al., 2003). The minds of the people, their intelligence, their individual variation in taking risk their willingness etc. influences the entrepreneurship deeply and its outcomes. The motivation shown by people towards their entrepreneurship is also mingled with external factors like opportunity costs, availability of resources, returns, expenditures etc. as well as the availability of the market (Reviewed by Shane S., Locke, E and Collins, C. et al., 2003). Other important factors, studied by sociologist is the need for achievement factor (Collins et al., 2004). Collins et al conducted a research in which we co-related the need for achievement factor with entrepreneur behaviors and motivational success. Collins conducted research at individual and group level to account for correlation between need for achievement and entrepreneur success. At the individual level, the need for achievement factor is challenged by many factors like individual goals, resources, targets, career prospects etc. and at the group level by group efforts, co-operation between members etc. However, no conclusive results could be found from these studies.

A study conducted by Sanchez et al., 2012 analyzed other factors co – relating to need for achievement. According to Sanchez et al., 2012 other components like need for competition, need for independence, internal locus control

play an important role in driving entrepreneurship motivation. Sanchez et al., 2012 collected data from small and medium sized companies to analyses the principal driving forces towards entrepreneurship motivation. The need for achievement can be bolstered by other factors like internal locus of control meaning the entrepreneur trust his capabilities and potential more than external elements. Also, the competitive spirit for doing better in their streams, for getting maximum profits, to outcast their fellow competitors increases their willingness and motivation to perform better and get maximum profits. Cumulative effect of these factors helps the entrepreneurs to make a good quality decision about their business. The ability to make decision is needed to the main catalyst regarding the proper functioning of the business.

However, keeping all these factors one side like it is stated; “a strong building lies on a strong foundation”. In context of business sector, the strong foundation is education attainment from the grassroots level i.e. setting up of new and good quality business courses, providing exposure to high class education in terms of books, lectures etc. (Sanchez et al., 2012). According to Stefanoic et al 2010, the main factors controlling the motivational spirit of entrepreneurs is categorized into 4 categories: extrinsic rewards, independence/autonomy, intrinsic rewards and family security. Stefanoic et al revealed that in different countries different entrepreneurs are motivated by different factors to fulfil their needs of achievement. In some countries, it is the job security, the income in other countries to increase autonomy etc. However, in the end the main motivation is to increase their profits and income and expand their share in the market.

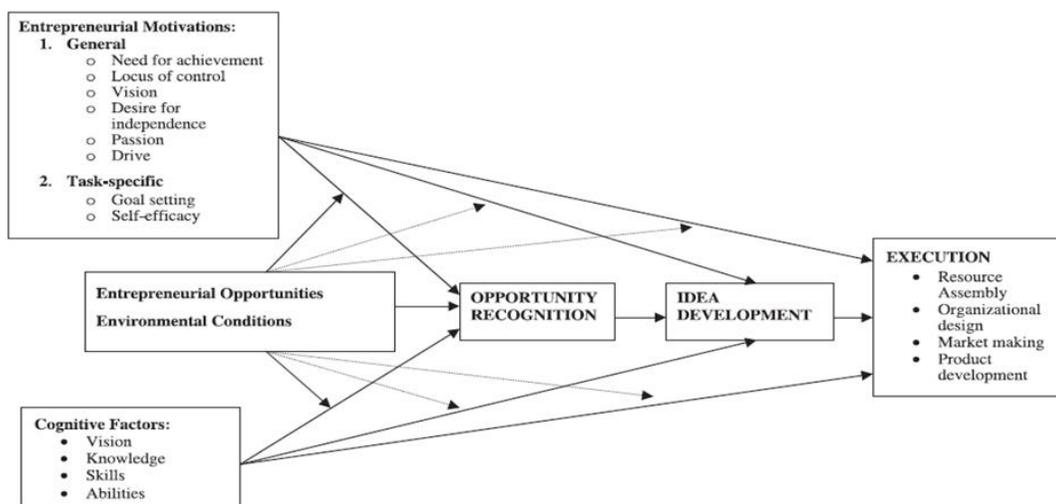
To sum up, the factors may be different but the main motivation is to increase the income expand these small and medium sized countries into big large profit-making machines. In the end, it is like a nuclear reaction, expansion of these small medium sized business not only benefit the entrepreneurs at a small scale but at the big level where they contribute to their own personal development as well globally establishing their market position and increasing economic benefits and profits.

### How motivations influence entrepreneurship

We initiate with the set of human motivations that psychologists have shown to influence Fig. 1) several features of human behavior. These embrace the motivations that we design at previous in the study, in specific, locus of control, desire for independence, passion, and drive. We recommend that entrepreneurship is a

course that initiates with the acknowledgment of an entrepreneurial occasion and is tracked by the growth of a knowledge for how to chase that chance, the assessment of the possibility of the chance, the advancement of the product or service that will be provided to clients, gathering of human and financial resources, organizational design, and the detection of customers.

**Fig. 1. Model of entrepreneurial motivation and the entrepreneurship process**



Source: Shane et al.,(2003)

We recommend that some or all of the motivations effect the evolution of peoples from one phase of the entrepreneurial process to another. In some cases, all of the motivations might matter. In other cases, only some of the motivations might matter. The relative extents of how much each motivation matters will likely vary, depending on the part of the process beneath

examination. In fact, it is probable that motivations that stimulus one part of the process have all of their effects at that period in the process and have no effects on later stages in the process.

### Materials and method

This research employed small medium entrepreneurship activities for development of

rural areas of India, the researchers chooses Maharashtra state as research area. The study is empirical and explanatory basically based on primary data collected survey moreover secondary data which is collected from various published sources such, journals, books, and various other publications, sample survey size was 115 participants from small and medium size enterprises registered with these District Industries Centre were selected on Simple Random sampling basis from Maharashtra state. Researcher use questionnaire and personnel interview as data collection tool and the data collected was subjected to quantitative analysis.

### Result and Discussion:

Demographic findings

*Table 1-Demographic Variables*

Sr no.	Characteristics	Frequency	Percentage
<b>1</b>	<b>GENDER</b>		
	Male	102	88
	Female	13	12
<b>2</b>	<b>AGE</b>		
	20-35	90	79
	36-45	13	12
	46-55	8	7
	56 and above	3	2
<b>3</b>	<b>HIGHEST LEVEL OF EDUCATION</b>		
	Secondary	19	16
	Diploma	33	28
	Bachelor degree	52	46
	Master degree	11	10
<b>4</b>	<b>MARITAL STATUS</b>		
	Single	43	37
	Married	72	63
<b>5</b>	<b>BUISNESS INDUSTRY</b>		
	Agriculture/Agro industry	56	48
	Manufacturing	31	27
	Service	19	17
	Handcraft	9	8

*Source: Calculated from primary data*

From table 1 it has been demonstrated that majority of the respondents i.e. 102 (88%) are males while females constitute only 13 respondents (12%) while 43 respondents (37%) are single and 72 respondents (63%) are married. Receive response implies that majority of 56 respondents (48%) are from agriculture sector while 31 respondents (27%) from manufacturing sector, 19 respondents (17%) from service sector and 9 respondents (8%) from handcraft sector.

The implication of this result is that majority of those who engaged in entrepreneurial activities are males it shows woman dominating Indian culture. While looking towards age structure the age of the majority 90 respondents (79%) of

those entrepreneurs range from 20 to below 35 years, followed by age range 36-45 that is 13 respondents (12%), age group ranging 46-55 years recorded 8 respondents (7%) and the least being age range 56 and above found only 3 respondents (2%). The result implies that most of the respondents are in their active and productive age.

**Table 2: Forms of business ownership**

Forms of business ownership			No. of respondents	Percentage
Sole proprietorship			82	72
Partnership	With family	23	31	26
	with friend	8	0	0
Cooperative Society			0	0
Private Limited Company			3	2
Total			115	100

*Source: Calculated from primary data*

Table 2 demonstrates that, as the form of business ownership sole proprietorship include 72% of participants and in the foremost situation. 31 (26%) of the respondents are in partnership form (23 of it with family members and 8 with

friends). From this it can be said that entrepreneurs in Maharashtra state are wanted to conduct their business by their own harmony. That is sole proprietorship is operated and managed by the owner.

**Table 3: Sources of start-up capital**

Sources	No of respondents	Percentage
Own fund	18	15
Finance from family	15	13
Loan from commercial bank	41	36
Loan from financial institutions	18	16
Both own fund and finance from family	23	20
Total	115	100

*Source: Calculated from primary data*

For the even working of an enterprise, adequate investment is an essential. According to (Charantimath, 2012) before initiating a business unit, it is important that an entrepreneur estimate its financial condition. He/she should scientifically estimate the fixed investment and working capital requirements. Table-3 shows that maximum of the respondent's source of investment include from family and own fund, which consists of 13% and 15% of the respondents interviewed correspondingly. Loan from a commercial bank (36%) represent huge

ratio and from financial institution contribute (16%). Another 20% uses both own fund and from finance from family.

**Motivation behind choosing the entrepreneurial career**

**Table 4: Who motivated them to be an entrepreneur?**

Motivators			No. of respondents	Percentage
Self-motivated			78	68
Friends			5	4
Family	Parents	7	24	22
	Siblings/Wife			
From social surrounding			7	6
Total			115	100

Source: Calculated from primary data

Most of the respondents (68%) mentioned that, they were self-motivated when they started their business, 4% were motivated from friends, while 22% of the respondents were motivated by their

family which include parents, wife and siblings ,Only 6% of the respondents are motivated by their friends (Table-7).

**Table-5: Challenges of entrepreneurs**

Statements	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Mean*	D*
Family members were not agree with my decision to be an entrepreneur.	46	32	6	2	10	.08	.94
I could not manage start-up capital very easily to start the business.	29	34	7	5	0	.16	.06
It is very hard to manage working capital	8	12	4	1	40	.92	.38
Required training/course facilities are not available	5	4	6	8	42	.96	.32
There are lacks different skills (management/ marketing etc.) to conduct the business	9	39	5	4	18	.89	.38
Political influences hamper my/our entrepreneurial activity	8	10	5	0	42	.25	.14
My suppliers are not very co-operative/supportive.	16	12	8	1	38	.81	.35
Infrastructural problems (water/electricity/gas/transportation etc.) are very hazarders to run the business	2	0	1	4	58	.4	.33
Inadequate technological knowledge creates obstacles in our way to do business	9	15	6	8	37	.16	.22

Source: Calculated from primary data \*Mean value greater than the midpoint of 5 or 2.50 indicates challenges.

\*Smaller SD (standard deviation) indicates lower dispersion among the responses in each statement.

Table 5 shows different problems that can hamper the way of rural entrepreneurs in their

path to success. Handling enterprise can occasionally be hampering to comprehensive the

social concern. That can increase scandalous language from family and this play a role of negative to inspiration. The preliminary consensus and frequent assistant is very much critical to endure the business successfully. In response to the declaration “family members were not agreeing with my decision to be an entrepreneur”- 46 of the respondents were strongly disagreeing with mean value (2.08) and the standard deviation (0.94) reveals that, rural are not facing problems by their family. That means, the entrepreneurs in India were getting co-operation of their family members. The result shows 34 of the respondents are disagree with the statement- “I could not manage start-up finance very easily to start the business”. The mean value (2.16) and standard deviation (1.06). being an entrepreneur, it is very important to manage working capital to manage everyday expenses. At this point, 51 of the respondents were agreeing with the statement- “It is very hard to manage working capital” mean value (3.92) and standard deviation (1.98) also reveals that, rural entrepreneurs are facing various problems to manage working capital. Getting training is important to the progression in occupation. 58 of the respondents were supportive with the statement- “Required training/course facilities are not available. The survey outcome shows that, 44 of the respondents are supportive with the statement “There are lacks different skills (management/marketing etc.) to handle the business.” Also, 9 of the respondents are strongly disagreeing with this declaration with Mean

value (2.89) denote the deficiency of diverse skills as challenge of rural entrepreneurs. Here the standard deviation is 1.38. We should understand that absence of managerial effectiveness can form straggler performance. To achieve labor, production, finance, research and development the management skill is enormous.

In response to the report- “Political influences hinder my/our entrepreneurial action.” 50 of the respondents are agreed with this and 42 are strongly with this statement with mean value (2.25) also designate it as a problem concerning entrepreneurial growth along with Standard deviation is 1.14. retorting the account- “My suppliers are not very co-operative/supportive,” 12 of the respondents are disagreed, and 16 are strongly disagreed with this report. Suppliers’ cooperation and support rarely necessity for the even movement of business process. occasionally the incorrect choice of position, insufficient water source, unequal supply of electricity and gas, transport can produce the random situation. “Infrastructural problems such as water, electricity, gas, transportation, etc.” This account covers mean value (4) and standard deviation (1.33) revealed it as a challenge there 54 of the respondents are agreed with the declaration and 58 strongly agree. In response to the account “Inadequate technological knowledge creates difficulties in our way to do business.” 48 of the respondents are agreed with this. The mean value (3.16) indicates a lack of technological know-how pose a challenge for rural entrepreneurs with the Standard deviation is 1.22 in this statement.

*Table 6: Major reasons to start business*

Motivation factor/ Reasons	No of Respondents	Percentage
To achieve profit	36	31
Become Independent	16	15
Have previous experience in business	4	3
Have innovative idea	3	2
Family business /Family tradition	9	8
Desire to utilize available resources	2	1
desire to provide security and a good future for the family	18	17

There is not sufficient opportunities in Govt jobs	11	10
want to utilize free time	4	3
Being employer provide job opportunism to other peoples	8	7
To upgrade social status	4	3
Total	115	100

*Source: Calculated from primary data*

In order to measure entrepreneurial motivation. As for the attitude towards the work they perform at the time of the research, the potential entrepreneurs consider that, although it is attractive and appreciated by the other citizens, it fails to secure them the long-expected income. The reasons which determine potential entrepreneurs to start a business are as diverse as the activities in which they choose to be involved. The results shows the main entrepreneurial motivations as resulted from the research we performed. The result shows that the most consistent group of 31 respondents have perception that entrepreneurship as a source of higher income (15%) respondents were attracted by the idea of being independent (17%). 18 entrepreneurs have another type of motivation lies in the desire to provide security and a good future for the family .Another category of entrepreneurs is constituted by what we may call “authentic entrepreneurs”, whose motivation lies in the desire to borrow and put into practice business models in the domains in which 4 respondents have experience (2%).On the contrary 9 respondents (8%)forced to become entrepreneur because of family tradition they have to continue the family business.3% of respondents majorly woman’s they want to utilize their free time and wish to support family by extra source of income. India is a country where everyone wants to work with government services for financial and job security but unfortunately looking towards Indian population government cannot provide jobs to everyone and private jobs that’s why nowadays individuals were entering into entrepreneurial activity from our study. 10% of respondents have opinion that there is not sufficient opportunities in Government jobs. 7% of respondents being employer would like to provide job opportunities to other local peoples, while 43% of respondents wants to become entrepreneur for upgrade their social status.

Results of this study designate that rural entrepreneurs in India generally face three types of problems like entrepreneurial/business problems, social/personal problems and technical problems. And all these three types of problems have negative relation with the working efficiency of rural entrepreneurs. The study

identified that 66% of the respondents are self-motivated to be entrepreneurs. The reasons to start business consist of- be self-dependent, extra income for the family, to run the family business, for economic freedom, etc. The study also finds out challenges in starting and continuing business of rural entrepreneurs that can obstruct the smooth functioning of it. Some of the challenges are- conservative social attitude, gender discrimination, lack of skills and training facilities, infrastructural problems, etc. This study has some implication for researchers in the area of entrepreneurship and rural entrepreneurship.

#### **Conclusion:**

In the present research work, we demonstrated that on the basis of analysis of data and discussion of their results it is concluded that rural entrepreneurs in India face problems such as entrepreneurial/business problems, social/personal problems and technical problems. This rural entrepreneur’s due to the deteriorating conditions cross the boundary of conservatism. The government should take further steps to improvise the advancement of them. What entrepreneurs from rural area need for enterprises are coordination from the family, financial support, and the motivation from the environment (society and government).

Without appropriate incorporation of entrepreneurs in a country’s economy, it is quite difficult to achieve the country’s targets. To make the route of rural entrepreneurship proper, it is imperious to introduce entrepreneurship courses in the educational institution Training is imperative for entrepreneurs so that they can avail updated technology as technology can save time and money and labor. As well as for new entrepreneurs should provide long term, collateral free loan and credit with low interest rate. For encouraging rural entrepreneurs, it is necessary to create opportunities and reduce barriers.

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## UNEMPLOYMENT OF PEOPLE WITH DISABILITIES IN SLOVAK REPUBLIC

Eva KOIŠOVÁ, Jana MASÁROVÁ, Karol KRAJČO

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### Abstract

*Being able to work and have a job is very important for everyone. This is especially important for people with disabilities. Some of these people are able to work at least part-time after removing certain obstacles. However, these people have great difficulty finding suitable employment in the labour market. This is related not only to their state of health, but also to their low level of education, frequent working capacity and various environmental barriers. The aim of the article is to evaluate the development of unemployment of people with disabilities in the Slovak Republic, its regions and districts. We use methods of time series analysis, synthesis and comparison. Our research has shown that the number of unemployed people with disabilities is fluctuating, with a decline in recent years. There are significant differences in the unemployment of people with disabilities in the regions and districts of the Slovak Republic*

### Key words

*Labour market. The people with disabilities. Unemployment. Job seeker with disabilities*

**JEL Classification:** E24, J64, R23.

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### Introduction

An important source of self-realization and a source of livelihood for a person is to have a job and to be employed. The work also contributes to personal development and a sense of usefulness. Social contacts and relationships are formed in the work environment. These facts are more important for people with disabilities than for other participants in the labour market. People with disabilities have a more positive approach to work, try to be consistent and are usually characterized by low turnover. Although the current situation on the labor market in the Slovak Republic is relatively favorable, there are nevertheless groups of people who have difficulty participating in the work process, whether due to insufficient qualifications, lack of experience, age, gender or disability. People with disabilities have a special position within the group of disadvantaged people on the labour market. These people have considerable problems finding employment on the labour market, as due to their state of health, they may also have difficult access to education, resp. to lifelong learning, which is essential in today's society.

The aim of this article is to examine and evaluate the development of unemployment of people with disabilities in the Slovak Republic and its regions and districts in the years 2000-2018. In evaluating this development, we use the statistics of the Central Office of Labor, Social

Affairs and Family. We use the method of time series analysis, comparison and synthesis. We have assessed regional differences in the level of unemployment of people with disabilities using the range of variation and the coefficient of variation. We have used Pearson's correlation coefficient to evaluate the relationship between the number of job seekers and the number of job seekers with disabilities.

### Theoretical aspect of employment issues of people with disabilities in the labour market at home and abroad

Disability is defined differently in the professional literature. According to Masárová and Španková (2006), a disability is a disorder of an individual's mental, physical or intellectual function with permanent consequences associated with limited educational ability, work ability, increased demands on health and social care and significantly reduced quality of life. Disability can be understood as a severe, permanent disorder of an important function (e.g. mobility, orientation, communication, etc.), which can lead to significant social disadvantage in participation in social life, even to complete social exclusion (Orgonášová, 2014). Restrictions resulting from disability can be understood as discrimination against these persons and thus difficult access to education, employment and social employment. Nevertheless, there are a large proportion of

people with disabilities who, if certain obstacles and disadvantages are removed, can work either full-time or part-time. The issue of the position of people with disabilities on the Slovak labour market is not neglected in the works of other Slovak authors such as Čmelíková, Španková and Živčicová (2005), Sekulová and Gyarfášová (2010), Orgonášová and Záhorcová (2012), Pawera and Štefancová (2013), Orgonášová (2014), Bakošová et al. (2017). Masárová and Španková (2006), Repková (2012), Brichtová and Repková (2014) and others dealt with the topic of people with disabilities within the issues of social services and social work.

The status of a person with disability extremely intensively influences the position of this person on the labor market (Orgonášová, 2014). People with disabilities have particularly serious problems finding suitable employment in the labour market. According to Bakošová et al. (2017) disability of a person basically refers to minimizing certain opportunities for people with disabilities, whether in the private, cultural or professional field. This disadvantage results from the disorder and limitation of the person with a disability. As stated by Pawera and Štefancová (2013), the main obstacles that affect the employment of these people in the Slovak Republic include low qualification or education, frequent incapacity for work of these people as well as environmental barriers or lack of prosthetic devices.

In the context of the development of society, higher levels of health care, new treatment methods and medical procedures make it possible to save the lives of people, who would not have survived in the past due to certain diseases or injuries. Orgonášová and Záhorcová (2012) point out that the group of people with disabilities is still growing as a result of the increased incidence of congenital disorders, injuries, as well as diseases of civilization. They also recall that in the third millennium, it is possible to adjust the environment so that these people are not excluded from society, but so that they have access to education and creative activity.

Many world authors also deal with the issue of the position of people with disabilities in society and on the labour market. Aytac et al. (2012) in their study evaluated the employment

of people with disabilities working from home for customs brokerage company in Turkey. Jetha et al. (2019) in their research focused mainly on the entry of young adults with chronic diseases into the labour market. Geiger et al. (2017) examined the successes and failures in reducing the employment gap for people with disabilities in Europe in 2002-2014. One of the reasons for the low employment of people with disabilities is the fear of companies to employ such people, the reluctance to adapt their work environment, the inability to communicate between healthy people with certain groups of people with disabilities, distrust in their abilities and others. In its study, the Institute for Research and Development on Inclusion and Society (2014) examined the employment of people with disabilities in Canada, and one of the findings is that most employers who have employed people with developmental disabilities have positive experiences with them. The study further shows that key benefits for employers in recruiting people with disabilities are their consistency, low turnover, positive attitude, pride in work and their positive impact on the diverse workplace culture and employer image in public. In his research, Turcotte (2014) focused on the participation of Canadians with physical or mental disabilities aged 25-64 on the labour market. He found that people with disabilities were less employed than people without disabilities, but in the case of university graduates, people with mild or moderate disabilities had almost the same employment rates as university graduates without disabilities.

Several authors examine the impact of the educational level of people with disabilities on the quality of life of these people, their employment, income and standard of living. Jones et al. (2011) examined the mismatch between disability and employment, income and job satisfaction in Australia in 2001-2008. Bliksvær (2018) examined the relationship between disability, level of education and employment. He notes that education can be a potentially effective means of reducing inequalities between people with disabilities and people with disabilities on the labour market. Sainsbury's and Coleman-Fountain (2013) emphasize that labour market participation through employment is considered to be one of the cornerstones of active citizenship for people

with disabilities. According to them, the level of education is one of the most important predictors of employment of people with disabilities, and therefore it is an effective way to improve the chances of people with disabilities on the labour market and reduce systematic differences in employment rates of people with disabilities and non-people with disabilities.

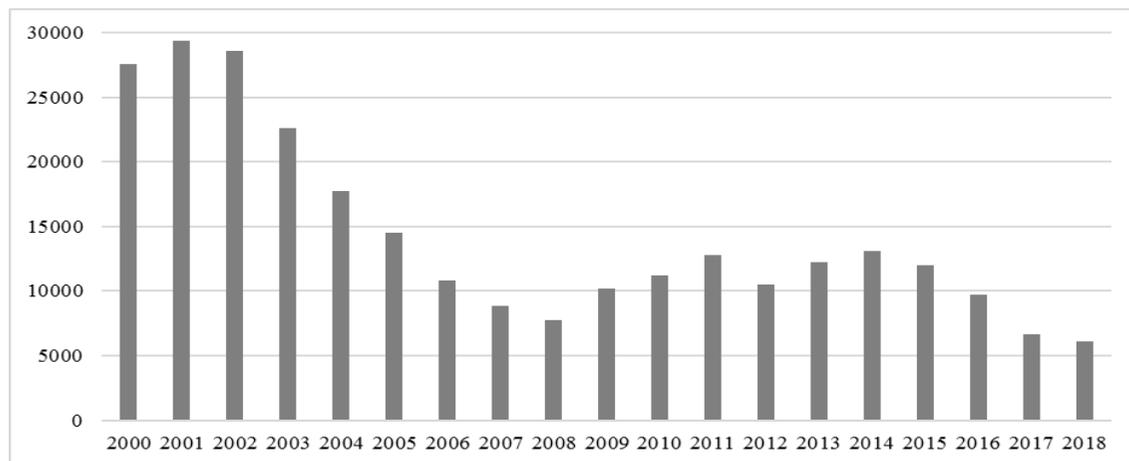
**Situation on the labour market in Slovak Republic**

We have used data for the evaluation of unemployment of persons with disabilities in the regions of the Slovak Republic, which is collected and reported by the Central Office of Labour, Social Affairs and Family of the Slovak Republic. We have examined the differences at

the level of regions and districts in the observed period 2000-2018.

Based on the data provided by the Central Office of Labour, Social Affairs and Family, it is possible to monitor the development of the number of job seekers with disabilities in Slovak Republic, in individual regions and districts. The development of the total number of job seekers with disabilities in the Slovak Republic is shown in Figure 1.

**Figure 1: Number of applicants with disabilities in Slovak Republic**

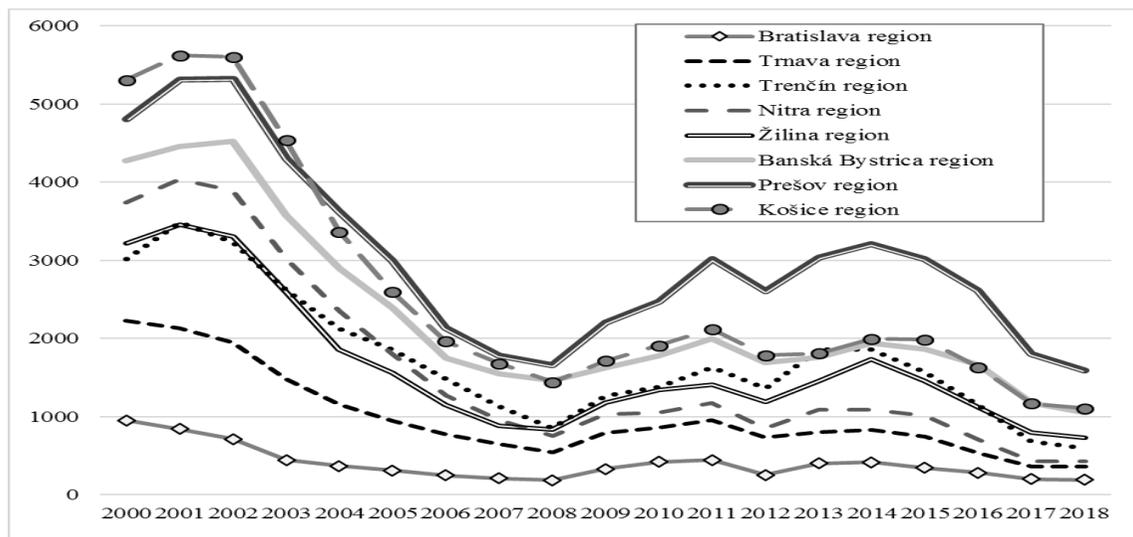


Source: Central Office of Labour, Social Affairs and Family(2019)

The number of jobseekers with disabilities fluctuated in the period under review, with a declining trend. The highest number of unemployed with disability was in 2001 (29,352 persons), on the contrary in the pre-crisis years (2006-2008) and in the last monitored years their number was significantly lower, in 2018 it was only 6060 persons.

Within Slovakia, there are significant differences in the number of people with disabilities in individual regions, which results from the size of the region and the number of inhabitants, the number of economically active population, the health status of the population and other factors. The development of the number of job seekers with disabilities in the regions of the Slovak Republic is shown in Figure 2.

Figure 2: Number of job seekers with disabilities in the regions of Slovak Republic



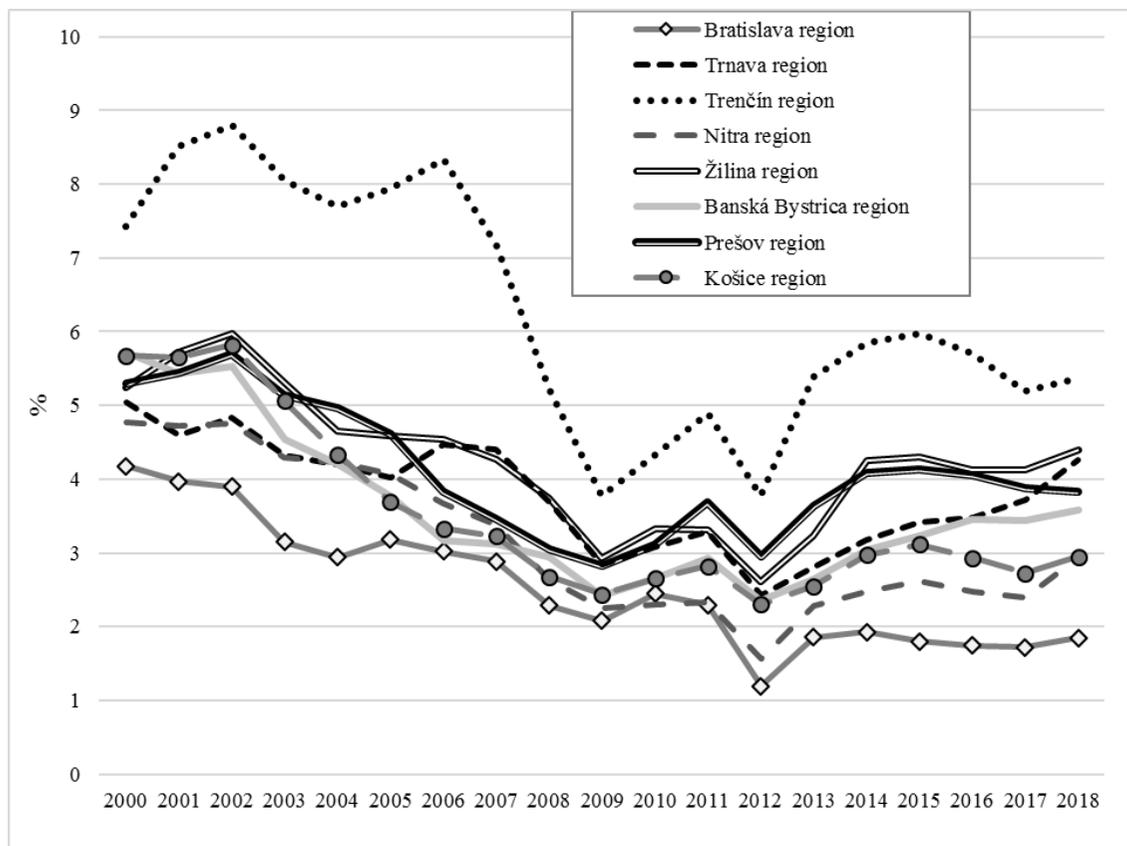
Source: Central Office of Labour, Social Affairs and Family(2019)

As Figure 2 shows, the largest number of job seekers with disabilities in the years 2000-2003 was in the Košice region, in the following years it was the Prešov region. In the Prešov Region, 5622 job seekers with disabilities were registered in 2001, but in the Bratislava Region there were only 846 of them in the same year. In 2018, the number of job seekers with disabilities also decreased significantly in the Prešov Region and

reached the level of 1,591 persons, in the Bratislava Region it was 191 persons.

Due to a more realistic comparison of the situation of people with disabilities on the labour market in individual regions of the Slovak Republic, we have recalculated the share of the number of applicants with people with disabilities in the total number of job seekers. The results are shown in Figure 3.

Figure 3: Share of job seekers with disabilities in the regions of Slovak Republic (%)



Source: Central Office of Labour, Social Affairs and Family(2019)

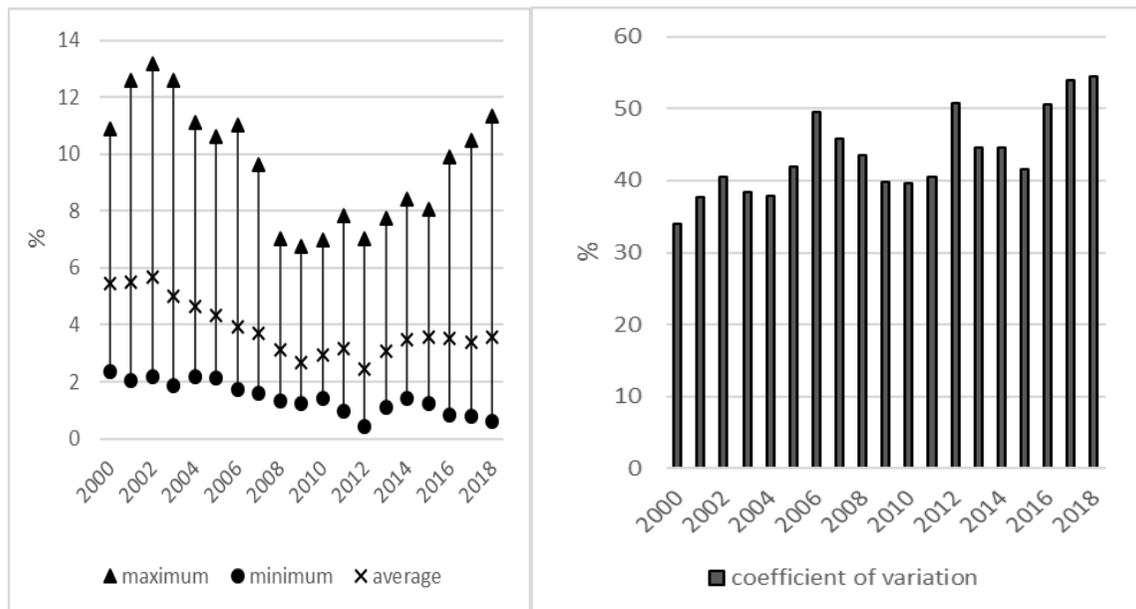
Figure 3 shows an interesting finding that although the situation on the labor market in the Trenčín region is not the worst in the Slovak Republic and there is not the highest number of unemployed with disabilities, the share of job seekers with disabilities is the highest among the regions in Slovakia. The distance of the Trenčín Region from other regions is considerable in most years. The Bratislava Region has the lowest number of job seekers with disabilities and also their share in the total number of job seekers is the lowest - in 2012 only 1.19%, in recent years around 1.8%.

Significant differences between individual districts can be observed within individual regions. The largest share of job seekers is in the

districts: Banská Štiavnica (2002: up to 13.16%), Medzilaborce, Stropkov, Myjava, Levoča, Prievidza and Žarnovica. The smallest share of job seekers with disabilities is in the districts of the Bratislava region (especially in the city districts of Bratislava), then in the districts: Lučenec, Kežmarok, Komárno, Levice, Malacky and Žilina.

In the monitored period of 2000-2008, we have evaluated the differences between the share of job seekers with disabilities in individual districts of Slovak Republic. The absolute differences in the share of jobseekers determined by the minimum value, the maximum value and the average, as well as the relative differences measured by the coefficient of variation are shown in Figure 4.

Figure 4: Variability in the share of job seekers with disabilities within the districts of Slovak Republic



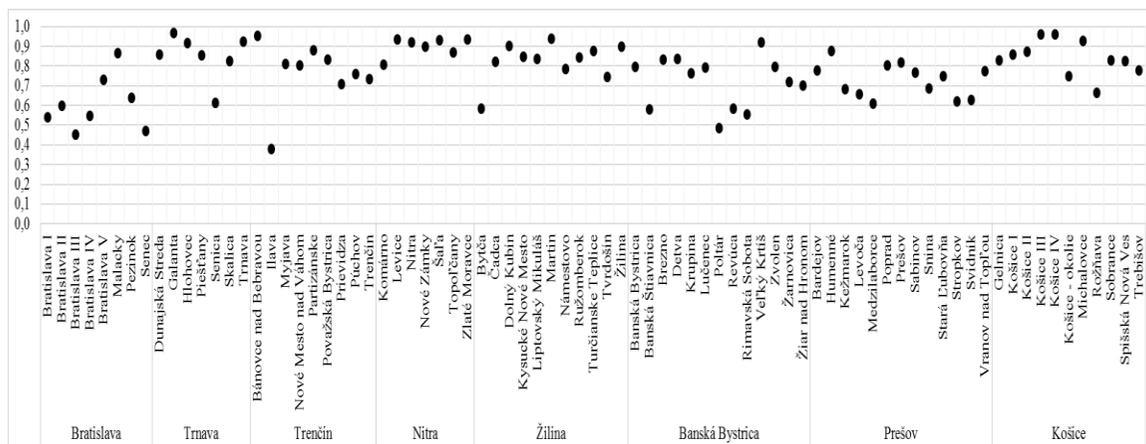
Source: own calculation, Central Office of Labour, Social Affairs and Family(2019)

The large absolute differences in the share of jobseekers with disabilities in the total number of jobseekers result mainly from the large distance of the worst regions from the average value. In 2008-2010, these absolute differences between districts were the lowest, but gradually increased and the difference between the best and worst districts was 10.69 percentage points in 2018 (similar to 2003). Relative differences between the districts of the Slovak Republic in the share of persons with disabilities in the total number of registered unemployed also increased in the observed period, reaching 54.50% in 2018. Thus,

we can state that although the general situation on the labour market is improving, regional differences are increasing, because in some districts of Slovakia there is a relatively high share of people with disabilities in the total number who cannot find job on the labour market.

Based on the above, we examined the correlation dependence between the number of job seekers and the number of job seekers with disabilities in the districts of the Slovak Republic (Pearson's correlation coefficient) in the period 2000-2018. The results are shown in Figure 5.

Figure 5: Dependence of the number of registered job seekers and job seekers with disabilities



Source: own calculation, Central Office of Labour, Social Affairs and Family(2019)

Figure 5 shows that there are districts in the Slovak Republic where there is a high dependence of the number of job seekers with disabilities and the total number of job seekers in the observed period, e.g. Galanta, Košice III, Košice IV, Martin and others. On the contrary, high dependence was not proven in the districts of Iľava, in the Bratislava city districts, in the district of Poltár and Rimavská Sobota.

### Summary and conclusions

The labour market is extremely dynamic and undergoes fundamental structural changes as a result of current economic developments. These cause the demand for certain types of work to decrease. As a result, people who have such work get into trouble and cannot find employment on the labour market. Individuals with disability are among the particularly vulnerable groups in the labour market. The above research shows that people with disabilities can be included on the labour market, important factor of their success is their education, as well as support from state authorities and institutions, various civic associations and foundations. Based on our knowledge, the most unemployed with disability were in 2001 (29,352 persons) and the least in the pre-crisis period (2006-2008) and in the last year 2018 only 6060 persons in the Slovak Republic. From the point of view of the regions,

the situation is quite different. We recorded the most job seekers with disabilities in the Košice region. The best situation in the whole monitored period was in the Bratislava region, although in the Prešov region there was a significant decrease. However, when examining the share of the number of applicants with disabilities in the total number of job seekers, we can observe an interesting development in the Trenčín region. It shows the worst results in the whole monitored period, although this region belongs to the regions with a low unemployment rate in terms of the number of unemployed. The situation is significantly different in the districts of individual regions of the Slovak Republic. Although the general situation improves on the labour market, regional differences are increasing, because a relatively high proportion of persons with disabilities in the total number of people in some districts of Slovakia. These are people who cannot find a job on the labour market. The coefficient of variation has not fallen below 50% in the last three years, on the contrary, it is still rising. The Slovak Republic has not been able to reduce large regional differences for a long time, which is also confirmed by our study focused on the position of people with disabilities. Reducing regional disparities in Slovakia is the Achilles heel of regional policy in the Slovak Republic.

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## EMPLOYMENT OF GENERATION Y, Z IN THE LABOR MARKET IN THE CONDITIONS OF THE INDUSTRY 4.0 CONCEPT

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### **Abstract**

*The change in the structure of the labor market in recent years has been largely influenced by the rapid robotization and automation of industries associated with the Industry 4.0 initiative, globalization and an important factor are demographic changes implying a possible demographic crisis. All these factors bring challenges to both current and future generations in the labor market. However, their successful management also depends on the economic policy actors involved in labor market policy-making, which should aim to ensure the functioning of the market. In the presented article we want to point out how the employment (employment) of generation y, z changes on the labor market in the concept of Industry 4.0.*

### **Key words**

*industry 4.0, generation y, z, labor market, employment*

**JEL Classification:** O30, M52, J20

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### **Introduction**

One of the fastest changing markets in the economy is currently the labor market. Its uniqueness lies in the abstractness of the concept of "labor" as a factor of production, which is carried by man and his labor potential is traded on this market. Everyone has different efforts, preferences and expectations, which are reflected in the value of their work. If it were only a sale of labor for which a worker would receive a fixed wage, the labor market would not be of deep interest to many famous economists. What makes the labor market complex and complex are precisely the non-monetary incentives, benefits and privileges that one considers when looking for a job, which is why Brožová describes him as a "multidimensional personality" (Brožová, 2012). The challenge of robotics and automation, which threatens jobs themselves, is putting pressure on the workforce in the form of the need to improve human capital. The absence of an adaptation process in the transforming labor market may result in a mismatch between the structure of the labor force and the needs of the labor market, which will result in a slowdown in economic growth. Therefore, every active generation in the labor market must constantly maintain the quality of its human capital (Kaczor, 2013). Employment is a macroeconomic category which, according to Habáňik et al. (2014, p. 201) "characterizes the

involvement of the working population in the process of creating new products and services" and is one of the most important indicators of evaluating the performance of individual regions and entire economies. Employment is the ability of an individual to find a job that is in line with his or her individual characteristics and objective labor market requirements (Kuchař, 2007). Employment is a determining factor in human identity, it expresses the state of the labor market.

### **Goal and Methodology**

The main goal of the paper is to examine the employment of generation y, z in the conditions of the concept Industry 4.0., where we deal with employment and employers in the labor market. In order to achieve this goal, we had to study various publications dealing with the latest research, Industry 4.0, or the labor market itself, we worked extensively with Internet resources, especially articles, proceedings, but also magazines. The paper was processed using the method of comparison, observation, analysis and we also worked with various statistics or research. With our work we want to point out how the requirements of employment of generation y, z on the labor market are changing

in the 21st century, especially in the conditions of Industry 4.0.

## 1 Industry 4.0

Along with automation comes the fourth industrial revolution, which aims at an intelligent factory that is versatile, capable of ad-hoc adaptability, efficient use of resources and respect for the principles of ergonomics to facilitate and ensure occupational safety. In the fourth industrial revolution, it is a matter of adapting products to the needs of users on the basis of the offer of new technologies, the use of automated technology and the appropriate involvement of people in the production process (Tomek, Vávrová, 2017). The basis for the fourth industrial revolution is the availability of all real-time information, accessible by interconnecting all stages of control of the entire process through which the product goes. This revolution does not bring fundamental changes only for industrial production, but has a greater impact on society. The changes concern technical standardization, security, the education system, the legal framework, science and research, the labor market or even the social system. Industry 4.0 is understood as a new level of management throughout the product life cycle, which is focused mainly on individual customer requirements. It represents an aggregate term for technologies and concepts of production process organization and is dependent on the digitization and integration of vertical and horizontal production processes (Gilchrist, 2016). Industry 4.0 affects the whole of society very widely and, apart from production itself, will probably have the greatest impact on the structure of the labor market. Great changes are already taking place in the labor market, but also in the education system and the state's readiness for the planned changes. This work deals with the identification of the influences of Industry 4.0 on the specification of the workplace, t. j. parts of jobs related to man and his characteristics. Industry 4.0 can be seen as a continuation or deepening of ideas and technologies from the 3rd Industrial Revolution. In addition to a fundamental reassessment of production functionality, it will also lead to significant changes in the work environment (Wolter et al., 2015). New technologies are

rapidly changing the face of our economy and also our way of life. Thanks to this, we are entering another, namely the fourth industrial revolution (Mařík et al., 2016). It started at the turn of this century and was built on the digital revolution. It is characterized by the ubiquitous and mobile Internet, smaller and more powerful sensors that have become cheaper, artificial intelligence and machine learning (Schwab, 2016). The essence of Industry 4.0 is to achieve fully automated production, changes in the way production processes are managed, and revolutionary changes related to human resource requirements. The main idea is to connect the production machines, products, systems and subsystems of an industrial enterprise with a computer. It is a transformation of production from separate units to a fully integrated, automated and continuously optimized production environment. During Industry 4.0, industry and the economy as a whole are undergoing fundamental changes due to the introduction of information technology, cyber-physical and artificial intelligence systems into manufacturing, services and all sectors of the economy. The first change is the connection of communication between computers and devices in the production process, between customers and suppliers, but also with competitors. This is the Internet of Things, which is a communication network between devices where the human factor will not be needed, because the devices will be able to synchronize themselves. With the help of cameras and sensors, it will be possible to identify the environment by devices that will allow to obtain information about their condition, faults and repairs in the production process. Another change is the use of 3D printers and intelligent robots that will be capable of self-adjustment. All these changes can be summarized by the term artificial intelligence (Mařík et al., 2016).

### 1.1 Impacts of industry 4.0

The changes brought by Industry 4.0 are both positive and negative. They will not only have an impact on profit and cost structure, but will also change the whole core of the business. The first benefit is increased efficiency through robotics. By making robots work faster and more flawlessly, there is also a reduction in operating

costs and a consequent increase in profits. Another advantage is the optimization of production processes, by reducing the communication time between the parties involved, through which the time required to produce one piece of product is reduced. Increasing job opportunities and expanding human capital can be seen as an advantage on the one hand, but it is a threat on the other. The employment rate is expected to increase as there is an increase in demand for engineering professionals, programmers, scientists and mechanical technicians. On the other hand, there will be job losses in traditional positions due to people working in factories being replaced by robots. Increasing the demand for professionals may lead to a situation where there will not be enough qualified workers on the labor market able to work in these positions. To avoid this situation, education should develop new curricula that include the experience, competencies and skills needed for use in Industry 4.0. The government should also support companies investing in industry and ensure infrastructure changes so that business integration can take place (Gilchrist, 2016). Industry 4.0 can have negative consequences for human intellectual development. With evolving digitization, jobs are emerging that require most of the time to sit and work with a computer, increasing the risk of back and posture, tendonitis and visual disturbances caused by prolonged monitor monitoring. It will also affect the development of the younger generation, as it is easier for parents to entertain children by playing with a tablet and watching television than by engaging in physical activity, leading to an increase in the proportion of obesity in adolescents (Veber, 2018).

### 1.2 Generation Y, Z in the labor market

The labor market is characterized by considerable homogeneity both on the demand side and on the labor supply side. From gender, age and race to social background or religious beliefs - diversity is a natural part of workplaces and for their better synergy it is desirable to understand the worldviews of these groups of people. A frequent discourse is the categorization of age groups into the so-called "Generations". In his work (The ABC of XYZ:

Understanding the Global Generation, 2014), McCrindle argues that things are not as simple and the traditional definition of generation as the interval between the birth of parents and their offspring is unsustainable in today's technology-induced lifestyle changes. As an example, he cites the median age of women at the birth of their first child, which has shifted to 31 years compared to 25 years from the early 1980s. It therefore considers that we should focus on the sociological definition of generations (taking into account the evolution of the time) rather than the biological definition, with a maximum time span of 15 years (McCrindle, 2014). Although it is difficult to determine the exact definition of generations, the timeline creates certain boundaries within which people with similar traits are located (Bencsik, Horváth-Csikós, Juhász, 2016). McCrindle cites two experts in the field of generations who agree that: "Generations are shaped by the spans of time and space in history that make up their distinctive collective staff" (McCrindle, 2014, p. 2). It is also necessary to think about people born at the imaginary turn of individual generations. To categorize these people into one of the two generations would be simply ignoring the fact that these people can take over the characteristics of both generations and create a mix (Kapoor, Solomon, 2011). It is also not possible to generalize characteristics to all members of a generation, as each individual is diverse and unique (Kapoor, Solomon, 2011; McCrindle, 2014). Despite the fact that all previous generations of the 20th century have somewhat signed up to the world we live in today and it is certainly interesting to analyze the impacts and impact of their actions, for this work will be examined in more detail only the 2 youngest generations affected by the labor market. Authors on this subject have trouble finding a consensus on the exact dating of generations and often their dating differs from the year of their own publication, but McCrindle mentions for older, Generation Y, a range from 1980, when the number of children born rapidly increased until 1994, when, on the other hand, the birth rate declined for a longer period in the 1990s, while this year also preserves the time gap of 15 years for monitoring generations (McCrindle, 2014). Since the timing of generation Z is not yet anchored in the dictionary, this period also tends to be extended until the end of the century,

following the traditional definition of generation. The authors (Bencsik, Horváth-Csikós, Juhász, 2016; McCrindle, 2014; Seemiller, Grace, 2016) date the younger generation Z between 1995 and 2009. However, the individual divisions differ almost from author to author, Kapoor and Solomon date Generation Y until 1999 (Kapoor, Solomon, 2011), Dimock deviates from McCrindle as his time gap between the younger generations is 16 years (Dimock, 2019), at the core, however, they coincide with the key years of the generations. McCrindle dating will be used for the purposes of this work.

### 1.2.1 Generation Y

Generation Y, also commonly referred to as the "millennials," is the first generation to grow up, so to speak, in the comfort of modern technology (Tolbize, 2008), making it easier for them to use new and more sophisticated devices in information and communication technologies and instantly search for information online. (Bencsik, Horváth-Csikós, Juhász, 2016). At present, they form a category of people aged 25-39, which means that most of them are already part of the labor market. Despite their self-confidence and expressiveness, which help them adapt more quickly to change, they are not as independent as previous generations. They prefer following instructions if they have some flexibility in how they do their job (Kapoor, Solomon, 2011). The main motivation in their work commitment is work success and vision of the achieved goal, which often comes into conflict with family values (Bencsik, Horváth-Csikós, Juhász, 2016) and despite the fact that they like work, they do not want it to dominate their lives. , and therefore try to find a balance between work and personal life (Kapoor, Solomon, 2011). More than previous generations, millennials attach importance to opportunities for education and personal growth (Kapoor, Solomon, 2011; Solnet, Kralj, Kandampully, 2012), preferring on-the-job training, which is beneficial not only from the employer's point of view, but also by the millennials themselves. a time-efficient form of preparation (McCrindle, 2014). They demand from their employer the possibility of self-realization, the feeling that their work has meaning and a real impact on the world around

them (Kapoor, Solomon, 2011) and a corporate culture based on trust among co-workers (Solnet, Kralj, Kandampully, 2012). They also welcome diversity in the workplace and tolerate diversity (Kapoor, Solomon, 2011; McCrindle, 2014), but because of their overconfidence they are often at the root of conflict situations and find it difficult to accept criticism (Bencsik, Horváth-Csikós, Juhász, 2016). The authors (Kapoor, Solomon, 2011) even consider that the work preferences of this generation do not differ significantly from the preferences of previous generations. The key difference, they say, is that millennials are more likely to demand what they want.

### 1.2.2 Generation Z

The youngest active generation in the labor market is generation Z, often referred to as "post-millennials" or "iGeneration". While millennials grew up with technology and gradually learned to use it, Generation Z members do not even remember the period without them, and their use is intuitive for them (Seemiller, Grace, 2016). Technologies create a natural environment for them in which they feel good, which causes them to be technically taken, non-stop online and negatively reflected on their communication skills in the real world (Bencsik, Horváth-Csikós, Juhász, 2016). For this generation, it is no longer so important to acquire new knowledge, but rather the ability to search for information as quickly and efficiently as possible (Seemiller, Grace, 2016). At present, they form a category of people aged 10-24, which means that most of them are currently attending school educational establishments. Unlike millennials, who prefer teamwork (Tolbize, 2008), members of Generation Z also show less preference for teamwork due to problems with communication skills (Mohr, 2017). Paradoxically, however, most Generation Z prefers face-to-face communication (Seemiller, Grace, 2016). They prefer the intrapersonal way of learning, as the information is always within reach and it is not necessary to communicate with a third party, while they can independently determine the pace of learning. They try to organize the acquired information logically and in an organized way and then apply it, thus learning from experience (Seemiller, Grace, 2016). However, they belong to the less optimistic generations with concerns

both about the question of the future workplace and about getting the job itself after graduation (Mohr, 2017). Some of them are afraid of unemployment, resp. that their careers will remain deadlocked and they will not be able to further develop their talent (Bencsik, Horváth-Csikós, Juhász, 2016), the next part is afraid that they will not find a job after graduation. Knowing that an academic degree does not automatically guarantee the acquisition of a dream job, they focus on acquiring knowledge and skills relevant to future employment and education as a tool that should help students become familiar with a large amount of information and lead to a possible successful career. At the same time, work, as with the millennials, must have meaning and impact on the real world. They take for granted the possibility of doing work from anywhere, and therefore focus on the personal life that surrounds work (Seemiller, Grace, 2016). Generation Z welcomes diversity with open arms, evaluating diversity not only as a benefit, but also as a way to solve difficult tasks assigned in the workplace. They value diversity so much that fairness and the absence of discrimination in the workplace are more valuable to them than money, financial benefits or social status. Money is a motivator only for a small part of Generation Z, they are more interested in relationships and the opportunity to work on what they care about (Seemiller, Grace, 2016).

### 1.3 Requirements of generation y, z employees in the labor market

The common ground of all is higher wages, flexibility and interesting work. Employers have opportunities to attract and retain the necessary talent. This is influenced by age, gender and the stage at which he finds himself in his career. Generation Z (ages 18-24) is ambitious, eager for money and a career. Nevertheless, the desires of men and women are different. Women mention the importance of wages twice as often as their next priority (skills development), while according to men, skills and careers are almost as important as wages. For the first time after the entry of women and men with higher education into the labor market and after decades of unequal wages, women have the opportunity to achieve the same financial conditions, which is

why wages are so important to them. The millennials (ages 25-34) have a career ultramarathon ahead of them and they want to achieve a life balance in this long-distance run. For women, flexibility is a must. Most women take care of the household and children, trying to handle everything at the same time. In short, flexibility is essential for her, while she remains comfortable for him. Generation Y (age 35-54) is characterized by flexibility = feeling good. Flexibility is as important for men as it is for women. They want a flexible start and end of working hours, the possibility to work partly at a distance and they want to take part in parental leave. There are 52 million working parents in the US, 65.4 million households with children in the EU, and care for the elderly is growing. Flexibility becomes more than a condition for mental hygiene for both sexes. Baby boomers (age 55+) love leaders and teams. Their priorities are leadership and teamwork. The boss they work for, as well as the people they work with, are very important to them. Older employees want to pass on their experience, those over 65 are the most motivated goal. Learning new skills is less important for them. Members of this generation want to grow as personalities, not just as employees (Manpowergroup, 2020).

### Findings

More than half, ie 57% of employers in the Slovak Republic, cannot find enough suitable candidates in the long run. In terms of employer size, the differences are abysmal. Large companies have the biggest problem, 83% of Slovak employers with more than 250 employees state that they cannot fill their vacancies, for medium-sized companies (50-250 employees) it is 68% and for small companies (10-49 employees) it is 46%. The smallest problem to fill job positions, namely 35%, is reported by micro-companies with up to 10 employees. A number of studies and research have addressed the work preferences of millennials in the labor market, while more recent ones also include working respondents from Generation Z. The Deloitte Millennium Survey in 2018, on a total sample of 12,299 respondents, has a subtitle on the unpreparedness of young people for the Industry 4.0 agenda. Despite the fact that around 50% of respondents

from both generations think that Industry 4.0 will have a positive impact on their work, a slightly smaller percentage also say that they feel unprepared for change in terms of knowledge and skills and expect more from their employers. training in this area. Generation Z respondents think they also need to develop interpersonal skills along with self-confidence. In the first place, 57% of them have a positive corporate culture, in contrast to Generation Y, of whom 63% still rank financial evaluation first, while inclusion and flexibility are important for both generations (Deloitte, 2018). A recent Deloitte study in 2019, which involved 13,416 respondents, says that only one in five members of both generations believes they have all the skills and knowledge needed for a world influenced by Industry 4.0 technologies and the agenda. In the context of the "gig" economy, 80% of Generation Z members like this concept, mainly because of the opportunity to work a free number of hours a week, while better able to reconcile work and personal life. In contrast, only 6% of millennials would exchange this type of employment for full-time work. Both generations see the biggest problem in the form of unpredictable income (Deloitte, 2019).

## Conclusion

In our work, we focused on the employment of individual generations, specifically generations Y and Z in the labor market in the conditions of the Industry 4.0 concept, because artificial intelligence is rapidly evolving in the field of automation and technologies today define rather than replace desired jobs. The high demand for sales representatives, marketing specialists, assistants and drivers is due to the ever-increasing volume of online sales and logistics. However, these jobs have changed and continue to change over the last 10 years, while requiring new skills. A growing trend in the labor market is still the growing shortage of suitable workers, even for unskilled jobs, such as construction workers, storekeepers or staff in accommodation and catering. The lack of suitable talent reduces the ability of companies to satisfy customers, prolongs the delivery times of goods and services, and thus at the same time reduces the company's productivity and competitiveness. In conclusion, we can state that wages have long

been the main factor that appeals to employees under the age of 65, regardless of gender. More or less, salaries are growing by half as slower than ten years ago, especially in lower-paid jobs. Companies need to be creative so that the benefits are little more than just pay. Interesting work is one of the five main priorities for employees of all ages and has many different meanings. People want a job that offers diversity, expands their experience and builds knowledge and skills. They want the opportunity to develop further and earn more. In general, they prefer life balance and choice, and do not negotiate. They want to choose where, when and how they work and this does not only apply to the millennials, who prefer to work from cafes. They also demand a balance between their social and work life, which will be made possible by flexible work, which meets the requirements of the so-called one's life and desire to strengthen his sense of well-being. Employees want to be proud of their employer and stand behind what they do. A strong brand, a good reputation, a great job and the opportunity to change something for the better are among the ten main reasons to work for a given company.

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## SUSTAINABLE DEVELOPMENT AND GREEN GROWTH: A EUROPEAN PERSPECTIVE

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### Abstract

*The green growth and green economy concept corresponds the environmental concerns, the economy as a whole and sustainable development. The green growth subjects to sustainable growth along with the development of environmental and economic sustainability. The main focus of green growth is concerned with waste minimization, reduction in greenhouse gases, environment friendly production, efficient use of energy and resources, eco-friendly practices, reducing environmental impacts, reuse and recycled products etc. This paper aims to understand the concept of green economy and green growth, and how it will help in attaining sustainable development. The study also focuses on the implementation of green strategy in European countries.*

### Key words

*eco-innovation, green economy, green growth, sustainable development, sustainability.*

**JEL Classification:** M31, Q01, Q56.

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### Introduction

The climate system is becoming intricate as a result of human activities over a hundred years. Increasing globalisation and industrialisation leads to deforestation, expansion of urban areas, increased and fast changes in gaseous composition in environment, increased water and soil pollution, rapid change in greenhouse gases, and the corresponding changes in eco-system such as global warming, climate change, melting of glaciers, droughts etc. (Li et al., 2011; Felton et al., 2016).

An influence of the climate change will continue to increase as world is undergoing rapid changes like globalization and internationalization, technological advancements, upgraded communication and information system, big data analytics, innovative financial and economic system. The challenges ahead are particularly compelled by increasing population of the world, changes in living standards, adverse environmental impact of human activities, scarcity of natural resources (Herrmann, 2010). It is clear that production system of industries plays a significant role because it consume around one third of the primary energy of the world (IEA, 2007). Hence, there is a need of changing present socio-economic development

with more sustainable development which is raised by the change in the micro and macro environment of the businesses, increasing awareness and increase in environmental constraints (Urbaniec, 2015).

The European Union is addressing the ecological problems globally. The European Commission recognised important role in improving the environment quality and quality of life. In 2006, the European Green capital award was formed so as to distinguish the cities that is working towards the environment protection and improving quality of life. These cities become an example for other cities to achieve sustainable development by the use of innovative and efficient practices, and it is identified that the environmental indicators of such cities that received the European Green Capital award is higher than the other cities (Ratas and Mäeltsemees, 2013).

The efficient implementation of sustainable development is linked with significant modification in economic activity, in respect of more integrated and systemic interdisciplinary approach (OECD, 2012; United Nations, 2012). Furthermore, well established partaking processes needed to enable the implementation of long term and short objectives for social,

economic and environmental concerns (Borys, 2011). It is to be taken into consideration that sustainable development is a multifaceted and multidimensional notion, which covers the interdependence of social, economic and environmental order, in socio-economic development, also for the necessity to reserve resources so that future generations can use those (Kates et. al., 2005; Zielińska, 2014).

It is identified that the previous financial and economic crisis led to the decrease of negative impact of human activities on environment. However, the negative environmental impact can again become intensifies as the economic growth will again take its pace. Such concerns have been addressed at the meeting named Green Growth Strategy of the OECD Ministerial Council also termed as the Ecological Economic Growth or Strategy of Ecological Development (Kasztelan, 2017; OECD, 2014; OECD, 2011b; OECD, 2011c; OECD, 2011d).

According to OECD, the definition of green growth is about implementing policies that leads to economic growth and development along with the assurance of protection of natural resources and natural assets that will help in prosperity and development of economy and ecology. The green growth aims at accelerating the eco-innovations and investments on eco-friendly processes and technology that will boost new ecological opportunities and leads to sustainable development (Kasztelan, 2017). This paper addressed the concept of sustainable development that can be achieved through green growth and green practices implemented by an economy. The European countries has implemented such practices and reduced their carbon dioxide emission consecutively. This study will explain the importance of green growth in achieving the sustainable development. The study is focussing on the concept of the green economy , green growth and sustainable development. It describes the policies and processes implemented by the European countries in preserving the environment and to be termed as green economy.

#### The concept of Sustainable Development

The idea of 'sustainable development' was first addressed in Brundtland Report World Commission on Environment and Development from the United Nations in 1987. According to

the Brundtland Report, the definition of sustainable development is "...the development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs". The concept of sustainable development has two main fundamental elements, i.e. sustainability and development which leads to the formation of the concept itself (Klarin, 2012). However, sustainability and development could be in contrast connection, and both could possess potential counterproductive effects (Sharpley, 2000). Although, neoclassical economists highlight that there is no contradiction in development and sustainability (Lele, 1991). In regard to this, Sachs (2008) proposes that, there is no development without sustainability and no sustainability without development (Sachs, 2010).

Sustainable development has created enormous consideration among academicians, businesses and policy makers, for instance, United Nations and European Union (Silvestre and Țircă, 2019). Sustainable development theory has faced numerous evolving phases from the time of its inception. Although, the concept has been accepted in several extents of human activity, but it also confronted several interpretations and criticisms over the time. The definition of sustainable development is among the most cited definitions of the literature (Klarin, 2018). The concept of sustainable development aims to fulfil the needs and wants of human beings in the present without affecting the ability of the future generation to use the natural resources.

A report named "Our Common Future" was published in 1987 by the World Commission on Environment and Development (WCED) which later became well-known as Brundtland Report. This report stated that the worldwide environmental issues are because of the extreme poverty in South region and the production and consumption processes in non-sustainable manner in the North region. According to Brundtland report, sustainable development is defined as the development that fulfils the needs and wants of the present without negotiating the capability of future generations to fulfil their needs (Silvestre and Țircă, 2019).

Green growth and Green economy

At present, the world is facing two most important challenges, for instance, fastest growing population worldwide and its relative impact on the environment. The increased pressure on the environment is needed to be primarily prevented with the external effect's internalisation (Kasztelan, 2017). Due to the scale of existing risks, the key challenges concern issues connected with climate changes. They necessitate undertaking the required preventive measures but the lack of an agreed position in international negotiations concerning the division of burdens made respective countries look independently for possible ways to balance their national paths of economic growth with potential problems, such as environmental pollution and exhausting natural resources. The above-mentioned conditions resulted, among other things, in the emergence of the concept of green growth (Satbyul et al., 2014).

The concept of green growth is associated with the notion of green economy concerned with the overall welfare and justice of the society and simultaneously reducing the negative environmental and ecological impacts (UNEP, 2011). According to OECD, the imbalance on ecosystem caused by the negative impact of economic and social processes induce risk to the development processes and growth of an economy, therefore, formulation and implementation of green growth strategies is important. Also, the natural resources like mineral resources are sometimes undervalued and as a result are not managed properly; thus, put extra costs on economy and leads to the deterioration of the social well-being (Kasztelan, 2017; OECD, 2011b). There is a lack of reliable policies to manage such issues that leads to the uncertainty, keeping innovation aside, and hence it slows down the sustainable development process. Also, the main purpose of the strategies and policies of green growth should motivate the firms and customers to follow more environment friendly activities, and to assign genuine incentive for the development of eco-innovations (OECD, 2014).

Green growth aims at fostering economic development and economic growth with the assurance that the natural resources will be used in sustainable manner, and keep on providing the ecological services and resources to induce

wellbeing and growth (OECD, 2011). Green growth helps in producing sustainable growth and development by making policies and processes of economic and environmental sustainable development into one intellectual policy (Samans, 2013). It is growth that is efficient in its use of natural resources, clean in that it minimises pollution and environmental impacts and resilient in that it accounts for natural hazards (World Bank, 2012). Green economy aims for improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities (UNEP, 2011). The concept of green economy rests on the economy, the environment and the social pillars of sustainable development. A broader concept of 'inclusive' green growth or sustainable development incorporates fully the social sustainability aspects, in particular enhancing human development and the conditions for the poor and vulnerable.

The green business policies and practices have been implemented by many organisations across the globe, as it have value proposition, competitive advantage and societal benefits as well (Yeganeh and Glavas, 2008). The meaning of the term 'green' is mainly associated with something which is environment friendly or natural or having least detrimental impact on ecosystem.

Achieving sustainability through green growth: overview of European countries

The present patterns of consumption and production systems that are based on traditional policies are not sustainable enough because of out-dated technologies. The reason behind exploitation of the environment and pollution is the industrial sector and its role towards society. The rapidly increased industrialization in many countries, land and air pollution became the reason for raising concern about current developmental patterns and its unsustainability. Hence, many changes has been made in the policies, processes, services and products, education system, industrial processes, greening of supply chain management and increase in awareness for environment.

Greening of the supply chain management (GSCM) refers to the responsibility of industries and enterprises to ensure coordination for environmental, social and ethical compliance

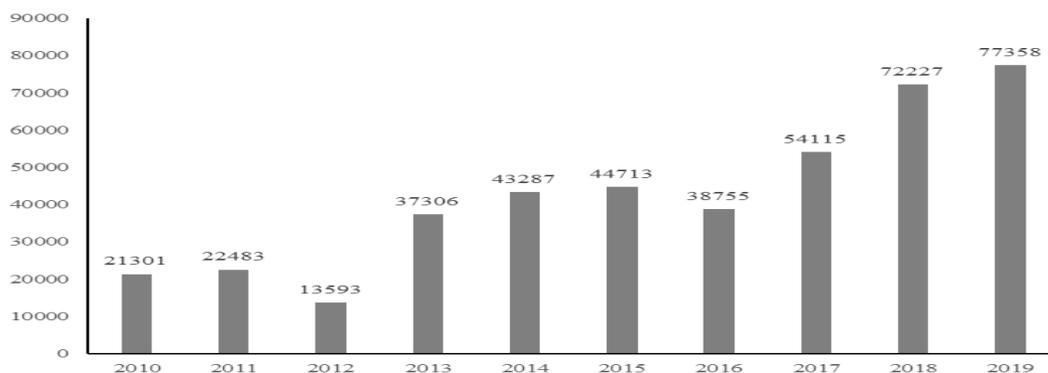
throughout all supply chains. This involves engagement in the green procurement process, which is especially important for large and multinational enterprises that rely on many linkages in their supply chains for products and services. In addition, this not only strengthens customer–supplier relationships, but it also reduces costs on a systemic basis, particularly when externalities are properly integrated into the entire system. Although GSCM still misses numerous dimensions of decision-making at many key societal levels, this added approach can help us to make progress toward sustainable consumption and production (SCP), and can result in a more sustainable value for businesses and communities.

Many societies in the world are more inequitable today than they were ten years ago. Consequently, SCP faces both the challenge of formulating strategies that foster the efficient use of natural resources and technological innovation

toward an improved quality of life; and the pressure of addressing the root causes of the socio-economic dichotomy.

According to the report of European commission, till September 2019, around 1,623 licences of European Union Eco label products have been given to around 77, 358 products including goods and services that are available in the market, and this is almost the double amount of products in 2016. The products with the registered highest number of growth are among textiles, tissue paper, hand dishwashing detergents, paints and varnishes, cosmetics etc. The countries that are in leading position with the highest number of awarded eco label products are Italy, Portugal, Spain, Germany and France. The following graph (Figure 1) shows the evolution of European Union Eco Label products and their licenses between the periods of 2010-2019.

**Figure 1: Evolution of European Union Eco-label products from 2010-19**



Source: European Commission, 2019

The Eco Label is meant to promote the products that have the tendency to reduce the negative environmental impacts and facilitates the engagement of producer towards the sustainable environment, thus, helping the consumers of Europe to differentiate between traditional and healthy and eco-friendly products. This EU Eco Label is a label of environmental excellence and is recognised across the whole Europe. This label is awarded to products that meet the requirement of being environment friendly all through its life cycle, for instance, from raw

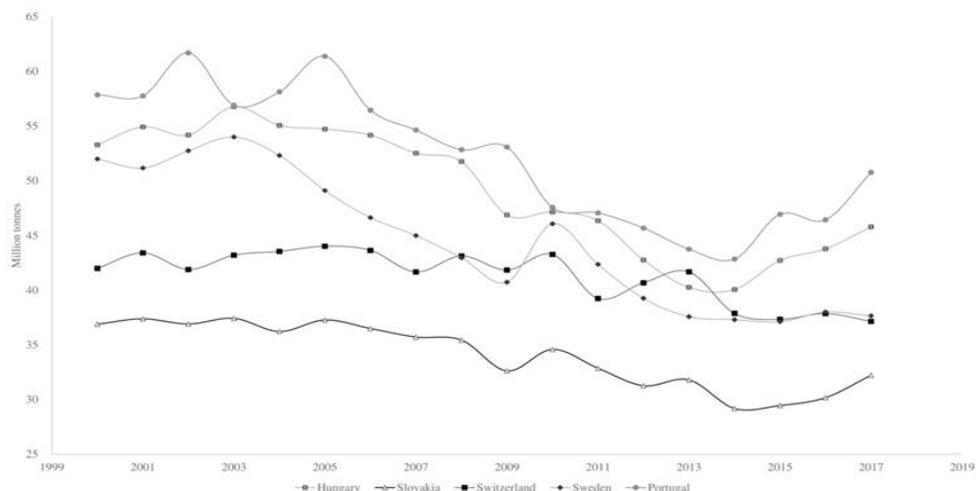
material to production, then from distribution to disposal.

The green growth and changing the economy into green economy helps the country to reduce the environmental pressures and reducing the waste. The decrease in environmental pressure leads to the reduction of greenhouse gases. The greening of economy and respective changes in production processes and supply chain management tend to reduce the emission of carbon dioxide. The following figure 2 shows

the reduction of production based carbon dioxide emission from in some countries of Europe

namely Hungary, Slovakia, Switzerland, Sweden and Portugal from the period of 2000 to 2017.

**Figure 2: Production based carbon dioxide emission from 2000-17 (OECD, 2017)**



Source: OECD, 2017

## Conclusion

As it is stated in this paper, that on-going environmental problems and adverse impact of human activities have created a major concern among policy makers and businesses. The green growth is basically a path towards innovative methods to achieve sustainable development and to gain potential advantage by such industries that are environment friendly and makes better use of present natural resources without posing any hazardous impact on environment. Through eco-friendly innovations and by following the policies of green economy, an economy, firms and companies can use waste reduction technology and also can make best use of waste generated by industries in order to conserve and protect ecology. Green growth encourages the production of environment friendly products to create a market niche for products termed as green products and marketed with eco-labelling and green branding. The main findings of the paper proposed the green growth in European countries over a time and there are many policies of eco-innovations getting implemented that will offer growth and potential to green technologies and eco-friendly processes. The internal and external factors act as drivers or determinants for

eco-innovation, for instance, companies are now focusing on corporate social responsibility and pressure from environment conscious consumers made firms to act accordingly. Among these drivers, government regulation is termed as the most important factor along with external and internal pressure and the need of efficient and cost reducing production.

The study also focuses on awareness among policy makers, consumers as well as companies regarding sustainability and environmental responsibilities. To efficiently support green growth, it is necessary to get access of various incentives and new diversified instruments to stimulate the demand of eco-friendly services and products, which will directly effects the processes of firms and companies to change their production processes and produce in a more sustainable way.

Future studies can analyse in more detailed manner about the practices and policies in green growth and sustainable development. A case study can also give proper information of the barriers and determinants it faced in the adoption of eco-friendly innovation.

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## ROLE OF SMES IN COMPETITIVENESS, COMPARISON OF HUNGARIAN SMES WITH EU SMES

Andrea VAJDA

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### Abstract

*SMEs play an important role in the country's economy. SMEs employ more than two thirds of the workforce and generate more than half of the added value in EU-28 until 2019. The importance of small businesses is also taken seriously by the EU, and the European Charter for Small Enterprises. Improving the competitiveness of SMEs is one of the 11 thematic objectives for Cohesion Policy in 2014-2020. Access finance for investments through grants, loans, loan guarantees, venture capital. Forge valuable links with research centres and universities to promote innovation. The data were taken from the World Economic Forum database. Research analysed the following sub-areas: Role of SMEs in competitiveness, presentation of problem areas, comparison of domestic values with EU average according to SBA Facht Sheet database with using digital system. The Hungarian National Bank depicts the most important aspects needed to improve competitiveness in a pyramid model, culminating in sustained catch-up and growth. Hungary ranked 60th out of 137 countries in the World Economic Forum's in 2017-2018 competitiveness ranking. In Hungary SMEs are not very development-minded, but it is a positive development that they receive a significant share of grant funding.*

### Key words

*Cohesion Policy, Innovation, Investment, Venture capital, WEF*

**JEL Classification:** D40, D24, L20.

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### Introduction

SMEs play an important role in the country's economy. SMEs employ more than two thirds of the workforce and generate more than half of the added value in EU-28. The importance of small businesses is also taken seriously by the EU, and the European Charter for Small Enterprises [9], adopted in 2000, indicates that small businesses are the backbone of the economy. The Lisbon goal is to make the European Union the most competitive and dynamic knowledge-based economy in the world. The European Union gives priority to supporting SMEs (Small and medium enterprises). The European Structural and Investment Funds will provide more than € 450 billion to Member States over the period 2014-2020, and this amount will be used for investments to create jobs and growth in order to strengthen SME competitiveness, as follows: Small and medium-sized enterprises are vital for the EU's economy, accounting for more than 99% of European businesses and two thirds of private sector jobs. The European Structural and

Investment Funds will make available more than €450 billion to Member States in 2014-2020 to finance investments for enhancing jobs and growth. [12].

Improving the competitiveness of SMEs is one of the 11 thematic objectives for Cohesion Policy in 2014-2020. Additional investments in SMEs will also be made under other thematic objectives, particularly research and innovation, the low-carbon economy and information and communication technologies. €57 billion or around 20% of funding from the European Regional Development Fund (ERDF) will be dedicated explicitly to SMEs. The increased use of financial instruments mobilising additional EU, national and regional funds during the 2014-2020 funding period is also expected to benefit SMEs. These investments will help SMEs to:

- Access finance for investments through grants, loans, loan guarantees, venture capital, etc;
- Benefit from targeted business support, e.g. know-how and advice, information and

networking opportunities, cross-border partnerships;

- Improve their access to global markets and international value chains;

- Exploit new sources of growth such as the green economy, sustainable tourism, health and social services including the “silver economy” and cultural and creative industries;

- Invest in human capital and in organisations providing practice-oriented vocational education and training;

- Forge valuable links with research centres and universities to promote innovation [12].

New simplified and common rules and measures make it easier for SMEs to access Cohesion Policy Funds in 2014-2020. These include online reporting of how the Funds are used clearer eligibility rules

more targeted and less frequent audits for small operations wider scope and simplification of the set-up and access to financial instruments Increased investment in SMEs in 2014-2020 will build on the achievements of EU Cohesion Policy during the 2007-2013 funding period: more than 95,000 start-ups supported and more than 300,000 jobs created in SMEs.

According to Kállay - Lengyel [17], the size of the company and the ownership structure are also important for internationalization. Domestic SMEs with foreign interests are more export oriented than domestically owned. The most important source of GDP growth is knowledge and innovation. Unfortunately, good professionals emigrate, and today over 300,000 workers want to work abroad. Intelligent people who produce smart products and work smartly can only get ahead and should be recognized. The current devaluation of human capital only adds to our underdevelopment [7].

It would be particularly important to utilize IT developments, for which the human resources are available, and this area should even be developed with state support. According to Lakatos [18], companies entering the global network-based market are facing a bright future. Small and Medium Sized Enterprises Strategy [20]. Study 2014-2020 identifies three key areas, which are: - improving growth potential, - improving the business environment, -

facilitating access to external sources of finance. The ideas should be taken up and guidance should be given to SMEs. Material and method. The importance of SMEs for the country's economy is unquestionable. The analysis of SMEs is done on the basis of expediently collected statistical data and presentation of the extensive literary background, depending on its size. Our decline in competitiveness also warrants a detailed analysis of this area, as this leads to a lack of R&D and innovation in other countries. I arrange the most important statistical data in tables and, where appropriate, present them in graphs. My conclusions and suggestions are intended to be corrective, and in many cases, to highlight errors by drawing attention. The study provides a detailed analysis of the situation of domestic SMEs.

### Objective and Methods

The data were taken from the WEF (World Economic Forum) database. During my research I analysed the following sub-areas: - Role of SMEs in competitiveness, presentation of problem areas, comparison of domestic values with EU average according to SBA Facht Sheet database with using digital system [12]; [26]; [27].

SMEs in the ‘non-financial business economy’ in Hungary account for more than two thirds (68.3%) of total employment, slightly above the EU average of 66,6%. The SME share of 54,1% of total value added is slightly below the EU average of 56,4%. The productivity of Hungarian SMEs, calculated as value added per person employed, is €19,800, less than half the EU average of €44,600. The average number of people employed by Hungarian SMEs is 3,3, which is lower than the EU average of 3,9. As in many EU countries, the most important SME sectors in terms of both employment and value added are manufacturing and wholesale and retail trade, which together account for more than 40% of SME employment and SME value added.

In recent years, Hungarian SMEs in the ‘non-financial business economy’ have generated strong value-added growth. In 2014- 2018, SME value added rose by 38,1%, outperforming the value-added growth of large firms, which

increased by only 34,5%. SME employment also increased steadily, by 9,7%, but lagged behind the employment growth of large firms, which at 20,9% rose at almost double the rate. Most recently, in 2017-2018 SME value added and employment grew by 10,1% and 2,4% respectively. [13].

### Literature Review

SMEs play an important role in the competitiveness of the country and of companies. Documents also show that SMEs are indispensable for more sustained growth and for more and better jobs [10]. Economists and politicians agree that everything needs to be done to strengthen SMEs, as their competitiveness is crucial for the competitiveness of regions, national economies and the European Union. By SME competitiveness, the term users mean the competitiveness of the companies that make up the sector. In the interests of the sector, the positive impact on competitiveness is primarily due to employment, job creation and their prosperity. Of course, economic performance is also an important factor. According to Némethné Gál [22]: “The precondition for this competitiveness is that companies in the sector, by exploiting the flexibility of their size, are able to adapt to changes outside and inside the company and to exploit the competitive advantages offered by the environment. to improve their position under conditions that will provide a return for their owners.

Farmers need for financial subsidies and credit to invest into their agricultural production, which last one also needs for adequate operating bank system for realising aim. The successful economic conditions in Hungary is proved by some experts [9] and [10] in field of financial background of taxes and loan conditions. Additionally, to the financial background of farming in order that the farmers can decrease the cost of production and their transaction cost, they are stimulated to strengthen their cooperation. “During the period of 1995–2012, the bank loan for agriculture in percentage of the total bank loan in Hungary was at the highest level, namely 9,76%, when the total loan amount

was 192,1 billion HUF in 1998, and this was at the lowest level, namely 3,69%, when the total loan amount was 265,6 billion HUF in 2010. The authors draw a growing linear trend of loans until 2005, namely the loan amount was 358,8 HUF billion, after that little decreasing occurred until 2008, and the loan amount has considerably decreased since 2008, when the economic and financial crisis started; while a decreasing trend of the loan ratio was going on. The average yearly credit increase is 24,486 billion HUF. The Hungarian agricultural sector is in a better position than other sectors of the economy. The new technology should be used even in field of digital development trends for improving the agricultural sector”.

Also, it can be declared about the earlier conditions of Hungarian agriculture concerning the SMEs in this sector, that „the income conditions made a significant influence on the capacity of the agricultural sector in fields of investments and accumulation. The main problem was the decline of real value of investments. For example, the real value of investments in 2001 had not implemented half of investments realised in 1989. This situation showed the low level of technological and technical development in the agricultural sector during a longer period, than a decade. It was important to increase different kinds of supports for agricultural producers, for example: export subsidies, interests of credits, supports for establishing new farmland structure. The share of supports for agricultural production and food industry was 12–14 percent of the two sectors’ GDP in 1990s.”

Most SMEs do not export, although there has been some improvement in recent years. The weight of productive sectors (agriculture, construction) increases with the size of the organization. About half of medium-sized enterprises already produce goods [8]. Literature review Hungary has a small and open economy. The ability of companies to appear in the global economy with increasingly lucrative goods or services is particularly important for the country, as it does not have a sufficiently large internal market. The concept of competitiveness has been summarized in the literature by several authors, e.g. [5]; [2]; [4]; [6].

Szucs [25]”The concept of corporate competitiveness has also been defined by international organizations in the [23] definition of both corporate and national approaches. By this definition, competitiveness is the ability of companies, industries, regions, nations and transnational regions to generate relatively high incomes and relatively high levels of employment while being exposed to international (global) competition. The potential of SMEs in itself is scarce and can be improved by exploiting the potential of clusters. SMEs are finding it difficult to survive in a fierce price competition and neither expanding production nor settling for cheap resources is an option.

The EU-12 achieved a higher increase of output value of agricultural industry and agricultural gross value added, more than average results of EU-28, while these values per agricultural annual working unit (AWU) and agricultural income per AWU increased more in EU-12 than in EU-28 for the period of 2010–2016. In EU-12, the growth of output value and GVA (Gross value added) was a result of concentration of agricultural production in less farms, modernization and mechanization in the sector, increasing productivity of input and factor income per AWU, better price income, better market conditions and increasing subsidies on production. Subsidies on production ensured higher agricultural income per AWU and factor income per agricultural AWU. Despite EU-12 had more subsidies on production than the average level in EU-28, only 21.7% of all subsidies of EU-28 were paid for EU-12. The agricultural income per AWU in EU-12 increased more compared to the average level of EU-28. In EU-28, the output value of agricultural industry and agricultural gross value added per intermediate consumption (input) decreased, but factor income – net value added at factor cost – per AWU increased by 21% because of the subsidies on production that

increased for the period of 2010 and 2016. In EU subsidies on production were concentrated on developing technology by subsidizing consumption of fixed capital. Generally, the value of subsidies was 87% of value of consumption of fixed capital in 2016. Their work focused on the increase competitiveness of farmers, which are mostly SMEs in agricultural industry in Middle-East European EU member states.

### Results and Discussion

These are estimates for 2017 produced by DIW Econ, based on 2008-2015 figures from the Structural Business Statistics Database (Eurostat). The data cover the ‘non-financial business economy’, which includes industry, construction, trade, and services, but not enterprises in agriculture, forestry and fisheries and the largely non-market service sectors such as education and health. The following size-class definitions are applied: micro firms (0-9 persons employed), small firms (10-49 persons employed), medium-sized firms (50-249 persons employed), and large firms (250+ persons employed). The advantage of using Eurostat data is that the statistics are harmonised and comparable across countries. The disadvantage is that for some countries the data may be different from those published by national authorities.

" According to the preliminary data of the CSO, at the end of 2017 there were 724 thousand enterprises operating in Hungary, 99.86% of them, ie more than 723 thousand enterprises were classified as SMEs. According to the EU Commission data on the "business sector", which is comparable between the individual Member States, the number of employed SMEs in Hungary was slightly above the EU average, in terms of value added (Table 1).

**Table 1: Number of Hungarian businesses, number of employees, value added generated by them in 2017**

Class size	Number of enterprises			Number of persons employed			Value added		
	Hungary		EU-28	Hungary		EU-28	Hungary		EU-28
	Number	Share	Share	Number	Share	Share	Billion €	Share	Share
<b>Micro</b>	525 857	94.0 %	93.1 %	912 599	33.4 %	29.4 %	11.2	18.0 %	20.7 %
<b>Small</b>	27 939	5.0 %	5.8 %	520 731	19.0 %	20.0 %	10.9	17.5 %	17.8 %
<b>Medium</b>	4 604	0.8 %	0.9 %	450 171	16.5 %	17.0 %	11.4	18.3 %	18.3 %
<b>SMEs</b>	558 400	99.8 %	99.8 %	1 883 501	68.8 %	66.4 %	33.5	53.7 %	56.8 %
<b>Large</b>	936	0.2 %	0.2 %	852 759	31.2 %	33.6 %	28.9	46.3 %	43.2 %
<b>Total</b>	559 336	100.0 %	100.0 %	2 736 260	100.0 %	100.0 %	62.4	100.0 %	100.0 %

Source: European Commission (2019): 2018 SBA Fact Sheet — Hungary [12]

Evaluation of Competitiveness: The MNB (Hungarian National Bank) depicts the most important aspects needed to improve competitiveness in a pyramid model, culminating in sustained catch-up and growth. Regardless of the task at hand, increasing productivity is essential. OECD Productivity Ranking in 2014 based on GDP per hour worked (US = 100) [24]; [21]. Hungary is also not good among Central and Eastern In Hungary, in terms of macroeconomic indicators, labour productivity is lagging behind V3 and the EU average. With higher wages, entrepreneurs pay more attention to mechanization, which can improve productivity. We went in that direction. We are in a relatively good position with regard to the competitiveness of work, and we are also approaching good performance in the case of the employment rate and the average tax wedge (families with 2 children). State competitiveness figures are not very good. Public administration expenditures and the number of procedures required for building permits in Hungary are significant, with only the administrative administration on the Internet developing well. Business competitiveness is improving, but there is still room for improvement. Research and development and innovation are lagging behind in every respect. Research and development spending are far below the 1,8% (as a percentage of GDP) target for 2020, being the last in the

summary innovation index [11];[19]. We are also among the weakest in the EU Digital Economy and Society Index. We have a moderate performance in the competitiveness of the energy market.

The energy intensity of the economy is not showing good value. Demography and social fabric are improving. The fertility rate is constantly rising and we are well on the HDI (Human Development Index) index. In the field of education, the results of the PISA survey are poor, and fundamental changes are needed. Public education spending is extremely low compared to other countries, which could pose serious problems for the future. The proportion of science graduates is low and changes in education are needed. We are far from the EU average in terms of health, and healthy life expectancy is low. The number of doctors per thousand inhabitants is small. There is also room for improvement in the competitiveness of the banking system, with a low proportion of Internet banking users. We are by far the last in the proportion of operating expenses and interest on assets.

European countries. We are particularly bad at institutions (114), macro-environment (47), labour market efficiency (80), technological readiness (54), business readiness (113) and innovation (80).

Hungary ranked 60th out of 137 countries in the WEF's (World Economic Forum) 2017-2018 [27] competitiveness ranking. The Czech Republic was ranked 31st, Poland 39th and Slovakia 59th. Hungary ranks 24th among the 28 EU Member States. Although most of the indicators examined are subjective, only 26% of the indicators are objective. The WEF examines 12 pillars in the Competitiveness Study, the first four pillars analyse the fundamentals, the next six deal with efficiency-enhancing factors, while the last two deal with innovation and economic complexity. The change in WEF rankings is deteriorating and the EU average and V3 average are significantly higher than the rankings for Hungary.

Health is rated relatively well, but significantly worse in primary education. The availability of skilled labour remains problematic. Secondary and higher education are more favourably regarded. The efficiency of the commodity market is good. Significant improvements have been made in technological and financial market developments, but the sophistication of the business sector is problematic. The size of the market is favourable due to Hungary's openness, but our innovation position is poor. The MNB's Competitiveness Report [21] aims to analyse the determinants of competitiveness in numerical terms, over time and internationally. Today, Hungary is no longer at a significant competitive disadvantage in terms of macroeconomic environment, employment and corporate competitiveness, or R & D & I (Research, Development, Investment) and demography.

Factors that undermine competitiveness. The World Economic Forum (2017-2018) [27] announces obstacles to competitiveness. Ranking these can help you identify areas where changes are needed and where change can deliver the greatest results. The main hindrances are shortages of labour training, corruption, the level of taxes and tax regulation. In terms of pillars, we have one of the worst performances in terms of innovation. In particular, the lack of domestic SMEs is significant in this area. The percentage of SMEs that introduce product or process innovation is low and few SMEs have introduced internal innovation. Domestic SMEs have difficulty accessing R&D money. Free

movement of labour was one of the fundamental objectives of the founding of the EU. Hungary is affected by emigration, and more skilled workers emigrate. Between 2012 and 2017, the Hungarian active population aged 20-64 decreased by an average of 30,000 per year[15].

Many believe that migrant labour is more mobile and adaptable than the home country [1];[16];[14]. Behind this is the assumption that regions with surpluses and shortages of labour may achieve more efficient labour allocation [28]. The outflow of skilled workers is detrimental to competitiveness. The free movement of capital is also important. Foreign Equity Investment (FDI) is an important driver of globalization. Both the domestic and foreign capital stock of the EU is growing. The main destination for EU foreign investment is North America (37%), primarily the US. The EU is therefore a major player in the global economy, both in terms of international trade and capital markets [3].

IMD Ranking Results. In the 2017 IMD ranking, Hungary ranked 52nd out of 63 countries. The countries surveyed are usually among the more advanced, so Hungary is at the bottom of the list. According to the IMD, Hungary is lagging far behind in the competitive sector and in government efficiency, but our economic performance is considered good. In terms of infrastructure, Hungary is ahead of the CEE region. International trade and the results of the sub-groups measuring them are particularly good. The foreign trade balance is positive and inflation is moderate. On the other hand, the country is doing poorly in international investment, due to a decline in FDI inflows in 2016.

## Conclusions

The role of SMEs as a top priority in employment is indispensable. By developing this sector, we can create new, profitable jobs. Micro-businesses are decisive, but they are weak in their tasks. The performance of Hungarian SMEs in terms of value added is significantly lower than that of large companies and labour

productivity should be improved. The SBA 2018 rating is a criticism of Hungary in many respects. Innovative companies are significantly more productive and export-oriented, and this direction should be supported. There is room for improvement in the economic environment for SMEs, and rapid and unpredictable changes are causing significant damage. In Hungary the SMEs are not very development-minded, but it is a positive development that they receive a significant share of grant funding.

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## CHALLENGES FOR FINANCE REGULATOR

Rita VANAGA, Biruta SLOKA

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### Abstract

Finance regulators are very important institutions for normal economic development of the country and good international cooperation in great extent depend from efficient work of finance regulator. Finance regulator has to be properly financed and this is also a very important aspect which is analysed also by academic researchers. Aim of current research paper is to investigate possible developments of finance regulator financing based on analysis of current legislative documents and expert views on possible future developments of finance regulator financing. Research methods applied: analysis of scientific publications and previous conducted research, analysis of legislative documents on finance regulator financing, expert survey. Data of expert survey are analysed by indicators of descriptive statistics. The results of the expert survey has indicated that there have to be prepared regulations for better motivation of market participants from one side and acceptable financing of finance regulator from other side.

### Key words

finance regulator, financing of finance regulator

**JEL Classification:** G18; G28

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### Introduction

Finance regulators are very important institutions for normal and efficient economic development of the country and good international cooperation in great extent depend from efficient work of finance regulator of the respective country. Finance regulator has to be properly financed and this is also a very important aspect which is analysed also by academic researchers world-wide.

Aim of current research paper is to investigate possible developments of finance regulator financing based on analysis of current legislative documents and expert views on possible future developments of finance regulator financing.

Research methods applied: analysis of scientific publications and previous conducted research, analysis of legislative documents on finance regulator financing, expert survey. Data of expert survey are analysed by indicators of descriptive statistics: indicators of central tendency or location (arithmetic mean, mode, median), indicators of dispersion (variance,

standard deviation, range and standard error of mean).

### Literature overview

Many countries world-wide pay a lot of attention for best possible organisation and financing of finance regulators as from their efficient work depend many aspects and activities in economy. Researchers have found that “substantial regulatory reform is necessary to respond to significant developments including globalization of the capital markets, innovative and sophisticated new financial products and trading strategies, growing institutionalization of the capital markets, and convergence of financial service providers and financial products” (Becker, et al, 2008, pp. 37). Research results (Fallon, 2015, pp. 106; Holland, 2019, pp. 53) have discovered the inside story in banking crisis. Researcher (De Koker, 2009, pp. 349) has worked several important aspects on identifying and managing low money laundering risk. Government policies and corporate financing decisions – how theory and evidence can come together in China (Qiao, 2013, pp. 108). Researcher (Cooray, 2011, pp. 931) has analysed in detail the role of the government in financial

sector development. Researcher (Preda, 2005, pp. 468) has investigated legitimacy and status groups in financial markets. Researchers (Bovens, et al, 2014, pp. 126) have discussed on public accountability where finance regulator has an important role. The study (Sathye, Patel, 2007, pp. 401) shows several commonalities and differences in the financial intelligence agencies in Australia and India and points to operational and policy changes required in making the units more effective. Several aspects of regulations in Malaysia and Indonesia are covered by several researchers (Amalina Wan Abdullah, et al., 2013, pp. 129) and has suggested practical steps for regulators. Researchers (Hazli, Ghafar, 2008, pp. 105) have found that banks' involvement in securitization activity needs to be regulated or restricted since excessive securitization activities could curtail credit and increase risk inherent in banks' lending portfolio. Researchers (Santangelo, Jacobs, 2005, pp. 12) have concluded that both law enforcement and regulators have embraced stricter anti-money-laundering enforcement standards despite some criticism from the financial industry, and that recent criminal enforcement actions bear careful analysis by the financial community; predicts that regulators and law enforcement officials will broaden their scope from banking institutions to include broker-dealers and other non-bank institutions as well; and recommends that all financial institutions devote greater resources to establish effective anti-money-laundering policies and procedures, particularly in the areas of due diligence for high-risk customers and suspicious activity reporting. Among the most important and deepest analysis by International Monetary Fund (Novoa, Seelig, 2009, pp. 68) has paid attention to governance practices at financial regulatory and supervisory agencies. Different aspects of finance regulation are covered by several researchers (Bértoa, et al, 2014, pp. 372; Schillemans, 2016, Wymeersch, 2007, pp. 301; pp. 1417; Holland, 2009, pp. 185; Witko, 2005, pp. 307; Palepu, et al, 2008, pp. 17; Haslam, 2010, pp. 644). Several aspects related to information technology application is analysed by researchers (Cooper, et al, 2017, pp. 279) with practical suggestions as result of their investigation. Researchers (Christensen, Lægheid. 2011, pp. 65) have analysed new public

management approaches with finance regulator involvement. Researcher (Murphy, 2006, pp. 439) has analysed the disclosure and sharing of sensitive information and revisiting risk in co-operating regulatory regimes, Importance of regulator's communication (Liff, Wahlström, (2018, pp. 254) is risen by researchers in academic research as well as to new approaches due the new technologies (Zekos, 2003, pp. 291) possibilities and applications in finance sector regulation.

### **Findings on current situation in Latvia and possible changes**

In Republic of Latvia (Saeima (Parliament of Republic of Latvia). 2000, pp. 5.) has accepted Law on Finance Regulator where all main aspects are covered including financing of the Regulator. Since than there have been several critical approaches and suggestins for change of financing of the Finance Regulator and were suggestions to take into account experience of other countries in this respect.

Recently there are applied new technologies and introduced new finance products, new companies but not all aspects are regulated by finance regulator (FKTK, 2014 and FKTK, 2019). Therefore there are needs in changes in finance regulator. Currently there are several possibilities to cover expenses of finance regulator:

- To some segments are determined minimal annual payments;
- To other segments – fixed payment and payment from activity in the market (indicator for basic payment);
- To some segments – minimum annual payment and limited payment during the year (maximum annual payment);
- To some segments – only payment from activity of market participant (indicator for basic payment);
- To some segments – payment is not determined.

Distribution of different kinds of payments for finance reulator in Latvia is reflected in table 1.

**Table 1. Distribution of different kinds of payments for finance regulator in Latvia**

Segments	Minimal payment	Fixed payment and payment on applied level of payment for payment basis	Payment on applied level of payment for payment basis	Limited annual payment (maximal annual payment)
Insurance companies	-	-	X	-
Reinsurance companies	-	-	X	-
Insurance brokers	X	-	X	X
Insurance agents	-	-	-	-
Private pension funds	-	-	X	-
Credit institutions	-	-	X	-
Investment broker companies	X	-	X	-
For organisers of regulated market	X	-	X	-
Depositories	X	-	X	-
Emitents	-	-	-	-
External credit rating institutions (rating agencies)	-	-	-	-
Investment management companies	X	-	X	-
Alternative investment fund managers	X	-	X	-
Cooperative lending companies	-	-	X	-
Payment institutions	-	X	-	X
Electronic money institutions	-	X	-	X
Institutions offering innovative services	X	-	-	-

*Source: Prepared by Rita Vanaga based on analysis of regulations*

In general for subjects of finance market it is payment for finance regulator which is determined according the regulations applying or not applying certain coefficient per respective year. Such approach is called as linear financing

model. Additional payments on activities of finance regulator related to registration, licensing, is not the same for all in different segments - data are included in table 2.

Table 2. Payment for permission on licences and registration (actual)

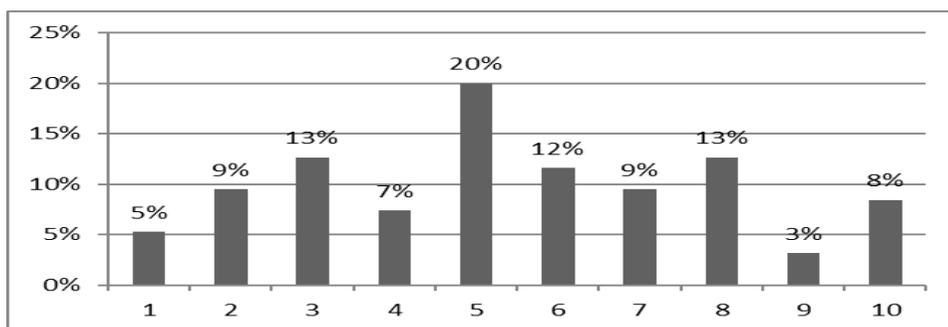
Segments	Payment for licence	Payment for registration
Insurance companies	Not determined	-
Reinsurance companies	Not determined	-
Insurance brokers	-	Is determined
Insurance agents	-	Is determined
Private pension funds	Not determined	-
Credit institutions	Not determined (payment has to be made only once – when licence is issued)	-
Investment broker companies	Not determined	-
For organisers of regulated market	Not determined	-
Depositories	Not determined	-
Emitents	Not determined	-
External credit rating institutions (rating agencies)	Not determined	Is determined (only for registration)
Investment management companies	Not determined	Is determined (only for registration of alternative investments)
Alternative investment fund managers	Not determined (payment has to be made only once – when licence is issued)	-
Cooperative lending companies	Is determined	Is determined
Payment institutions	Is determined	Is determined
Electronic money institutions	-	Is determined

Source: Prepared by Rita Vanaga based on analysis of regulations

To find the best possible changes on current situation it was conducted expert survey where several important aspects were analysed and summarised. Distribution of expert evaluations on statement „Market participant (MP) determined payment amount is fair among the segments (are

determined in correspondence with monitoring expenses)” with arithmetic mean of the expert evaluations which was 5,41, median 5 and mode 5 (in evaluation scale 1-10, where 1 – fully disagree and 10 – fully agree) are included in figure 1.

Fig. 1. Distribution of evaluations of the statement „Market participant (MP) determined payment amount is fair among the segments (are determined in correspondence with monitoring expenses)”



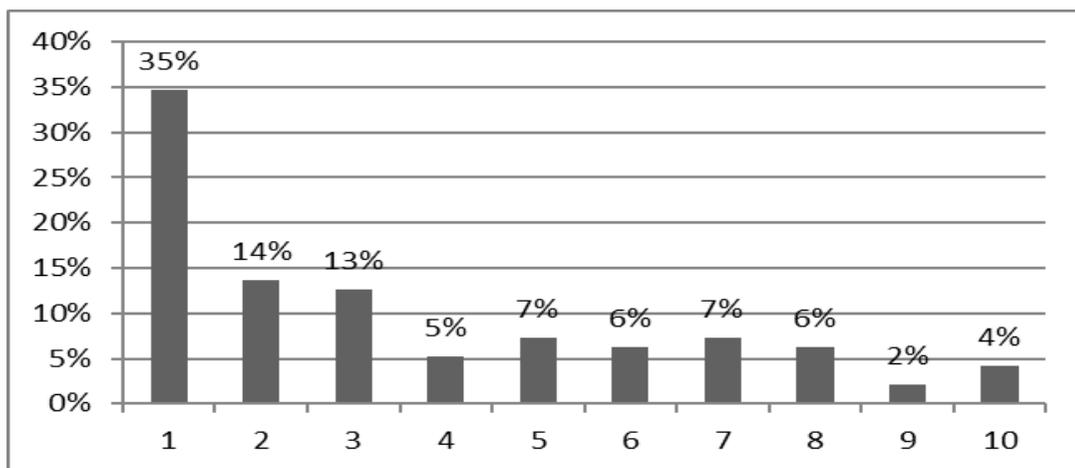
Source: Rita Vanaga conducted expert survey, Evaluation scale 1-10, where 1-fully disagree; 10-fully agree; n=95, share in percent, %

As information included in figure 1 on expert evaluations for analysed statement indicate that 32 % of experts (evaluation 5 and 6) has neutral attitude on finance distribution among the segments for financing of Financ and Capital Market Committee (FCMC) and 34% (evaluations from 1 till 4) - negative attitude to that, but 33% (evaluation 7-10) - positive

attitude, including 8% - fully agree with the statement.

Negative attitude of experts was for the statement „MP have to support monitoring of other MP (if such segment is small/not developed)” – distribution of expert evaluations is included in figure 2.

**Fig. 2. Distribution of evaluations on the statement „MP have to support monitoring of other MP (if such segment is small/not developed)”**

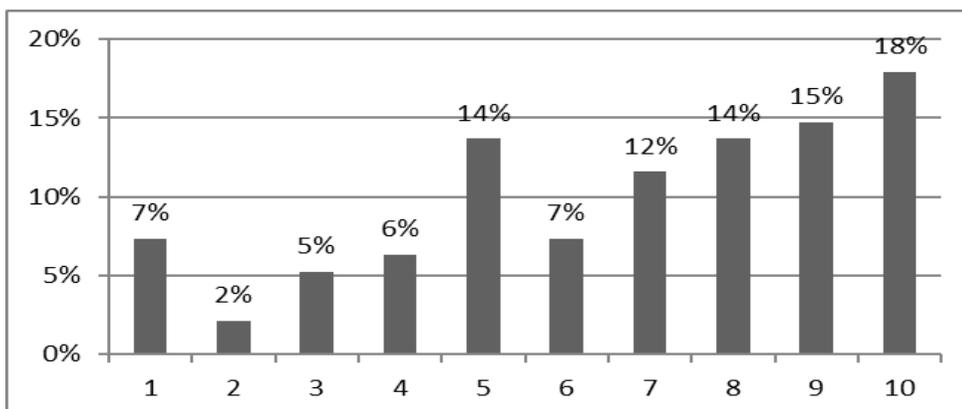


Source: Rita Vanaga conducted expert survey, Evaluation scale 1-10, where 1-fully disagree; 10-fully agree; n=95, share in percent, %

As data included in figure indicate the expert evaluations from 1 till 4 are given by 67% of respondents with arithmetic mean 3,59, median – 3, mode - 1, standarddeviation - 2.785. The results clearly indicate thar market participants are not ready to finance the development of other participant in the market.

Distribution of evaluations on the statement „MP have to be classified according their risk profile and payment has to be settled bigger for more risky MP and decreased payment for less risky MP” are included in figure 3.

**Fig. 3. Distribution of evaluations on the statement „MP have to be classified according their risk profile and payment has to be settled bigger for more risky MP and decreased payment for less risky MP”**



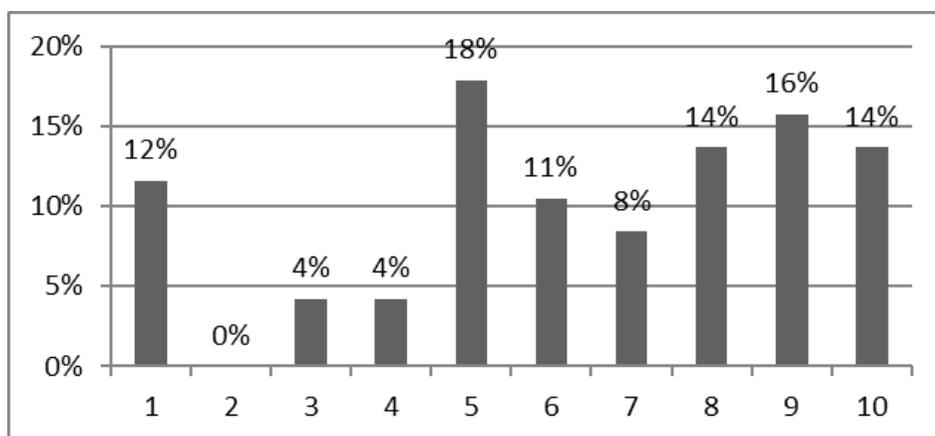
Source: Rita Vanaga conducted expert survey, Evaluation scale 1-10, where 1-fully disagree; 10-fully agree; n=95, share in percent, %

The information included in figure 3 indicate that the biggest share of respondents - 59% (evaluation 7-10), including 18% - fully agree that market participants have to finance FCMC depending from the risk degree of the market participant, 20% (evaluation 1-4) – do not support such approach, but 21% (evaluation 5 and 6) respondents are neutral for this aspect. For

expert evaluations for this statement arithmetic mean was 6.67, median - 7 and mode – 10, and standard deviation – 2.742.

Distribution of evaluations on the statement „MP have to be classified by their volumes and organising them in groups with fixed payment per year” is included in figure 4.

**Fig. 4. Distribution of evaluations on the statement „ MP have to be classified by their volumes and organising them in groups with fixed payment per year”**



Source: Rita Vanaga conducted expert survey, Evaluation scale 1-10, where 1-fully disagree; 10-fully agree; n=95, share in percent, %

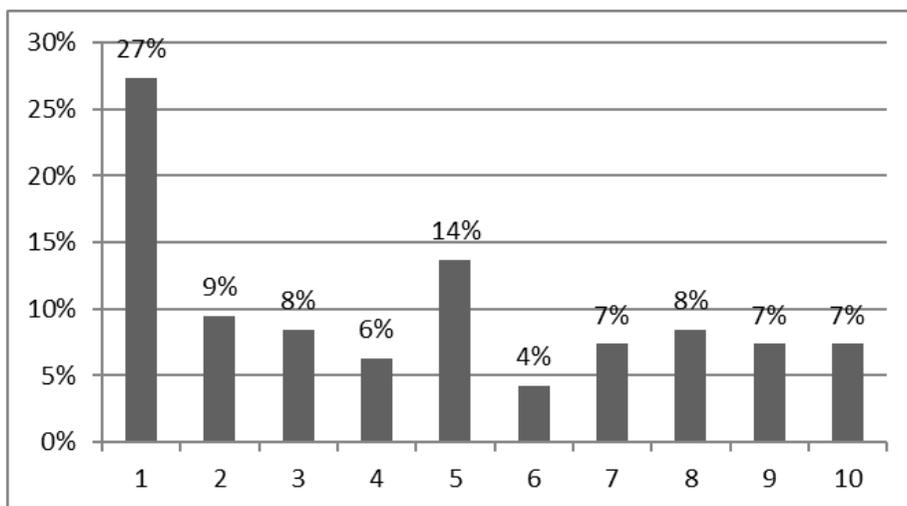
Data of expert evaluations indicate that 52% of experts gave very high evaluations (evaluations from 7-10), with arithmetic mean

6,41, mode is 5, median 7, standard deviation 2,789.

Distribution of evaluations of the statement „Minimum amount for financing of FCMC have

to be determined for all MP” is included in figure 5.

**Fig. 5. Distribution of evaluations of the statement „Minimum amount for financing of FCMC have to be determined for all MP”**



Source: Rita Vanaga conducted expert survey, Evaluation scale 1-10, where 1-fully disagree; 10-fully agree; n=95, share in percent, %

Half of experts gave evaluations 1 till 4, reflecting view of 50% of experts with arithmetic mean of the evaluations which was 4,49, median 4 mode 1 (most often given evaluation by experts – it means that 27% of the experts did not agree that minimum amount for financing of FCMC have to be determined for all market participants, and standarddeviation of the evaluations was 3,09.

The results of the expert survey has indicated that there have to be prepared regulations for better motivation of market participants from one side and acceptable financing of finance regulatir from other side.

### Conclusion

Finance regulators in different countries are financed by different ways and each of them has their certain advantages and also problematic aspects.

In Latvia different finance institutions have to contribute to finance regulator by different approaches.

In Latvia finance experts have different views and they have suggested apply different approaches to improve the situation.

The results of the expert survey has indicated that there have to be prepared regulations for better motivation of market participants from one side and acceptable financing of finance regulatir from other side.

### Acknowledgments

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