

KNOWLEDGE FOR MARKET USE 2018: PUBLIC FINANCES IN THE BACKGROUND OF SUSTAINABLE DEVELOPMENT

**INTERNATIONAL SCIENTIFIC
CONFERENCE PROCEEDINGS**



**Palacký University
Olomouc**

Pavla Slavíčková – Tomáš Talášek (Eds.)

**Palacký University Olomouc
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PUBLIC FINANCES AS A TOOL TO REDUCE THE NEGATIVE EFFECTS OF TRANSPORT ON THE ENVIRONMENT

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Abstract: *Transport is the one of the key factors in the development of every modern society, which is not an objective, but a means of economic development and a prerequisite for achieving social, regional and suprarregional cohesion. On the other hand, transport has a negative impact on the environment; among the most discussed are greenhouse gas emissions from transport and public finance expenditures that are expended to reduce these negative impacts.*

Keywords: *transport, greenhouse gas emissions, investment*

JEL classification: *A12, O18*

Grant affiliation: *The article was supported by student grant SGS_2018_023.*

Introduction

The issue of increasing concentration of greenhouse gases (GHG) has become a much-discussed topic both in the scientific and the political areas in recent years. This issue has a significant impact on the existing situation. It is important to understand its potential future impacts since it could cause unwelcome climate change in the future. Akerman (2005) states that GHG emissions should be significantly reduced in order to prevent unwelcome impacts on the climate and on ecosystems. Espinoza et al. (2017) and the Centre for Transport Research (2003) agree on the fact that transport is a significant producer of GHG emissions and that transport has significant impact on greenhouse effect origination. Nocera et al. (2015) states that quantification of GHG emissions' economic impacts is one of the most important areas of transport engineering in the context of sustainability.

According to Black (2010) transport has an important role in social and economic development of a state; however, on the other hand, regarding the environment it is a source of emissions, noise, vibrations and thereby causes health and safety risks. Transport also requires land and thus land is confiscated/occupied to a large extent. Danish et al. (2018) and Lotfalipour et al. (2010) state that transport significantly influences economic growth of regions. The authors also, at the same time, point out that economic growth goes hand in hand with growing production of GHG. Also, other authors confirm this fact, for instance Saidi and Hammami (2015), Al-mulali a Sab (2012), Niu et al. (2011), Lotfalipour et al. (2010), Fong et al. (2007) and Brant (2004). Chapman (2007) recommends to take quick action and to implement fast measures minimizing transport impacts on the environment and preventing fossil fuels depletion. Tošovská et al. (2010) states that the current trend is to increase efficiency of transport and at the same time to eliminate negative impacts of transport in relation to sustainable development.

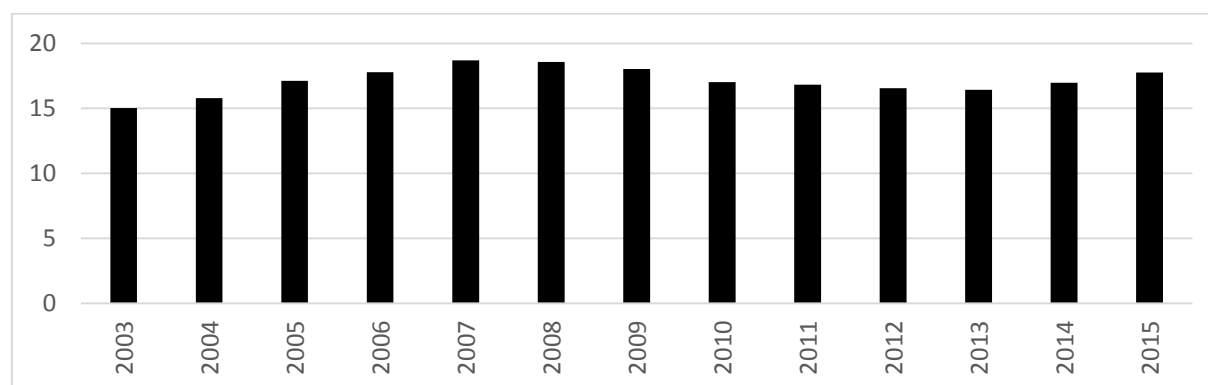
According to Nocera et al. (2015) GHG emissions from transport represent approximately 30% of the total GHG production in Europe. The authors point out that this value has been and still is continuously increasing with time. Friman, Larhult and Gärling (2013) stress that unlike in other national economy sectors where GHG emissions are reduced, in transport and specifically in personal car transport GHG emissions volumes increase. For this reason it is important to focus primarily on this area and to reduce significantly GHG emissions.

1 Development of GHG emissions from transport

Nocera and Cavallaro (2013) state that the most important GHG contributing to global warming is carbon dioxide (CO₂). They also state that CO₂ represents about 90 % of the global GHG emissions and approximately 96 % of GHG emissions in the transport sector. In the Czech Republic territory transport produces approximately 20 % of the total GHG.

Development of GHG emissions produced by transport in the period 2003 to 2005 in the Czech Republic is demonstrated in FIG. 1. This development can be divided into three periods. In the period 2003–2007 GHG emissions increased by 24,5 %; that means from the volume of 15,02 million tons CO₂ equivalent (MT of CO₂eq) in year 2003 up to the volume of 18,70 MT of CO₂eq in year 2007. The biggest increment of GHG emissions was seen in year 2005 (1,33 MT of CO₂eq). In year 2007 transport produced the biggest volume of GHG emissions (18,69 MT of CO₂eq), which represents nearly 1,3 times the volume of year 2003. In the second period, that is the period 2008-2013, GHG emissions showed a decline; from the volume of 18,56 MT of CO₂eq in year 2008 the volumes of GHG emissions declined by 11,5 % down to the volume of 16,43 MT of CO₂eq in year 2013. The biggest year on year decline (1,01 MT of CO₂eq) was observed in the period 2009-2010. The volumes in the third period, that is in years 2014 and 2015, show again an increase; from year 2013 to year 2014 by 0,54 MT of CO₂eq and from year 2014 to year 2015 by 0,78 MT of CO₂eq. GHG emission in year 2015 got up to the level of year 2006.

FIG. 1: Transport Related GHG Emissions Development for the CR (MT of CO₂eq)



Source: Eurostat (2016)

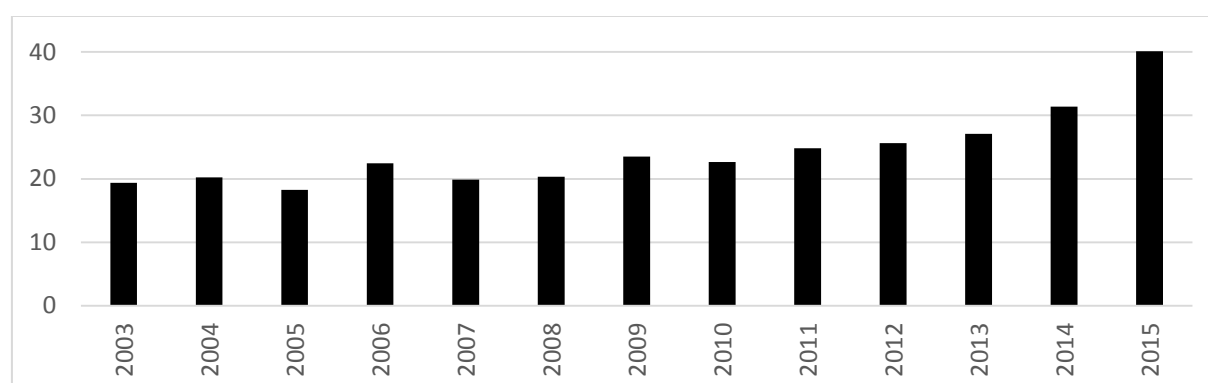
2 Development of Investments to Environmental Protection from public finances (transport and storage)

Ministry of Transport (2013), the European Commission (2011) and professional public agree that one of potential tools how to reduce GHG emissions is the investment into protection of the

environment. Transport and environmental protection is radically depended on public finances (European Commission, 2011). European Commission (2011) recommends to finance environmental protection from alternative sources, e.g. PPP projects. The literature alerts that this form of financing is not actually insufficiently used. Ministry of Transport (2013) emphasized that the cost of air pollution could be internalized by charging for the use of infrastructure. Professional public recommends to invest to low carbon technologies as a tool for reducing GHG emission from transport.

Investments into environmental protection include investments for acquisition of long-term tangible assets for environmental protections. The development of investments into environmental protection from public finances in the CR (see FIG. 2) has been analysed for the period 2003–2015. In the observed period the amount of 315,68 billion CZK from public finances was invested into environmental protection. This amount includes investments into air and climate protection, into wastewater management, into waste management, into land protection and rehabilitation and into protection of surface and underground waters. It can be stated that, with the exception of three declines in years 2005 (by 1,96 billion CZK), 2007 (by 2,57 billion CZK) and 2010 (by 0,84 billion CZK), expenditures to environmental protection have been growing. The biggest investment was done in year 2015 (40,11 billion CZK). The smallest investments were realized in year 2005 (18,25 billion CZK).

FIG. 2: Development of Investments into Environmental Protection from public finances (billion CZK)



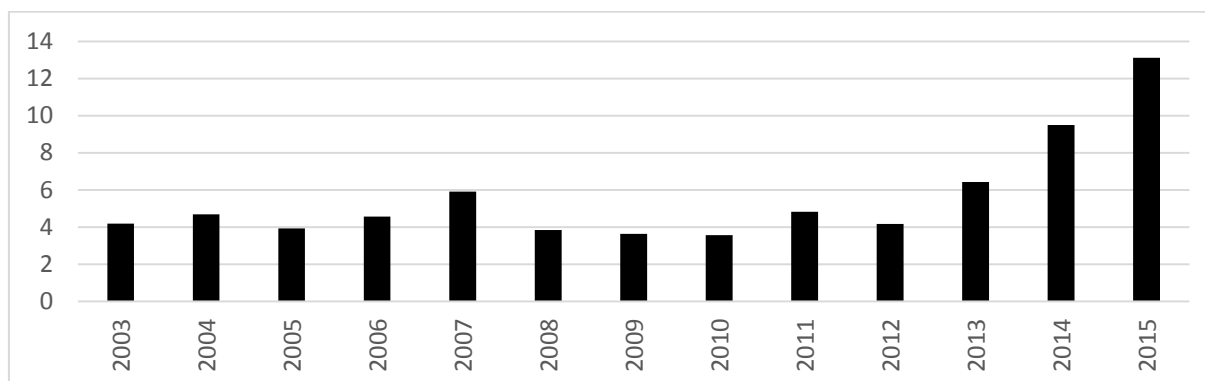
Source: Czech Statistical Office (2017)

Now our attention shall be given to investments from public finances provided to environmental protection and to climate protection (see FIG. 3). Investments to environmental protection and to climate protection include for instance modification of technology processes with the aim to prevent origination of pollution, eliminate waste gases and ventilated out air, removal of solid and gas emissions and to monitoring equipment for monitoring air cleanness.

Generally, it can be said that the above stated represents on average 22,9 % from the total investments from public finances for environmental protection in the Czech Republic. In the observed period in total 72,3 billion CZK was invested into environmental protection. The biggest investment was into air protection in year 2015 (13,11 billion CZK); the smallest investment was in year 2010 (3,56 billion CZK). There were seen five reductions in values/volumes in the following years: year 2005 (by billion CZK), year 2008 (by 2,06 billion CZK), year 2009 (by 0,21 billion CZK), year

2010 (by 0,07 billion CZK) and year 2012 (by 0,65 billion CZK). It can be stated that investments have had an increasing trend since year 2012. In the period 2012 to 2015 there was invested 33,2 billion CZK, which represents 45,9 % of the total investments volume.

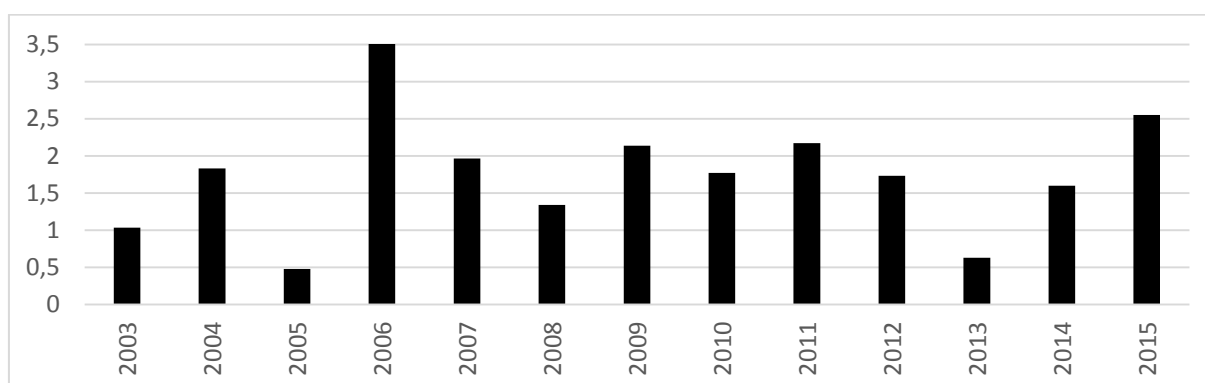
FIG. 3: Development of Investments into Air Protection (billion CZK)



Source: Czech Statistical Office (2017)

Further the development of investments into environmental protection in the areas of transport and warehousing shall be analysed. These investments are showed in FIG. 4. In the observed period 22,74 billion CZK were invested from public finances in total, and that represents 7,2% of the total investments for environmental protection. The development does not have a stable trend. There are frequent declines in investments; in concrete words there are six declines. The highest investments were made in year 2006 (3,52 billion CZK); the lowest investment was made in year 2005 (0,48 billion CZK). It can be seen that since year 2013 investments have been showing an increasing nature. In the period 2013 to 2015 4,78 billion CZK were invested, which represents 21 % of the total investments into environmental protection in the areas of transport and warehousing in the observed period.

FIG. 4: Development of Investments from public finances into Environmental Protection in the Areas Transport and Warehousing (billion CZK)

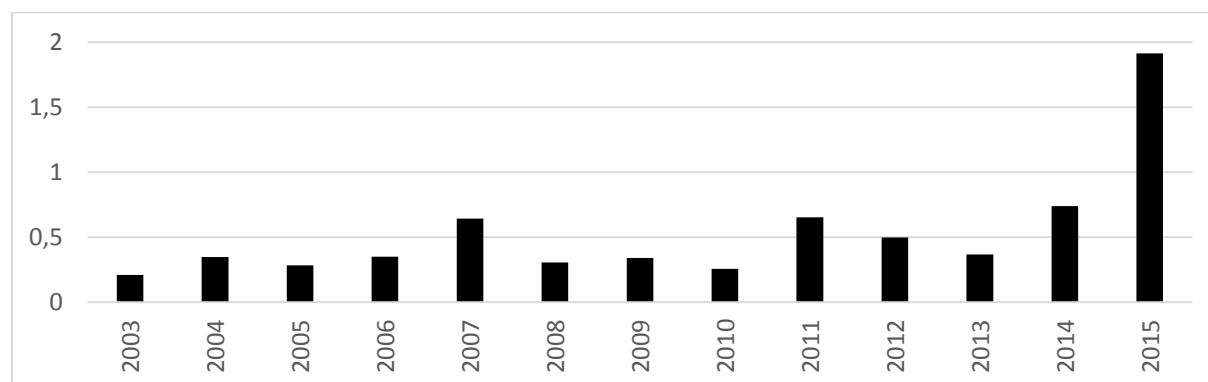


Source: Czech Statistical Office (2017)

The most important are investments from public finances into air protection in the areas of transport and warehousing. During the observed period 6,9 billion CZK were invested in this area, which represents 30,3 % of the total investment into environmental protection for the areas transport and

warehousing and 9,54 % of the total investment into air protection. The biggest investment was implemented in year 2015 (1,91 billion CZK). The smallest investment was reported in year 2008 (0,21 billion CZK). It can be concluded from this information that the reported decline had been caused by the debt crises/economic crises that hit the European Union in that period. As it is clear from FIG. 5 since year 2013 volumes/values have been increasing. In the period 2013 to 2015 3,02 billion CZK were invested which is 43,8 % of investment from public finances into air protection in the areas transport and warehousing.

FIG. 5: Development of Investments from public finances into Air Protection in the Areas Transport and Warehousing (billion CZK)

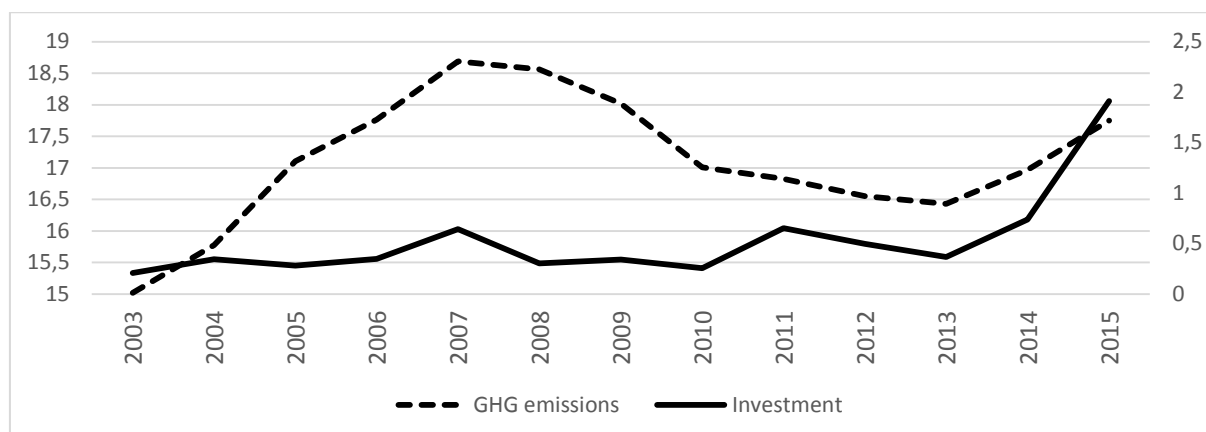


Source: Czech Statistical Office (2017)

3 Comparison of the Development of GHG Emissions from Transport in the Czech Republic and Investment from public finances into Environmental Protection in the Areas Transport and Warehousing

In FIG. 6 there is demonstrated the development of GHG emissions from transport and investment from public finances into air protection in the areas transport and warehousing. It can be seen that the developments of both time lines have a similar character. It is possible to conclude that this development can be divided into three periods in a similar way as it was divided in the description of GHG emissions from transport development. In the period 2003 to 2007 values were growing (with the exception of expenditures for air protection in the areas transport and warehousing for year 2005 when values declined). In the second period, that is year 2008 to 2013, values were declining (with the exception of expenditures for air protection in the areas transport and warehousing in year 2009 and year 2011, when the values increased). In the third period (between years 2014 and 2015) we can see increase of values in both of the time lines. Investment growth rate for investment into air protection in the areas transport and warehousing in year 2015 is bigger than GHG emissions from transport growth rate. It can be assumed that in the following years GHG emissions from transport shall decline.

FIG. 6: Development of GHG Emissions from Transport in the CR (MT of CO₂eq) and of Investment from public finances into Environmental Protection in the Areas GHG Transport and Warehousing



Source: Czech Statistical Office (2017), Eurostat (2016)

Conclusion

It has issued from the analysis of relevant technical literature that the issue of GHG emissions produced by transport is a highly topical subject. The reason for this is the fact that transport is important for many national economy sectors and also the fact that transport has a large number of negative impacts on the environment. A large number of authors deal with the idea that economic growth is accompanied by increasing volume of GHG emissions production. In the last three years of the observed period (2013 to 2015) values of GHG emissions from transport have been growing. This development is considered alarming and thereby it is essential to take, on the national level, drastic measures that will help to stop or reduce the increase of GHG emissions. Since year 2013 expenditures into environmental protection have been growing, in concrete terms expenditures to air and climate protection in the area of transport that has been the subject of our research in the above-mentioned text. With a certain rate of probability it is possible to forecast that increased investment from public finances shall have positive impact on the reduction of GHG emissions in the area of transport. It is important to take into consideration here that transport sector depends on public budgets finance. One of potential solutions could be PPP projects. Co-financing from the private sector could allocate larger volumes of financial resources that can be invested into environmental protection. Currently this type of financing is considered to be innovative and it is scarcely used.

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STATE MONOPOLIES IN INTERWAR CZECHOSLOVAKIA

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Abstract: *The Czechoslovak state had a (financial) monopoly on tobacco, salt, artificial sweeteners, and explosive substances between the two world wars. There were also several large national enterprises. In the 1930s, cartelisation took place with state approval (Act No. 141/1933 Sb.z. a n.) and ‘the grain monopoly’ was established in 1934 (Decree No. 137/1934 Sb.z. a n.). The paper examines the various roles of state monopolies as major sources of state finances, important elements in national security, or anti-crisis measures.*

Keywords: *state monopoly, cartels, grain monopoly*

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Introduction

Czechoslovakia was established in 1918 and in the first decades of its existence was seeking sources of funding for the state administration. In addition to standard state revenues such as taxes, fees, and customs duties there were other payments and fiscal measures which contributed to the state budget revenues. In general, states exert their power through the public administration of a specific activity. The Czechoslovak state too capitalised on certain activities and businesses which the state either reserved for itself or collected a special fee from every such activity or business. The purpose of this paper is to identify such additional sources of income and analyse the reasons for their imposition and use.

1 State financial monopolies

The structure of fiscal revenues was rather complicated (see Šouša 2009, pp. 88-133). Czechoslovakia adopted, through the Reception Act, the dual legal order of Austro-Hungary which included the so-called (state) financial monopolies. At the time, the state budget covered the state financial monopoly on tobacco, salt, and artificial sweeteners and, since 1922, also the monopoly on explosives. Even though monopoly activities may also include for example postal services provided under an exclusive licence or other licensed activities (such as state lotteries), at the time these activities were classified as so-called national enterprises (see below). The ‘tobacco directorate’ (*tabáková režie*) was classified as both a state financial monopoly and a national enterprise. The excise (*akcíz*), a type of indirect excise tax, was imposed on sugar, spirits, mineral oil, beer, sparkling wines, and matches (Šíroký, 2008, p. 38).

The tobacco financial monopoly consisted in the determination of the prices of products and the collection of licence fees on imports. Additionally, a separate national enterprise under the name of 'tobacco directorate' (*tabáková režie*) was formed under Act No. 404/1922 Sb. z. a n. (Collection of Laws and Ordinances). The supreme administrative authority in charge of the 'tobacco directorate' was the Ministry of Finance. The headquarters of the 'tobacco directorate', with its registered address in Prague, managed 97 tobacco factories in Bohemia, 6 in Moravia, 5 in Slovakia, and 1 in Carpathian Ruthenia. The 'tobacco directorate' contributed the highest revenues to the state budget from both the financial monopoly and the national enterprise, therefore the financial factor played the primary role. Another major factor was the social one: it was decided that tobacconist shops would be allocated to people disabled during the war, widows, orphans, and other persons injured as a result of war. It was even declared in the agricultural policy that domestic cultivation of tobacco should be increased.

The salt monopoly gained importance after the annexation of Carpathian Ruthenia to Czechoslovakia as it meant the acquisition of salt mines in Solotvyno. Together with the mines in Solivar in eastern Slovakia this made Czechoslovakia self-sufficient in the production of salt. Salt production was subordinated to the Ministry of Public Works, while the Ministry of Finance was in charge of distribution and sale.

The state financial monopoly on artificial sweeteners was introduced during the war by Imperial Decree No. 37 of 25 January 1917. Even after the establishment of the republic, the monopoly continued and one of the justifications therefor was the need to protect the farmers growing and processing sugar beet, for whom the manufacturers of cheaper saccharin would constitute devastating competition.

After the establishment of an independent state, a state financial monopoly was imposed on explosive substances under Act No. 414/1919 Sb. z. a n. to introduce the monopoly for explosive substances of 15 July 1919. The administration of the monopoly on explosive substances was carried out by the Ministry of Finance. A joint-stock company for the manufacturing of explosives was formed under the name *Československá akciová továrna na látky výbušné*, with its registered address in Prague, which was granted the monopoly for the production of explosives from the Ministry of Finance for a period of 30 years beginning on 1 July 1923. In addition to financial revenues, security was a decisive factor. Under s. 2 of Decree No. 615/1920 Sb. z. a n. to implement Act No. 141/1919 Sb. z. a n., the entrepreneur was under the duty to comply with all regulations stipulated by the Ministry of National Defence for military purposes.

Table number 1 above shows that state financial monopolies represented important sources of state finance. It illustrates the overwhelming importance of the 'tobacco directorate', while the salt monopoly was an historical legacy, and the monopoly on explosives did not produce very high fiscal revenues but was important in order to keep the production and sale of hazardous goods under control.

TAB. 1: State budget revenues from state financial monopolies

Financial monopoly	“Tobacco directorate”	Salt	Explosives	Artificial sweeteners
Year	Payment into the state budget in Czechoslovak koruna			
1919	107,000,000	12,555,373	-	13,617,256
1920	335,000,000	30,018,728	-	37,655,260
1921	600,000,000	27,626,624	22,814,056	8,470,785
1922	800,000,000	45,454,153	22,381,088	5,865,242
1923	907,677,904	22,432,826	22,730,049	3,130,733
1924	1,200,672,165	21,055,529	21,313,918	2,651,573
1925	1,093,974,909	24,909,260	20,649,158	2,247,779
1926	1,241,610,476	24,420,704	16,941,837	2,032,817
1927	1,089,568,064	28,570,621	18,215,062	2,317,865
1928	1,465,309,068	24,411,417	14,634,780	2,345,156
1929	1,273,000,000	18,502,023	14,541,905	2,580,346
1930	1,382,007,900	55,743,333	15,101,856	2,846,042

Source: Kozák, J. (1932). Československá finanční politika. [Czechoslovak Financial Policy] Praha: Orbis, pp. 140-143.

2 National monopoly enterprises

After the establishment of Czechoslovakia the state took over the property of the former monarchy and the ruling Habsburg dynasty. The majority of national enterprises were of a monopoly nature or substantially influenced the given market (e.g., *Poštovní spořitelna* – ‘the Postal Savings Association’). The biggest enterprises included *Československé státní železnice* – ‘Czechoslovak State Railways’, *Československá pošta* – ‘Czechoslovak Post’ (the monopoly for post offices, telegraphs, and telephones), *Státní doly a hutě* – ‘National Mines and Ironworks’, *Státní lesy a statky* – ‘National Forests and Farms’, *Státní statek Lány* – ‘National farm in Lány’, various school-run agricultural enterprises, the ‘tobacco directorate’, *Státní mincovna v Kremnici* – ‘National Mint in Kremnice’, *Státní lázně* – ‘National spas’, *Státní loterie* – ‘National Lotteries’, *Státní tiskárny* – ‘National printing works’ in Prague, Žatec, Bratislava, Košice and Uzhhorod, *Československá tisková kancelář* – ‘Czechoslovak Press Agency’, *Úřední noviny* – ‘Official Journal’ in Prague and Bratislava, *Československé závody na výrobu zbraní* – ‘Czechoslovak enterprises for the production of weapons’ in Brno, *Vojenská továrna na letadla* – ‘Military Factory for Airplanes’ and some other industrial enterprises. The group of national enterprises was later expanded to include *Československé*

aerolinie – ‘Czechoslovak Airlines’, *Československý film* – ‘Czechoslovak Film’, and *Plynárenské podniky Protektorátu Čechy a Morava* – ‘Gasworks of the Protectorate of Bohemia and Moravia’.

The state railways were the biggest national enterprise. At the time of its establishment Czechoslovakia had 13,127 km of railroad tracks, of which the state owned 7,932 km. However, the state operated a total of 12,178 km of railroad tracks, or 92.77% of all tracks and therefore had a virtual monopoly on railways (Rašín, 1922, p. 99). The nationalised railways were loss-making already at the time of Austria, and Czechoslovakia took over the railways in poor condition as a result of minimum maintenance and zero investments made during the war. The fleet was in a similar condition and additionally the government in Vienna and Budapest made sure to get as many engines and carriages as possible to the future Austria and Hungary at the end of war when the disintegration of the monarchy was inevitable (Rašín, 1922, p. 100).

According to statistical data from the Ministry of Railways, in 1920 the income of Czechoslovak State Railways from passenger transport was 784.3 million crowns, from the transport of goods 3,021.3 million crowns, and from miscellaneous income 1,106.7 million crowns, for a total of 4,912.4 million crowns. Operating expenses stood at 3,396.3 million crowns and thus the operating profit was 1,516 million crowns (Pazourek, 1924, p. 7). This amount reflected an increase in transport tariffs, but did not include investment in the railways. The state railways were perceived as a public good and the duty of the state to provide basic transport.

After the end of World War I, the low efficiency of some national enterprises was criticised, as well as overemployment and excessive bureaucracy (Pazourek, 1924, pp. 7-8). There was also a discussion as to whether the state should increase, or on the contrary reduce, the number of national enterprises. The finances of national enterprises had to be managed independently of the national budget with their own operating capital, and the national budget was to present only the final profit or loss of the national enterprises. This is why on 18 December 1922 an Act was adopted under No. 404/1922 Sb. z. a n., to regulate the financial management of national enterprises, institutes, and facilities that are not primarily charged with administrative tasks. In addition, a government decree to implement the act was adopted under No. 206/1924 Sb. z. a n. It required that national enterprises be managed so that they fulfil their purpose in the national economy or their administrative purpose in the best possible manner while heeding the generally accepted public interest, and that they be managed in accordance with the principles of due managerial care. All expenses including reasonable interest paid on invested capital had to be paid from the income from entrepreneurial activities. It was only possible to deviate from these principles in exceptional circumstances of important state (public and security) interest for which the government had to make the decision on a case by case basis.

3 Cartels

At the beginning of the 1920s the Czechoslovak Republic, similarly to other states in Central Europe, had no special codes regulating competition including the formation and existence of cartels and private monopolies. On the contrary, contracts with other entrepreneurs were generally perceived under the Constitutional Charter (Constitutional Act No. 121/1920 Sb. z. a n.) as part of guaranteed freedoms – section 108 (1): “Every citizen of Czechoslovakia has the freedom of establishment in any location in the Czechoslovak Republic, may acquire immovable property in that location, and perform entrepreneurial activities within the limits of general legal regulations”) and the right to associate (ss. 113 – 114) for the protection of employment and economic relations. Of course, the legal order

could define restrictions or partial limitations in the public interest, such as in the case of supplying citizens with food products (Hexner, 1929, p. 44).

In 1921 Czechoslovakia acceded to the international conventions for the protection of industrial property, and on 15 July 1927, based on the conventions Act No. 111/1927 Sb. z. a n., was adopted to regulate unfair competition prohibiting the destruction of competitors through the application of the so-called general clause invoking good morals in competition. However, this did not mean a ban on the formation of cartels and monopolies. This is why in the interwar Czechoslovak Republic, similarly to many other advanced industrial economies in Europe, monopoly corporations played an important role. In 1933 there were 538 such corporations in Czechoslovakia and in 1937 their number grew to 820, of which 133 were international corporations (Malý, 1997, p. 354).

The licences to form and operate cartels and private monopolies were regulated by Act No. 141/1933 Sb. z. a n. The concept of a cartel was defined as an agreement between independent entrepreneurs serving to achieve effective control over the market through which they mutually agreed to restrict or exclude competition primarily by the adjustment of production, sales, and trading conditions – which was perceived as a positive element stabilising the national economy. The formation of cartels was subject to the provisions of the Commercial Code and had to be in written form. Cartels were registered in the register maintained by the State Statistical Office. Cartel agreements were subject to the general provisions of civil and commercial law (Bažantová, 2017, pp. 35-36). This act did not apply to state monopolies and national enterprises unless they themselves were members of a cartel.

4 The grain monopoly

The economic crisis and mass insolvencies of farmers at the beginning of the 1930s yielded an additional element (Kárník, 2002, p. 54). First it was necessary to introduce a legislative solution enabling the government to take action as required: based on the Act on Extraordinary Regulating Power (Act No. 95/1933 Sb. z. a n.) the government could adopt decrees that were subject to subsequent approval by the Parliament. The government decrees could regulate only carefully defined areas: for example, the prices of agricultural and industrial products, rates of customs duties, and so forth. Even though the act on regulating power was originally intended only for the then government and only for one year, its validity was extended twice by amendments in both cases by an additional year up to 30 June 1935. Over the period of effect of this law, a total of 306 government decrees were issued, and many of them (approximately 130) dealt with the agricultural sector.

Government Decree No. 137/1934 Sb. z. a n., to regulate the trade with grain, flour, and mill products and certain feeds of 13 July 1934, also called the 'grain monopoly', had the biggest impact on agriculture (Malý, 1997, p. 356). The objective of the grain monopoly was according to section 1 to ensure and regulate the sale and prices of domestic grain. The prices of agricultural products were no longer created on the Crop Exchange by the ratio of supply and demand, but were instead announced by the government for each individual year by regions so that they ensured at least a minimum return on farming activities. Based on the above Government Decree 137/1934 Sb. z. a n. a joint stock Czechoslovak 'grain company' was formed under the name of *akciová Československá obilní společnost*. The shareholders were all important agricultural unions, associations of agricultural producers, merchants, exporters, etc. This company, which was granted a monopoly for the purchase

and sale of grain, mill products, and feed from farmers, including the import of these products from abroad, was led by Ladislav Feierabend (1891–1969), an economist and the director of Kooperativa (business headquarters of agricultural cooperatives) who later became the Minister of Agriculture and then the Minister of Finance in the London government in exile. The ‘grain company’ had the duty to buy from the farmers all the grain they wanted to sell for the announced prices. Any potential losses of the ‘grain company’ were to be covered from its reserve funds or paid by the government. The ‘grain company’ had a duty to check the quality of grain when purchasing it, and disputes were decided by an expert committee of the relevant crop exchange in accordance with the rules of the exchange. All the activities of the ‘grain company’ were subject to state supervision performed by the government commissioner appointed by the Minister of Finance.

Conclusion

After the establishment of Czechoslovakia, national enterprises and financial monopolies played an important role in financing the country’s expenditures and at the time represented approximately one quarter of budget revenues (Pazourek, 1924, pp. 3-5). There was a clear effort to efficiently administer these sources of revenue and to achieve the highest possible yield for the state budget. This had to be done through the separation of national enterprises and the monopolies from the state finances in a manner determined by Act No. 404/1922 Sb. z. a n. so that they would be converted into independent economic units and could succeed in the market economy using their privileges.

In addition to the fiscal role of the financial monopolies and national enterprises there was also a public role (ensuring transport), a defence and security role (financial monopoly on explosives, military national enterprises), as well as a social role (allocation of tobacconist shops based on the “tobacco directorate”).

During the Great Depression in the 1930s, the government became more significantly involved in the regulation of the economy, justified by measures to mitigate the crisis and to save Czechoslovak entrepreneurs primarily in the agricultural sector, as evidenced by the so-called grain monopoly.

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„There are no effective or ineffective enterprises,
there are only better or less well-managed enterprises”
Druker P. 1992

QUALITY COSTS IN ACCOUNTING

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Abstract: *The cost of quality is one of solutions of modern cost accounting. It is considered the most important element of the quality management system. It is used to assess effectiveness of quality management in an enterprise and to create the basis for implementation of internal quality improvement programs by defining problems to be solved, areas of key activities or opportunities. The article discusses quality costs and their role in the company. In addition, the issue of implementation of cost of quality and quality cost analysis on the example of SIGMA was described. The research was based on the analysis of the subject literature and personal interview conducted in the analyzed company.*

Keywords: *cost of quality, analysis costs*

JEL classification: *M11, M41*

Grant affiliation:

Introduction

The issue of quality has been for many years in focus of both companies and customers, which are offered products. Often, criterion of product quality is a decisive factor in the company's acquisition of customers. The cost of quality is one of solutions of modern cost accounting. It is considered the most important element of the quality management system. It is used to assess effectiveness of quality management in an enterprise and to create the basis for implementation of internal quality improvement programs by defining problems to be solved, areas of key activities or opportunities. Although it is not obligatory to run a quality cost account, it is obvious that quality costs are an important area of improvement. The aim is to optimize these costs to ensure a certain quality of production on the one hand and reduce the production costs as much as possible. Estimated costs of quality are 5-15% of production costs. Not all costs are visible at a first glance.

It is important to skillfully conduct a quality cost analysis, which largely determines the quality of decisions made by the management in managing the company's quality system.

Companies fail to take into consideration many various types of quality costs. Therefore, we are talking about the so-called visible costs and hidden costs, which are often graphically presented on the so-called iceberg quality costs.

The article discusses quality costs and their role in the company. In addition, the issue of implementation of cost of quality and quality cost analysis on the example of SIGMA was described. The research was based on the analysis of the subject literature and personal interview conducted in the analyzed company.

1 Quality costs and their analysis

Modern enterprises operate in a rapidly changing environment, in conditions of intensive technology development and very high competition. Business reality points to the growing dependence of producers on consumers. In recent years, the market imposes the necessity to constantly increase quality of products, leaving at the same time few possibilities to raise prices, and often even forces them to lower them (Bailom, Matzler, Tschernernjak 2009, pp. 13-14). Today's consumer is a consumer expecting high quality products and services. To meet these requirements, organizations are increasingly trying to establish emotional, based on trust, relationships with clients. It is also becoming increasingly important to ensure high quality of products and services and to increase the value provided to clients, for example as part of cooperation with the client in the open innovation model as well as widely understood co-creation of values (for more details see: Jelonek 2013, pp. 262-271).

Increase in interest in quality has contributed to intensification of research on the structure and division of quality costs for enterprises. Earlier, quality costs in accounting were often treated very briefly, which resulted from the low and insufficient level of knowledge in this area and the lack of implementation of integrated management systems. Currently, the quality cost accounting is considered the most important element of quality management system

Many countries have decided to introduce the ISO 9000 series of standards into the regulatory set, which also deal with quality costs. The increase in interest in quality costs is also due to the fact that adapting the market offer to the needs of recipients and the possibility of its easy improvement constitute an important asset in the fight for client, which is reflected in profitability of a business unit. There is a close relationship between financial result achieved by the company and the level of product quality. Quality costs are an important tool used to reduce own costs, and at the same time play an important role in determining the company's policy (Skrzypek, Czernastek, 1995, p. 34). There are many concepts of quality costs in the literature on the subject. However, due to the fact that the concept of quality approximates their structure, both the theory of quality management and economic practice often defines costs through their structure. Most frequently presented are characteristics of the concepts of the most important authorities in this field: A.V. Feigenbaum, J.M. Juran, P. Crosby, G. Taguchi, J. Banka, J.J. Dahlgaard, K. Kristensen and G.H. Kanji and quality costs based on the international standard ISO 9000 standards (for more information see eg Campanella 1999, p. 5, Yang 2008, pp. 175-191, Kendirli, Tuna 2009, pp. 21-32, Zymonik 2003). Considering today's pro-market attitude of enterprises and undertaking difficult-to-measure activities, such as shaping the company's image (which may also be a value for the client), quality costs can be defined as all costs incurred by the enterprise to achieve full customer satisfaction at the time of sale and during the use of the product (see eg Rogala 2012, p. 128).

Cost of quality accounting is a tool supporting and enabling quality management. It aims to record and analyze quality-related costs, leading to their optimization, thanks to the identification of ineffective activities and internal improvement actions. Information on quality costs should be useful

in fulfilling management functions in an organization, i.e. should be used in planning (including improvement), performance, control and improvement of activities. Company should take steps to ensure that information on quality costs is obtained and used in a continuous and repeatable manner. That is why it is so important to analyze quality costs, thanks to which it is possible to improve the quality management system in many areas of company's activity. Analysis of the quality costs should be performed in many cross-sections, in order to obtain an assessment of effectiveness of operations of business unit, as well as minimization of production costs. It includes changes in the structure of quality costs, interpretation of relations between individual cost groups, trend of their changes over time, assessment of quality costs in relation to established quality policy of the company and determination of reasons for deviations of actual costs from planned quantities. This analysis provides the enterprise with necessary information about places of generating costs, as well as on the company's weaknesses and processes occurring in it. This information should be used by management in decision making process, both operational and strategic, as well as for planning and analyzing quality objectives and the organization's quality policy. Results of analyzes and conclusions are provided in the form of a report to individual units responsible for incurred costs related to the quality of implemented tasks. After receiving feedback on activities planned and undertaken, a report for top management is prepared (for more, see Balon 2012, pp. 446-449, Sulowska 2012, p. 706).

Basic source of information on costs are accounting records, however, traditional accounting solutions used in many enterprises make it difficult to observe quality costs because they are not recorded as a separate category, but collectively, most often in the total sum of departmental costs, overhead costs or selling costs. Determining what part of company's own costs are quality costs is therefore a very difficult task, and when extracting them it is necessary to use estimates. Data obtained in this way are neither reliable nor transparent. Aggregated information on costs significantly hampers quality management in the enterprise. Striving for optimization of quality costs requires a thorough knowledge of not only their size, types, but also places and reasons for their formation. For this purpose, it is necessary to organize an efficient system for measuring and registering these costs (Piechota, 2004, p. 236). Taking into account generally accepted solutions of registration systems, quality costs can be grouped both in a system by type and in a system by type of activity. An extremely important problem, from the point of view of cost of quality, is the identification of cost centers, so that they are recorded according to actual place of their creation, and not the places of disclosure. Correct records are related to changes in the company's chart of accounts, which involve adjusting it to the needs of the quality cost calculation. It should be noted that there is no universal quality cost accounting model that could be used in any enterprise. Such a model should be developed individually, tailored to the information needs of managers. It is important that implemented quality cost account provides information so significant that the cost of obtaining this information exceeds the cost of implementing and maintaining the quality cost accounting system.

2 Analysis of the cost of quality in practice – a case study

This paper presents basic aspects of the implementation of quality cost account by the "SIGMA" company, producing chandeliers and lamps in south-western Poland. Analyzed company belongs to the SME group, where percentage of undertaking pro-quality activities and implementing the cost of quality is relatively small. Last year, the company decided to implement a comprehensive quality

management system, which aims to improve competitiveness, reduce operating costs and improve quality of products manufactured and sold. In order to be able to achieve assumed goals, the natural consequence was the implementation and application of a tool that would allow to assess effects in this area, i.e. the cost of quality.

It was decided that ultimately quality costs will be separated in accordance with the modern approach, often chosen by enterprises among classifications represented in the literature (including Zymonik 2003, Schiffauerova A., Thomson V. 2006) on the costs of internal and external quality assurance. In the first implementation phase, attention was focused on costs of internal quality assurance, which are divided into compliance and non-compliance costs. Compliance costs consists of prevention costs, i.e. costs of undertaking actions aimed at preventing poor quality and evaluation costs, i.e. costs of tests and inspections carried out in order to check whether a certain quality is obtained.

Non-compliance costs (damage or loss) consist of costs of internal errors and costs of external errors. Costs of internal errors are a consequence of damage or errors occurring in the company, i.e. costs resulting from the fact that the product does not meet quality requirements before delivery to the customer (costs of re-manufacturing, improvement, repair, re-examination, scrapping, etc.). Costs of external errors are a consequence of damage to the product after delivery to the customer, including costs resulting from the fact that the product does not meet quality requirements after delivery (costs related to product servicing, warranty proceedings, product returns, direct costs and discounts, costs of legal liability).

Records of quality costs are carried out in a traditional way. Accounting department is the basic source of information about the size and types of incurred quality costs. Additionally, the operative records of quality costs are carried out by the quality management department and used in a limited way in daily analysis. Identification, registration, control and analysis of quality costs related to the production of a product are reduced to monitoring costs of product quality assessment and qualification of internal and external failures. This does not give a full picture of the scale, type and structure of costs incurred, therefore in the next stage the company will undertake activities necessary to calculate, analyze and assess costs related to the downtimes resulting, among others, from the delivery of poor quality materials and their current unavailability, from production errors, costs of exceeding the quality requirements, which do not constitute an added value for the customer, costs of liquidation of defective products or costs of lost profits. Management is aware that records based on the applied cost accounting do not allow the disclosure of all quality costs. The costs of non-compliance shown in quality cost calculation are usually the tip of the iceberg. The management of SIGMA is interested, however, in active and healthy reduction of costs of poor quality, which is why in the next stage they want to introduce modifications in the current cost calculation in order to conduct multidimensional registration of quality costs, which will allow for in-depth cost analyzes. Reports using different types of cost accounting may then be generated. In the next stage of implementation of the quality cost account, the management board plans to create a combination of the cost recognition by: nature, subjective and objective, which would be the cost of quality based on activities (occurring in the production and sales process). Presentation of the cost of quality through this approach will allow, first and foremost, to obtain information on activities that are attributable to creation of a given cost item and to determine the costs of quality of activities and their analysis. Ultimately, the Company wants to treat the quality cost accounting as a

comprehensive management information system that indicates the relationship between pro-quality activities and the level of costs incurred and enables identification of the main quality cost centers, optimization of these costs and determination of costs and indication of products with the highest quality costs.

On the basis of defined scope and structure of planned quality cost accounting, a chart of accounts has been prepared that is consistent with company's existing cost records. Particular attention was paid to the good organization of document flow, their description and the entire system of assigning incurred costs to the cost of quality, and then to a specific group of quality costs. For this purpose, employees were provided with a model quality cost accounting model in the form of a procedure, including definitions, exact quality cost classification and source documents assigned to a given cost element along with corresponding account numbers and a specific scope of responsibility. Detailed guidelines of the procedure should allow for a clear assessment whether the given cost is actually a cost of quality, and if so, which cost group should be classified. In addition, a procedure was developed in the course of cost accounting. Having such a procedure in the company is necessary to ensure repeatability of the process and comparing costs from individual reporting and accounting periods. The scope of competences, rights and responsibilities of employees related to the scope of tests covered by the quality costs accounting is also precisely defined. Meeting these requirements in the opinion of managers is a condition for usefulness of the applied cost of quality. It is impossible to effectively manage costs, without their correct identification and classification to a specific group. The key role here is played by the competencies, awareness and commitment of employees that determine the quality of tasks performed, and as a result have an impact on the entity's financial performance. Ultimately, the cost information provided thanks to the systematically and reliably maintained quality cost accounting are to be a decision support tool in the quality management system and management quality assessment in the area under examination.

This year the company prepared for the first time a list of quality costs incurred in 2017, which is presented in Table 1.

TAB. 1: Quality costs in SIGMA

Quality costs:	Amount ¹	Structure
Costs of quality adjustment	46 900,00	32,82%
Prevention costs	13 600,00	9,52%
Products and processes planning	4 600,00	3,22%
Employees training in the area of quality	9 000,00	6,30%
Evaluation costs	33 300,00	23,30%
Control of purchased materials and components for production	5 400,00	3,78%
Testing of finished products	27 900,00	19,52%
Costs of non-adjustment of quality	96 000,00	67,18%
Internal costs of errors	32 700,00	22,88%
Testing products again (after possible elimination of detected failures)	3 400,00	2,30%
Repair of defective products detected before shipment to the customer	23 200,00	16,23%
Production waste	6 100,00	4,27%
External costs of errors	63 300,00	44,30%
Warranty repairs	48 000,00	33,59%
Returns handling	15 300,00	10,71%
Total quality costs incurred in 2017	142 900,00	100%

¹ due to the confidentiality of the analyzed company, only simulation values were included in the study

Revenues	840 000,00	
Quality costs as a% of revenues	17%	

Source: Own study based on internal materials of SIGMA

On the basis of the above specification, the team appointed to monitor and analyze quality costs was able to draw first conclusions that formed the basis for taking corrective actions. As you can see, the company incurs significant quality costs (17% of revenues). Analysis of the structure shows that expenditures on preventive measures are very low, as they constitute only 9.52% and over 67% are losses due to shortages. It is worrying that over 44% of quality costs are costs resulting from external errors. Based on conducted analysis, the company's owner decided to increase in 2018 expenditures on quality adjustment, mainly for prevention (preventive) measures, while taking corrective actions aimed at reducing losses resulting from errors. It also assumed a reduction in the relation of quality costs to revenues by 1 percentage point.

In subsequent reporting periods, a more detailed analysis of quality costs is planned, ultimately in all cross-sections, which will allow obtaining detailed information on:

identification of those categories of quality costs that can be reduced or eliminated,

internal structure of quality costs and cost structures included in particular categories,

cost centers,

the structure of direct and indirect quality costs and the structure of quality costs per manufactured product assortment groups,

reasons for the existence of costs of quality,

deviations between the planned and achieved volume of costs,

the impact of costs on the company's financial result,

defining the possibilities of reducing the costs of external and internal deficiencies by investing in preventive activities,

creating the basis for undertaking activities in the scope of organization of processes taking place in the enterprise, aimed at improving the quality of products offered to clients.

The company also plans to introduce a matrix layout of quality cost report, which will identify those areas of the company that are to a most extent responsible for error costs and those that have the largest share in expenditure on error prevention.

An index analysis is an integral part of the quality cost analysis. For the time being, the company has focused on the most important indicators, which are mentioned in the ISO standards, namely:

total quality costs in relation to revenues,

costs of non-adjustment in relation to revenues from the sale of products,

expenditures on adjusting quality in relation to revenues from sales of products,

total quality costs in relation to the value of assets,

costs of internal shortages in relation to the costs of direct remuneration with overheads,

costs of shortages in relation to the total cost of manufacturing,

costs of prevention in relation to operating profit,

In the next stage of implementation of the quality cost accounting, the Company plans to enlarge the set of indicators with non-financial measures in accordance with the approach represented by Crosson and Neeles (2008, p. 584) with regard to project quality, quality of material deliveries, quality of production process, delivery and production cycle time and customer satisfaction

Conclusion

Cost of quality accounting has been popular in Poland since the 1990s, however, research carried out in the pages of both scientific and industry journals (e.g. the magazine "Quality problems") indicates that only part of the cost of quality implementation has been introduced in large amount of enterprises. Many companies, especially those that want to implement TQM are just introducing or considering a comprehensive implementation of the cost of quality, because the quality costs are an important diagnostic indicator of weaknesses in the company that can be found in the following departments: construction, supply, production, In extreme cases, quality costs may exceed the benefits of increasing or maintaining a certain level of quality. Optimization, including quality costs, is a search for the most favorable result value.

The analyzed company has been operating on the market for only a few years and is in the process of implementing TQM and the cost of quality. It tries to function according to the Deming principle: plan, do, act, check (possibly correct). 2017 was a pilot year for the identification of quality costs, their records, monitoring, control and analysis. The company wants to continuously improve the quality system and the quality cost calculation. The improvement cycle will include: a process that should ensure preparation of documentation in order to meet assumptions of measurable objectives of the project, implementation of the activities set out in the plan and collection of necessary information about its course, control of the performance of tasks compared to the plan and implementation of the undertaking, except that if there is a discrepancy during the check-up, it is necessary to start preventive action, which should lead to the implementation of the intended undertaking.

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COMPARATIVE ANALYSIS OF APARTMENT PRICES OVER THE LAST DECADES IN SLOVAKIA

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Abstract: *Housing and apartment purchase are topics of big interest to young people. According to UniCredit Bank estimates, real estate prices in Slovakia grew by an average of 5.7 percent from a year ago and people paid about 1350 euros for one square meter. In our article, we focused on the development of apartment prices in Slovakia over the last decades. What are differences in price history and trends in regions of Slovakia? What does it affect the change of apartment price? Our aim was to deal with a mathematical model describing changes in prices.*

Keywords: *apartment price, mathematical model, regression, correlation coefficients.*

JEL classification: *Q56, Q51*

Grant affiliation: *This contribution was undertaken as parts of the research project VEGA 1/0696/16.*

Introduction

The right to housing is embodied in many documents with international importance, of which Slovak Republic is a signatory. It is classified as a basic social right with special character. It is not perceived as a claimable right of an individual towards society, but rather based on the joint responsibility of society to the citizen. The housing accessibility and sustainability of housing are of the topical social subjects. The scope of housing need is determined by demographic development, social changes, e.g. the birth rate, the marriage rate, the divorce rate, and a growing number of single-member households. Especially Slovak feature "living in own" is preferred option, in spite of the fact that the buyers often get into debts for 20 to 30 years.

The price is one of important criteria in the decision-making process related to the purchase of dwelling. There is no objective analysis of market selling prices for real estate in Slovakia, which could be possible, for example, with Cadastral Register based on the prices indicated in the sales contracts. A lot of agencies or concerned parties have their own subjective analysis, and the results often differ from each other. The most reliable is analysis of the National Bank of Slovakia, based on the cooperation with the National Association of Estate Agents. According to these data, in Slovakia, the average price of floor area of dwelling increased from EUR 592/m² in 2002 to EUR 1 511/m² in 2008 (State Housing policy concept, 2018). The more favorable income situation of households and the positive expectations of population along with better accessibility of loans caused a higher demand on dwellings, which was reflected in the increase of dwellings prices. However, the financial crisis affected the construction sector which led to setting back of the implementation and revision

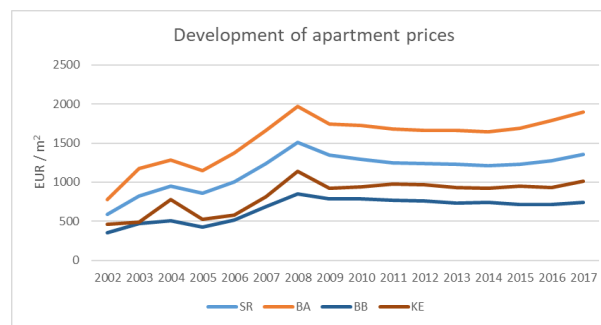
of several prepared projects. The prices started to decline in 2009 and in 2013 the average price achieved EUR 1 226/m² of floor area, which corresponds to the price level of year 2007 (State Housing policy concept, 2018). In the last years dwelling prices have grown, despite this, prices are still about 11% below peak values in 2008.

In our paper, we focused on three questions. Can we predict the future price development via regression analysis? What are relations in the time development of dwelling prices among regions of Slovakia? The Slovak republic is divided into eight regions: Bratislava, Trnava, Nitra, Trenčín, Žilina, Banská Bystrica, Košice, Prešov, and each of them has its own specifics in living condition, e.g. climate, economic situation, unemployment rate, free apartments offer, and so on. Is there mathematical correlation between the dwelling price and factors as the interest rate, the unemployment rate, and the average salary?

Economic literature consisting of econometric modelling of housing market is vast. The problem of the price evaluation and forecasting its trends is discussed in many articles, e.g. (Boitan, 2016) or (Geipele et al., 2012). The dwelling price is influenced by many various factors. Orientation, views from the property, noise, number of storeys, and the age of the building as important factors are presented in (Ferlan et al., 2017). Location (Vatin et al., 2014), distance from the city center (Herath & Maier, 2013), presence of and proximity to water (Bonetti et al., 2016) affect also the price. Many of housing studies focus the comparison of prices of residential real estate depending on the type of apartment and house type, e.g. in Saint Petersburg (Vatin et al., 2014) or major metropolitan areas in Poland (Zuzanska-Zysko, 2014). The problem of apartment prices and their overvaluation in the Czech Republic is discussed in (Zemcik, 2011). The situation on Slovak real estate market and its time development one may find in (Jakubec & Kardos, 2010).

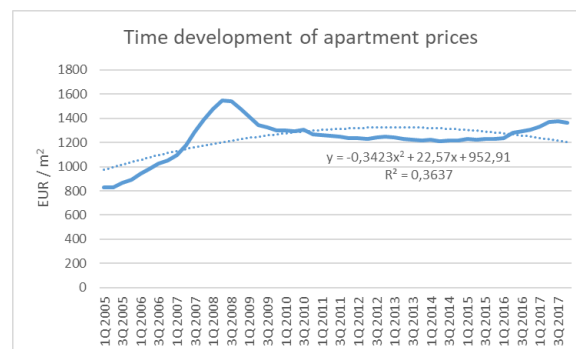
1 Time development of apartment price in Slovak Republic

We used data from the National Bank of Slovakia: the time series of the average price of floor area of dwelling (in EUR/m²) within the years 2002 – 2017. It is seen that during years 2002 -2008 the price grew strongly, within years 2009 -2013 the price declined to the level of the year 2007, then from the year 2013 the price has increased, and in the last two years, the price is rising strongly with demand buoyed by low interest rates. The price developments in the Slovak Republic (SR) and in Bratislava region (BA), which has the country's most expensive housing, are similar, it is seen that the development in Košice region (KE) doesn't copy Slovak trend (SR) entirely. The lowest prices have been in Banská Bystrica region (BB) (Fig. 1).

FIG. 1: Development of apartment prices in the period 2002 -2017

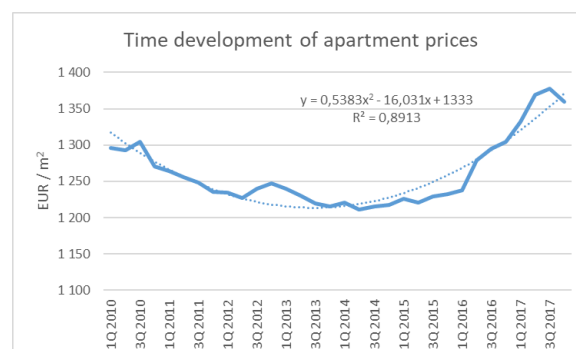
Source: own elaboration based on (Ceny nehnuteľností na bývanie podľa krajov, 2018)

We used the time series of the quarterly basis to forecast the future apartment price. Within the years 2005 – 2017 the using of any regression function is not appropriate, since the coefficient of determination R^2 is not significant (Fig. 2 shows the quadratic function with $R^2 = 0,3637$).

FIG. 2: Time development of apartment prices within 2005 -2017

Source: own elaboration based on (Ceny nehnuteľností na bývanie podľa krajov, 2018)

In the period 2010 – 2017 quadratic regression function $y = 0,5383x^2 - 16,031x + 1333$ is accurate, the coefficient of determination $R^2 = 0,8913$. By this regression we predicted the price of EUR 1 454 /m² in the end the year 2018.

FIG. 3: Time development of apartment prices within 2010 -2017

Source: own elaboration based on (Ceny nehnuteľností na bývanie podľa krajov, 2018)

2 Apartment prices in the regions

The trends in development of dwelling prices in the eight region of Slovak Republic seem to be similar. We calculated correlation coefficients between Slovak regions: Bratislava (BA), Trnava (TT), Nitra (NR), Trenčín (TN), Žilina (ZA), Banská Bystrica (BB), Košice (KE), Prešov (PO), and then between the regions and Slovak Republic (SR). The strongest mathematical bond is between the development in Nitra and Trnava ($R = 0.9764$), and Žilina with Banská Bystrica ($R = 0.9658$). The weakest mathematical bond is between Trnava and Trenčín ($R = 0.8302$), and Trenčín and Prešov ($R = 0.8376$). The development in Slovak Republic and in Bratislava region are the closest ($R = 0.9925$), and Trenčín region has the biggest difference ($R = 0.8818$). We must take into account that it is about the mathematical point of view and more extensive economic analysis is needed.

TAB. 1: Correlation coefficients between apartment prices in the regions

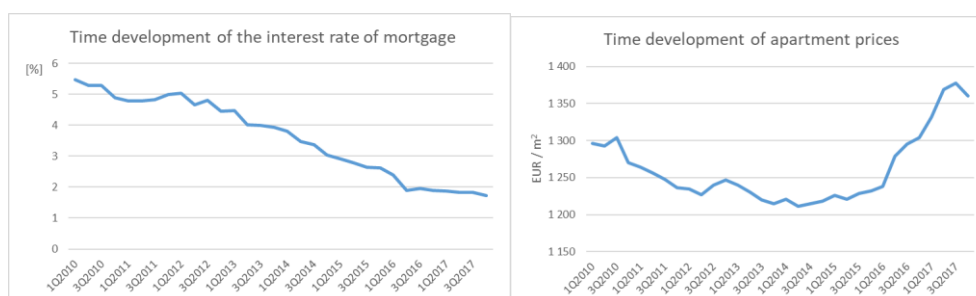
	BA	TT	NR	TN	ZA	BB	KE	PO
SR	0,9925	0,9636	0,8954	0,8818	0,9537	0,9667	0,9415	0,9706
BA		0,9484	0,8667	0,8550	0,9471	0,9529	0,9302	0,9441
TT			0,8539	0,8302	0,8920	0,9055	0,9111	0,9520
NR				0,9764	0,8806	0,9064	0,9441	0,8669
TN					0,8711	0,8936	0,9364	0,8376
ZA						0,9658	0,9181	0,9478
BB							0,9521	0,9469
KE								0,9036

Source: own elaboration based on (Ceny nehnuteľností na bývanie podľa krajov, 2018)

3 Apartment prices and economic conditions

We focused on the development of the apartment prices and some economic variables. Firstly, we compared the time series of interest rate of mortgage with the development of the apartment prices (Fig. 4). If we take into account the period 2005 – 2017 quarterly, the correlation coefficient is $R = -0.2030$, within 2010 – 2017 the correlation coefficient is $R = -0.3823$. It was interesting that it has not been proven a significant bond between them.

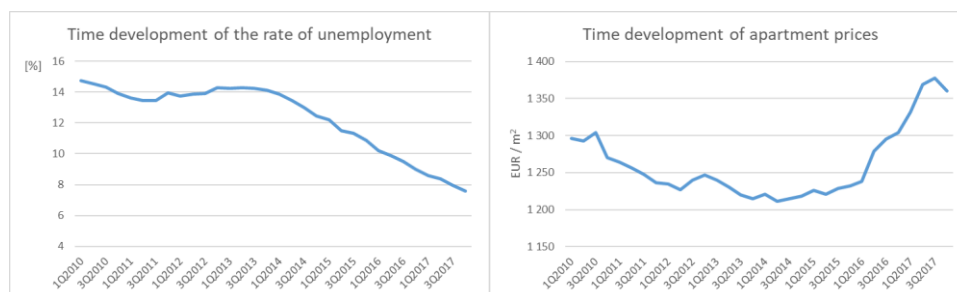
FIG. 4: Time development of interest rate of mortgage and apartment prices



Source: own elaboration based on (Makroekonomická databáza, 2018)

The rate of unemployment was of greater influence on the apartment prices. If we take into account the period 2005 – 2017 quarterly, the correlation coefficient is $R = -0.6683$, and within 2010 – 2017 the correlation coefficient is $R = -0.6567$. So the higher is the rate of unemployment, the lower is the average price of squared meter of floor area.

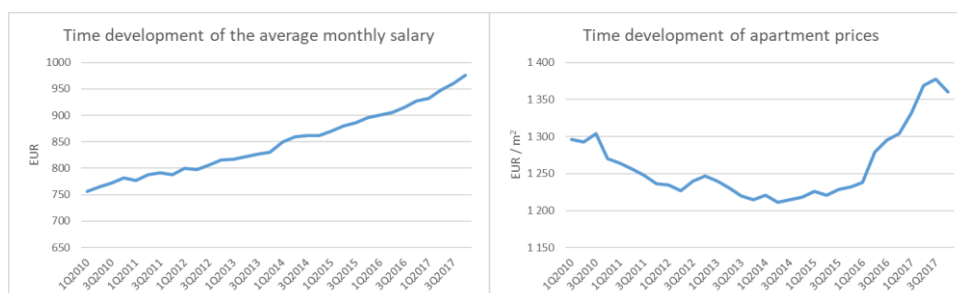
FIG. 5: Time development of rate of unemployment and apartment prices



Source: own elaboration based on (Makroekonomická databáza, 2018)

In the next, we looked at the average monthly salary and the apartment prices. If we take into account the period 2005 – 2017 quarterly, the correlation coefficient is $R = 0.5508$, and within 2010 – 2017 the correlation coefficient is $R = 0.4568$. We may say, the higher is the average salary, the higher is the average price of squared meter of floor area, but the bond is not so significant.

FIG. 6: Time development of average monthly salary and apartment prices



Source: own elaboration based on (Makroekonomická databáza, 2018)

Each of results above is only a mathematical interpretation. It would be of interest to look relations in more details and to explain in broader economic context, but it was not possible within the scope of this paper.

Conclusion

A citizen in the conditions of market economy is a bearer of primary responsibility for acquisition of his or her own housing. Owner-occupied housing is dominant housing form in Slovakia. More than 90% dwelling are owned by private persons, which is one of the highest rates within the EU. One of the reasons is the low supply of affordable rental dwellings. Another factor favouring the owner-occupied housing are the current, historically lowest, interest rates for mortgage loans. Similar favourable conditions are also provided by building savings products and other housing specialized loans offered by commercial banks. Furthermore, the real estate is one of the best investments, the

price for real estate remains more or less stable. These are some of the reasons, why the real estate market is active and interesting for buyers and sellers. Our aim was to look on the changes of dwelling prices from the mathematical point. We found quadratic regression function $y = 0.5383x^2 - 16.031x + 1333$ of the coefficient of determination $R^2 = 0,8913$ for the evolution of the price of squared meter of floor area and predicted the value for the end of the year 2018. We calculated correlation coefficients between prices in regions of Slovak Republic. We found out that there is not the significant bond (or it is slightly negative) between the interest rate of mortgage and the apartment price; the correlation between the development of the rate of unemployment and the apartment price is close and negative, and the correlation between the development of the average monthly salary and the apartment price is positive.

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IS IT TIME TO AUDIT CONTROLLING?

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Abstract: *The systems of controlling which function in various companies are greatly diversified. Those differences can be observed in a few major areas. The first of them is a set of management systems included in controlling which are applied in a given company, since controlling can use several systems such as budgeting, cost accounting, strategic planning, target management and systems of motivation. All of those systems can apply varied specific tools, and each of those tools may be built on the basis of diverse rules, also with the use of simple principles of construction. Equally, those tools can make use of highly advanced methodologically, hence complicated, principles of construction. Thus, it is worth to analyse the condition of the functioning of controlling in a given company. Conducting an audit of controlling, aims at indicating directions for the improvement or development of that system. Such analysis will facilitate the comparison of the already functioning system with best practice. Naturally the systems of controlling play a crucial role in management, hence the need to prepare the rules of their auditing*

Keywords: *audit, controlling, budgeting, best practice*

JEL classification: G30, M21

Grant affiliation:

Introduction

These days, controlling has become a common system in support of management and is employed by a large number of companies. However, in many of them it does not operate in an entirely correct way, meeting the latest standards in this field. Therefore, it is vital to gather information regarding the correctness of the implementing and functioning of the system of controlling in a given company. Such data may be obtained through an audit of the applied system of controlling. Thanks to such an audit, one can receive information allowing for an improvement of the system of controlling functioning in a given enterprise.

The aim of this article is to define the tasks and the variety of audits of the systems of controlling operating in companies. This seems an easy task, yet a certain problem may emerge due to the lack of clear and universally accepted models of a well-functioning system of controlling.

The article refers to the selected available literature on the subject of auditing systems of controlling, as well as own experience acquired in conducting such audits in enterprises operating in varied sectors of the economy and in implementing information systems supporting controlling.

1 System of controlling in an enterprise and best practice

The management in many companies claim that in the enterprises they are in charge of, a system of controlling has been implemented and functions correctly. However, in practice it often turns out that such statements do not always hold true since unfortunately in many companies the implemented systems of controlling do not meet the required proper standards. Yet it is only in some of them that the controllers and managers are aware of this fact. The knowledge of this will allow them to improve the systems in the direction determined by best practices in controlling. Such a situation is shown here in Example 1.

Example 1

One of the enterprises run a training session regarding two vital elements in a system of controlling which are cost accounting and budgeting. One of the effects of that training was the identification of the ways of improving these systems of management. Its outcome was a report identifying the following needs for the modification of the systems of cost accounting and budgeting:

1. expanding a plan of accounts to increase the detailed identification of technical and human resources,
2. preparing instructions for recording revenues and costs,
3. preparing the principles of the calculation of prices and costs of the services rendered,
4. preparing an instruction of budgeting for individual centres of responsibility,
5. preparing a new structure of a budget for a single centre of responsibility including the scope of responsibility for individual positions in the budgets,
6. preparing budgets and profit and loss accounts for new enterprises at the investment stage,
7. selecting and implementing an information system supporting controlling and budgeting.

A system of controlling operates in this enterprise, however, many people claim that it is not fully operational. Its shortcomings were listed as:

1. the major lack of the necessary information,
2. the lack of knowledge regarding the principles of its functioning among the personnel from non-administrative departments,
3. the need to perform many time-absorbing tasks.

The above example illustrates the situation where, despite the already operating system of controlling, it was decided to conduct its analysis and then to improve it. The analysis was aimed at the assessment of the state of the existing system compared with the best standards required within this scope. Its result was to obtain the information on the appropriate ways of improving the system of controlling. In this company such an analysis was conducted only in respect of the systems of accounting, cost accounting and budgeting. Yet it should be mentioned here that controlling involves also many other systems of management. Hence it is worth noting that the presented audit did not involve all the potential areas of the controlling activity.

Therefore, the correct performance of a system of controlling should be analysed in the following aspects:

1. defining tasks of individual managers of the organizational units regarding their duties related to applying the tools of controlling,
2. determining and defining the scope of activity of the section of controlling or a designated specialist in controlling, and its position within the organizational structure,
3. establishing the scope of the responsibility and prerogatives of financial controllers,
4. elaborating the methods of budget planning,
5. preparing the procedures of planning, realizing and budget settlement,
6. appropriate records of revenues and costs,
7. establishing the procedures of recognizing costs, their accounting and calculating,
8. preparing a coherent system of financial reporting,
9. implementing systems of information,
10. relations of controlling with other systems of management.

The factors which influence the efficient functioning of controlling are also described in, among others, [Kotapski 2014, p. 306], [Kotapski 2017, pp. 37-38].

To sum up, before initiating the audit of controlling, two important issues should be settled. Firstly, the scope of examination; secondly, adopting a model for the comparison with a given system. This could be a model related to the trade sector or suited to the size of the company.

2 Definition and types of the audit of a system of controlling

An audit of the system of controlling provides information regarding the correctness of the implementation and functioning of the system of controlling in a given enterprise. The most significant outcome of this audit should be the indications as to the proposed ways of improving and developing the system of controlling. The audit can be performed in two mutually pervading perspectives, depending on the scope of the audit and the persons conducting it. Such criteria of classification will allow for setting two basic types of auditing a system of controlling, i.e. internal and external (Figure 1).

FIG. 1: Categories of an audit of a system of controlling

		Type of audit	
		An audit regarding correct use of the implemented tools of controlling	An audit regarding correct implementation of the tools of controlling
Persons conducting an audit	Employees of the section of controlling	Internal audit	-
	External consultants	-	External audit

Source: own elaboration

3 Internal audit of the system of controlling

Every developing enterprise undergoes changes. This process has to be closely followed and evaluated by information systems, including that of controlling. The changes in the system of controlling were described in, among others: [Hyra 2017, pp. 23-25], (Kilijański 2017, pp. 21-23). Therefore, employees in the section of controlling have to check regularly the functioning of the

system of controlling, since they are informed on the principles of functioning of the examined system and the aims it should achieve.

The fundamental aim of an internal audit is to verify the correctness in performance of their duties by the company employees, mainly the managers of centres of responsibility regarding the tasks covered by the system of controlling. Because of the need to analyse many detailed issues, it is recommended that the audit in respect of the above should be conducted by the staff of the section of controlling. The controllers are able to work more accurately and faster, and to use fewer resources in assessing whether the system of controlling within their own company functions according to plan.

Another valid aspect to discuss is the time of conducting this type of audit. There is no uniformly recommended period for conducting an internal audit of the functioning of a system of controlling as is the case in an external audit. Such timing can be selected fairly liberally, however it is worth remembering that in different periods of a year, one can obtain different effects. The optimal period for such an audit seems to be the time just after the completion of the financial report for the previous budget year, and before commencing work on the new budget. Thus, the outcome of the audit can be used to improve the system of planning a budget for the following year.

4 External audit of the system of controlling

An external audit of the system of controlling is conducted by an external consultant, and it is of paramount importance that such a person is a recognized authority on the subject of controlling. Commissioning a less experienced consultant, or even worse, someone without the relevant knowledge of the subject may produce a situation where he/she will not be able to indicate the scope of functioning of the system of controlling in the company which needs improving. The chosen consultant should have extensive practical experience and the knowledge of the latest solutions used in respect of individual tools of controlling.

Hands-on experience will allow the consultant to locate quickly potential problems, while the knowledge of the latest solutions used in controlling enables a comparison between those and the system operating in a given enterprise. However, the criterion of the auditor does not reflect the fundamental idea of the audit. In this case its basic aims are intended to verify:

1. the correctness of the construction of the applied tools of controlling.
2. the implemented tools of controlling.

Due to the fact that the main aim of external auditing is to examine the correctness of the principles of construction of the implemented tools of controlling, it is recommended that such audit should be conducted by external specialists. The employees of the enterprise who implemented specific tools of controlling executed that task according to their best knowledge. Therefore, they are unable to analyse in an entirely objective way whether the task was performed completely correctly.

Another factor distinguishing the two types of audit is the period in which they should be performed. In the case of an external audit, the timing is quite vital. It should be conducted on the conclusion of a budget year but before commencing the creation of the next year's budget. Thus the results of the audit can be used to introduce relevant corrections in the implemented tools of controlling. This is especially recommended when, in the outcome of the audit, there is a need to introduce significant changes in such areas as:

1. management methods,
2. scope of the conducted activity,
3. changes of personnel,
4. expenditure on restructuring,
5. investment in IT.

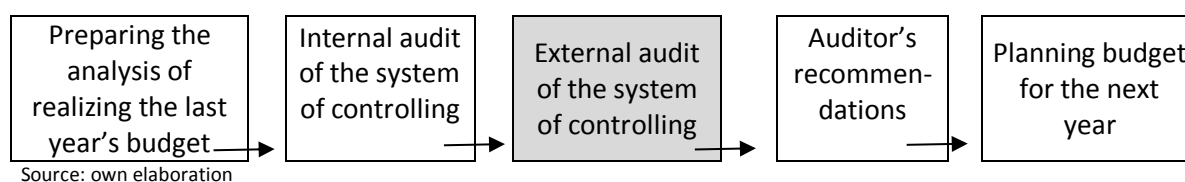
Yet another difference between the two types of audit is the frequency of conducting them. It is a good practice to perform an internal audit annually. As a result, the system of controlling in a given company will be improved every year. The external costs incurred in such an audit are not high since usually it only requires the allocation of time on the part of the controllers employed in the company itself.

On the other hand, an external audit requires a certain financial outlay on consulting services, hence many enterprises do not see the need to conduct it every year. In the case of a yearly internal audit it is actually not necessary to perform an external audit too often; it is recommended to repeat it approximately every few years. In the case of a company without any audit, and where in a period of three years there has not been any significant improvement in the applied tools of controlling, it can be clearly stated, and with a large degree of probability, that the existing system requires modernization, and it is worth to perform an audit of its system of controlling.

This situation arises from the huge global progress in the field of modernization of the tools and methods applied in their work by controllers, and in particular the available IT instruments which allow to examine a variety of data related to various areas of company activity, not to mention the ways of presenting data and information and their automatization (see [Lapajne 2017], pp. 24-27).

The external audit should take place just after the completion of the internal audit (Figure 2). The results of the internal audit may be helpful in outlining the scope of work carried out during the external audit. On the basis of their results it will be possible to establish the direction of the work conducted by the external consultant, thus avoiding a thorough analysis of those areas of the controlling's functioning which were confirmed as correct.

FIG. 2: Location of the controlling system's audit within the process of budgeting



5 Final report in the audit of controlling

Independently of the type of audit and its scope, it should be concluded with a final report consisting of the following parts:

1. detailed analysis of the principles of constructing individual tools of controlling,
2. synthetic analysis of the functioning of the system of controlling,
3. recommended actions in order to improve in future the system of controlling,
4. timetable and scope of tasks to realise based on the results of the conducted audit,
5. final conclusions.

A detailed analysis consists in describing the principles of the constructions used in the tools of controlling in a given enterprise. This part of the report should indicate the strengths and weaknesses of the adopted solutions. Additionally, it should also contain suggestions regarding the correct ways of modifying the implemented tools. Due to the descriptive nature of presenting information, the detailed analysis should be as precise as possible and hence fairly extensive. In effect it will constitute the largest part of the whole final report. This part of the report will be addressed mainly to the staff of the section of controlling, who will obtain in this way detailed information helpful for the improvement of the individual tools of controlling.

Another part of the final report covers a synthetic analysis of the functioning of the company system of controlling. It outlines in brief the basic information included in the detailed analysis and takes the form of a directive summary, and as such it is included in the first part of the whole report. Its fundamental role is to present the results of the audit in the shortest form, since it is usually written in the form of bullet points and not as a description. Such an analysis is mostly addressed to the company board of management, which on its basis should decide on the future strategic directions of developing the system of controlling.

Both an internal and external audit should be presented in written form. When carrying out an audit it should be possible for every manager to comment on the audited area and the scope of it, which may prevent theoretical mistakes, including that of an incomplete description. As a result, the participants of the system of controlling will become familiar with the problems affecting the whole enterprise, and are included in the process of implementation, thus reducing the risk of resisting change [Czakoń 2006, p. 10].

The final element of the audit report has to include the tasks and the timetable of their implementation, as well as to name the employee responsible for it. Without all this the report will remain in practice yet another pointless piece of paper.

Conclusion

An audit of the system of controlling may be prepared for various purposes, among them:

1. improvement of the functioning of the existing system of controlling in an enterprise,
2. expansion of the operating system of controlling,
3. implementation of IT system supporting the controlling.

In each of these cases the scope of audit may differ, hence it is difficult to define a single universal standard for an audit of a system of controlling. Other examples were described in publications of, among others [Chalastra 2010, pp. 21-29]; Czakoń 2007, pp. 17-20]. Every conducted audit has to have an individually set aim and scope. These factors should consider the state of development of controlling in a given enterprise, such as:

1. expertise of the staff in the section of controlling and of the management,
2. degree of complexity of the business processes,
3. availability of IT resources,
4. existing experience.

According to the authors, based on their own experience, an attempt should be made to define a model scope of an audit of controlling. Such a standard should include systems of management which are to operate within controlling. Additionally, there should be pointed out detailed and

correct principles of constructing individual management tools which function within these systems. Such standardization will enable to establish individual scope of audits conducted in a given enterprise. It will also evaluate the system of controlling in relation to best practices. However, some questions emerge:

1. To what degree is it possible to create a uniform standard for an audit of the system of controlling?
2. Will the meaning of such an audit match the examination of financial reporting conducted by a certified auditor?

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THE RELATION BETWEEN TRUST AND OPENNES ON EFFICIENT COMMUNICATION IN THE WORKPLACE

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Abstract: *This paper concerns with the relation between the openness and trust between the employees on communication and performance in the workplace. The aim of the research was find out if the openness and trust in the workplace has impact on the performance of employees. Research also focused if there is any impact between the openness and trust of employees on efficient communication in the workplace. The research inquiry was based on primary and secondary data collection. The first of all was collected secondary data about the research area. After the evaluation of these data was created the questionnaire. This questionnaire was used in the pilot research. It was evaluated and corrected.*

Keywords: *efficient communication, employees, manager, openness, trust*

JEL classification: *M12*

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Introduction

Many authors nowadays write about communication. Everybody communicates not just in the private life but also in the workplace. Communication should be part of qualitative leadership in the company.

Research which was done was concentrated on finding if is efficient communication influenced by trust and openness between employees in the workplace.

1 Literature overview

Marques & Jirásek (2000), say that company culture has impact on the manners of employees in the company. They say that company culture depends on the company and how they control their employees and norms in the company. Company culture includes not just values which are shared by employees, but also the style of the leading, the style of the communication in the company and outside of the company, environment and technical equipment (Schein, 1969). Grönfeldt & Strother say that communication is one of the fundamental processes of life of the enterprise, all activities of executives is pervaded communications; the quality of decision-making executives depends largely on the availability of information (Grönfeldt & Strother, 2006). Gutierrez-Wirsching, Mayfield, Mayfield & Wang (2015) believe, that for transmission of a leadership culture is necessary to use motivating language. Bělohávek, Košťan a Šuleř write that in organizations where the predominant form of downward, management is built on a commanding and lack of information about problems

in operation. Keeping losing track of reality changes and believes that just they know the best how to solve any problems. All power in the organization concentrated in their hands. They received only positive news. This allows subordinates profound distortion of information and in its consequences leads to demotivation, idleness and fraud. Rensis Likert called such an organization-based user - authoritative (Bělohlávek, Košťan & Šuleř, 2001).

Lam, Peng & Wong believe, that: "Feedback is valuable for employees because it provides them with information that allows them to correct mistakes and attain work goals" (2015, p. 2199).

Cheng (2017) made research, which dealt with relationship between managers and subordinates. He found out that "quality and social interaction are positively associated with effective knowledge transfer, and most importantly, it found that social interaction between Taiwanese managers and their subordinates has a full mediating effect on this relationship"(Cheng, 2017, p.880).

Yang said, "Communication should be carried out strategically to create an ethical climate and harmonious atmosphere" (2014, p.522).

Other authors add that for effective performance is necessary to have frequent leader-member communication (Gajendran, Joshi, 2012).

Efficient communication can take place only in an atmosphere of trust. Now it is currently very topical and significant problem not only for business activities, political negotiations, but never any contact and negotiations. When the imperfections of the existing legislation, malfunction and voluntary membership in chambers of commerce and other supervisory and professional associations, the initial economic inexperience of the vast majority of new entrepreneurs and congestion of the judicial authorities is not surprising that today often are not even written, nor oral agreement. The resulting jungle should not last forever. Also, in the Czech Republic will soon belong to a popular properties partner's respectability and credibility and in bilateral relations become important preconditions for successful negotiations. At the beginning and in the short term may seem unnecessary luxury, especially when compared with lightning-fast, dizzying profits dishonest and unreliable enterprising people. However, since prehistoric times one does not learn anything as quickly as her mistakes (Foret, 2003).

Other authors add that member influence on team decisions can be enhance through frequent leader-member communication (Gajendran, Joshi, 2012).

2 Determination and evaluation of hypothesis

H0 If is between manager and his subordinates reciprocal trust and open collaboration, than is also between colleagues the reciprocal trust and open collaboration.

H1 If is between manager and his subordinates reciprocal trust and open collaboration, than is not between colleagues the reciprocal trust and open collaboration.

TAB. 1: Statistical evaluation about trust and open collaboration

Statistic	DF	Value	Prob
Chi-Square	9	30.2411	0.0004
Likelihood Ratio Chi-Square	9	32.6660	0.0003
Mantel-Haenszel Chi-Square	1	3.2566	0.0725
Phi Coefficient		0.4219	
Contingency Coefficient		0.3724	
Cramer's V		0.2489	
Sample Size = 423			

Source: Own research, 2018

By the processing of statistical data was accepted null hypothesis on the significance level 0,5, which says if is between manager and his subordinates reciprocal trust and open collaboration, than is also between colleagues the reciprocal trust and open collaboration. At the same time was rejected the alternative hypothesis. According to the Phi Coefficient, we can say that addiction is central, based on the coefficient 0.4219. According to Cramer's Coefficient, dependence is weak. Which means that the dependence between examined questions of dependence are not very important.

H0 If is trust in the workplace, than are always transmitted truthful and complete information.

H1 If is trust in the workplace, than are not always transmitted truthful and complete information.

TAB. 2: Statistical evaluation about transmitted truthful and complete information

Statistic	DF	Value	Prob
Chi-Square	6	39.1627	<.0001
Likelihood Ratio Chi-Square	6	39.8569	<.0001
Mantel-Haenszel Chi-Square	1	12.0987	0.0002
Phi Coefficient		0.4653	
Contingency Coefficient		0.4251	
Cramer's V		0.3483	
Sample Size = 423			

Source: Own research, 2018

By the statistical evaluation of researched results, was rejected null hypothesis and the alternative hypothesis was confirmed. The force of dependence Phi Coefficient was 0,4653, which means that is central dependence. This finding was also confirmed by interviews, where managers said, that they can not always tell the full information in terms of confidentiality of certain sensitive information.

H0 The trust is always in the workplace, if employees talk openly and honestly.

H1 The trust is not always in the workplace, if employees talk openly and honestly.

TAB. 3: Statistical evaluation of open and honest communication on trust in the workplace

Statistic	DF	Value	Prob
Chi-Square	15	34.6509	0.0020
Likelihood Ratio Chi-Square	15	38.4316	0.0011
Mantel-Haenszel Chi-Square	1	13.7513	0.0004
Phi Coefficient		0.4393	
Contingency Coefficient		0.4213	

Cramer's V	0.2696
Sample Size = 423	

Source: Own research, 2018

Statistical analysis of the results of the research had to be reject the null hypothesis that the trust is always in the workplace, if employees talk openly and honestly. Research has shown that trust in the workplace is not always assured, even though the employees communicate openly and honestly. The force of dependence Phi Coefficient was 0,4393, which means that is central dependence.

H0 There is relation between trust and openness on the efficient communication in the workplace.

H1 There is no relation between trust and openness on the efficient communication in the workplace.

TAB.4: Statistical evaluation of trust and openness on the efficient communication

Statistic	DF	Value	Prob
Chi-Square	9	117.3698	0.8049
Likelihood Ratio Chi-Square	9	112.7639	0.8439
Mantel-Haenszel Chi-Square	1	13.7513	0.7659
Phi Coefficient		0.8319	
Contingency Coefficient		0.6214	
Cramer's V		0.4689	
Sample Size = 423			

Source: Own research, 2018

By the statistical analysis was found out that was accepted null hypothesis, which said, that there is relation between trust and openness on the efficient communication in the workplace. The dependence between these factors were evaluated as a strong. Phi Coefficient was 0,8319.

3 Discussion

Many authors are persuaded that the internal communication is important for the understanding and real collaboration. By the analysis of the view of different authors on communication, was find out that there is not same opinion about factors, which are important for the internal communication.

Some of authors believed that efficient communication could be achieved in the workplace just if the trust is between employees. Another author is convinced that for the efficient communication is necessary feedback. The research examined if the openness and trust belongs between factors, which have impact on efficient communication. By the quantitative and qualitative research was find out, that is important trust and openness between manager and his subordinates. By the examined results from research, was find out, that if is between manager and his subordinates reciprocal trust and open collaboration, than is also between colleagues the reciprocal trust and open collaboration. This is important finding. Because manager can influence collaboration between employees in the workplace. They have power to change the business climate in the workplace.

Conclusion

Research found a moderately central association between manager and his subordinates reciprocal trust and open collaboration, than is also between colleagues the reciprocal trust and open collaboration. Which is significant finding. Because it showed that, the manager has power to influence the environment in the workplace.

Research also explored the psychological barriers, including the fear of failure affects the communication. The research found that if is open collaboration in the workplace, than subordinate have no mental barriers. This means they have no fear of solving a problem at work with their manager. Dependence between these two factors was found as weak.

A central association was found between faiths in the workplace and transmitted truthful and complete information.

Weak dependence was found between listening and discussions, the participants concerned. It has been found that if there is discussion about work problems between colleagues whose are concerned in this work assignment, than they listen to each other.

By the research was find out that if the employees have fear from theirs manager, they do not go to solve working problem with him immediately. They postpone the solving problem. Manager should not apply autocratic leadership style. This style is suitable just for same type of organization.

The research found out that efficient communication depends on trust and openness in the workplace. If is trust and openness between employees, than the communication between them is not influenced by negative factor and they can depend on each other.

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VALUE MANAGEMENT - MODERN METHOD IN THE BUSINESS MANAGEMENT

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Abstract: *The paper analyzes the value management. It is a specific management which aims at achieving competitive capacity in all areas of economy, science, administration and control. It enables control of activities connected with the preparatory phase and the implementation of project innovation processes with the aim to increase their efficiency and competitive resistance. The principle of functional cost approach, which has already been applied in value analysis, is used, however, nowadays this principle is enriched by managerial techniques and activities. This philosophy fully respects the solvent customer, where. high-quality and prompt satisfaction are musts while ensuring the lowest cost possible and an adequate price.*

Keywords: *value management, management, methods of value management*

JEL classification: *M11,A10*

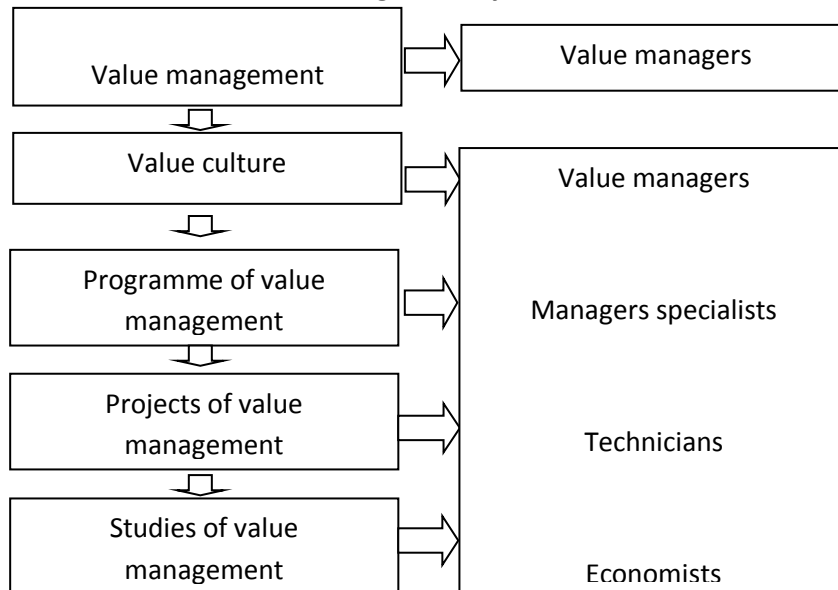
Grant affiliation: *project VEGA 1/0652/16 - The impact of territorial location and sectoral orientation on the performance of business entities and their competitiveness in the global market.*

Introduction

Value management is a process of managerial activities through approaches and methods used at different levels of value-driven enterprise management. It contributes to meeting the ultimate goal of the business, which is to maximize value for owners, respecting the constraints given by interested business groups. Profiling of the value management is based on value analysis. By its development and interconnection of principles and methods of value analysis with managerial functions and activities was created the subject, methods and specific activities of value management. Their basis is a cost-effective (value) approach initially market-oriented (primarily customer). The essence of the function-cost principle is to maximize the relationship between meeting needs and resource consumption. Satisfaction of needs is expressed in functions and consumption of resources in costs.

1 Characteristics of value management

Value management is a special type of management, clearly focused on creating and increasing value for the customer while increasing the value of the company. (Vlček, 2008). The value of value management for an enterprise is to maintain and intensify the competitiveness of the company by building a long-term sustainable relationship with the stakeholder groups. A value management enterprise will gain a competitive advantage by focusing on value creation. Elements of the Value Management System are contained in Fig. 1. Elements of the Value Management System.

FIG. 1: Elements of the Value Management System

(Source: Own processing)

At the top level in the enterprise, value management is based on a value culture of the business, and takes into account value for stakeholder groups and customers. Value culture expresses a relationship, awareness and sufficient knowledge of the meaning of value for the enterprise and its stakeholders, and of the factors that can influence that value. This includes adequate knowledge of available methods and tools and awareness of managerial and environmental conditions (Tokarčíková, 2011).

An enterprise where management has decided to use value management is based on a compiled value management program. The Value Management Program is a planned and organized set of activities that enable to develop, implement, and maintain a value management policy in a sustainable manner. It is deployed as an organizational framework, such as specific programs, such as projects and individual project studies Fig. 2. Areas of management of value management. The Value Manager is responsible for planning, organizing, supervising and implementing a value management program. Value managers are specialist managers because they are professional managers in the field of value creation. A substantial part of their work is a team work, therefore they are necessary for them:

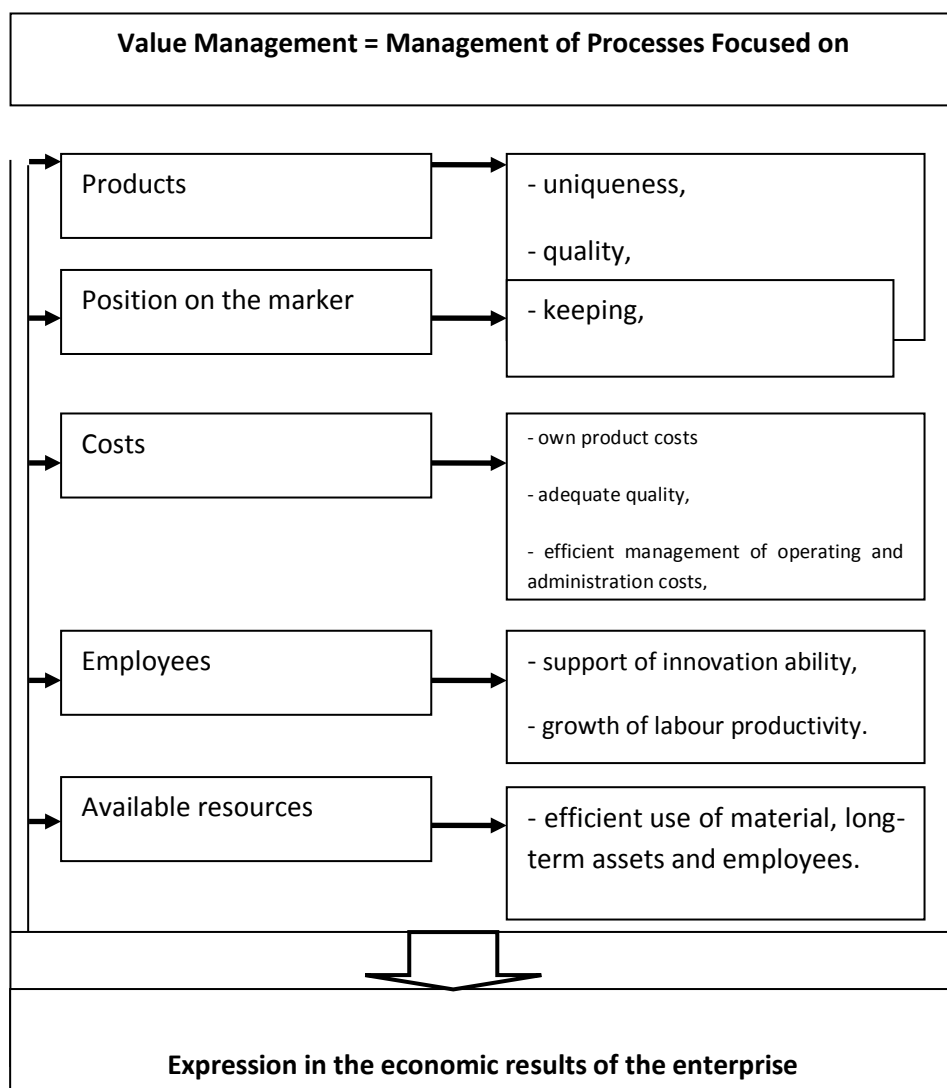
- focus on functional principle,
- communication and support of mutual communication,
- encouraging people to work together to achieve the goal,
- creating an atmosphere stimulating creativity and innovation,
- recognition of team members' results,
- convergence of members through interaction,
- providing support for collective decision-making, etc.

The value is the quantification of utility or rate of satisfaction of the needs in relation to the spent resource through the function of the given object. Vlček (2008) states:

- Functionality or benefit does not exist in itself. It only exists if the need exists for this functionality to meet the needs.
- Benefit can only be measured by need, because benefit is a measure of satisfaction.
- Use or functionality consists of quality and efficiency. Effectiveness is the importance of the benefit of the object being investigated, able to meet the customer's need. Quality is the conversion of performance features.

The concept of value management, in which business aims to increase the value of an enterprise, is based on the idea that the value of an enterprise depends on its ability to generate future revenues. (Ďurišová, 2011).

FIG. 2: Areas of management of value management



(Source: own processing)

In addition to existing management methods, value management also uses its specific methods. These are primarily functional and value analyses (Chodasová, 2008).

2 Cost analysis of value management

Value Analysis is an organized and creative approach utilizing a functional and economic design process aimed at increasing the value of an existing product or service. The subject of value analysis is usually an existing product or service. Fundamentals of value analysis were created by Lawrence D. Miles in 1947, which characterized it as an organized approach to locating, finding and removing unjustified costs. Value analysis is a systematic and creative exploration of all items of product or service cost to reduce or eliminate those that do not deliver acceptable value from the customer's point of view, while maintaining the quality and performance requirements. The value analysis distinguishes:

- Functional costs, which are all expected or actual expenditures necessary to bring the function into the object of value analysis, into the product.
- Target costs are the costs of the end product under the specified conditions of its implementation.
- Life cycle costs are the costs of acquiring and possessing the product over a defined life cycle. They may include the costs of development, acquisition, user training, operation, support, decommissioning and disposal of the product.

3 Value management and stakeholder groups

The stakeholders identified in this way are related to the value orientation of the business. It is important for an enterprise to realize that it must first provide the value to the interested group that will return it to it. Value is characterized by its subjectivity, and this results from the benefits provided by businesses. A person realizes the existence of utility if he she needs it and is satisfied with it. (Kucharčíková, 2014). The extent to which needs are met in relation to the resources expended is the basis of value orientation. Recognizing the interrelationship of the business - stakeholder group is the basis for building value. Identifying stakeholder expectations begins with need-to-know. Such cooperation may result in the strengthening of mutual trust, problem identification and resolution, long-term private, public and non-profit sector advice, mutual motivation and dissemination of good examples.

Current value management concepts are based on the assumption that the capitalization of shareholders' equity is only possible through increasing of the value for other stakeholders. The value for owners can only be increased if the company has competitive advantages compared to competitors (i.e. it brings higher value to customers and other interested groups than competing businesses). The common goal of all concerned groups is the long-term existence of the business. The value creation process for interested groups can be defined by following steps:

- Identification of significant stakeholder groups in the company (selection from a set of all interested groups),
- An expression of value for identified stakeholders,
- Measurement of value and its expression through financial and non-financial indicators,
- Identifying factors influencing the value creation.

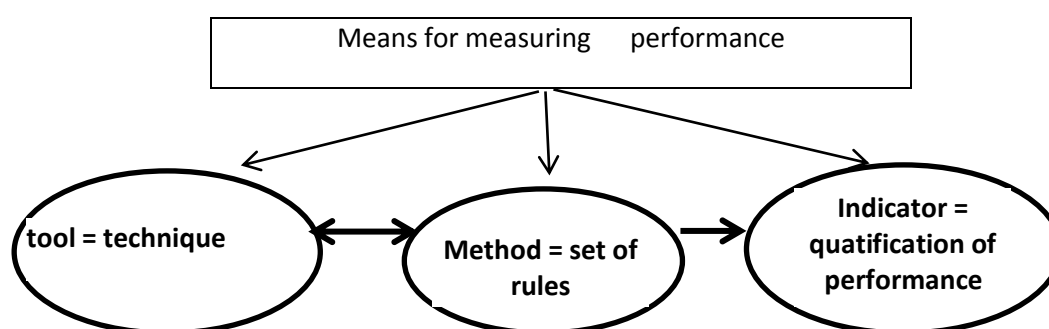
4 Indicators for tracking value according to stakeholder groups

The value for stakeholder groups needs to be expressed and measured through indicators. Value measurement is a process of quantifying the value-creation capability of an enterprise. Instruments, methods and indicators are used, as documented in Fig.3. Method is a set of special rules that need to be followed in the cognitive process. Basic methods used in economic theory and practice include induction, deduction, abstraction, modelling and comparison. While respecting these methods, specific methods, such as, in particular, value and function analysis and analytical methods and methods describing the state and development of value creation, are also warranted in the measurement of value creation.

Tools represent the techniques, a way of exploring value creation. In general, observation, analysis, synthesis, statistical analysis, experiments and verification. When measuring value, the use of these is relevant:

- regular or random personal interviews,
- questionnaire query
- observations (defining the causes of the growth or fall in value for the groups concerned, comparison with competitors),
- analyses (decomposition of the growth or decrease in value creation, what factors, how they worked, identifying their consequences, predicting further development, revealing causal links);
- synthesis (summary and aggregation of knowledge gained through analysis, selection of root causes of growth or decline in business performance, definition of the urgency of the solution in case of a major decline).
- intuition.

FIG. 3: Means used to measure value for enterprise groups



(Source: own processing)

Indicators are variable quantities that express information about real economic activity, as well as value for stakeholder groups. The method thus recognizes the economic reality, the tool is used to determine the state and the indicator quantifies it. The indicator is a mediated image of objective reality, which is expressed by different means of expression and unit of measure. To get a clear, true and reliable image of value creation, adequate indicators need to be used. In terms of definition,

indicators for measuring the value of an enterprise are broken down into **financial indicators** (revenue, earnings, EVA, wages, remuneration, etc.) and **non-financial indicators** (delivery time, quality, service, customer satisfaction, innovation, etc.). Non-financial metrics must be based on identifying the value and implementation chain. Their use is beneficial to the business if they are chosen in causal connection with strategic goals.

Conclusion

An integral part of value creation management is the organization of individual activities of the value chain of an enterprise. The value string consists of activities that add value. In addition to the above mentioned activities to ensure the operation of an enterprise, activities that do not add value are realized. They need to be eliminated. Value-related and other activities are interrelationships. The result of organizing business performance improvement is to change the components or form of the value chain. A different and effective way to design, manufacture, distribute or market and sell their products is introduced in the enterprise. Today it is becoming more up to date to identify success with the value creation. This approach to management tracks the growth in value as the primary business objective. All business activities are then directed to its fulfilment. Controlling activities in managing enterprise value creation are based on a comparison of achieved indicators with defined goals. Differences are identified that need to be analysed and concluded. Planning the process of achieving a certain level of value involves not only setting targets but also determining how to achieve them. As a result of the controlling activities could be the changes in the timetable, proportions and intensity of the to reach the desired level of value for identified stakeholders. Personnel security and development includes activities beginning with personal planning and further activities related to the acquisition, recruitment of employees and their activities in the company up to the termination of the employment relationship.

Decision-making in an enterprise is subject to uncertainty and risk. Value creation is the ability of an enterprise to value invested capital, the ability to increase market value for owners while respecting the interests of other stakeholders in the business. It is a complex economic category that determines the partial interdependent economic categories such as revenue, profit, labour productivity, economic added value, and so on. In deciding on these aspects, it is necessary to take into account and quantify the probability of variability of the expected results, i.e. the risk. It is necessary to continuously identify, evaluate, quantify, search and select tools to eliminate them in the enterprise. Advantageously, the creation of an enterprise risk management system, which uses data from existing records in an enterprise, also works with ex ante data, i.e. with their expected values. The expected value is the quantity that is most likely to be achieved. Each deviation of the value considered from the expected value is a risk. The greater the variability, the higher the risk.

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MOTIVATION OF FOREIGN INVESTORS FOR DISINVESTMENT IN HOST COUNTRIES

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Abstract: *Host countries usually consider the FDI inflow to bring positive effects on the economy. The inflow of investment induces economic growth, increases the employment and brings new technologies to the country. That is the reason, why are countries willing to receive investments generating low added value, often allocated in the host country because of the low cost of the production. However, such investments are volatile with quick respond to the changing business environment, cost of production, or changes in taxation system. Liquidating of foreign affiliation, withdrawing investment or leaving the host country at the same time with moving production back to home or to another country become more common after global financial crisis. The assumed stability of the FDI is questioned. Disinvestment become to affect economy of host countries negatively, leading to the slowing economic growth or to stagnation of the economy. The paper deals with the issues relating to the disinvestment and analyses determinants influencing investors to leave the host country and reallocate the FDI.*

Keywords: *disinvestment, host country, FDI determinants*

JEL classification: *F21, F23*

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Introduction

Along with the development and increasing role of the international trade, the flow of international capital became as important as the trade on goods and services. The long-term movement of capital, in the form of foreign direct investment (FDI) allows companies to use additional sources, additional labour force, make production at lower cost and gain access to new markets. As a result, production is more efficient and cheaper resulting in higher yields of companies and subsequently leading to the development and growth of national economy. The FDI has mainly positive impact on the host economy. However, the negative effects are also noticed. Indisputably, the raising FDI inflow to the developing and transition economies has support and stimulate the economic growth, volume of production, employment and export of these countries. In this matter, the FDI helps countries in transition to transform the economy (e.g. from the central planned to the market economy) and developing countries to catch up the developed economies. Obviously, the goal of investors is not helping countries but with the “egoistic” goal of raising profits or returns helps the host economy to growth. Motives and incentives of transnational corporation (TNC) to conduct business are various and might be summarized by the Dunning’s OLI paradigm with ownership, location and internalization advantages (Dunning, 1988). Thus, investments are efficiency, resource or market seeking. To be more detailed, the main incentives are lower cost of production (e.g. wages), natural resources (e.g. oil, coal, etc.), qualified labour force, access to the new markets including not only the

host country, but also the neighbour countries. As the governments of countries realize the advantages obtaining from the FDI inflow, they are willing to support FDI inflow, even when such investment is creating only low added value and is based on the efficiency seeking relating to the low cost of production, mainly low wages. However, such investments are volatile with quick respond to the changing business environment, raising cost of production and wages, increasing corporate tax rate, termination of tax allowance or changes in taxation system of a host country. Liquidating of foreign affiliation, withdrawing investment or leaving the host country at the same time with moving production back to home country (country of origin of investment) or to another country become more common after global financial crisis. Thus, the assumed feature of stability of the FDI is questioned. As the host country become more developed, the cost of production and wages grow and the production became less effective (more expensive). Similarly, when resources dry out, investors will leave the host country. The investment is also tending to leave the host country, if the demand for production decreases. Market seeking investment are often allocated on the places fulfilled the condition of efficiency seeking. These are investments in region or countries with relatively low cost of production exporting production to neighbour countries (usually more developed), which have higher cost of production. The reason of liquidating of foreign affiliation is in such case caused by factors that the host economy cannot influence, i.e. foreign demand. The decision of investors for leaving the host country and close the business, often leaving production halls and production lines in country unused is a knotty problem relating to the strategic plans of TNC. Company/investor must consider complexity of issues associated with the leaving the host country, compares advantages and disadvantages if the decision will be to stay or will be to leave, and assesses impacts of leaving the country on the whole corporation. The question that arise is, what factors induce withdrawing of investment from the host country respectively, which factors motivate investors to leave host country. The assumption is that factors enhancing the FDI inflow to host countries are also factors, which motivate investors to leave. The difference is in only in the direction of the indicators development. However, the decision on disinvestment relates also with the microeconomic characteristics of particular company. Factors that must be considered in the complexity of decision making includes as macroeconomic as well as microeconomic factors. The paper summarizes the literature relating to the disinvestment, deals with the description of factors enhancing investors to leave the host country and briefly demonstrate the role of disinvestment in the FDI inflows on the sample of OECD countries.

1 Literature review

The FDI inflow is interest of the research for many authors. These authors deal with various issues relating to the FDI inflow, such as determinants of FDI inflow, effects of the FDI on the host and home economy (e.g. effects on employment, economic growth, export), spill-overs effects and technology transfer, providing of investment incentives, etc. Among the most important works belong papers by Lipsey (Lipsey, 2004), Borensztein, De Gregorio and Lee (Borensztein, De Gregorio & Lee, 1995) or Graham and Krugman (Graham & Krugman, 1989).

However, the subject of disinvestment is not analysed well with only small focus. The main reason might be the fact that disinvestment became more common only after the global financial crisis of 2007/2008 with the sharp increase in the bilateral disinvestment flows as well as the overall disinvestment leaving the host countries. For this reason, the issue and analysis of disinvestment is at the beginning of the research interest and empirical studies are not available. Moreover, almost

entire attention to the issue of disinvestment is focused on the managerial, thus microeconomic aspects of realization of disinvestment or managerial decision making process in order to leave the host country. For example, such interest has authors as Hoskisson and Hitt (Hoskisson & Hitt, 1994) or Harrigan (Harrigan, 1981). From the macroeconomic perspective, Boddewyn (Boddewyn, 1983) and Chen and Wu (Chen & Wu, 1996) think that the determinants of the FDI are also the determinants of the disinvestment with the respect of the opposite effect. We might consider such factors/determinants as macroeconomic volatility, risks and opportunities related to the technological changes, geopolitically instability, and behaviour of shareholders. The disinvestment is strategic decision combining microeconomic and macroeconomic factors or in other words external and internal factors of doing business. This kind of decision entails the various type of cost and is often expensive. Investors stop to conduct many activities or just leave manufacturing halls or other estates unused and close down foreign affiliates in host countries. Activities are reallocated to other countries or back to the country of investment – home country. Reasons might be a growing cost of production in host countries or finding lower production cost in other countries, changes in the structure of economy in host countries, exhausting of natural resources, decreasing demand for the production respectively finding new markets distant from the place (country) of production or by the decision of managers/owners to leave host countries due to the microeconomic aspects occurred inside of the foreign affiliates. Generally, there are only two factors determining disinvestments – company factors and market factors. From the microeconomic aspect, the low productivity/performance of the country is very significant determinant of leaving host country (Montgomery & Thomas, 1988). The important is also indicator profitability (Ravenscraft & Scherer, 2011). The lower the profitability, the higher the risk that foreign investor leaves the host country. However, we have to note that the profitability might be the result of other micro and macroeconomic changes relating to the running of the business of the foreign affiliates. In other words, profit or return just signalizes that some factors of conducting business have changed. Finally, paper by Gómez-Plana and Latorre (Gómez-Platta & Latorre, 2013) identifies three types of the disinvestment. Firstly, the most evident is the closing down the manufacturing plant in particular host country and leaving the country. This is the most extreme case and is often associated with the reduction of employment in the region/country due to the layoff. Subsequently, many workers became unemployed. Further type of the disinvestment is the takeover of the foreign company by the company with the headquarter in the host country. Aftermath, company starts to be considered as domestic (from the point of view of the host country) and the production continues with only change in the ownership. The last type of the disinvestment that is not seen and not act as a real disinvestment is the reverse intra loans or repayment of the debt to transnational corporation that is so called home or mother company. This is an example, when foreign affiliates from host countries provide loan for the home company within the consortium or repay liabilities provided to the foreign affiliates in previous periods. In both cases, the flow of money directs from the host country to the country of origin of investment and fulfil the definition of disinvestment.

2 Development of Disinvestment in the OECD Countries

The global economy was very turbulent and has faced several challenges in the last decade. Since the 2001, after the dot.com crisis, world economy grew and world GDP increased. This relatively long period of growth was interrupted by the arising mortgage crisis, which was further spread to almost whole world and cause the global financial crisis. Moreover, European countries has faced to the debt crisis, in some countries also associated with the bank crisis. Presently, countries are in the

process of recovery. The economies start to re-growth and some countries achieve balanced or even surplus budgets. In spite of that, countries face not only economic but also social and political problems and challenges as the ageing, migration, expansion of national – extreme right parties or the increasing fear of inhabitants relating to the terrorism. As the global financial crisis has arisen, the phenomenon of disinvestment has also occurred. The disinvestment exists even before this time, but the volume and the number of disinvestment was much lower. After the 2007, the disinvestment became a part of economic system and the previously considered advantage of the FDI inflow as the stable form of capital (in comparison to the portfolio investment) has been disputed. More and more investment was returned back from the host country to the home country or moved to the other country. This situation has opened the question of capital movement and the factors that motivate investors to shift investments. The overview of the disinvestment is seen in Table 1. It shows the number of bilateral investments for the OECD countries, where the OECD country is the reporting country of investment. Thus, these are FDI inflows to the OECD countries from the whole world. Table confirms the increasing trend in the development of disinvestment, but also rapid growth of bilateral cooperation between countries in the form of capital flow. We might see that the number of observations is more than 7 times higher in 2016 than in 2006. The analysed years of 2006, 2011 and 2016 capture turbulent environment as written in previous text. Year 2006 signifies the growth of economies before the global financial crisis, thus the peak of the economic boom. Year 2011 represents the financial, debt and banking crisis and year 2016 stands for the recovery period of present days. To summarize the data on the number of disinvestment, disinvestment has represented about 9% of total and 12% of non-zero / not available observations in 2006; 10% and 11% in 2011 and comprise 12% of total and 15% of non-zero / not available observations in 2016.

TAB. 1: Number of bilateral FDI inflows to OECD countries

Year	Number of bilateral FDI inflows – positive sign (without regard to the reporting country)	Number of bilateral disinvestments (negative sign, without regard to the reporting country)	Number of zero/not available observations	Total number of positive and negative observations (positive FDI inflows + disinvestment)	Total number of observations
2006	673	88	182	761	943
2011	1930	250	407	2180	2587
2016	4632	789	1404	5421	6825

Continue with the data analysis, the volume of the bilateral FDI inflow (positive or negative) is also the indicator of the FDI development. Table 2 shows the volume of positive FDI inflow as well as the volume of disinvestment. It again confirms the increasing trend of FDI inflows, where the volume of bilateral positive FDI inflow in 2016 is almost 15 times higher as in 2006. In the case of disinvestment, this ratio is even higher and is more than 26. To consider the absolute values of disinvestments, disinvestments would represent about 16% of positive FDI inflows in 2006, 13% in 2011 and 30% in 2016. It implies that the ratio of negative to positive FDI inflows has increased in recovery period when comparing to the pre-crisis and crisis period.

TAB. 2: Volume of bilateral FDI inflows to OECD countries (mil. USD)

Year	Volume of bilateral FDI inflows – positive sign (without regard to the reporting country)	Volume of bilateral disinvestments (negative sign, without regard to the reporting country)
2006	99 902.63	16 149.34
2011	519 230.39	67 057.09
2016	1 449 444.58	420 220.09

3 Factors and Determinants of Disinvestment

The literature review and the current state of art gives not the answer to the complex analysis of the factors determining the disinvestment or the reallocation of the FDI. However, we might summarize the main factors that motivates investors to leave the host country. Firstly, these are macroeconomic indicators such as real GDP, unemployment rate respectively employment, inflation and balance of the current account of the balance of payment. Further on, very important is stability within the country / economy reflecting business environment. Indicators representing this stability are mainly law enforcement index, control of corruption index, corruption perception index and competitiveness index. Of course, these indexes are very similar to the Doing Business indicator but are explaining the business environment separately, not in aggregate form in one index. Other indicators that might be important from the view of the investors are corporate tax and the system of taxation, average wage and minimal wage, political stability, and absence of the violence and the respect of human rights. We might say that determinants of the FDI inflow are also the determinants of disinvestment. Positive development of these indicators motives investors to allocate investments in particular country or region. To the contrary, the negative changes in indicators motivate investors to leave the country and to move investments to other countries. However, the motivation of investors to leave the country depends also on the microeconomic factors of conducting business by particular foreign affiliation. We assume that microeconomic factors are more important for the decision to shift investment than the macroeconomic factors. In case of the FDI inflow, situation is right opposite. The analysis of microeconomic factors is very difficult and would need surveys to obtain micro data on motivation to leave the country, which might include confidential business information due to the trade secrets and cannot be publish.

Conclusion

The FDI inflow was considered as the stable source of investment creating positive spill-over effect on the economy of host country. However, present development shows that FDI inflow is very prompt in reaction to leave host country with the shift of the investment to other country or back to country of the investment origin. Disinvestments start to be issue that countries have to face. Literature on disinvestment is mainly focused on particular topic, but the complex analysis of factors that motivate investors to reallocate investments is still missing. The main reason is the complexity and microeconomic background of investment move to other country. Development of disinvestment shows the increasing number and value of disinvestments in the OECD countries, with the raising ratio of negative (disinvestment) to positive FDI inflow. Factors that motivate investors to leave host countries are principally the same as the determinants of the FDI inflow. Only difference is the higher importance of microeconomic factors for conducting business of particular foreign affiliation and stress on the determinants relating to the doing business such as corporate tax,

corruption, law enforcement index or competitiveness index. The paper is the introduction to the analysis of the disinvestment within the OECD countries as the reporting countries of the FDI inflow and thus potential consequent disinvestments. Authors would like to continue with the data analysis and finding relevant determinants that motivate investors to shift and reallocate investments to other host countries in future research as many questions related to disinvestment is not answered and need to be the point of interest for researchers as well as for policy makers.

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ASSOCIATION OF INNOVATIONS WITH THE ENTERPRISE GROUP MEMBERSHIP

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Abstract: *The presented contribution processes data from Community Innovation Survey (CIS) in the Czechia concerning the survey structure, which reports about enterprise innovations that could be grouped to technical (product and process) innovations and non-technical (marketing and organisational) innovations. Besides, the information about a status of an enterprise is recorded as well, dividing surveyed companies into two groups - individual enterprises or enterprises with group membership (mostly international). The statistical processing of data from two CIS periods (2010, 2012) verifies that membership in a group of enterprises has a positive influence on the amount of innovation activity. In this contribution, the authors discuss methodological aspects of the approach using statistics.*

Keywords: *innovation, association, enterprises, data processing, statistics*

JEL classification: *O3, O32, Q5*

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Introduction

Nowadays the innovation is said to be a key to increasing the economic growth, sustain competitiveness and create new jobs. There are many different definitions of “innovation”, each of them emphasising a different aspect of innovation, e.g. level, type, character (Edison, Bin Ali & Torkar, 2013; Mathiassen, & Pourkomeylian, 2003). Oslo manual (OECD/EUROSTAT, 2005) defines four basic types of innovation. Product innovation is a good or service that is new or significantly improved; process innovation represents a new or significantly improved production or delivery method. Marketing innovation stands for a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing, and organisational innovation is a new organisational method in business practices, workplace organisation or external relations. Generally, in entrepreneurship context, innovations are treated as something new with added value to company’s performance helping to increase its competitiveness on the (regional) market.

Innovations are closely related to research and development (R&D), which could be conducted internally by an enterprise itself, or externally through cooperation with universities, research institutions or laboratories. Innovations are also tied with the theories such as industry clusters, knowledge spillovers or regional innovation network system, which is stimulating for growth and innovation from an individual business perspective and a regional perspective (Pászto, Vaculík, & Švarcová, 2017; Sternberg, 2000; Cooke, 1992). According to Felder et al. (1996), R&D activities are

concentrated within the mother company, where central R&D departments develop and design new products for the whole group; and daughter companies receive the knowledge necessary for innovation through internal technology transfer. Therefore, companies that are members of large (international) groups should be more likely to introduce innovations. However, Tabas et al. (2014), argue that, in the case of Czechia, it is common practice that a mother company is drawing the resources of its daughter companies. As a consequence, daughter companies have to face the lack of resources for financing innovations.

Although Edison et al. (2013) argue that the innovations are hard to describe, evaluate, and analyse due to data insufficiency (among other factors), one of the most used methods for acquiring desired data about innovations is questionnaire survey (e.g. Kirton, 1976; Maillat, Quévit and Senn, 1993, Sternberg, 2000). Dobesova, Pászto, Macku (2017) detected similarities of innovation by a coefficient of similarity. In this paper, a questionnaire-based survey called Community Innovation Survey conducted by the European Union was used in order to assess the main objective - to compare the differences between the enterprise group membership and individual enterprises according to the amount and types of innovations.

1 Data

In this work, the two dataset from the Community Innovation Survey (CIS) were used. The first dataset was from the fifth period (2008-2010) and second data set was from the six period (2010-2012). This survey is carried out by all EU member states. CIS uses harmonised questionnaire (EUROSTAT, 2012). The dataset for Czechia referring to various innovations was taken (ČSÚ, 2013). Data for CIS 2010 were gathered in 2011 by a questionnaire sent to all enterprises with ten or more employees, stratified by size and economic activity. In total 5,151 responses, representing 21 % of the total statistical population, were received with 83% return rate of useful answers. Data for CIS 2012 were gathered in 2013. This survey had 5, 449 responses with 80% return rate (Vaculík et al., 2017).

The enterprise innovations are reported in two groups of indicators: technical (product and process) innovations and non-technical (marketing and organisational) innovations. The technical innovations are reported by two product indicators concerning innovation of final products (INPDGD) or service (INPDSV). Next three technical process indicators reported about an improvement of producing (INPSPD), supplies and distribution of products (INPSLG), and change of accounting and information systems (INPSSU). The non-technical innovations are reported by four marketing indicators (new design of packaging of products - MKTDGP, advertisements - MKTPDP, licensing and franchising - MKTPDL, and product pricing - MKTPRI) and by three organisational indicators (internal business practices - ORGBUP, new internal workflow methods - ORGWKP, and external change of relationships - ORGEXR). A total number of innovation indicators was 12.

2 Methodology

This chapter describes the main methodological steps of data processing. Firstly, the share of individual enterprises with group membership in both CIS surveys are presented. Secondly, the rank and the most frequent countries according to the main headquarters seat is ordered. Finally, a detailed comparison of each type of innovation is presented and main differences in partial innovations are pointed out. All data processing was made in MS Access database by SQL queries.

2.1 Statistical evaluation of input data

Totally, 5,151 enterprises responded in CIS 2010, and totally 5,449 enterprises responded in CIS 2012. The number of responses is slightly higher in 2012. The number of enterprises answering that are members of a group of enterprises (indicator GP=Yes), were 1,880 in 2010 and 2,057 in 2012. The amount of individual enterprises is higher in both surveys (indicator GP=No). For better comparison, the share of firms (in %) in mentioned indicator GP is calculated. In both cases around 37 % (the difference is only 1.3 % between surveys, see Tab. 1) enterprises indicated a group membership.

TAB. 1: Input data and portion of the group membership enterprises in 2010 and 2012

Group membership	CIS 2010		CIS 2012	
	Number of enterprises	The portion of total count [%]	Number of enterprises	The portion of total Count [%]
Yes	1,880	36.5	2,057	37.8
No	3,271	63.5	3,392	62.2
Total number of enterprises	5,151	100	5,449	100

In the next step, list of business that belongs to a group of enterprises was created based on the country origin of their mother company (Tab. 2). In most cases for both surveys, the mother company of a group was located in Czechia (649 in 2010 and 714 in 2012). In percents, this equals approximately to 35 % of all businesses that belong to a group of enterprises for both survey periods. The second biggest number of mother companies were located in Germany (19 %), followed by Austria (6 %). In case of Germany, it is a result of the strong German-Czech economic relationship.

TAB. 2: The countries according to the main office of the enterprise group

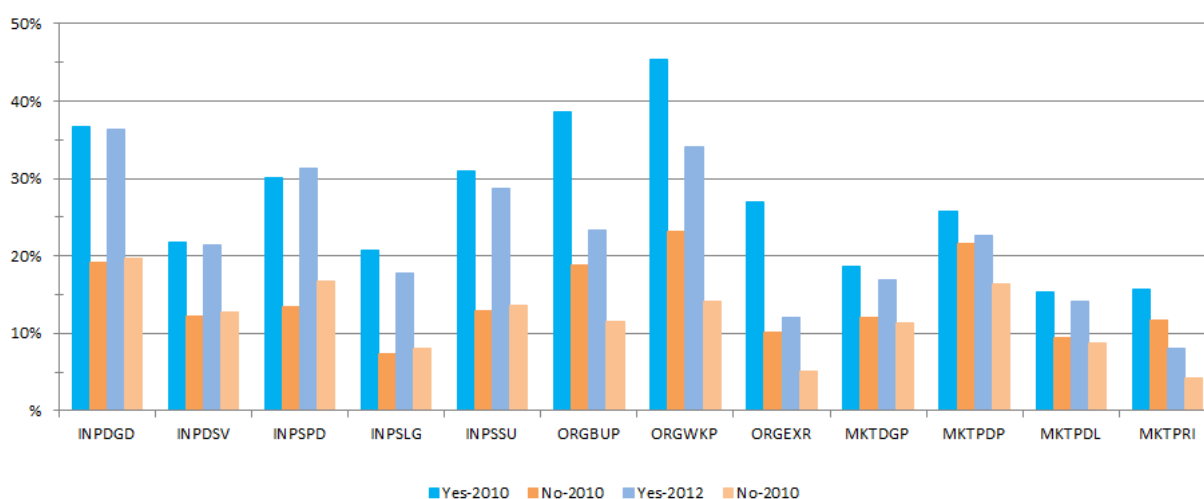
Rank	CIS 2010			CIS 2012		
	Country	Count of entr.	Portion [%]	Country	Count of entr.	Portion [%]
1	CZ	649	34.5	CZ	714	34.7
2	DE	364	19.4	DE	392	19.1
3	AT	114	6.1	AT	125	6.1
4	FR	109	5.8	US	122	5.9
5	US	104	5.5	NL	109	5.3
6	NL	85	4.5	FR	107	5.2
7	GB	58	3.1	GB	55	2.7
8	CH	49	2.6	CH	49	2.4
9	JP	44	2.3	JP	47	2.3
10	BE	40	2.1	IT	40	1.9
11	SK	31	1.6	BE	39	1.9
12	IT	29	1.5	SK	30	1.5
13	SE	25	1.3	SE	27	1.3
14	ES	19	1.0	LU	22	1.1
15	DK	14	0.7	CY	21	1.0
16	LU	14	0.7	ES	21	1.0
17	CY	13	0.7	PL	17	0.8
18	PL	13	0.7	DK	15	0.7
19	KR	12	0.6	IE	13	0.6
20	FI	11	0.6	FI	12	0.6

France, USA and Netherlands were placed between a fourth and sixth position in both years; each country being the main residence of roughly 4 to 5% of mother companies. Positions from first up to 12th are occupied by the same countries in both years, with only small differences in order after the 3rd position. Given this fact, we can deduce that the situation - country origin of mother companies of enterprises operating in Czechia - does not change dramatically over the survey periods and almost remains the same. Because of the historical bonds, it is worth mentioning the number of mother companies located in Slovakia (SK) - over 30 enterprises - which places this state at the 11th and 12th place respectively. It is also interesting that there has been a rise in business with its mother company residing on Cyprus (CY), which is known as one of the European tax havens. Whereas it was 13 enterprises in 2010, the number of business has almost doubled to 21 in 2012 (causing Cyprus to move from 17th to 15th position in ranking).

2.2 A detailed comparison of partial innovation indicators in relation to group membership

In this part, a comparison of all 12 innovation indicators is made. For each type of 12 innovations, the total count of enterprises that recorded the innovations was calculated. Again, the share of individual innovation indicators was calculated in order to comprehensively compare the results in both survey years (Tab. 3). It is obvious from the Tab. 3 that the share of innovations of all twelve indicators is higher in both surveys when the company indicates the membership in a group of enterprises. It is also evident from the Fig. 1 that in many individual innovation indicators the share of innovations is almost doubled when a company is a member of a group of enterprises (difference between being “Yes”, i.e. blue colour bars, and “No”, i.e. orange colour bars, answers in both surveys).

FIG. 2: Number of enterprises (in %) by innovation indicators in 2010 and 2012



For instance in 2010, the indicator **INPSPD** (significant improvements in the production process, products or services) reached 30.1% in group membership companies, which is almost two times more than in case of individual enterprises (13.4%). The maximal share of innovating companies with group membership in 2010 was recorded for indicator **ORGWKP** (an innovation of work organization methods, responsibility and decision-making) reaching 45.3% (in bold in Tab. 3). The same indicator was the second greatest regarding innovations share in 2012 (34.1%), after the **INPDGD** (new or significantly changed product) with 36.4%. It is evident that enterprises with group membership

require a new system of responsible employees, teamwork, decentralization (powers transferred from higher system components to lower ones) or education system more than individual enterprises.

The minimum number is 7.4% (red number) for indicator **INPSLG** (an innovation of logistics, delivery or distribution method for products, services, or inputs) for individual enterprises in 2010. It means a very low requirement of logistics improvement in such companies. At the same time, this indicator represents the one with the greatest difference between the share of innovating individual enterprises and enterprises with group membership in given year (2010).

TAB. 3: Comparison of innovation activities of individual enterprises and group membership enterprises in 2010 and 2012

		Year	2010				2012			
		Group Member	Yes		No		Yes		No	
		Type of Innovation	Total	%	Total	%	Total	%	Total	%
Technical innovations	Product	INPDGD	689	36.6	629	19.2	749	36.4	665	19.6
		INPDSV	410	21.8	397	12.1	440	21.4	435	12.8
	Process	INPSPD	566	30.1	439	13.4	644	31.3	568	16.7
		INPSLG	391	20.8	241	7.4	366	17.8	275	8.1
		INPSSU	583	31.0	423	12.9	591	28.7	464	13.7
Non-technical innovations	Organisational	ORGBUP	725	38.5	618	18.9	481	23.4	393	11.6
		ORGWKP	852	45.3	757	23.1	702	34.1	480	14.2
		ORGEXR	507	26.9	329	10.1	246	12.0	173	5.1
	Marketing	MKTDGP	352	18.7	395	12.1	348	16.9	387	11.4
		MKTPDP	484	25.7	708	21.6	467	22.7	557	16.4
		MKTPDL	288	15.3	309	9.4	289	14.0	298	8.8
		MKTPRI	294	15.6	383	11.7	167	8.1	143	4.2

Worth noting is a relatively high number of innovations in both years for the indicator **INPDGD** (new or significantly changed product). In percents, it exceeds 36 % for enterprises with group membership contrary to much lower 19% for individual enterprises. Again, this confirms that enterprise innovates more if it belongs to a group of enterprises. Despite the fact that individual enterprises make fewer innovations for this indicator than enterprises belonging to a group, among individual enterprises only, the indicator INPDGD had the most innovations in the year 2012. This indicates that individual enterprises favour innovating products over other types of innovations. The lowest share rate in 2010 among enterprises with group membership is in indicator **MKTPDL** (new product placement or sales method - franchising or distribution of licenses, direct sales, a new concept for product introduction), which is only 15.3%. In this case, we assume that marketing innovations are not dealt by enterprises themselves but rather centrally in a consortium (or mother company) respective department. However, this indicator (**MKTPDL**) has a low percentage share in case of individual companies as well (9.4%); similarly, in 2012. The lowest values in 2012 expressed the indicator **MKTPRI** (new system in product or service pricing - different prices according to demand, discount system) with 8.1% share in case of enterprises with group membership, and with

4.2% share in case of individual enterprises. Product pricing seems to have higher demands on data-analytical processes (e.g. data mining, statistical inferences, market survey), which is rather out of individual enterprises capabilities since they have limited time, expert and financial capacities.

Conclusion and discussion

This paper explores the results of Community Innovation Survey from 2010 and 2012 focusing on the enterprises group membership and the possible influence of the membership on their innovation activity. The basic statistical evaluation proved that there is an influence of group membership on the amount of innovations, in a positive manner, i.e. higher innovation activity of enterprises with group membership. Namely, the organisational innovation (where the differences are most visible) is more frequent for enterprises with group membership than for individual enterprises. The same observation could be made in all groups of innovations. It is supposed, that benefits of being a member of a bigger group of enterprises lie in the centralised innovation activities. For instance, it is more likely that marketing innovations will be governed by a mother company in order to maintain the same corporate identity (or the identity of the products). Therefore, surveyed enterprises indicated more innovations as they are driven by innovation policies defined by a mother company. This leads us to a limitation of the CIS dataset - in general, the sample of respondents (enterprises) is somehow limited and could not represent the overall status quo in a business environment in Czechia. On the other hand, there is no other dataset available with such level-of-detail. This paper represents the kick-off contribution to the topic of innovation activities related to an enterprise group membership. In future, we will examine the dataset with stress on the overall economical and geographical context.

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GENERAL DATA PROTECTION REGULATION 679/EU/2016

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Abstract: *The General Data Protection Regulation (GDPR) is a new European Union legal standard that will enter into force on 25 May 2018. The GDPR enhances the protection of EU citizens' personal data while imposing new obligations on administrators and processors of such data. This legal standard is equivalent throughout the EU, and if it is not followed, there is a risk of sanctions. The contribution describes what rights the data subject collects, what responsibilities the data controller has to fulfil. The article describes how to implement GDPR, practical solutions, and basic recommendations such as reviewing contracts with employees, intermediaries, or customers. Additionally, it is necessary to revise the consents to the processing of personal data under the GDPR Obligatory Regulation.*

Keywords: *GDPR/679/EU/2016, information security management system, Act No. 101/2000*

JEL classification: *M15*

Grant affiliation:

Introduction

The General Regulation constitutes an updated legal framework for the protection of personal data in the European area. Starting May 25, 2018, we will directly set up rules for the processing of personal data. In the Czech legal environment, the General Regulation will replace, from May 25, 2018, Act No. 101/2000 Coll. On the Protection of Personal Data, this currently defines the obligations and rights in the processing of personal data.

In connection with the need to adapt the Czech legal order to the general regulation, it will be necessary to adapt some of the partial aspects necessary to complete the entire legal framework of personal data protection. This is because, for example, the general regulation allows Member States to derogate from the general regulation in defined cases, or even provides for certain aspects to be regulated in the national law of a Member State. It will no longer be a separate law, but only an additional to the general regulation, which completes the comprehensive regulation of personal data protection.

1 Rights of subjects

The data subject has the right to be informed about the processing of his or her personal data. This means the right to certain information about the processing of his or her personal data so that the principle of transparency of processing is met in particular. This includes information about the purpose of the processing, the identity of the controller, his legitimate interests, and the recipients of the personal data. In this case, it is a passive right, as the activity has to be developed by the

controller against the data subject, so that the required information provided in the general regulation of the data subject provides, respectively, accessed.

A complete list of information provided by the controller in the collection of personal data can be found in Articles 13 and 14 of the General Regulation. The General Regulation formally distinguishes the provision of information in case personal data are obtained from the data subject, are not obtained from the data subject. The right to information is the equivalent to the right to information on processing provided for in Section 11 of the current Act No. 101/2000, On the Protection of Personal Data.

Other rights of the data subject, which are often based on the data subject's (application) activity, include:

the right of access to personal data, the right to repair, or supplement, the right to delete, the right to limit the processing, the right to data portability, the right to object, the right not to be subject to automated individual decision making with legal or similar effects, including profiling.

2 Administrator Obligations

The administrator is responsible for complying with the obligations of the General Regulation. It is absolutely essential to adhere to the processing principles, the adherence of which must be documented by the trustee. The essential prerequisite for this is the existence of a proper legal basis for the processing of personal data which the controller must have in order to process personal data at all. At the same time, personal information must be secured. However, the fulfilment of other obligations laid down in the General Regulation must also be a matter of course. Each trustee should verify the extent to which the general regulation will come into effect, in particular as regards new obligations based on risk-based approach (e.g. the appointment of a trustee, the assessment of the impact on the protection of personal data).

2.1 Obligation to take versions of the processing activities

Each administrator and processor shall keep records of the processing activities for which he is responsible. Records include:

1. the name and contact details of the trustee / legal entity;
2. reason for data processing;
3. a description of the categories of data subjects and personal data;
4. category of organizations receiving the data;
5. transfer of data to another country or organization;
6. deadline for deletion of data;
7. a description of the security measures applied in processing.

2.2 DPIA – Obligation to assess the impact of personal data protection

Critical Analysis - Identifies the need to conduct a DPIA analysis:

1. determine the level of monitoring of data subjects, 2. data collected on data subjects, 3. the vulnerability of data subjects, 4. availability of personal data, 5. the extent of processing of personal data, 6. to the affected area from the point of view of data subjects, 7. to exercise the rights of data subjects to process personal data, 8. accessibility of personal data, 9. the integrity of the processing of personal data, 10. Forwarding, 11. to the competence of the controller / processor, 12. to divide the manager / processor into the territory, 13. the complexity of the system of processing the personal data of the controller, 14. links to other entities, 15. Innovation of the solution.

2.3 Obligation to designate the responsibility for ANS

The assignment's role is to monitor the compliance of the processing of personal data with the obligations arising from the GDPR. The appointment of the appointing authority occurs in three cases:

1. Processing is carried out by a public authority or by a public body (except courts).
2. The principal activities of the controller or processor consist of processing operations that require extensive regular and systematic monitoring of citizens.
3. The principal activity of the controller or processor consists in the extensive processing of specific categories of data or personal data relating to criminal convictions and offenses.

2.4 Data protection disclaimer must be informed within 72 hours

The administrator / processor must report the leak or threat to the security of the authority's personal data no later than 72 hours after he / she learned of the incident (also affected by the natural person / customer).

The notification must include at least:

1. a description of the nature of the case of a personal data breach (such as a hacker attack on Internet banking);
2. the contact details of the employee or the DPO;
3. a description of the likely consequences of a security breach;
4. a description of the measures that an administrator has taken or proposed to be adopted to address a personal data breach (such as the temporary blocking of Internet banking and prompting clients to change passwords without delay).

3 Implementation Steps

3.1 Analytics – internal audit, DPIA

At this stage, it is essential to look at how personal data is treated in the company. It is necessary to find out:

1. what kind of personal data is processed (e.g. sensitive data, children);

2. who works with them (e.g. union staff, external contractors);
3. where they are stored (e.g. CRM, electronic or paper records);
4. on the basis of which legal title personal data are processed (consent, contractual obligations, statutory obligations);
5. For what purpose the data is processed (wage or personnel agenda, marketing services);
6. How long the data is processed (if the company deletes personal data after the project expires);
7. where and how personal data is being archived (external storage, clouds).

3.2 Practical solutions

On the basis of the analysis, the draft solution should include:

a) Adjustment of company internal standards and processes:

modification of internal documents, provide training for staff who handle personal data, prepare for the possible processing of the impact assessment on the data protection officer (DPO), provide the necessary documentation for records of processing activities, set security incident solutions, prepare for special conditions when processing children's children.

b) Determine whether a company needs a data protection officer:

The GDPR does not provide any conditions for the education or certification of a commissioner. They must have knowledge and practical experience in the area of security personal data

c) Ensuring the security of the processing of personal data:

- the personal data must be secured by category - personal and sensitive data;
- depending on the category of processing of personal data, it is necessary to assess possible risks;
- prepare procedures for potential data breach (obligation to be notified within 72 hours of the Office for Personal Data Protection, but also to the natural person concerned);
- implementation of technical measures (these are not mandatory terms of processing of personal data, they are security elements that can help the data controller or processor of personal data) for example:
 - pseudonymization (the personal data of a natural person are identified by a number / code, the link number being kept separate from personal data);
 - encryption of personal data (a procedure that translates information into an illegible form based on a key / cipher).

3.3 Realization phase

- After selecting suitable solutions, their implementation takes place in the life of the company. The effectiveness and practicality of the measures taken should be regularly verified, both technically and regularly. The greatest risk to data protection is the human factor.

- If these risks can be eliminated, there is a high probability that the company will manage the transition to GDPR without undue burdens and high costs. The result will be data protection from both inside and outside external attacks.

Conclusion

The customer must know, who processes his or her personal data (necessary business identification); Why process his or her personal data (to buy goods); How long will it keep (erasing data that it does not work with); Who else gets his personal data (external company).

The author recommends reviewing the contractual relationship between an administrator (e.g., an employer) and a processor (an external company). The contract must clearly set out the obligations and liability for any damage to each of the parties.

In the case of outsourcing, it is advisable to have a contractual arrangement that an external contractor processes personal data in accordance with all generally binding legal regulations, as the direct responsibility for the proper processing of personal data also affects the processors.

The author recommends that employees review their employment contracts, respectively. write a supplement to confidentiality. In case we publish (web, leaflets, articles) personal data of employees (photo, name + surname, name@company.cz, phone number), especially with the sales representatives have their consent. In the selection process, consent to the processing of personal data for what purpose and for how long. If we want to process personal data even after the end of the selection process have their consent. Next the author recommends that customers revise contracts by providing a paragraph on processing personal data (despite a contractual title). If we have a self-employed supplier or a person working on behalf of the firm, it is also necessary to include in the contracts a paragraph on the processing of personal data (despite the legal title).

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FILMMAKING FINANCING THROUGH CROWDFUNDING. AN ANALYSIS OF SUCCESSFUL AND UNSUCCESSFUL FINANCING PROPOSALS

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Abstract: *The film industry is a creative-cultural industry that has the potential to generate revenues and employment, increase national and worldwide cultural consumption, improve country image, increase awareness and openness, and promote social and cultural inclusion. Given the economic, social and cultural impact of the film industry, it is critical to resort to alternative funding schemes, besides the scarce public financing dedicated to filmmaking. Such an alternative is crowdfunding. The aim of the paper is to identify the main determinants of successful crowdfunding campaigns in the film industry, as well as to find the main shortcomings of crowdfunding proposals, which lead the film crowdfunding projects to fail. The study is based on a selection of Romanian film crowdfunding campaigns - both successful and unsuccessful - on international crowdfunding platforms. The research method involves a content-based as well as a critical analysis of the selected cases.*

Keywords: *crowdfunding, creative-cultural industries, film industry, successful proposals*

JEL classification: Z10, L82, D26

Grant affiliation:

Introduction

Creative-cultural industries in general, and in particular the film industry, have the potential to generate revenues, value added and employment (Terra Consultants, 2014), increase national and worldwide cultural consumption, improve country image, increase awareness and openness, and promote social and cultural inclusion. Given their economic, social and cultural impact, it is critical to identify alternative funding schemes to support their development whenever public finance is not sufficient for all initiatives (Fernandez, 2014). Searching for funding sources may prove to be a difficult task in creative-cultural industries, as artists are frequently considered financially ineligible for traditional bank financing. Indeed, uncertain cash flows, fuzzy revenue forecasts, and fluctuant profitability in artistic and creative businesses are all determinants of poor banking credit within such industries. This is the reason why entrepreneurs in arts and culture need to resort to various financial innovations. In this respect, a viable and long-standing solution to finance artistic creation has been represented by sponsorship and donation. With the rapid development of technology, donation and sponsorship are now facilitated and popularised by the existence and operation of crowdfunding platforms. Such platforms are virtual places that reunite those having available funds (donors) and those in need for finance (project initiators), who present their projects and open calls for finance.

The article analyses several Romanian cases of film crowdfunding projects and discusses the main determinants of successful and unsuccessful campaigns.

1 Theory and literature review

Crowdfunding – raising money from the online community – provides valuable benefits for cultural-creative projects – Internet and social media create audiences (Gascon, Rodriguez, Monforte, Lopez, & Masip, 2015), and the community built around the project helps the entrepreneur get exposure, which is a valuable marketing and communication tool (Hossain, & Oparaocha, 2017). The community is motivated to donate for various projects based on the promised reward in the event the project is successful. There are four main crowdfunding types: donation without any reward, reward-based crowdfunding, equity-based crowdfunding, and lending-base. Depending on the crowdfunding type, the platform opens up opportunities to raise funds, but also to raise capital, to improve technology, to create market knowledge and to generate collaboration and competition (Nucciarelli et al., 2017)

Generally, crowdfunding performance is affected by four main factors: the campaign, the crowdfunder, the crowdfunding platform, and the fund-seeker-related factors (Kaartemo, 2017). More specifically, the success of a crowdfunding campaign depends on the nature of the project, the creativity involved in the project (Stofa, & Zoricak, 2016), donors' preferences (Davis, B. C., Hmieleski, K. M., Webb, J. W., & Coombs, J. E., 2017), the perception of the online community regarding the chances of the project to raise the necessary amount, and donors' perception of the impact of their own donations (Kuppuswamy, & Bayus, 2017; Zvilichovsky, Danziger, & Steinhart, 2018). In the film industry, however, the crowdfunding campaign and strategy need to be adapted to the specificity of the field, by fostering a tighter relation between the project initiators and the community (Roig, Sanchez-Navarro, & Leibovitz, 2017). It has been argued that the success of a film crowdfunding project mostly depends on the reputation of the filmmaker and their previous successes, building the story around interesting and novel topics, and managing to keep the community close to and involved in the project (Sørensen, 2012). In reward-based crowdfunding model, also known as pre-ordering model, it has been found that founder (such as identity disclosure and prior experience) and project (for instance, comments, updates, description elaborateness, visual pitches and campaign duration) have a positive effect on successful crowdfunding, while the funding goal amount, the campaign' runtime and the estimated time of delivery have a negative influence on the success of a campaign (Boeuf, Darveau, & Legoux, 2014; Kim, Por, & Yang, 2017; Kunz, M. M, Bretschneider, U., Erler, M., & Leimeister, J. M., 2017).

2 Research methodology

The research method involves a content-based, as well as a critical analysis of a selection of Romanian film crowdfunding proposals. All the six cases were taken from leading international crowdfunding platforms: Kickstarter and Indiegogo. The content of all selected campaigns were analysed in terms of determinants of their success or failure, based on the film topic (description elaborateness, nature of the topic), the relation with community (comments, updates, interaction, communication, the existence of multiple rewards – both material and symbolic, i.e. acknowledgement), and the filmmaker's reputation and previous successes. The funding goal amount, the campaign runtime and the estimated time of delivery were also analysed, due to their negative impact on the likelihood of projects to succeed. For the purposes of this paper, I consider

that a successful campaign is one reaching or exceeding the funding goal amount. The distinction is necessary, especially because several crowdfunding platforms have a flexible goal, and the project is funded anyhow, no matter how little the amount of money raised.

3 Findings and discussion

A selection of six Romanian crowdfunding film projects were analysed, of which three succeeded, and the other three failed to raise the funding goal amount. Below is a detailed presentation of each of these six cases.

3.1 The Goat and Her Three Kids by Victor Canache – a successful film project on Kickstarter

The Goat and Her Three Kids is created after a Romanian folktale. It illustrates the notions of motherly love and childish disobedience, and recounts how a family of goats is ravaged by the Big Bad Wolf who is allowed into the house by the oldest kid. The only surviving kid, the youngest one, then helps his mother plan the revenge. The topic is quite fresh and interesting in the international environment of Kickstarter, as some foreign backers mentioned in the comment section of the project. The details of the story are very well explained, as well as the costs that needed to be covered through the crowdfunding campaign – gear rentals, cast, crew and post-production related costs. The fact that all other expenses were covered using personal funds represented a success factor for the project – the public was aware that their contribution was just a supplement and was needed to complete the project, not to finance it entirely.

Reaching and exceeding the target amount (USD 6,000) were possible within one month by building a community around the project. The community was promised quite inventive rewards: both material rewards (autographs, digital download of the movie, traditional Romanian artefacts) and symbolic rewards (planting a tree for each backer, thank you credit, exclusive access to the behind-the-scene content, IMDb associate producer credit or IMDb co-producer credit). By actively involving backers into the project, they became more than donors or consumers – they played the role of prosumers. The project was launched in February 2017 and completed one year later, and throughout this period the project members kept the public up-to-date with their achievements in the comment section. Moreover, the deadline for reward distribution was set for December 2017. The relatively short estimated time of delivery (less than one year) plus the moderate target amount turned the project into a winner. The cast included the multiple award-winner actress, Maia Morgenstern and renowned actor Constantin Florescu, which were valuable assets for the project.

3.2 A Distance by Teodora Totoiu – a successful film project on Kickstarter

A Distance tells the story of three Romanian women reunited in Transylvania, who struggle to reconnect while mourning the death of a dear family member. The campaign description mentions that the project would be co-financed by the online community, especially for post-production expenses. The presentation, however, includes quite a few details about the film, but rather insists on the background and on the international expertise of each of the team members, as well as on the quality and technical aspects of the movie.

The goal (USD 12,500) was reached and slightly exceeded over a period of one month (June-July 2016). The rewards promised to the backers ranged from simple thanks, photo updates, postcards, digital download of the film, to mentioning the backers' names in the final credits, invitations to the

film premiere, personal letters from the director, and the title of associate producer or that of executive producer. In this project, symbolic and intangible rewards prevailed, but the public acknowledgement of their support led to a happy-end crowdfunding campaign. The delivery of rewards was scheduled to take place within one year from the end of the campaign. Although the amount is not very low, the campaign managed to raise the necessary amount from a larger community – 126 backers.

3.3 Letters of Longing: Romania's Forgotten Modernist by Anita Nițulescu – a successful film project on Kickstarter

Letters of Longing: Romania's Forgotten Modernist is a short documentary presenting the life and work of a famous Romanian architect, George Matei Cantacuzino, within the setting of changing times in Romania and in Europe during and after World War II. The topic caught the attention of the online community from various countries, as the architect's and his family's life were connected both to Romania and to Western Europe. An important asset of the project was the involvement of one of the descendants of the main character of the documentary. A very clear and concise story of the main character corroborated with a thorough description of the project team were among the determinants of a successful project. The funds raised would be used to finance production in the most economical fashion possible, according to the team members.

In terms of rewards, the project initiators offered updates, postcards, thanks in the end credits, digital copies of the film, as well as the title of founding producer and executive producer for the most generous donors. The project managed to raise the money in three weeks (a little over the target, i.e. USD 7,000), and the public was updated with the development of the project in the comment section. Also, upon completion of the project, the backers were invited to watch the first public screenings of the movie. The project members promised that the rewards would be delivered in November 2015, which is within four months from the launch of the project. The short waiting time contributed to the success of the project, although the project was completed with a delay of four months.

3.4 The Day Sleep Ran Away by George Sipos – an unsuccessful film project on Kickstarter

The Day Sleep Ran Away is the project of an animation film based on a children's book written by Victoria Pătrașcu. The project description does include the story summary, but it presents no proof of the team's expertise in the field, nor its composition. Furthermore, the project initiator mentioned the fact that they were still looking for designers to turn the illustrated characters of the book into characters revealing the Balkan cultural essence, while also being palatable to a wide, international audience. In other words, this is nothing but a written statement of an unclear and not well-established project – no details about the production and timeframe are provided. In addition, there is no mention as to how the project is financed through own funds, if any. The total financial dependence of the project on the crowdfunding campaign plus the large amount of money needed by the project – USD 45,000 – led to the failure of the campaign.

The prevailing material rewards (digital copies of the original drawings, the signed film on DVD, T-shirts) and thanks in the final credits managed to attract only four backers who donated less than 1% of the goal amount. Despite the short waiting time until the distribution of rewards (6-10 months), these details did not weigh in the decision to finance the project.

3.5 The Folktale in Romanian Culture by Bianca Ștefănuț – an unsuccessful film project on Indiegogo

The Folktale in Romanian Culture is a feature length documentary about the Romanian folktale and is aimed to increase awareness about the importance of safeguarding traditional values. The documentary would take the viewers to enchanted lands and places that keep the folktale alive, and would introduce them to charismatic and evil characters. Fundraising via the crowdfunding platform was aimed at covering equipment rental, travel and other production expenses. The project was not entirely dependent on Indiegogo, but the remaining amount was absolutely necessary for its completion. The filmmaker also mentioned that she had found voluntary actors, and that part of the equipment was lent to her by the university. Out of the GBP 1,600 budget, the project initiator managed to raise a little over BGP 600 (i.e. 40% of the needs).

Backers were promised postcards, thank you letters from the director, online previews of the documentary, DVD, posters, T-shirts or the title of associate producer in the credits. Communication with the community is quite scarce, as the update section is empty. Instead, updates in the story section were posted at the time when the project was completed and afterwards. Although the campaign was not able to raise the target amount (it was only partially financed due to the flexible goal of the platform), the project initiator managed to create the final product using other funds. The overall conclusion is that the founder did not connect and engage the public into the production process sufficiently to be able to reach the target.

3.6 Thugs by Matei Parascan – an unsuccessful film project on Indiegogo

Thugs is a feature film about young Romanians. The film, as the project initiator – an almost film graduate – mentions, is influenced and inspired by the new Romanian cinema. The film tells the story of two friends who mistakenly kill a person being under drug influence. The crowdfunding proposal is meant to finance post-production and distribution activities: organising a tour of Romania, submitting it to film festivals, get a wider audience and publishing the film. According to the project initiator, the risks associated with donating to this project are quite low, because the product already exists. The additional funds are only necessary to distribute the film and to gain a larger audience.

Donors would be rewarded with discount vouchers for seeing the movie, name in the credits, cards and treats during the screening, digital film download, brand promotion for companies having financially contributed. The interaction with the public is not obvious on the crowdfunding platform, nor does the project initiator post any updates regarding the progress of the post-production activities.

Conclusion

The three successful projects have in common the following features: approaching an interesting and fresh topic, related to Romanian culture, history or community in an international, open and diverse online community; the existence of other sources of finance and a statement of economical spending of raised funds; a clear description of each project with an emphasis on the team members' reputation, previous successes and expertise, as well on cinematographic techniques and quality concerns. Insofar as the community is concerned, the promised rewards within the successful projects were inventive and the most motivating ones symbolic too, such as public acknowledgement for the donation and involvement in the project. The updates section of all three cases are filled with information on the progress made, and the estimated time of delivery did not exceed one year.

Another determinant for the successful campaigns was the fact that the projects were not financially dependent on the online community and that the amounts required to complete the project were not too high.

The unsuccessful projects analysed have certain common features, as well: the projects are not accompanied by a very thorough description, nor do they seem to be well designed and established in all aspects; the expertise, experience and reputation do not play a central role in the marketing of the project, as two of them were created by young and unexperienced professionals; full financial dependence on the crowdfunding campaign for the respective activities or production phases; a poor engagement and interaction with the public, and lack of consistent updates on the progress of the project in the case of the flexible goal projects; common, less inventive rewards; little or no public acknowledgement for the more generous donations.

The article proposes a qualitative and critical case-based analysis of six film crowdfunding projects with the specific aim of identifying common determinants for their success or failure. The study builds on the existing literature review and provides valuable conclusions for managers in the creative-cultural industries who open calls for finance on crowdfunding platforms. Filmmaking is a particular type of artistic creation having its own specificities, which requires the reconsideration and increased flexibility of the typical crowdfunding model as we know it. Film crowdfunding projects are more likely to succeed the better the presentation of the story, the more reputable the team, and the better the engagement with the public. When managing such a project, besides not very long delivery times for rewards, the project initiator should creative inventive and unique rewards and provide the donors with the opportunity to be part of the filmmaking process, including the public acknowledgement of their role.

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“TO DO ORDINARY THINGS IN AN UNUSUALLY GOOD WAY” – HARDTMUTH VERSUS FABER-CASTELL

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Abstract: *A pencil. One might say an “ordinary thing”. A lot from contemporary economic sciences can be exemplified on its production history and on life stories of two entrepreneurial families – Hardtmuths from České Budějovice, and Faber-Castell from a small town called Stein situated near Bavarian city Nuremberg. In this article, we are going to focus on competitive relationship between these two companies, more precisely on Faber-Castell’s view of its partner from České Budějovice. Faber-Castell Company, today run by 8th generation of Faber-Castell’s family members, observes quality, innovation and brand creativity principles. Really fierce competition between these two companies started in 1905. Back then Faber-Castell Company fought a very successful and in Europe recognized pencil “Koh-i-noor” that was manufactured in back then unusual yellow colour. Faber-Castell’s new product was a new pencil series Castell whose green lacquer and logo remained promotion motives of Faber-Castell’s goods to this day. The logo is remarkable – two medieval knights fighting with pencils, a green pencil breaks a yellow one in combat...*

Keywords: *competition, economic history of 20th century, history marketing, pencil making, Koh-i-noor Hardtmuth, Faber-Castell*

JEL classification: *N00*

Grant affiliation: *IGA_FF_2018_002_The interpenetration of Eastern and Western thinking in the global economy and management.*

Introduction

Most of companies underestimate their histories, at best they remember them when their anniversaries are coming up soon and then everything goes back to the way it was before. But company history, brand history or history in general may be a very interesting marketing tool that may be used in business communication. Historic perspective can become a part of corporate life in a great variety of contexts, opportunities, tools and measures. It emphasises temporal dimension of a company regarding both brand building and business culture, it contributes to enhancement of credibility of a company and its products in the flow of time and it increases customer confidence and affection thanks to appropriately shaped picture of company development. In histories of both Hardtmuth and Faber-Castell, we can find important moments when both these companies had to react competitively – after all they were the largest pencil producing companies in the world. Because of competition, Nuremberg company found a new path – initially in 1905 but then also multiple times in its modern history. We can trace this concept in this company even nowadays – 250 years after it was founded.

1 Fates of Both Pencil Companies

Pencil factory L. & C. Hardtmuth, later named Koh-i-noor, General partnership, České Budějovice, was established as a gravel factory by a constructor Josef Hardtmuth in 1790 (Geršlová, & Sekanina, 2003, p. 122, 165). In 1802 Hardtmuth found a way to manufacture artificial graphite that has soon become a substituent for very expensive graphite imported from England. He patented his pencil that he invented independent of Parisian mechanic N. J. Conté, his contemporary (Schättinger, 1978, p. 134). In 1804 he obtained a licence to manufacture of pencils. After his death, his sons Carl and Ludwig managed the company. They changed the name of the company to L. & C. Hardtmuth, L. & C based on the initials of their first names. In 1846 the company was relocated to České Budějovice because nearby there were all necessary raw materials, enough cheap labour and transport connections (thanks to horsecar to Vltava and Danube). The company manufactured ordinary and coloured pencils, propelling pencils, pencil holders, pen holders, rubbers, fountain pens, little black boards, writing chalk, crayons, etc. (Jetschgo, 2001, p. 160). Since 1847 Franz Hardtmuth (1870-1927), son of Carl Hardtmuth, also worked for the company. He studied mechanical engineering and modern machinery design in England and after his return to České Budějovice, he became an inventor of ground-breaking devices for pencil manufacture that were not surpassed to this day. He was also an author of a new line of graphite pencils. He designed it based on a graphite hardness scale that had 12 degrees (soft pencils were marked by B – black; hard ones by H – hard, and middle ones by HB – (“Hardtmuthsche Bleistift”). This labelling method took root and it is a global standard to this day. Other companies, including rival companies situated around Nuremberg, adopted this method. Koh-i-noor named its pencils after one of the largest diamonds in the world that was handed over to Queen Victoria’s royal treasure from India when Franz Hardtmuth was studying in England. It had yellow colour and so henceforth the pencils were also light yellow. They were introduced with much success at Paris World Exhibition in 1889. In 1890 the company changed its name to Koh-i-noor L. & C. Hardtmuth. (Lišková, & Králová, 2016, p. 75 an.). Since the end of 19th century, the company had a worldwide commercial network. Around 1910 the company was on the top of its economic development. After World War I, its English branch separated from the rest of the company. Management of company headquarters situated in České Budějovice tried to renew disintegrated commercial network in successor states especially in 1920s. Company subsidiaries were established in Vienna, Budapest, Dresden, London, Paris and Milan. One plant of Austrian company Hardtmuth was still operational in Austria. Its distributorship was in Cracow, Zagreb, Bucharest and Zurich. In Protectorate of Bohemia and Moravia, the company was integrated into a system of war economic management. It made its products from substitute materials. In 1945 Koh-i-noor was nationalised, as a national enterprise it served mostly as an export-oriented business and the main producer of school supplies and stationery. In 1969 the company became a highly privileged specialized business in whole Comecon. In 1979 Koh-i-noor was changed to a manufacturing trust that comprised 6 national enterprises, 9 production plants and 1 sales organisation. In 1986 the company was split up into two specialized businesses – Koh-i-noor Hardtmuth and Gama – and in 1988 Centropen was separated and a year later Grafo was separated. In the framework of privatization, the company was transformed into a joint-stock company in 1992. After other restructuring steps, sales company Koh-i-noor Hardtmuth Trade was established in 1998 and its subsidiary was established in Slovak Republic in 2000. Further structuring of subchapters is indicated below.

History of present-day Nuremberg company Faber-Castell, that interests us, started in 1758 when a joiner Kaspar Faber settled in Stein near Nuremberg. He started to make wooden pencils in 1761 and he sold them at Nuremberg market (A.W. Faber). Lothar von Faber (1817-1896) was in the lead of the company since 1839. He was a good innovator. For example, he introduced hexagonal pencils as a quite unmistakable company product. Hexagonal pencils do not as easily roll down off a desk as round ones. He improved graphite compressing technique and he was able to affect degree of pencil hardness by adding pulverised clay – primacy of this division was owned by České Budějovice and other companies only adopted this division (Geršlová, 2011, p. 107). He standardised pencil length and width – this standard was even applied internationally since 1851. He patented his pencil labelling method and as one of the first people, he promoted a law to protect trademarks in Germany (in 1875). Lothar Faber was a factory owner, entrepreneur, manager and salesman. He carried a briefcase with sample pencils around Germany and Europe and offered them to potential customers. However, his journey was an arduous one because he insisted on his prices for his high-quality products that were comparable with well-established English competitors. Even though Nuremberg merchants claimed that Faber sells his pencils for the same price as if they were made of silver, Faber returned from his business trips with enough contracts (Neumann, 1987, p. 351). Establishing of subsidiaries all around the world followed, from New York, Paris, London, through Vienna, Saint Petersburg, to Orient, Japan, China and Australia. He was faithful to the principle “offer the best that was ever invented to the world” and he collected the newest discoveries on his business trips. In 1898 the company name was changed to Faber-Castell when Otilia, Lothar von Faber’s daughter-in-law, married count Alexander zu Castell-Rüdenhausen (1866-1928). Under his leadership a new era began in the company (see a section below). In 1905 “Castell” brand was established as a brand offering especially outstanding and high-quality products. In this connection, Faber-Castell Company logo and trade mark was created and in 1906 – it is based on a motif of a medieval castle on a hill that serves as a reminder of feudal roots of company founders. Shortly after that, the company put a new product on the market that has very soon become an essential part of painters’ equipment – the company sold a set of sixty coloured pencils that had the same hues as acrylic paints under the brand “Polychromos”. World War I hit A. W. Faber-Castell enterprise activities hard. All abroad factories were confiscated, American subsidiaries were sold and in case of the USA, it took till 1994 till the company was able to regain the right to do business in both the USA and Canada. Count Alexander zu Castell-Rüdenhausen split up with his wife Otilia, after two years he married again and his son Radulf was born of the second marriage in 1922. But the count suddenly died in 1928 and Roland (1905-1978), his 23-year old son of his first marriage, became the man in charge. In 1948 Faber-Castell Company started manufacture of pencil holders (by takeover of manufacture in Konstanz) and it was internationally successful with them. In 1950 Faber-Castell acquired Osmia company and an era of manufacture of fountain pens began but it was stopped by the company in 1975. Faber-Castell was also an important producer of slide rules. The eighth generation of family members got in charge of the company in 1978 – Anton Wolfgang Graf von Faber-Castell began an era of other company subsidiaries (among others he established the biggest caoutchouc and rubber plant in the world situated in Malaysia in 1980), new products especially for cosmetics industry (kohl pencils, eye liners and eye pencils, lipsticks, applicators) and in recent years the company focuses on protecting of environment.

Conclusion: Historical Idea in Connection with Company Development and Today

In management of Nuremberg company, there were several times situations when it was necessary to take action against rival companies. The first case that we should remember is marketing politics of Lothar Faber – even though very strong rival companies controlled European market, he insisted on his prices for his goods that he was able to maintain in appropriate quality. But the essential year was year 1905 – in particular in relation to its competitor from České Budějovice. Count Alexander zu Castell-Rüdenhausen who entered Nuremberg company – after that day named Faber-Castell – designed a new line of high-quality pencils that were accompanied by a completely clear advertising message – their bright green colour appeared for the first time and it accompanies the pencils and all company particulars to this day. Then he also brought a story into an entirely new brand – because of his noble origin and his name, a medieval castle became motif of the company (the castle was documented by historians to date back till 11th century). Two medieval knights in full armour sitting on two horses fight each other – instead of swords they have pencils in their hands. The knight with a green pencil wins and breaks a yellow pencil of the other knight. This brand of an excellent product, that the pencil would become in the future, carried a message of victory over competition fighting with yellow pencils – Koh-i-noor Hardtmuth. If we look into 2011 Faber-Castell anniversary publications and leaflets etc., we find this combat right on the front page. And its advertising slogan “to do ordinary things in an unusually good way” was elevated by recently deceased head of the company Anton Wolfgang Graf von Faber-Castell (who run the company since 1978 as the eight generation of the family) and who brought it another step further by introduction of a “perfect pencil” with an inbuilt penholder and pencil sharpener.

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SOCIO-ECONOMIC AND TECHNOLOGICAL ASPECTS OF INDUSTRY 4.0 DEPLOYING

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Abstract: *The fourth industrial revolution brings technological advances in the introduction of smart innovations in the enterprises. They represent their digital automated systems that communicate with each other as the Internet of Things. Smart manufacturing systems that can learn and adapt, or predictive logistics, that eliminates downtime in supplying of the production process. These are all emerging trends in Industry 4.0. Generally, they cause that some low-skilled jobs disappear. On the other hand, within this trend, new job positions for the highly qualified employees appear on the labor market as well. The key question is how successfully this marked shift in requirements for qualifications of the current and future labour force can be managed. In the present document we describe some selected socio-economic and technological aspects of the introduction of Industry 4.0.*

Keywords: *industry 4.0, technological aspects, employment*

JEL classification: *J00, O31, O33*

Introduction

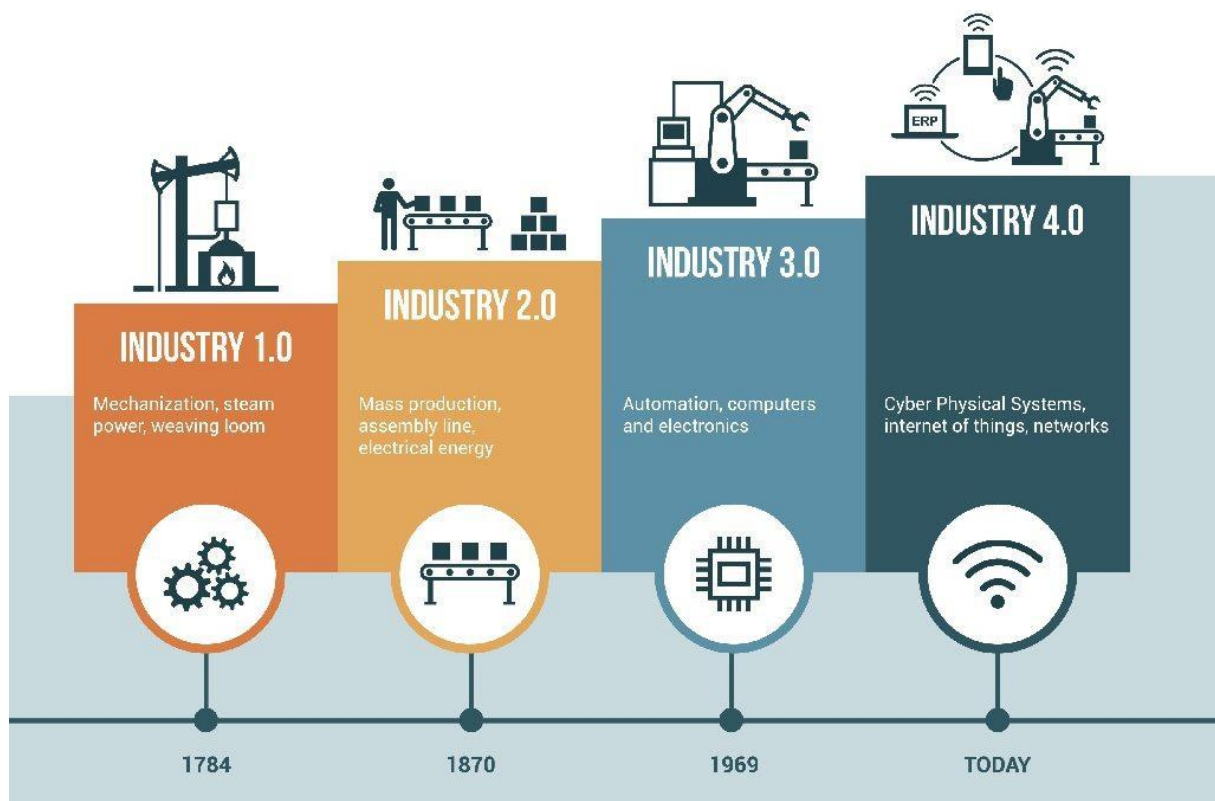
The fourth industrial revolution-related technologies affect not only the field of industrial production but they are gradually intervening in all areas of people's lives to a wider extent. It has not been the truth for a long time that a service, a product, or a thing has its certain form, and that people can adapt to it.

Nowadays we tend to have everything shaped to our needs, tailored to our parameters. In relation to this issue terms such as "the internet of things" are applied, meaning a network of devices embedded in electronics through which these devices can be interconnected and exchange relevant data. And this IoT principle is expected to be the basis of functioning of all the things around us in the future (Gubbi, et al., 2013). The intelligence of things will become part of our life. So far we do not know how our society will cope with this change, whether people are ready for this shift, or if it is beneficial, and in particular what the world of work will be like. Nobody can predict if people as members of society will be able to handle this remarkable shift regarding the requirements for their work. The objective of the present article is to find some answers to questions that have arisen due to the start of the fourth industrial revolution, i.e. which changes can be expected in the labour market, and in what way the related social consequences will be dealt with.

1 The Historical Periods of Industrial Revolutions

The fact that development of new technologies makes the world move faster can be traced within particular historical periods divided by particular industrial revolutions (See Figure 1). The first cycle of industrial revolution lasted for more than 100 years, whereas the second and the third revolutions are only divided by less than an eighty-year period (Jensen, 1993). The period before the next revolution lasted a shorter time, and the period between the third and the fourth is just 41 years. All the changes in the field of industry had their momentum (steam, electricity, microprocessor). The engine of the current change is the internet. As estimated by experts, in 2020 about 50 billion devices and products will be communicating through the internet (Nordrum, 2016). Assuming this fact, as stated above, this phenomenon has been named “the internet of things”.

FIG. 1: Industrial Revolutions, source: (<https://casopis.fit.cvut.cz/tema/priemysel-4-0/>)



The previous “industrial revolutions” were based on different principles. Their common attribute was a rapid innovation of the production process, which resulted in speeding up and simplifying production. Inventions and innovations always contribute to economic growth. Society moved forward from a long-lasting agriculture-based period into the age of industry (Theory of Economic Cycles). The model of cyclic development of economy is represented by the so-called Kondratieff Waves, according to which one cycle lasts for about 44 to 60 years, and is generally launched by the introduction of some new technology (Grinin, Korotayev & Tausch, 2016).

The current shift in networking of technologies has become a natural consequence of sophisticated and systematic sequencing of operations. This is the only option among a few others that can preserve competitiveness in industry focusing on production of modern products in a demanding

environment with high requirements regarding individualisation (Groß, Siegert, & Bauernhansl, 2017).

2 Technologies Industry 4.0

The third industrial revolution started in the second half of the 20th century when robots and IT technologies started to be used in production processes (Smith, 2001). Similarly to the previous ones, a boosting growth of productivity was recorded within it. Each of the successively running “industrial revolutions” was based on different principles, but they had one indicator in common, namely, high-speed innovation of a manufacturing process enabling products to be made faster and in a more simple way. The third industrial revolution, brought information technologies and automation both to production and society in general (Smith, 2001). However, slower growth in productivity can progressively be observed. The production processes are being continuously innovated. New and more efficient technologies are being introduced, but they have not contributed to remarkable growth in productivity, as it could be observed within the third industrial revolution. Recently the signs of arrival of the new, fourth industrial revolution have been appearing. This is named Industry 4.0, and is expected to lead to even more efficient production (Lasi, et al., 2014).

The main focus is on a deep systemic change which would give rise to more efficient and transparent production processes, and their deeper interconnection (Lasi, et al., 2014). This is production based on networking of all the components via the internet with a cybernetic extension which enables full automation of production processes.

Whereas machines in the past were able to operate independently and automatically, nowadays they are networked. It is not machines which regulate production, but semi-finished products themselves containing information about how they are supposed to be processed, while this information is stored on the internet. This is how the new phenomenon Industry 4.0 (Kagermann, Lukas, & Wahlster, 2011). The processed part (or the carrier of this part) has a chip on which all the requirements regarding the production and all the processing steps are stored. The extended computer system equipped with artificial intelligence is able, using the data obtained from sensors implemented all over the system, to control the production process, optimize it, and deal with unpredictable issues.

The major changes that the concept of Industry 4.0 is based on include, apart from the internet of products mentioned above, a number of other technologies. The following is a brief summary of them (Lasi, et al., 2014):

- Artificial intelligence. The use of artificial intelligence for helping machines make their own decisions regarding less important issues, i.e. decentralization of the production process.
- Internet of Things. In industry the IoT consists of communication connections between different devices and computers within the production process, as well as connections with suppliers, customers, and what is more, with competitors.
- Intelligent robots. The use of intelligent robots with the capacity of self-adjustment.
- The capability of identification of the environment using cameras and sensors, which help devices gather different information on their state, breakdowns, required maintenance, state of the environment, and the production process.

- Big data. The collection of big data on the production process, the state of supplies, risks, critical points in production, and other data that can serve for analysis of the production process and the increase its efficiency, and avoidance of unfavourable situations.

The mutual connection of all components of production is a distinguishing feature of a perfect 4.0 industrial company:

- on the first level there are physical objects (e.g. an automatic turning machine or a robotic arm) that intelligently communicate by means of a network, so they can be given any tasks at any time, and details about their operation and state can be found;
- the second level is the data memory, the so-called cloud, where data on physical objects are stored;
- the third level relates to services, applications and algorithms that are dynamically integrated, so there is exchange of data here as well.

By interconnecting all the levels of the chain, in which added value is created, all the required information is available in real time. This enables managers to make better decisions, and helps to increase efficiency. During computer-aided production planning, or modifying the sophisticated production in interconnected digitally-controlled intelligent operations, nothing can be underestimated within the preparatory process. However, other fields, mainly cybernetic system security, must be controlled equally thoroughly.

3 The Concept of Intelligent Industry for Slovakia

The introduction of the concept of Industry 4.0 to Slovak companies is a process that has started running (Sova Digital, 2017). Slovak companies are interested in obtaining information and exchanging experiences, but they do not trust the new technologies, and are not determined to progressively adjust their productions to them. These technologies will have remarkable impact on their competitiveness, so it is important to talk about which approach to follow, and which first steps should be made.

The Ministry for Trade and Industry of the Slovak Republic has a positive attitude towards the development of intelligent industry. In its ambitious Concept of Intelligent Industry for Slovakia it states that the Ministry aims to make Slovak industry a regional (even more, European) leader through the introduction of intelligent technologies. In the document that was presented in 2016 to the European Commission, it claims that some partial intelligent concepts already exist in Slovakia (e.g. e-mobility, smart cities), and some of them still have to be created, such as smart grids, smart homes, smart buildings. The document presented was highly evaluated by the European Commission, and what is more, the Commission used its English version as a basis for Digitising European Industry Initiative. (Euractiv, 2016).

The Ministry for Finance of the Slovak Republic, however, did not agree with the concept presented here. Within the comment procedure the Ministry insisted on creating a so-called Platform for Intelligent Industry with the presence of representatives of business and academic areas. The Ministry also called for developing an Action Plan for Intelligent Industry in the Slovak Republic covering several years. This document was drawn up in the middle of last year. The comment procedure was supposed to be completed by the end of April 2018.

4 The Fourth Industrial Revolution and Employment

The relation between economic growth and creation of new jobs started to weaken due to the introduction of labour-saving technologies based on the use of microprocessors in numerically-controlled machines and by launching automated production lines in the early 1970s. In the past there existed a typical relation of mutual dependence between economic growth, production capacity and quality of the labour force in industrial society, but this relation does not apply any longer in this period of development of society (often called “post-industrial” or “post-modern” society) (Bauman, 2004). The work factor is becoming marginal with regard to economic growth. The relation between economic growth and work has been dissolved. This phenomenon can be illustrated by the fact that economic growth in the second half of the 20th century started being achieved even if stagnation in the number of jobs available was recorded. The labour market is expected to change. Many work positions will disappear and new ones will be created. According to the trade union representatives who took part in the conference The Culture of the World of Work in Digital Society, in spite of the presence of outstanding experts both from abroad and from this country dealing with this topic, many more questions arose than answers (Labour Law Association, 2018). For example, „what impact will robotization and artificial intelligence have on different types of jobs in production and services, as well as on family life in relation to new forms of work? How will work in production be influenced by the introduction of 3-D printing technologies? How will digital literacy be improved within the education process?“ (Labour Law Association, 2018).

The arrival of the fourth industrial revolution could threaten more than 40% of work positions. It will also bring with it other risks and negative consequences. Through the implementation of automation and robotics the demand for less qualified work force will be reduced. Industry 4.0 will bring with it increased interest in better-qualified people who will be shifted into the field of research, development of preparatory stages of production, and operators whose task will be to co-ordinate and monitor a wider range activities. Some people can be re-qualified. However, it will not be a balanced ratio, which means that from the global point of view it will have a negative effect on employment, which may lead to discrimination for and against different social groups in the labour market.

The forthcoming phenomenon called Industry 4.0 is a process that must be faced, and we must not run away from it. Considering the analyses made, there is a shared conclusion that several professions will disappear as a consequence of automation. New ones, known so far to be rare, will have to be introduced, and brand new jobs will also appear, which are not known so far at all. There will be no need for numerical machine mechanics, but for designers of systems using artificial intelligence. There are a lot of disputes about preparation of workers in the field of industry and services. However, there is another generation in the labour market, the middle generation of employees, with regard to whom, there is silence, or they are not mentioned. This is a generation that can rely less and less on the opportunity of life-long employment on the basis of their education or training. Even nowadays young people studying at secondary schools and universities fail to find jobs corresponding to their education. The “dual education” system that is currently so much discussed is not the solution to this issue, which should have been tackled much earlier.

Recently, a lot of attention has been paid to these changes in industrial production at the World Economic Forum in Davos. The people responsible for education are expected to respond to the demands of the labour market in advance, but they seem not to be aware of the above-mentioned

situation, as can be observed at both secondary schools and universities offering programmes that do not match up the new tendencies. It is very important to create new relations between those who study, educational institutions and providers of education, investors and innovators.

Conclusion

Considering the above-stated facts, we can assume that the fourth industrial revolution may have remarkable impact on all aspects of human life. The question is not whether Industry 4.0 is developing. What is at issue is when it will fully develop. We should be aware of the fact that this revolution will not only impact industry, education and labour market, but it will become part of our everyday life. In shops we will not have to stand in long lines to get to an attended check-out, nor will we have to check ourselves out at a self-service terminal.

The whole system should be perceived as a direction which industrial companies will follow in the future to be able to survive the fight with competitors. However, there are numbers of other obstacles that make the shift towards the new system of production more difficult. In Slovakia one of the biggest will be capital intensity. The transfer to fully-automated production, developing an IoT network, and purchasing of new, modifiable machines will require a great deal of investment, which only huge companies may afford. Several of them are sceptical, and do not see a sufficient amount of added value in the new production.

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MEETING THE OBJECTIVES OF SMART GROWTH IN SLOVAKIA IN THE CONTEXT OF THE EUROPE 2020 STRATEGY AND THE AGENDA 2030

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Abstract: *The aim of the article is to evaluate the fulfilment of the objectives of the Europe 2020 strategy for Slovakia in the field of smart growth – increasing the number of people aged 30-34 having completed higher education, reducing the number of early school leavers, financing R&D, as well as financing the education system that are a precondition for creation of a pro-innovation environment. In addition, attention is paid to the importance of lifelong learning to ensure sustainable development in the context of the Agenda 2030 and to explore the form of its implementation in Slovakia. There are analyses of selected problems and topical issues of innovation development in Slovakia (inconsistency of study programmes with the needs of the labour market, brain drain, the problem of recognition of the results of non-formal and informal education as part of lifelong learning etc.) and suggestions of possible measures for its improvement.*

Keywords: *Europe 2020 strategy, smart growth, Slovakia, lifelong learning*

JEL classification: *I20, I25, O31*

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Introduction

The main factors of economic growth and increasing competitiveness of companies, regions, countries and integration groups include the creation of knowledge and innovation. Quality education is a prerequisite for their development and application. Hence it is natural that this factor has given a great deal of attention in the Europe 2020 strategy as well as in the UN Agenda.

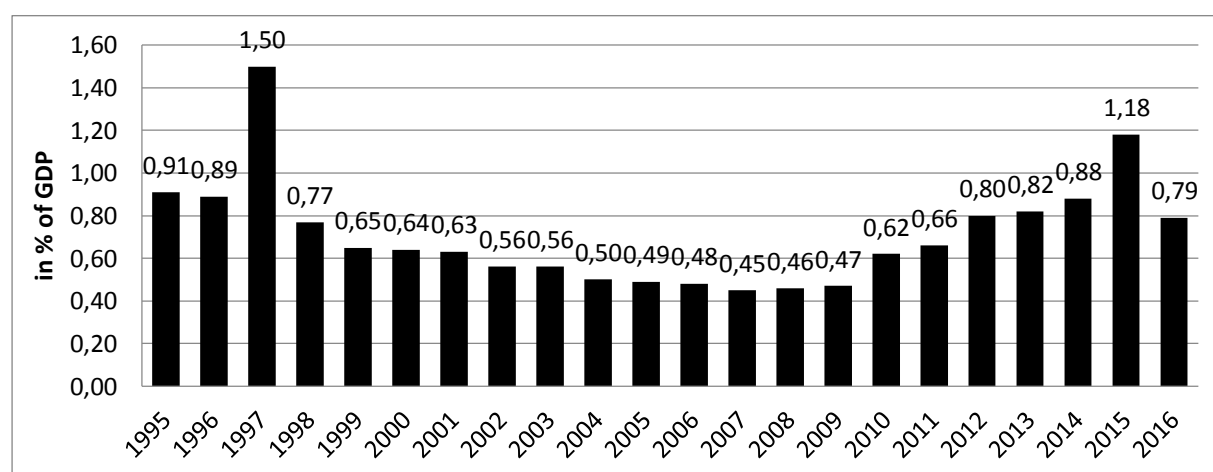
1 Fulfilling national goals of the Europe 2020 strategy for Slovakia in the field of smart growth

As the successor to the Lisbon strategy in years 2010-2020, the Europe 2020 strategy is based on three interrelated pillars – smart, sustainable and inclusive growth. The article focuses on objectives and selected issues in the field of smart growth, representing the development of a knowledge-based and innovation-based economy. Of the five headline objectives of the Europe 2020 strategy – employment, research and development (R&D) investment, climate and energy, education, fighting poverty, smart growth is related to the ones in R&D investment: reach 3 percent of the EU's GDP, and in education: 1) reduce the rate of early school leaving below 10 percent, 2) increase the proportion of the population aged 30-34 with tertiary education to at least 40 percent (EC 2010).

To meet the objectives of the Europe 2020 strategy, each EU country set its own national objectives. In the field of smart growth, Slovakia set the objectives of increasing R&D investment to 1.2 percent of GDP, reach at least 40 percent share of people aged 30-34 with tertiary education and reduce the proportion of early school leavers below 6 percent (MF SR, 2018, p. 56).

1. *Expenditure on research and development.* Though compared to the European goal – reaching the intensity of R&D expenditures of 3 percent of GDP by 2020 of which 2/3 should consist of corporate spending and 1/3 of public spending – the Slovak goal is much more modest (1.2 percent of GDP), nor is it yet to be fulfilled. After the adoption of the Europe 2020 strategy, it started to grow year-on-year, but until 2014 it was below 1 percent of GDP. In 2015, there was a significant increase of expenditures to the level of 1.18 percent of GDP whereby Slovakia came very near the goal of 1.2 percent of GDP for the first time (chart 1). It should be noted, however, that this relatively good result is related to the fact that 2015 was the last year of drawing money from the EU funds (structural funds and the Cohesion Fund). For this reason, we expect R&D spending to fall (both absolutely and relatively) in coming years. Already in 2016, their decline was recorded to the level of 0.79 percent of GDP (EC, 2018).

FIG. 1: Slovak spending on R&D in the period 1995-2016 (percent of GDP).



Source: Eurostat

2. *Share of people with tertiary education.* Regarding the goal of the Europe 2020 strategy in the field of education, 31.5 percent of citizens aged 30-34 in Slovakia in 2016 had a tertiary education (MF SR, 2018, p. 56). As illustrated in table 1, the EU as a whole tends to successfully meet the goal. In this area, Slovakia has also experienced continuous growth and the fulfilment of the goal has a steadily growing trend.

TAB. 1: The development of tertiary-educated citizens in Slovakia and the EU (% population aged 30-34).

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Goal
SK	10,5	11,5	12,9	14,3	14,4	14,8	15,8	17,6	22,1	23,2	23,7	26,9	26,9	28,4	31,5	40
EÚ	23,6	25	26,9	28,1	29	30,1	31,1	32,3	33,8	34,8	36	37,1	37,9	38,7	39,1	40

Source: Eurostat

3. *Early-ended school attendance.* Slovakia has not had any problem with early school leaving during its EU membership, while the percentage of such people aged 18-24 has been always below 10 percent. Therefore, Slovakia set a more demanding national goal, namely to reduce the number of early school leavers below 6 percent (table 2). Though the goal had already been fulfilled before 2013, in the following years, the results were worse (2013 – 6.4 percent, 2014 – 6.7 percent, 2015 – 6.9 percent and 2016 – 7.4 percent) (MF SR 2018, p. 56). Critical values are mainly in the risk group of Roma as up to 83 percent of young Roma end their school attendance early (EC, 2016a).

TAB. 2: The number of early school leavers in Slovakia and the EU (% population aged 18-24)

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Goal
SK	6.7	5.3	6.8	6.3	6.6	6.5	6	4.9	4.7	5.1	5.3	6.4	6.7	6.9	7.4	6
EÚ	17	16.4	16	15.7	15.3	14.9	14.7	14.2	13.9	13.4	12.7	11.9	11.2	11	10.7	10

Source: Eurostat

2 Lifelong learning in the context of 2030 Agenda

The issue of education has gotten great attention also in the UN document Transforming our world: the 2030 Agenda for Sustainable Development which includes 17 global goals. One of them is the Goal nr. 4 - Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all (UN, 2015).

Lifelong learning which means learning through the whole life plays an important role in ensuring sustainable development. In fact, a person needs to be constantly educated in his/her personal life as well as in the position of an employee in order to succeed in ever stronger competition (Lukáčová, 2016, p. 212). In terms of societal interest, two equally important objectives of education are highlighted in lifelong learning: (1) promoting active citizenship and (2) promoting employability and employment of people (Machalová, 2015).

The European Union is aware of the importance of *lifelong learning*. It is supported by the EU programmes: *Comenius* (school education), *Erasmus* (tertiary education), *Leonardo da Vinci* (vocational training), *Grundtvig* (adult education). For the period 2014-2020, the European Union has adopted the new Erasmus+ (Erasmus plus) programme which has combined all the current EU programmes for education, training, youth and sport, including the Lifelong Learning Programme.

Unfavourable demographic trends, a decline in birth rates and aging population in countries of Europe (including Slovakia) require the creation of conditions for the education of older people. Adult education now becomes an important factor in socio-economic development. The need for education through the whole life is also conditioned by the acceleration of the pace of renewal of

professional knowledge. An integral part of lifelong learning is therefore adult education. It allows the realisation of the right of every adult to continuous education through its particular forms, taking into account his/her personal needs, priorities of social development and the needs of the economy.

Lifelong learning has been implemented in Slovakia in all forms – formal, non-formal and informal learning; education in pre-productive, productive and post-productive age – albeit of varying intensity. Compared with developed Europe, the issue of adult education in Slovakia has relatively little attention. Participation of adults in lifelong learning in Slovakia is among the lowest in the EU countries. For example, only 2.9 percent of Slovak citizens were involved in continuous education in 2013, while the EU average was 10.5 percent (EC, 2016b). The participation of low-skilled as well as long-term unemployed persons is particularly low.

An important role in the education of seniors in Slovakia is played by *the Universities of the Third Age* (UVT), whereby the education of seniors is voluntary. In our opinion, the sense of such education is mainly “psychological”.

3 Selected issues and current tasks of innovation development in Slovakia

1. The problem of Slovakia is *the deficit of financing of the education system* at all levels. In the area of *education financing*, the Slovak economy belongs to the group of EU28 with the lowest educational expenditures – in 2014, only 4.09 percent of GDP was spent on education from public resources, whereas in Sweden it was 7.14 percent, in Finland 6.81 percent and in Belgium 6.46 percent (EC, 2018). This is reflected also in the gradual deterioration of the results in the international comparative measures (e.g. PISA) (Brzica et al., 2017).

2. The negative moment of the relatively rapid growth of the share of tertiary-educated people in Slovakia is *the imbalance in the interest of various study programmes*. While the demand and supply of the education system in the field of social sciences is high, the interest in technical and natural science directions is weakened.

3. Slovakia has been still struggling with the phenomenon of so-called *brain drain*. A large number of educated and qualified people are leaving abroad, especially to economically more advanced countries. At present, approximately 15 percent of Slovak students study at universities abroad. Many of them remain there to work which cause that Slovakia lose highly qualified specialists.

4. Unlike formal (school) education, *non-formal education currently does not lead to getting a degree or qualification* which makes it possible to significantly increase the chances in the labour market. This is also a reason why this form of education does not have proper sense and importance (EC, 2017).

5. For a long time, the low volume of invested resources in R&D is criticised in Slovakia, while the participation of the corporate sector in such financing is particularly low. Slovakia's long-standing problem is the persistent *innovation model based on the import of finished technologies* and, on the other hand, *the insufficient role of domestic R&D capacities* (Šikula, 2013, p. 231). Most of the large companies in Slovakia are in the position of a subsidiary of an international company and R&D is mostly handled outside Slovakia.

6. Slovakia also has considerable reserves in the transformation of new knowledge into practice. The negative consequence of weak interconnection of *the research and production spheres* is the lack of scientific-research results suitable for commercial use. The barriers to technological transfer cause that only part of the inventions is commercialised.

Conclusion and recommendations

To achieve better results in the field of smart growth and sustainable development in Slovakia, the country needs changes that will lead to a greater evaluation of existing potential of R&D and its extension to shift Slovakia closer to at least current average level of the old EU member states in the field of innovation development in the future. In our opinion, this needs to:

- significantly increase the share of education spending as well as the share of R&D spending on GDP (in particular corporate spending),
- improve cooperation between research and corporate sectors in order to improve the knowledge and technology transfer and increase the commercialisation of R&D outcomes,
- make such a change of motivational environment that forms a situation in which talents and high-quality researchers find their application in Slovakia and there is no brain drain which makes the country lose in global competition,
- implement policies to stimulate the retention and return of qualified workers back to Slovakia.

Supporting and developing lifelong learning which promotes social inclusion, active citizenship and personal development is of great importance. It also increases the ability of individuals to work and apply in a competitive labour market. In conditions of the unfavourable demographic situation in Slovakia, creating conditions for the education of older people is an indispensable factor for ensuring sustainable development. Adult education is now an important factor in socio-economic development. In this situation, the issue of recognising knowledge, skills and competences acquired from non-formal or informal learning becomes a reality.

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EDUCATION SUPPORT AS A TOOL OF DEVELOPMENT OF KNOWLEDGE SOCIETY

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Abstract: *The article deals with public expenditure on education in selected states of the European Union (EU). Drawing on a number of works dealing with education from the macroeconomic perspective, it can be said that governments are directly responsible for the quality of educational process on all its levels (pre-primary, primary, secondary, tertiary). Education system can be improved by ensuring thorough funding on all its levels. The main aim of the article is to verify the relationship that exists between the amount of public expenditures in EU states and the impact it has on the level of advancement of their societies. The amount of public expenditure is demonstrated via the Government Expenditure (% of GDP % of total expenditure), while the level of advancement of society is demonstrated via Social Progress Index.*

Keywords: *education support, knowledge, human capital, social development*

JEL classification: *H520, I310, O150*

Grant affiliation: *The article was supported by student grant SGS_2018_023.*

Introduction

Modern sociologists work with the term knowledge society to designate the current society. This concept can be found mainly in the works of German sociologists (Stehr, 2001, 2007; Willke, 2000), whose main ideas were adopted by declarations of transnational organizations such as UNESCO or OECD (UNESCO, 2003, 2005; OECD, 2000). These declarations postulate the main principles of development of knowledge society - it purposefully and actively invests into development of each individual's personal potential and develops its innovation capacity through support of education, scientific and research activities (UNESCO, 2003).

Reasonably educated and skilled citizens are a condition for competitiveness and development of knowledge and information society. Preparation on all levels of school education together with adults' education and lifelong learning is considered a key aspect in the obtaining of necessary knowledge. Knowledge society has its foundations in educated individuals, who are ready to use practically their skills in a globalized world. Education is considered the central component of knowledge society and education institutions are its key institutions (Drucker, 1998). Knowledge society is not just a term, but also a challenge for a new conceptualization or re-conceptualization of education and lifelong learning, i.e. the distribution and reproduction of knowledge (Dopita, 2010). Knowledge society uses the terms acquisition, sharing and use of information and the principle of better knowledge. Put into practice, this means mainly improving qualifications, lifelong learning and

the ability to use information also with the use of information technologies (Lorincová, Hitka, & Balážová, 2016).

The term knowledge society is closely semantically related to knowledge economy, which is being supported by knowledge society. This concept came to the forefront in the 1990s, when knowledge-based economy described the way how several high-tech branches (such as information and communication technology, biotechnology, nanotechnology and also education and scientific institutions) bring a significant contribution to the wealth of a country (Mansell, Wehn, 1998; Rooney, 2003, 2005). In intense global competition, economy can function only when it supports development of innovations and technological inventions, which is possible only in the case when it has a high-quality human capital. Knowledge is a basic factor of economic growth and the ability to bring innovation stems from knowledge, which is a key factor in the overall development of a society (David & Foray, 2002).

Building on the works of many authors, it can be said that development of knowledge can be modified systematically by improvements in the education system, which leads to a more advanced society (Bleiklie, 2005; Barnett, 1994; Anderson, 2008; Drucker, 1998). Moore (2014) states that improvements in the education system can be brought about by consistent and systematic funding of each level of education. Other authors (Trabelsi, 2017; Kourtellos et al., 2016) assume a significant interdependence of public education expenditure and economic growth. Changes in expenditure reflect overall development of society and its growth (Krueger & Lindhal, 2001).

The purpose of the article is to show that active state support for the education system has a positive impact on the development of these states and to verify the relationship that exists between the amount of public expenditures in EU states and the impact it has on the level of advancement of their societies.

1 Analysis of government expenditure on education in selected EU countries and its relation to the level of advancement of their societies)

Government Expenditure index (% of GDP % of total expenditure) makes it possible to analyze public expenditure on education.

TAB. 1: Total general government expenditure on education, 2014 and 2016 (% of GDP and % of total expenditure) (Eurostat, 2016, 2018)

Country	Government Expenditure (% of GDP % of total expenditure) 2014	Government Expenditure (% of GDP % of total expenditure) 2016
Austria	5.0	4.9
Belgium	6.3	6.4
Bulgaria	4.1	3.4
Croatia	4.7	4.8
Czech Republic	5.2	4.5
Denmark	7.2	6.9
Estonia	5.6	5.9
Finland	6.4	6.1
France	5.5	5.4
Germany	4.3	4.2

Greece	4.4	4.3
Hungary	5.2	4.9
Ireland	4.3	3.3
Italy	4.1	3.9
Latvia	5.9	5.5
Lithuania	5.4	5.2
Netherlands	5.4	5.3
Poland	5.3	5.0
Portugal	6.2	4.9
Romania	3.0	3.7
Slovakia	4.1	3.8
Slovenia	5.9	5.6
Spain	4.3	4.0
Sweden	6.6	6.6
United Kingdom	5.2	4.7

Table 1 shows expenditure on education between years 2014 through 2016. ISCED 1997 classifies government expenditure on education as follows: pre-primary and primary education, secondary education, post-secondary non-tertiary education, tertiary education, education not definable by level, subsidiary services to education (such as school buses or R&D education) and education not elsewhere classified.

The above table shows that Denmark, Belgium, Sweden and Finland had the highest government expenditure on education in both reference periods. On the other hand, the lowest expenditure was found in Romania and Bulgaria. Relatively low values can also be found in Spain and Greece.

Based on the results of the analysis it is possible to assume an interdependence of government expenditure on education and the level of advancement of societies. The assumption is based on the general idea that citizens of advanced European countries enjoy better living conditions, which makes it possible for these societies to develop. Ensuring better living conditions should be guaranteed inter alia by active approach to education funding.

To prove this assumption right, it is necessary to analyze the level of advancement of society in the same group of countries as in the previous analysis (Total general government expenditure on education) in the same period (2014 through 2016). Social Progress Index makes it possible to analyze the level of advancement of society.

TAB. 2: Social Progress Index, 2014 and 2016 (Social Progress Imperative 2015, 2017)

Country	Social Progress Index 2014	Social Progress Index 2016
Austria	85.11	86.60
Belgium	82.63	86.19
Bulgaria	70.24	72.14
Croatia	73.31	77.68
Czech Republic	80.41	82.80
Denmark	86.55	83.39
Estonia	81.28	82.62
Finland	86.91	90.09

France	81.11	84.79
Germany	84.61	86.42
Greece	73.43	78.27
Hungary	73.87	76.88
Ireland	84.05	87.94
Italy	76.93	82.49
Latvia	73.91	76.19
Lithuania	73.76	76.94
Netherlands	87.37	88.65
Poland	77.44	79.76
Portugal	80.49	83.88
Romania	67.72	72.23
Slovakia	78.93	78.96
Slovenia	81.65	84.27
Spain	80.77	85.88
Sweden	87.08	88.80
United Kingdom	84.56	88.58

Table 2 shows values of Social Progress Index in selected EU countries in the period 2014 through 2016. The Index measures social progress directly, without the use of any economic development measure. It is based on a framework that builds on a number of experts and scholars from various fields and constitutes 54 indicators of social and environmental outcomes. It helps identify and measure the dimensions of social and environmental performance of societies as it respects the three basic dimensions: Basic Human Needs, Foundations of Wellbeing and Opportunity.

The above table clearly shows that Sweden, Finland and Denmark reach high values on the index. On the other hand, the index value is very low in Romania, Bulgaria, Croatia, Greece, Lithuania and Latvia.

Confirmation of that assumption of the existence of a relationship between the amount of public expenditures in the EU states and the impact it has on the level of advancement of their societies is done with the use of statistical analysis tools.

The purpose of the statistical testing is to confirm or refute the assumption of existence of dependence between the amount of public expenditures in EU states and the impact it has on the level of advancement of their societies.

The results will therefore either confirm or refute the null hypothesis on the basis of the P-value. Before the statistical testing the following hypotheses were put forward:

H0¹: The value of 2014 Government Expenditure (% of GDP % of total expenditure) does not affect the value of 2014 Social Progress Index in selected EU countries.

H1¹: The value of 2014 Government Expenditure (% of GDP % of total expenditure) does affect the value of 2014 Social Progress Index in selected EU countries.

H0²: The value of 2016 Government Expenditure (% of GDP % of total expenditure) does not affect the value of 2016 Social Progress Index in selected EU countries.

H1²: The value of 2016 Government Expenditure (% of GDP % of total expenditure) does affect the value of 2016 Social Progress Index in selected EU countries.

TAB. 3: Results of testing of development of the amount of public expenditures in EU states and its impact on the level of advancement of their societies in 2014

95% confidence interval	
Slope	1.181 to 5.297
Y-intercept when X=0.0	52.13 to 73.82
X-intercept when Y=0.0	-62.37 to -9.863
P value	0.0035
Deviation from zero?	Significant

Based on the results it is possible to reject the null hypothesis and accept an alternative hypothesis. The existence of relationship between 2014 Government Expenditure (% of GDP % of total expenditure) and 2014 Social Progress Index can thus be confirmed.

TAB. 4: Results of testing of development of the amount of public expenditures in EU states and its impact on the level of advancement of their societies in 2016

95% confidence interval	
Slope	0.3583 to 4.559
Y-intercept when X=0.0	60.07 to 81.17
X-intercept when Y=0.0	-226.0 to -13.21
P value	0.0237
Deviation from zero?	Significant

Based on the results it is possible to reject the zero hypothesis and accept alternative hypothesis. The existence of relationship between 2016 Government Expenditure (% of GDP % of total expenditure) and 2016 Social Progress Index can thus be confirmed.

Conclusion

With reference to a number of works of authors who deal with education, it is evident that it is consistent support for education system that helps build knowledge society. Knowledge society is a fundamental prerequisite for overall economic stability of countries, but also a tool for ensuring continuous development of societies.

The purpose of the article was to confirm the assumption that active state support for education system has an impact on the development of society. The analysis of Government Expenditure and Social Progress Index in the 2014 - 2016 period showed that this assumption is correct. Generally, it can be said that countries that approach education actively (in terms of amount of expenditure), reach a higher level of society advancement.

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THE EFFECT OF VISIBLE ARMED SOLDIER'S PRESENCE ON PERCEPTION OF TERRORISM MEASURED BY PICTURE-ASSOCIATION METHOD

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Abstract: *European public institutions spend huge amount of money on visible presence of armed soldiers in city centres to calm down the nerves of population, which is afraid of terrorism. The goal of the following study was to find out if armed guards in city centres serve really as a psychological support for calming nerves of population or if it is rather as a stress factor and therefore loss of resources. To find out 667 Czech respondents were randomly split into two treatments and asked about their concerns and fears using the picture-association method. When listing concerns respondents in the first treatment were presented with picture with tourists and locals without any visible counter terrorist measures. Respondents in the second treatment were presented with the picture of four soldiers standing in front of the tourist attraction when listing their concerns about travelling to this city. The statistical significance of the difference between these two treatments was measured by the z-test calculator for comparing proportions of two samples providing a proof for conclusion that security theatre in the form of armed soldier's presence does not have an effect on the feeling of safety and if meant only as an illusion of control, can be considered as a waste of public resources.*

Keywords: *security, public policy, armed soldiers*

JEL classification: *F52, J18*

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Introduction

Terrorism has been present in the world for centuries. Tourism managers and terrorist organizations have something in common. Both rely on media management and the creation and manipulations of beliefs and perceptions. Similarly, security services often have more to do with providing the appearance and feeling of safety than providing actual, physical security. Perception is key for understanding the damage that terrorism causes and the impact on the tourism industry. It is well understood in terrorism studies that fear of terrorism has an impact far beyond any actual damage that terrorism causes. (Howie, 2014) According to Pizzam and Smith: *"Fear and insecurity about the possibilities of terrorism affect tourism demand, even when, in fact, deaths and injuries from terrorism for US citizens are statistically insignificant – less likely to occur than being struck by lightning or killed in an accident on the roads or at home. At the same time, however, terrorism has gained premier power and efficiency as a political weapon through mass media coverage and the exaggerated perceptions about traveler safety and security that this perpetuates."* (Pizam, Smith, 2000) Shortly terrorism can have a devastating effect on the reputation and perceived safety of a

tourist destination. It does not matter as much how much real-life losses and infrastructure damages they cause. Whether the damage is enormous or smaller, it causes a panic of fear. (Logan, 2006)

The goal of the following paper is to find out if the presence of armed soldiers in the city of Jerusalem influences the perceived safety by Czech tourists, who plan to travel to this destination. Shortly we try to find out if there is a statistically significant effect on respondent's fears when armed soldiers are present in the city. We have decided to study this issue in the city of Jerusalem, since the greatest amount of terrorist attacks (domestic as well as international) steadily occurs in the Middle East and Jerusalem is one of most popular destination in Middle East among Czech tourists. (Lutz, 2010)

1 Methodology

To find out if armed guards in Jerusalem serve as a psychological support for calming nerves of tourists or rather a stress factor we have decided to test reactions on two different environments – when armed soldiers are present and when armed soldier are absent in the given environment. As the background of the environment we have decided to use the Western Wall in Jerusalem, since this city have experienced several bigger terrorist attacks recently and the Western Wall is a popular symbol connected with the city of Jerusalem.

In the first stage of the research all 667 respondents were split into two groups, which have been treated differently using the picture-association method. Both groups were asked to place themselves into a situation they have to travel to the city of Jerusalem next Monday as a business trip (had to replace their bosses last minute). After this placement all respondents both two groups were asked to list all concerns they have with the journey. The only difference between these two groups was the treatment – one group was presented with the picture of the Western Wall in Jerusalem with tourists and locals without any visible counterterrorist measures when listing their concerns and the second group of respondents was presented with the picture of the Western Wall in Jerusalem with not only tourists and locals, but also four soldiers.

To find out the difference in the subjective risk perception of terrorism in this first stage of our research, we will then count the amount of the words “*terror*” and “*terrorism*” which were listed by the first group and by the second group. If there will be higher percentage (“*terror*” and “*terrorism*” words per person) in the first group (no soldier on the picture), it will be a sign that soldier could actually calm down the nerves of tourists. If there will be higher percentage (“*terror*” and “*terrorism*” words per person) in the second group (presented with four soldiers on the picture), it will be a sign that the presence of soldiers makes the population think about population even more and their presence in front of the Western Wall in Jerusalem is rather a stress factor. In case of the first possible result that there will be higher percentage (“*terror*” and “*terrorism*” words per person) in the first group (no soldier on the picture), we could conclude that soldiers provide an illusion of control and make Czech tourists travelling to the city of Jerusalem feel better. In case of the second possible result that there will be higher percentage (“*terror*” and “*terrorism*” words per person) in the second group (presented with four soldiers on the picture), we could conclude that the presence of soldiers is mainly the source of priming and therefore make Czech tourists travelling to the city of Jerusalem think about their presence and possible terrorist attack leading to increased risk perception. It is important to note that to conclude one of these results the difference between the average values indicated on the Likert scale must be statistically significant at p-values lower than

0.05. To find out the statistical significance of our results the 2-sample z-test for 2 proportions will be calculated. (The Pennsylvania State University, 2018)

2 Results

When the respondents were asked to write down the fears they have in situation they have to travel to the city of Jerusalem because of their work, in scenario with no visible counterterrorist protection (no soldiers present on the picture), 18.68 % of respondents have listed terror or terrorism among their fears. In group of respondents, who were presented with presence of armed soldiers in Jerusalem, 15.18 % have indicated terror or terrorism as their concern. The result of this open question suggests that the presence of armed soldiers in Jerusalem could have a positive impact on subjective risk perception of terrorism. But when using the z-test calculator for comparing proportions of two samples, we can see that the difference of 3.5 % in both scenarios is not statistically significant at p-value lower than 0.05.

TAB. 1: The comparison of two different treatments (picture with no soldiers, picture with four soldiers) and its effect on listing terror or terrorism among main concerns when travelling to Jerusalem

	Scenario 1 – no soldiers present	Scenario 2 – armed soldiers present
All responses	364	303
Responses with terror/terrorism	68	46
Average amount of responses with terrorism	18.68 %	15.18 %

Source: Author

3 Discussion

It is important to point out that this research was carried out exclusively among Czech respondents (in Czech language) and therefore it is possible that if this research was reproduced in a different country, the results could vary significantly. Also, it is relevant to mention there was no big terrorist attack directly in Jerusalem during the period of electronic questioning and the results of this study could be different shortly after a terrorist attack when emotions about a terrorist attack in Jerusalem is freshly in respondent's minds. It is also important to note that the effect of the presence of armed soldier's presence was tested in the city of Jerusalem, where terrorist attacks happen with higher frequency than in the other parts of the Western world.

The picture used for the picture-association method in second scenario pictured four very young soldiers (since soldiers in Israel do their army service usually at the age of 18 – 22). It is also possible that if the armed soldiers looked older (more experienced) and have also looked readier to fight or defend, the results could have looked very different and less respondents would list terrorism among their fears in the second scenario.

On the other hand, the presence of soldiers in front of the Western Wall in Jerusalem has probably a much higher public reassurance effect than police officers, private security guards or council wardens

would have. According to previous British studies, in which respondents were shown four photographs of officers dressed in different uniforms we know that the deployment of different security personnel has very different effect on public subjective risk perception. Visible, uniformed foot patrol is a key element in this process, which improves feelings of safety and security. And the stronger the personnel looks and the better reputation it has, the more the public is reassured by its presence. (Rowland, Coupe, 2014)

From previous researches we know that the subjective risk perception (and therefore also the fears associated with different pictures) are not the same for all the society. Different people feel unsafe in different places and their reasons depend on gender (Biaggio, 1980; Slovic, 1999; Harris, Jenkins, 2006), age (Bonen, Ellsworth, Gonzalez, 2015; Ferraro, LaGrange, 1992; Ray, Parker, 2010), mental state (Eysenck, Santos, Derakshan, Calvo, 2007; Huddy, Feldman, Taber, Lahav, 2005), nationality (George, 2003) duration of stay (George, 2003) and whether they had encountered any crime which influences their perceptions of safety and security. (George, 2003) According to previous research people who have already been a victim of crime are often more fearful than those who have never being victimised; women are more fearful than men; older adults express more fear than younger individuals; familiarity with the environment makes people feel safer and newcomers are therefore more fearful; people have also the tendency to declare fear for their family and friends, what is called "altruistic fear". But perceived safety can be influenced also by other, more complex factors that affect individuals in their daily routines as for example the media image of security in the city of Jerusalem and the media image of soldiers proving public safety in Jerusalem and Israel. (Ceccato, 2016; Marshall, Bryant, Amsel, Suh, Cook, Neria, 2007; (Sharifpour, 2012; Correia, Pimpao, Crouch, 2008) In this research the proportion of respondents of different gender was almost the same in the first and the second scenario. Similarly, the distribution of age and people with chronical anxiety and/or chronical depression have not differed significantly between the first and the second scenario. Other information as for example the previous experience of encountering (from the position of victim) terrorism and serious crime were not investigated among our respondents.

The results of this study could be also very different if we changed the setting of our scenarios from the city of Jerusalem, which is often target of terrorist attack, to other cities as Paris (which is the target of terrorist attacks rarely) and Prague (which has never been a target of a terrorist activity in modern history).

Conclusion

The goal of this research paper was to find out the difference in the subjective risk perception of terrorism in two different scenarios – without any visible counterterrorist measure and in scenario with four armed soldiers portrayed on the pictures. The setting for both scenarios (pictures) was the front site of the Western Wall in the city of Jerusalem, which is the target of terrorist activity on regular basis. To find out the results using the picture association method we have counted the amount of words "*terror*" and "*terrorism*" which were listed by the first group and by the second group. Later we calculated the proportion of responses of "*terror*" and "*terrorism*" and the amount of all responses for both groups coming to the conclusion that if there is higher percentage (of "*terror*" and "*terrorism*" words per person) in the first group (with no visible counterterrorist measures on the picture), it will be a sign that soldier could actually calm down the nerves of tourists. If there is the higher percentage ("*terror*" and "*terrorism*" words per person) in the second group

(presented with four soldiers on the picture), it will be a sign that the presence of soldiers makes the population to worry about terrorism even more, and their presence in front of the Western Wall in Jerusalem is rather a stress factor.

Using the picture-association method we have found out the average amount of responses with concerns about “terror” and “terrorism” is 18,68 % in the first scenario (without visible counterterrorist measures) and 15,18 % in the second treatment (with visible counterterrorist measure of presence of four armed soldiers) and therefore at the first it could look like that the presence of armed soldiers in front of the Western Wall in Jerusalem could have a positive effect on respondent’s fear of terrorism. But when using z-test calculator for comparing proportions of two samples, we have not found statistically significant difference between these two treatments and therefore cannot really say that the presence of armed soldiers in front of the Western Wall in Jerusalem has had a significant effect on respondent’s concerns.

We can therefore conclude that huge amount of money spends on visible presence of armed soldiers in city centres with the goal to calm down the nerves of population, have no statistical significant effect on perceived safety of general population. Security theatre in the form of armed soldier’s presence does not have an effect on the feeling of safety and if meant only as an illusion of control, can be considered as a waste of public resources.

But this research needs further investigation on bigger sample and with focus on specific groups of population, who generally perceive higher subjective risk perceptions – as women, people of higher age, population, which suffer from chronic mental problems as chronic anxiety and/or chronic depression, people, who came to Jerusalem/the Western Wall in Jerusalem for the first time, people of different nationalities and personal histories of being and not being a victim of a terrorist activity or other serious crime before. This research could be also reproduced to different sites as Prague or Paris, which have a very different experience with the frequency of terrorist attacks.

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FIRST STEPS TOWARDS A LOSSLESS REPRESENTATION OF QUESTIONNAIRE DATA AND ITS AGGREGATION IN SOCIAL SCIENCE AND MARKETING RESEARCH

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Abstract: *The paper presents a novel approach for the assessment of questionnaire data. It suggests a multiple-criteria multi-expert evaluation framework capable of reflecting perceived importance of the answers by individual respondents. The importance of specific answer categories for the user of the evaluation/analysis is also reflected. Likert-scale inputs are represented using histograms, so are the aggregated evaluations (aggregation across several items, across all the evaluators). We suggest the concept of histogram weights of criteria for the analysis of marketing-survey data. Marketing implications of the lossless representation of questionnaires and the possibility of reflecting weights of answers specified by the user/buyer of the analysis (to reflect specific goals of the analysis, such as stressing negative consumer reviews) are discussed.*

Keywords: *questionnaire, data representation, lossless, histogram, MCDM*

JEL classification: *C44, C83*

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Introduction

Surveys and questionnaires are a frequent source of social-science data. Even though there is a difference between these two concepts, we will be using the term “questionnaire” further on to denote any tool that is intended to obtain data from the respondents through a series of questions of possibly different type. Self-made questionnaires offer their users the freedom to ask whatever they need in almost any form imaginable. This makes questionnaires a versatile tool potentially useful in any situation and context. There are clearly limits to the use of questionnaires (see e.g. Woodside (2016) for some business research limitations, or Stoklasa, Talášek & Stoklasová (2018)) and the design of the questionnaire, the questions within and the scales used for answers plays a crucial role in the success or failure of the research based on questionnaires. Obviously, measurement (if possible) should be preferred if the context of the problem allows for it and if subsequent quantitative analysis of the data is supposed to follow – particularly when numerical outputs are expected from the analysis. Measurement instruments are, however, not available for all the problems and for all the contexts that might interest the researchers and practitioners in social sciences. Experiments that can provide valuable insights into the studied problems/systems (and as such provide evidence in favour or against hypotheses that are being investigated) are methodology-cally demanding to

design and in many cases also rather expensive in terms of time and money. The qualitative methodological framework (where data is gathered through interviews, focus groups, observation etc.) can provide interesting and valuable data, but usually in a form that is difficult to process further using quantitative methods. This limits its use in hypothesis testing and similar contexts.

Faced with the possible high cost of the data, with the inability to measure everything that needs to be measured and with the difficulties connected with the processing of qualitative data, many researchers turn to questionnaires. Particularly to questionnaires where answers are to be provided through Likert (see Likert (1932)) or similar types of scales (Stoklasa, Talášek & Lukka, 2018; Stoklasa, Talášek, Kubátová & Seitlová, 2017; Stoklasa, Talášek & Musilová, 2014). Note, that self-made questionnaires are a frequent data source for many bachelor and masters theses in social sciences. In fact if the data is not already available and needs to be obtained, practitioners (incl. university students) and researchers tend to resort to questionnaires quite often. Particularly when the experience of people, their knowledge, attitudes or preferences are concerned and no standardized measurement tools are available. This is also the case of expert evaluation.

In this paper we do not focus on the methodological aspects of the design of questionnaires and assume that the questionnaires are designed well for the given purpose. Our intention is to suggest how to deal with the questionnaire data so that its distortion is minimal by its aggregation and other forms of further processing. We assume discrete Likert-type scales are used in the questionnaire to obtain answers (evaluations) from several respondents (experts) concerning several aspects (criteria) of a given object (alternative). We also allow the respondents to express the perceived importance of the given answer. We suggest a general methodology for the processing of such questionnaire data and show examples of its use on the data collected by Giang Hoang for the purpose of the evaluation of Vietnamese airlines by their customers in 2017. First, we introduce the problem in general terms and the necessary notation and also the notation for histograms. Then we suggest a lossless aggregation procedure for the expert evaluations w.r.t. the criteria and a visualisation technique of these evaluations. In the end we outline a full multi-expert multiple-criteria evaluation framework dealing with discrete Likert-scale data and reflecting expert-defined importances of evaluations as well as the importances of particular evaluations as perceived by the user of the analysis. In all the steps we strive to minimize information loss and distortion.

1 Definition of the problem and basic notation

Let us now assume an evaluation context where n evaluators E_1, \dots, E_n provide evaluations of a given alternative A (e.g. airline) with respect to m items T_1, \dots, T_m of the questionnaire. Each item is assessed by each evaluator on a p -point Likert-type discrete scale, i.e. on a scale with integer values $\{1, 2, \dots, p\}$. We will consider these scales to be benefit-type (i.e. 1 represents the worst evaluation and p the best one). For simplicity let us assume that the scales are framed as point-scales or that linguistic labels are used (as usual in the Likert scale context) just for the endpoints of the scales and possibly also for its middle point, provided that p is odd. Under these circumstances we can consider the values of the scales to be equidistant. Stoklasa et al. (2017) and Stoklasa, Talášek and Luukka (2018) suggest a possible solution to the violation of the equidistance assumption. Let us also assume that the evaluators provide an “importance assessment” of each questionnaire item on a q -point discrete Likert scale and this assessment is valid for all the alternatives (i.e. it depends just on the goal of the questionnaire, not on the evaluated alternatives themselves).

We can also assume that specific subsets of items in the questionnaire constitute r criteria C_1, \dots, C_r , such that $C_k \subseteq T = \{T_1, \dots, T_m\}$, $k = 1, \dots, r$, all C_i are mutually disjunctive and $C_1 \cup \dots \cup C_r = T$. In other words, criteria can be assessed by multiple items in the questionnaire that either represent repeated “measurement” of the criteria-value or represent different aspects of the criterion. Criteria may in this context represent different goals of the evaluation, or different features that need to be evaluated etc. Our goal is to obtain an overall evaluation of each alternative across all criteria and all evaluators to be able to select the best alternative in the multiple-criteria multi-expert evaluation setting. We might be interested in the following characteristics:

- overall evaluation of the alternative A : e_A
- overall evaluation of the alternative A with respect to the criterion C_k : $e_A^{C_k}$, $k = 1, \dots, r$
- overall evaluation of the alternative A by the evaluator E_i : e_{A,E_i} , $i = 1, \dots, n$
- evaluation of the alternative A by the evaluator E_i with respect to criterion C_k : $e_{A,E_i}^{C_k}$, $k = 1, \dots, r$ and $i = 1, \dots, n$.

We might, however, also want to know what are the perceived importances of the criteria:

- the importance of the criterion C_k as perceived by the evaluator E_i : $w_{E_i}^{C_k}$, $k = 1, \dots, r$; $i = 1, \dots, n$
- the overall importance of the criterion C_k : w^{C_k} , $k = 1, \dots, r$

Usually the overall evaluations of alternatives are required in order to select the best alternative or to find ordering of the alternatives. Therefore, all the above mentioned characteristics are usually considered to be real numbers. In this paper we argue against the unnecessary aggregation of information obtained through questionnaires. Aggregation frequently means loss, reduction or distortion of information. One should therefore have good reasons to aggregate. We claim that a lossless representation (information-wise) of all the above mentioned characteristics is possible. We present examples of such representations using histograms and outline an overall evaluation methodology based on such lossless partial evaluations.

Let us consider a set of evaluations $EVAL = \{e_1, \dots, e_m\}$ all expressed on a p -point Likert-type scale, i.e. $e_j \in \{1, \dots, p\}$ for all $j = 1, \dots, m$. A histogram of the set $EVAL$ can be defined (in accordance with Cha and Srihari (2002) or Stoklasa, Talášek and Luukka (2018)) as a vector or an ordered p -tuple $(EVAL) = [H_1(EVAL), \dots, H_p(EVAL)]$, where the values $H_s(EVAL)$ can be defined for all $s = 1, \dots, p$ in the following way:

$$H_s(EVAL) = \sum_{j=1}^m c_{js}, \quad \text{where } c_{js} = \begin{cases} 1 & \text{if } e_j = s \\ 0 & \text{otherwise.} \end{cases} \quad (1)$$

As long as $e_j \in \{1, \dots, p\}$ for all j , $H(EVAL)$ is a lossless representation of the set $EVAL$. In other words, the histogram carries the complete information represented by the actual evaluation in the set $EVAL$ and $EVAL$ can be reconstructed from $H(EVAL)$.

2 A simplified application example

Since the vector histogram notation (1) can be rather tedious to follow for practitioners, we will accompany our proposed methodology with real life examples. The data is taken from a survey carried out by Giang Hoang in 2017 mapping the satisfaction of customers of two Vietnamese budget

airlines (Vietjet and Jetstar). Four criteria were considered: Tangibility (4 items in the questionnaire), Reliability (2 items in the questionnaire), Responsiveness (2 items) and Assurance (2 items). The answers were obtained using a 5-point Likert scales (benefit-type) and the perceived importance of the given item for the assessment of customer-satisfaction with a budget airline was also obtained using a 5-point Likert scale (again the higher the value, the more important the item was considered to be). The survey sample consisted of 114 respondents (final number of complete questionnaires, incomplete questionnaires were discarded).

3 Proposed solution – lossless representation of questionnaire data

Let us for now assume that we have available all the evaluations $e_{A,E_i}^{T_j} \in \{1, \dots, p\}$, for all $i = 1, \dots, n$ and $j = 1, \dots, m$. In other words, all the n evaluators provided their evaluations of a given alternative A on all m items of the questionnaire using discrete p -point Likert-type scales. Let us also assume that all the evaluators provided the assessment of the importance of each item, i.e. the values $w_{E_i}^{T_j}$ are also available for all $i = 1, \dots, n$ and $j = 1, \dots, m$.

Let us now denote the set of all evaluations of A provided by the evaluator E_i as $EV_{A,E_i} = \{e_{A,E_i}^{T_j} | x = i; j = 1, \dots, m\}$. The overall evaluation of the alternative A as expressed by the evaluator E_i , denoted e_{A,E_i} , can now be represented by a histogram $e_{A,E_i} = H(EV_{A,E_i})$ defined in the following way, for all $s = 1, \dots, p$:

$$H_s(EV_{A,E_i}) = \sum_{j=1}^m c_{js}, \quad \text{where } c_{js} = \begin{cases} 1 & \text{if } e_{A,E_i}^{T_j} = s \\ 0 & \text{otherwise.} \end{cases} \quad (2)$$

Even though $H(EV_{A,E_i})$ is a lossless representation of all the evaluations provided by the evaluator E_i (in terms of the evaluations used in the items), it does not take into account the perceived importance of the items. We can, however, take even this into account and define a 2-dimensional histogram $H'(EV_{A,E_i}) = [H'_1(EV_{A,E_i}), \dots, H'_p(EV_{A,E_i})]$, where for all $s = 1, \dots, p$:

$$H'_s(EV_{A,E_i}) = \left[\sum_{j=1}^m c_{js}^1, \dots, \sum_{j=1}^m c_{js}^q \right]^{Transp.}, \quad \text{where } c_{js}^t = \begin{cases} 1 & \text{if } (e_{A,E_i}^{T_j} = s) \text{ and } (w_{E_i}^{T_j} = q) \\ 0 & \text{otherwise.} \end{cases} \quad (3)$$

Analogously, we can define histogram representations of $e_A^{C_k}$, $e_{A,E_i}^{C_k}$ and finally of e_A , i.e. $H(EV_A^{C_k})$, $H(EV_{A,E_i}^{C_k})$ and $H(EV_A)$ respectively, where $EV_A^{C_k} = \{e_{A,E_i}^{T_j} | T_j \in C_k, j = 1, \dots, m; i = 1, \dots, n\}$, $EV_{A,E_i}^{C_k} = \{e_{A,E_i}^{T_j} | x = i; T_j \in C_k, j = 1, \dots, m\}$ and $EV_A = \{e_{A,E_i}^{T_j} | i = 1, \dots, n; j = 1, \dots, m\}$. We can also introduce their 2-dimensional versions.

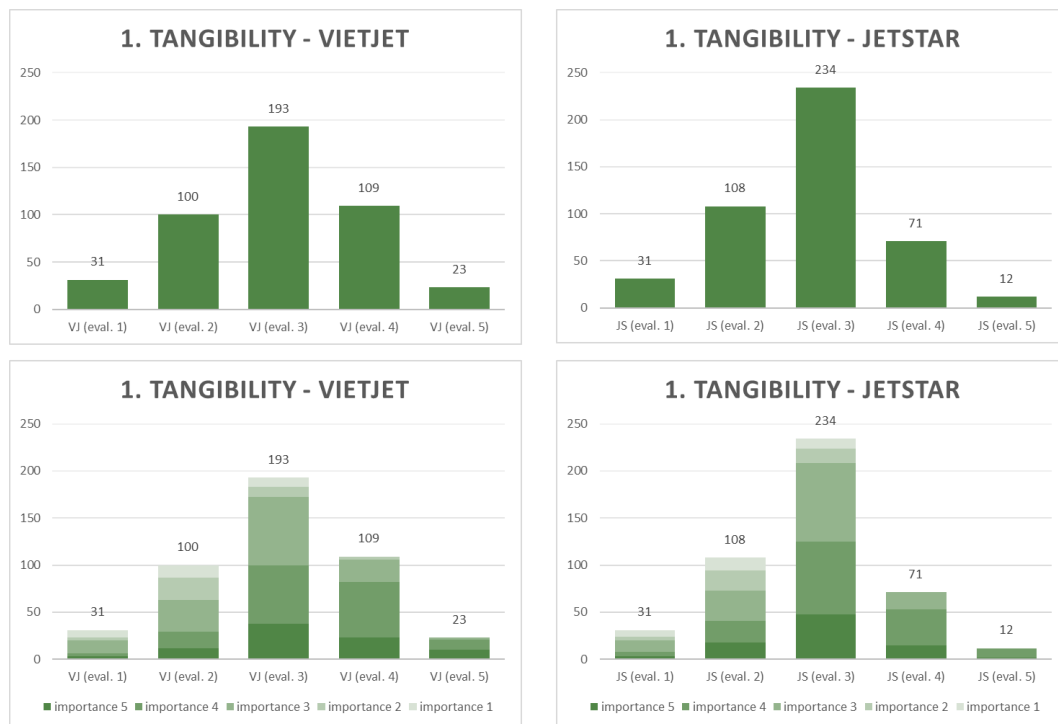
Note, that the reflection of perceived weights is usually done in the process of aggregation of evaluations into the overall evaluation using e.g. the weighted arithmetic mean or more complex aggregation operators. In our case the 2-dimensional histograms do not lose the information concerning the perceived importance of the given evaluation.

FIG. 1 compares the graphical representations of classic histogram (1) and a 2-dimensional histogram (2). Note, that in both representations Vietjet seems to be slightly better. The 2-dimensional histogram, however, also offers insights into the perceived importance of the given

evaluations. Conveniently, each evaluation is paired with the appropriate importance as expressed by the given decision-maker. We can see that the respondents tend to express worse evaluations in the case of less important items, whereas good evaluations do not include less important items (importance 1-2).

If an overall real-valued evaluation was needed, one would need to aggregate the evaluations across all the items and all the evaluators. In the multi-expert multiple-criteria evaluation setting usually partial evaluations w.r.t. different criteria are first aggregated for each evaluator (the expert-defined weights are reflected in the process) to obtain the evaluation by each expert and then the expert-evaluations are aggregated reflecting the weights of the experts. This, however, requires the weights of the experts to be known. Another approach might be to define overall (consensual) weights of criteria and then use these weights for all the evaluators. This is frequent when the weights are defined by the user of the analysis or when the weights (perceived importance) of the criteria are not known for all the evaluators.

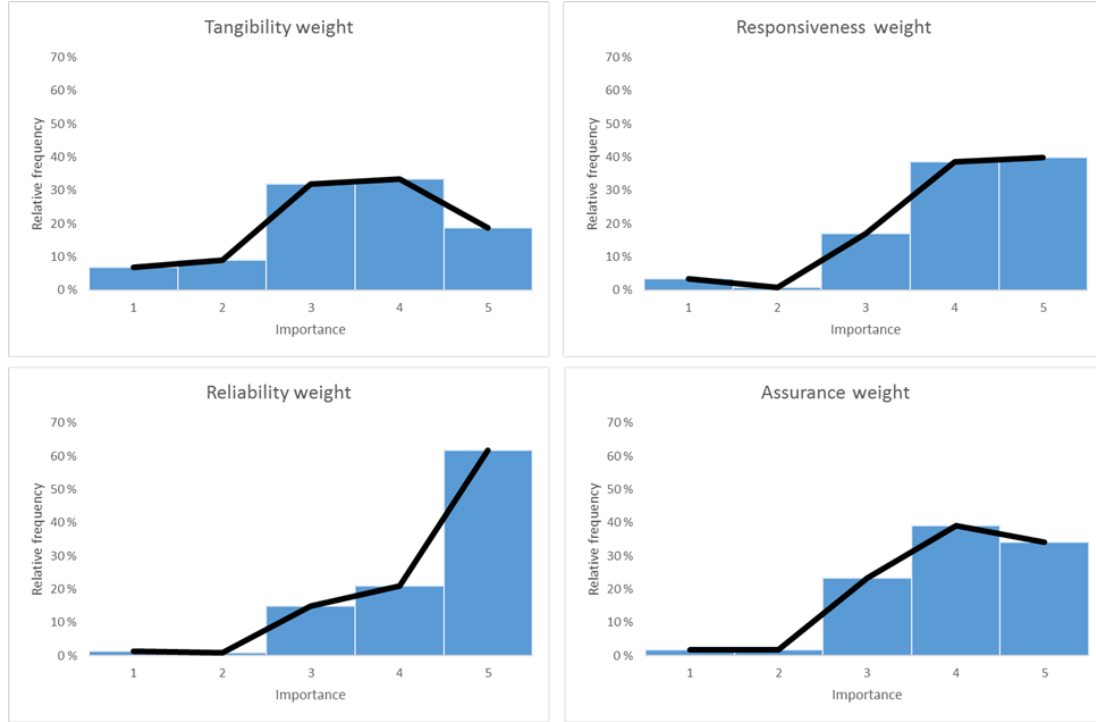
FIG. 1: Comparison of the standard histogram representation of questionnaire data (top row) and the 2-dimensional histogram representation of the same questionnaire data (bottom row). In the bottom row lower perceived importance of the given evaluation is represented by a lighter colour of the bar. Real data comparing Vietjet and Jetstar airlines in terms of tangibility perceived by their customers (114 respondents, tangibility saturated by 4 items in the questionnaire).



In marketing research, it might be interesting to see how the customers perceive the importance of the criteria. It has already been established by research (see e.g. Hsu, Chuang and Chang (2000)) that the users of the product consider different factors to be important in its evaluation that the designers of the product. Full information on the perceived importance of the items or sets of items (criteria) can therefore provide interesting insights into the needs and expectations of the respondents of the survey (and possibly also identify criteria w.r.t. which the sample seems to be divided into more subgroups). Again, histograms seem to be capable of conveying the necessary information. In our setting we suggest to use histogram weights (see FIG. 2) for the analysis of the

importance of the criteria. We can clearly see that reliability seems to be the most important criterion for our set of respondents in the practical example.

FIG. 2: Histogram weights representing the perceived importance of the items saturating the four criteria in our real-life example. Blue bars represent relative frequencies with which the given importance was expressed with an item falling under the given criterion. Black lines connecting the top-points of the bins just stress the overall trend of the answers. (Real data comparing Vietjet and Jetstar airlines.)



Even though we can obtain a lossless representation of the evaluations of a given alternative by a group of evaluators overall (FIG. 1 summarizes such evaluations for two low-cost airlines in Vietnam and 114 respondents) or criterion-by-criterion, it might still be difficult to select the best alternative using the histogram (or even the 2-dimensional histogram) representation. We can, however, use the concept of histogram distance and define a theoretical ideal histogram evaluation. Let us for now assume the representation by (1) and let us disregard the information on the perceived importance of the items. In this case the ideal evaluation can be expressed, given n evaluators, m items in the questionnaire and p -point discrete benefit-type Likert scales as $e_{IDEAL} = [0, 0, \dots, m \cdot n]$. We can easily define its distance to any e_A using the earth-mover's distance (Rubner, Tomasi & Guibas, 1998):

$$d(e_A, e_{IDEAL}) = \sum_{s=1}^{p-1} (p-s)(H_s(EV_A) - H_s(EV_{IDEAL})). \quad (4)$$

Note, that the distance (4) can be used under our assumption of equidistant values in the evaluation scales for each item. If the evaluation scales' equidistance was compromised, Stoklasa, Talášek, Kubátová and Seitlová (2017) suggest a 3-bin histogram distance approach. It might also be reasonable to be able to reflect fixed weights of evaluations (OWA-type) in the evaluation proces, representing the idea of "only evaluations on items considered important by the evaluators should matter" similar to the ideas of fuzzy ROC analysis suggested in Stoklasa and Talašová (2011).

Conclusion

In the paper we propose a novel approach for the evaluation and analysis of questionnaire data. We utilize the discrete nature of the popular Likert-type scales and propose histograms as a well suited tool for the aggregation and visualization of the data. We have suggested the concept of a 2-dimensional histogram to represent the data with subjective importances of the partial evaluations as expressed by the experts and propose histogram weights as a useful tool for the analysis of respondents' preferences in marketing research. Further research will continue on this topic, involving the development of a full multiple-criteria multi-expert evaluation methodology based on histogram evaluations and using histogram distances from ideal evaluation as its core.

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CONSUMPTION OF SLOVAK DOMESTICS AS THE PART OF QUALITY OF LIFE IN THE POST-CRISIS PERIOD

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Abstract: *Consumption has an irreplaceable role in relation to the quality of life, it denounces the material aspect of meeting the needs and desires of man. If the quality of life is linked to innovation and the modernization of the needs' structure, the possibilities of their saturation, it takes into account the material aspect that allows us to evaluate the quality of life from the point of view of consumption. As a basis for this survey, we chose monetary expenditures, which are divided into three spheres: sphere of non-working time, free time and sphere of cross-sectional expenses. By analyzing these spheres we evaluate the existential side of the quality of life. The aim of the paper is to examine the quality of life of Slovak households in terms of changes in their consumption in the post-crisis period and at the same time offer a prediction of possible development trends in this area.*

Keywords: *household consumption, quality of life, monetary expenditures*

JEL classification: *D 10, D 12, D 19*

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Introduction

One of the essential and natural priorities of human existence is meeting needs. Saturation of basic and superstructure needs is realized through consumption, which significantly contributes to fulfilling the desires and the individual's perception of their own lives. In this context, consumption can be considered an important component of quality of life. Since consumption and quality of life are realized in the concrete realities of the time and society, it is necessary to examine the size, structure and level of consumption in order to understand their interrelations, because consumption expresses not only the saturation of needs but also the material aspect of the quality of life, on its formation.

Based on the relationship between consumption and quality of life, we chose pure money expenditure, which is divided into three spheres: sphere of extra-time, free time and sphere of cross-sectional expenses. The analysis of these spheres allowed us to evaluate the existential aspect of the quality of life of Slovak households as well as their changes during 2009-2016.

The study of quality of life in the context of consumption has its historical and substantive justification - in the 1960s, the concept of quality of life was associated with consumption. At that time, it was used as a critique of mass consumption. (Galbraith, 1967)

At present, the quality of life assessment is based on the level of satisfaction achieved, not only because consumption is a real part and important domain of quality of life, but also for its easy data availability, quantification and comparison.

1 Consumption and quality of life

Consumption is an expression of the social way of using material and spiritual wealth; it represents the process of appropriation and use of things and values exclusively to meet needs. In this sense, it is the realization of the diverse consumer interests and goals of the members of the society determined by the broadly conceived groups of factors. Some factors determine the connection of consumption to a particular type of production that is aimed at fulfilling different social goals. Other factors reflect the conditionality of consumption by the type of distribution and the mode of allocation, as a result of which certain paths to prosperity are opened or closed for consumers. Other factors capture consumption dependence on the resulting consumption situation in society. However, there are also factors that include the status quo of consumption, resulting from a certain position of the consumer in society and consumption.

Actual consumption is not only a matter of economic indicators, which can be characterized to a great extent by the position of a person in society. It is also the result of its consumer behavior, in which the ideas and way of life, the value system, the financial possibilities of the consumer, consumer culture, social relations, etc. are projected.

If we look at consumption as a cumulative way of meeting the needs of the company's members at a particular time and stage of economic development, we can see consumption as a model of distribution and use of goods, services and other forms of wealth in the company. It is a model that is understood as a sum of constantly recurrent ways and forms of meeting needs, through which a wide range of consumer functions, different forms of consumer behavior are realized.

Quality of life is a category that captures the different parameters of human life, the individual's, the social group, and society as a whole. It is referred to as a multidimensional concept because its content is material, spiritual, cultural, social and other aspects of life, and it also has its own internal dimension.

The quality of life is an abstract and complicated concept, it is presented as a very broad category that carries with it the persistent problem of seeking a universally valid definition expressing its complexity. (Wu & Yao, 2006)

Today, there is a wide range of diverse content concepts and a definitive definition of this term, ranging from clearly subjective feelings of survival to the understanding of quality of life as a set of objective conditions for the life of an individual or a particular social grouping.

In the broadest sense, quality of life can be defined as a certain, attained level of human life domains that take into account important social values and goals. In this context, the quality of life is defined as an individual perception of one's own position in life in relation to a particular culture, value system, life goals, expectations, standards and interests. (The WHOQOL Group, 1997)

According to Massam (2002), the quality of life is a product of the interaction between social, health, economic and environmental conditions that impact on human and social development.

In this contribution, we perceive quality of life on the one hand as an expression of the desire of man for a better and fairer life, on the other hand we put emphasis on consumption as part of it. In a simplified form, we can say that the quality of life is a good and satisfying life and, in this context, consumption.

While consumption is an important component and a natural part of the quality of life, it can't replace it. There is a very important, interdependent relationship between consumption and quality of life. Consumption not only tells about the degree of saturation of needs, but also, by its structure and level, contributes significantly to shaping the quality of life.

From the point of view of improving the quality of life and achieving its effective forms, the relationship between consumption and quality of life should be a balanced relationship. Focusing only on the material side of consumption as well as on the trend towards self-consumption may be marked as unwanted developments in terms of personality development. In certain extreme situations, in a state of emergency or wealth, consumption can be deforming. Generally speaking, the optimal state is the functional balance of consumption and quality.

The solution to this relationship should be to achieve a structure of consumption and quality of life that would contribute to meeting not only the reproductive, but also the developmental needs and values of man. This trend has not yet been sufficiently contained and proven in the real-life activities of our households.

For Slovak households achieving this functional balance is a relatively complex problem. In the short term, consumption in Slovak households is determined primarily by the size of their income and changes in the prices of goods and services. In the long run, consumption is influenced by demographic trends and built-in consumer habits. The current quality of life of most of our population is a compromise between relatively small realistic finances and relatively large living aspirations and needs.

2 Quality of life from the point of view of consumption

The beginnings of any life process are, above all, the needs, from their satisfaction emerging impulses for the emergence of new needs of diverse character. (Laluha, 2008) Fulfilling needs is one of the basic priorities of the existence of man as well as the functioning of the economy. The level of satisfaction meets the economic development of society, the level of living of its members and the quality of life.

In terms of quality of life, consumption has an irreplaceable function because it reflects the material level of everyday life of the individual, members of households in breakdown of monetary expenditures into individual life activities of reproduction and human development, respectively to meet the relevant needs.

For this purpose, we used the net cash expenditures of households broken down by the basic spheres of life, it is divided into non-working time, free time and cross-sectional expenses. (Holková & Laluha, 2009)

The structure of non-working expenses is dominated by activities aimed at satisfying basic material and reproductive needs. These consist of expenditure on food and non-alcoholic beverages, alcoholic

beverages and tobacco, clothing and footwear, housing, water, gas and electricity, furniture and furnishings, as well as health. The second sphere of quality of life is leisure time generally understood as part of the day when a person delivers, according to his (her) own discretion, the choice and possibilities of such activities that contribute to his (her) relaxation, self-fulfilment and self-satisfaction. The structure of expenditure consists of expenditure on recreation and culture, education, hotels, cafes and restaurants. The third sphere of quality of life is the cross-sectional area that engages in activities that blend in with other spheres of life and which contribute to the modernization of the way of life. In terms of expenditure, this area consists of expenditure on transport, communications, various services and other expenditure.

TAB. 1: Cash expenditure of Slovak households by spheres of quality of life in 2009-2016 (%)

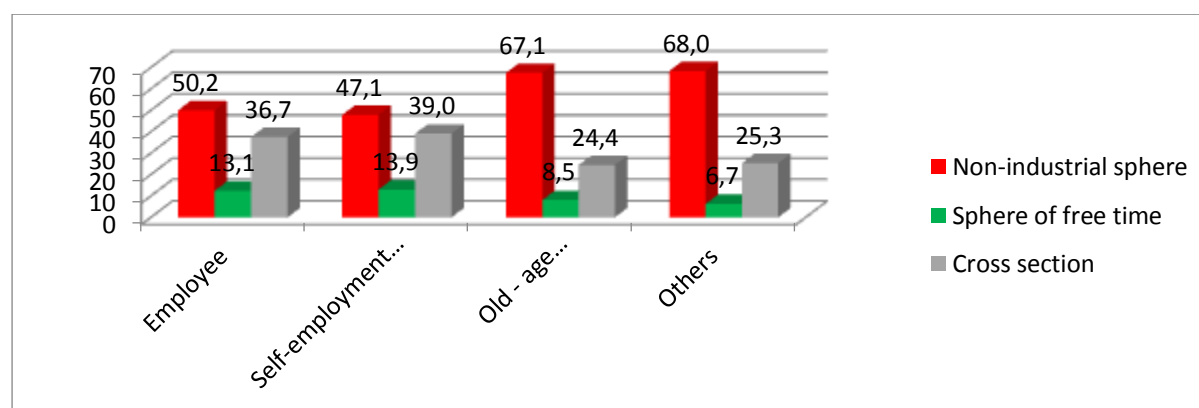
Spheres of quality of life	2009	2010	2011	2012	2013	2014	2015	2016
Non-industrial sphere	56.6	58.0	57.2	57.6	57.6	57.7	56.1	54.9
Sphere of free time	12.3	12.4	12.9	12.7	12.9	12.9	11.6	12.3
Cross section	31.1	29.6	29.9	29.7	29.4	29.4	32.3	32.8

Source: Statistical Office of the Slovak Republic, selected and calculated from Family Budget Statistics 2009-2015

The data in Table 1 indicate that the cash expenditures of households of the Slovak Republic according to defined spheres of quality of life are directed mainly to non-working time in high seating, reflecting the high financial demands of satisfying basic needs. Leisure expenditure is very low, reaching a relatively low level in 2016, accounting for 12.3 % of total spending, expenditure on modernizing lifestyles is inadequate. The low level of spending on the cross-section indicates a limited possibility to improve the way we live our homes.

Based on spending on these spheres of quality of life, we distinguish three models of consumer behavior of our households, namely an economical, luxury and conservation model of consumption. (Holková & Laluha, 2009) The majority of Slovak households are characterized by an economical model of consumption and the resulting reproduction model of quality of life aimed at satisfying mainly basic reproductive needs is a manifestation of delayed consumption of aspiration and insufficient personal development members. This model restricts the improvement of the quality of life of our households, proving the relatively high share of non-working expenses and low share of leisure expenses – see Figure 1.

FIG. 1: Cash expenditure by spheres of quality of life and type of households in the SR in 2016 (%)



Source: Statistical Office of the Slovak Republic, selected and calculated from Family Budget Statistics 2009-2015

Significant differences in quality of life formation were found in the different types of households. From the point of view of the level of quality of life monitored by individual spheres, self-employed households have the relatively most appropriate composition of expenditures, which is related to their financial capacity to implement activities contributing to the modernization of life. The unfavourable situation can be observed in the households of farmers (Others), where the share of out-of-hours expenses is 68.0 % and 6.7 % of the total spending for free time. Low-income issues are also reflected in the consumer behavior of a retired household, where the share of non-working time spends 68.0 % of the total spending and 8.5 % of free time – see Figure 1.

3 Reflections on improving the quality of life of Slovak households

One of the profiling trends in changes in quality of life in the long run could be for the Slovak population such a trend of changes in consumption patterns that would lead to the improvement of the quality of life and the universal development of man, i.e. the development of his (her) essential and spiritual forces. The real prerequisite for this trend is the creation of economic conditions that would ensure a dynamic growth of household income. By entering this growth trend we could expect the following changes:

1. The reproduction model of quality of life would no longer be dominant, the elements of the developmental quality of life model, which is mainly linked to the middle and upper part of the middle layer, would gradually expand.
2. The social baseline of the conservation model of consumption would be narrowed, part of the population would shift to a fuel-efficient consumption model.
3. Expanding the social basis of a luxury model and prestigious consumer activities.

From the point of view of improving the quality of life then it would be a form of consumption that would contribute to meeting the material and spiritual needs of the sessions and the structure leading to the development of the creative potential of man, his (her) self-realization and at the same time contributing to his (her) sense of well-being and happiness. (Sirgy, 1986)

The basic assumption for this vision of improving the quality of life of our population is economic growth, GDP growth and household income, which would lead to the creation of real material conditions for the gradual transfer of the population from the reproductive model of quality of life and temporary consumer preference consumer tendencies into the so-called development model of quality of life. In this context, greater attention will need to be paid to reducing income and social inequalities.

Building the development model of quality of life furthermore implies:

- changes in value orientations,
- a balanced relationship between materialistic and post-materialistic values,
- the penetration of technologies into everyday life activities and the efficiency of the necessary non –working time,
- changes in the scope and content of leisure time, increased spending on education and culture,
- healthy, rational lifestyle,

- environmental quality of life.

The interaction of these elements of quality of life is a motivational impulse for the dynamics of the whole society. For the Slovak society, despite the various current assessments of its state, it is able to adapt and integrate into the given transformations, because the current quality of life of Slovak households creates prerequisites for this. However, this is in itself not sufficient for the practical implementation of the trend of improving the quality of life in terms of the quality of life of the advanced EU countries, it is essential to substantially increase investment in science and research, to significantly increase investment in all forms of education, to increase human resource development needs, and human capital in the conditions of global competition, which also requires the improvement of the complex infrastructure in which the everyday way of life of our population is realized.

Conclusion

Consumption expresses how to use the material and spiritual wealth of society in meeting the needs of its individual members, who differ in realizing consumer interests and goals. In relation to the quality of life, consumption has an irreplaceable function because it tells of the material aspect of meeting the needs and desires of a person.

From the assessment of the quality of life of our households, based on its material aspect, the current quality of life of our households is under the dominant pressure of the classical structure of consumption. Our economy is dominated by an economical consumption model that is geared to satisfying mainly basic reproductive needs. This consumption model restricts the improvement of the quality of life of our households in the direction of the development model of quality of life, which is a relatively large share of non-working expenses and low share of leisure expenses. The economical model of consumption and the resulting reproductive model of quality of life is, on the one hand, a high financial difficulty in satisfying the basic needs of Slovak households, on the other hand, it is a manifestation of delayed consumer exhortations and insufficient personal development of their members.

With regard to improving the quality of life, it is important that the relationship between consumption and quality achieves a functional balance in terms of contributing to the fulfilment of reproductive but above all human development needs. Such a trend in the quality of life of most of our households has not yet been captured by real conditions in the Slovak society.

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PRACTICE OF CSR AMONG POLISH ENTERPRISES - FINDINGS OF RESEARCH

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Abstract: *Corporate Social Responsibility (CSR) is more and more popular in Poland too. Enterprises use the rules of this conception during a business practice. Unfortunately, a polish economy still grow up, and international standards aren't be used to such an extend like in a west Europe or in a others more developed countries. A main goal this article is show, how the polish companies (or companies which operate in Poland) use of CSR rules in their activity, how they perceive it, where we have the same level as in the Europe and which areas are need be improve. In this article the original data was used.*

Keywords: *social responsibility, growing economy, enterprises*

JEL classification: *M14, L53, K32*

Grant affiliation:

Introduction

In practice of companies more and more often emphasizes the importance of responsibility of them towards the environment in which they operate, with simultaneous emphasis on the creation of a specific value for customers or recipients of the actions of these entities. One of the more popular concept of the functioning of enterprises and organizations is the concept of corporate social responsibility (CSR), according to which the aim of the company is not only generate of income, but above all service in fulfilling expectations of the groups of interest in its environment.

Companies, also in countries which still are in developing phase, take into account the CSR aspects. But we can ask: How is a maturity of activities undertaking by companies? How is a level of implementation these actions? Do companies know how can implement of CSR in market practice? This article try to show how polish enterprises implement of CSR in their business practice.

1 CSR concept

Corporate Social Responsibility (CSR) also called the "corporate conscience", „corporate citizenship", "responsible sustainable business" or at the end of "responsible business" is becoming more and more popular, also in Poland. We can discuss a business ethics (BE), stakeholder management (SM), corporate citizenship (CC) and sustainability (SUS) too (Carroll, 2015). This concept is not new. Its origins can see in the work of academic 80s and 90s of the last century [Preston and Post 1975, Ackerman and Bauer 1976, Frederick 1978, Carroll 1979, Freeman 1984, Wartick and Cochran 1985, Miles 1987]. This concept is also increasingly being studied by Polish authors [Rok 2001, Rybak 2004, Korpus 2006, Geryk 2010, Bartkowiak 2011].

Corporate Social Responsibility is defined as a concept whereby companies voluntarily take into account social and environmental protection in their strategies and activities and dealing with stakeholders [European Commission, pp. 9-12].

2 Practice of CSR among polish enterprises – data research

2.1 Data and research methodology

Studies were conducted among 180 enterprises in the 2013-2015, in Silesia and Lesser provinces in Poland. The study was conducted in the form of a structured interview. In the research used a convenient choice. After rejecting of invalid responses, the basis for the calculation were: 150 questionnaires. The sample characteristic is presented in Table 1.

TAB. 1: Enterprises - the sample characteristic [%]

Organizational position	Chief executive officer / Managing Director / Company owner	Chief marketing officer / Marketing department manager	Sales director / Sales manager	CSR specialist	Other
[%]	48,7	10,7	22,7	0,7	17,3
Formal status and structure of the company	Enterprise branch	A one-company enterprise	Multi-company enterprise	Capital group	
[%]	10,7	70,0	12,7	6,7	
Financial condition	Very favorable	Favorable	Average	Difficult	
[%]	7,3	57,3	29,3	6,0	
Number of brands	One	From 2 to 3	From 4 to 6	7 or more	
[%]	52,0	22,7	14,0	11,3	
The employment	Below 10 people	10 - 49 people	50 - 249 people	More than 250 people	
[%]	48,0	29,3	10,0	12,7	
Company's size	Micro-enterprise	Small enterprise	Medium-sized enterprise	Large enterprise	
[%]	44,0	35,3	10,0	10,7	
The form of company ownership	Private	The state	Cooperative		
[%]	93,3	4,7	2,0		
Ownership supervision	Domestic	Foreign	Mixed		
[%]	86,0	6,0	8,0		

Source: Self-elaboration.

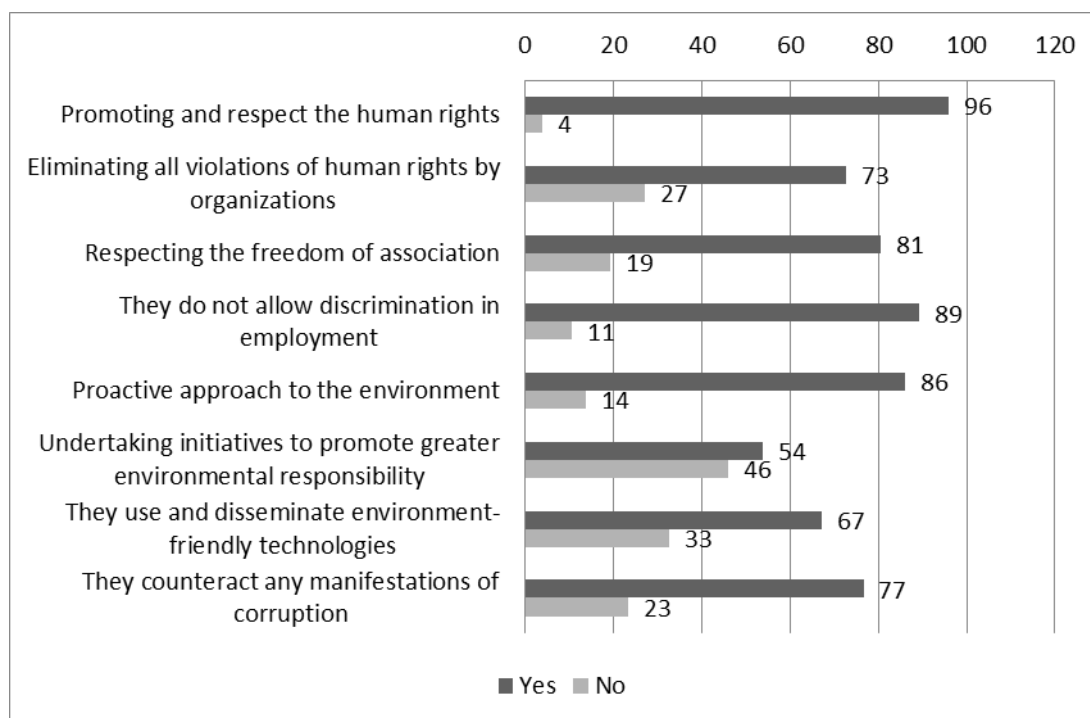
2.2 Result of researches

According to responses, enterprises have relatively good opinion about the activity of enterprises in area of CSR in Poland. More than 65% believe, that enterprises who operate in Poland take into account CSR aspects during these activities.

Enterprises indicate that they promote and respect the human rights – 96%, haven't any kind of discrimination of employees – 89%, they have a proactive approach to the environment – 86% and

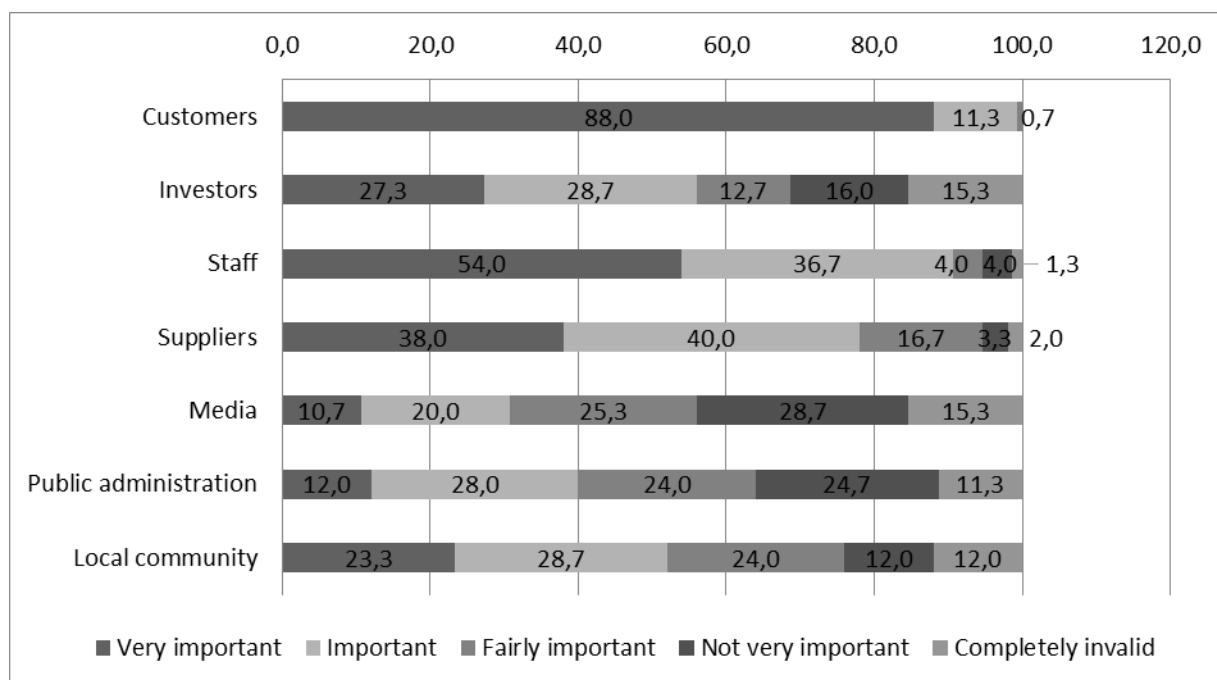
try to respect the freedom of associations – 81%. A little less believes also, that they counteract any manifestations of corruption – 77%, eliminate all violations of human rights by organizations – 73%, use and disseminate environment-friendly technologies – 67% and Undertaking initiatives to promote greater environmental responsibility – 54% (Figure 1).

FIG. 2: Adherence to the principles of CSR by companies according to the responses of companies [%]



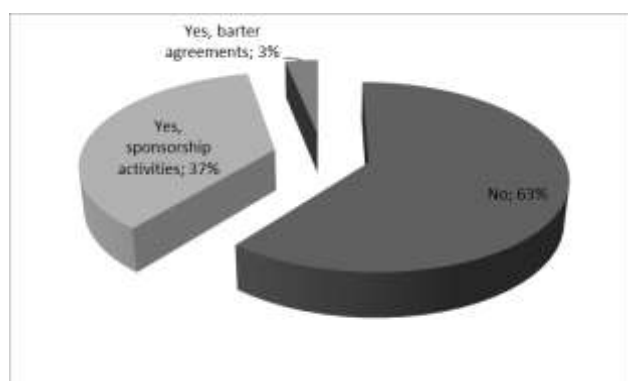
Source: Self-elaboration.

The most important group to the enterprises in their own view are customers. Almost 88% believe that is very important group for companies and over 11% believe that is important group for companies. Second place take staff. In opinion of 54% enterprises this is very important group for them, a little less – 37% said that it is important group for companies. Third group are suppliers, 38% of surveyed evaluated their as very important for enterprises, 40% as important group and 17% as fairly important. Next places take: investors, local community, public administration and media (Figure 2).

FIG. 2: The degree of the importance of various group for businesses in the opinion of the companies [%]

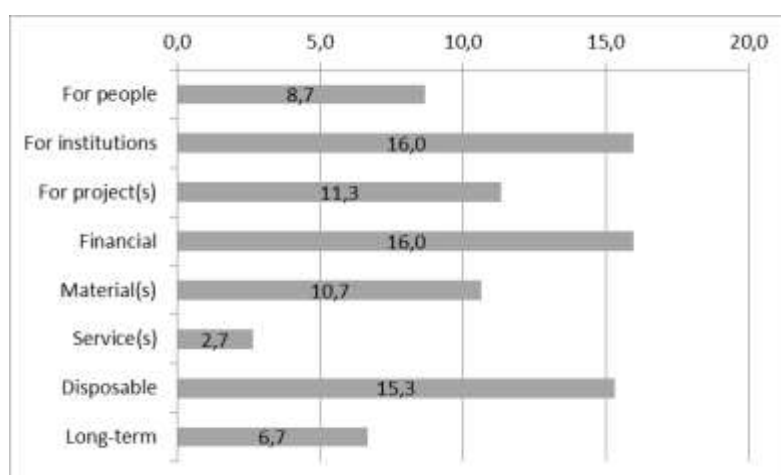
Source: Self-elaboration.

But when they were been asked about their engagement in sponsorship the most surveyed said "no" – 63%. Only 40% of companies declare using of sponsorship's activities, where mainly is this sponsorship activities – 37% and only 3% - barter agreements (Figure 3).

FIG. 3: Do companies engage in sponsorship activities? [%]

Source: Self-elaboration.

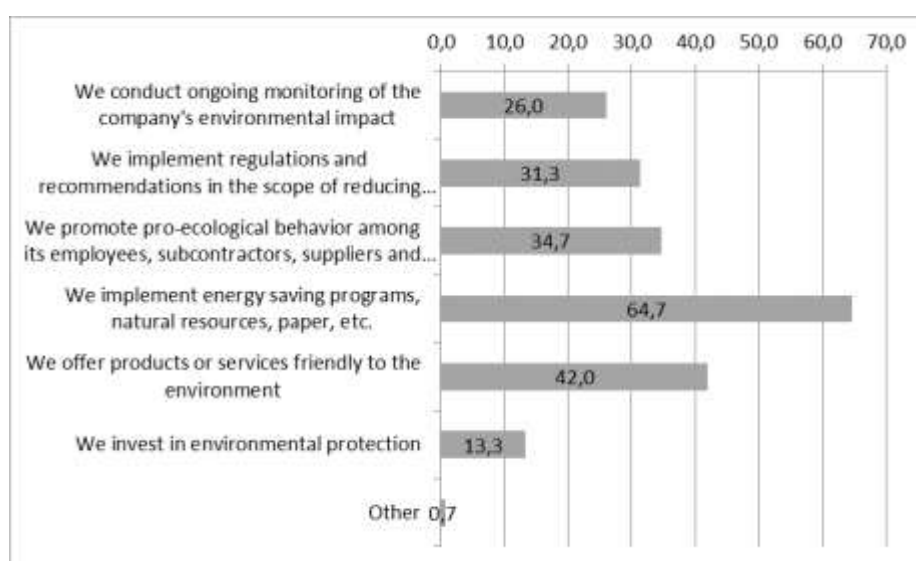
The companies prefer the financial, disposable support for institutions than long-term support for – for example – people (Figure 4).

FIG. 4: Type of support offered [%]

Source: Self-elaboration.

Even worse it looks when companies were asked about running a charity. Only 33% said, that they are engagement in charities.

Activities of companies looks better in area of environmental protection. Almost 65% of companies declare that they implement energy saving programs or saving natural resources, paper etc. About 42% of surveyed said that they offer products or services friendly to the environment. Less of them indicate that promote pro-ecological behavior among its employees, subcontractors, suppliers and clients – 35%, implement regulations and recommendations in the scope of reducing the negative impact of the company's operations on the natural environment – 31% or conduct ongoing monitoring of the company's environmental impact – 26%. Only 13% of companies said that they invest in environmental protection.

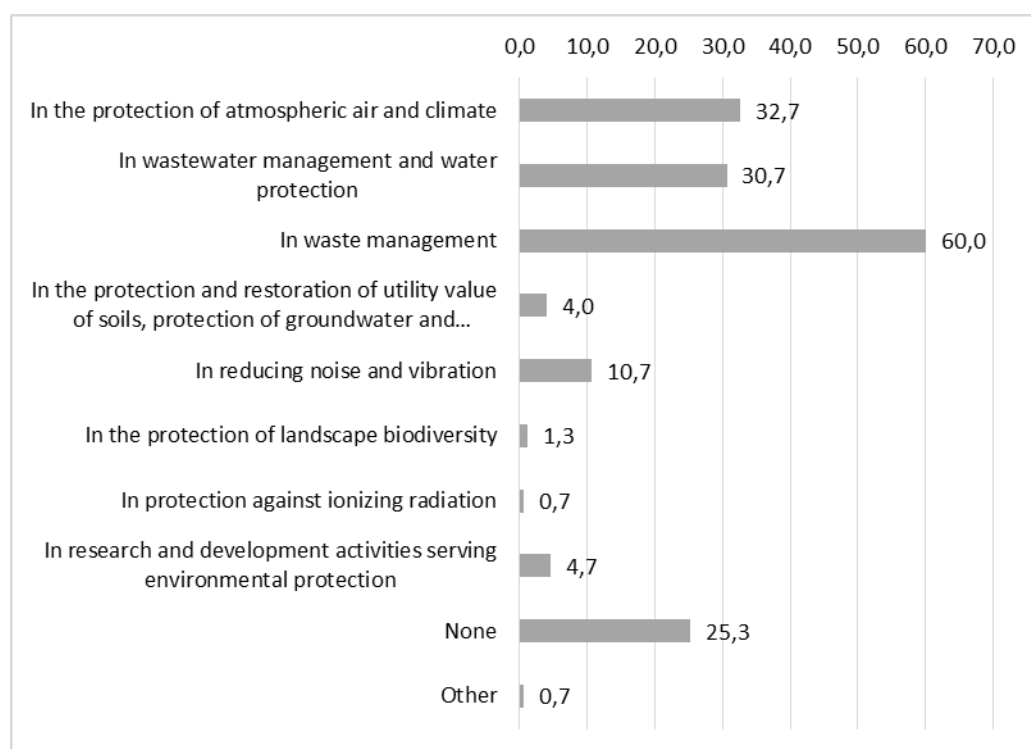
FIG. 5: Do companies have the activities for environmental protection? [%]

Source: Self-elaboration.

Unfortunately, companies do not spend a lot for environmental protection. Over 40% of companies don't spend anything for environmental protection, 48% spend 1-3% of annual profits and about 11% spend 4-6% annual profits for environment.

Among companies who spend money for environmental protection, 60% invest in waste management, almost 33% - in the protection of atmospheric air and climate, 31% - in wastewater management and water protection. A quarter say that have none investments in thos area (Figure 6).

FIG. 6: What kind of investments for environmental protection have the companies taken over the last 5 years? [%]



Source: Self-elaboration.

Companies who was surveyed haven't document in CRS area rather. Only 45% declare thah have ethical codex, but only 9% of companies has CSR Policy, 4% - CSR Report and 5% indicate that have other document refering to CSR.

However, companies don't evaluate so high of CSR implementation degree. Almost half of surveyed arque that level of implementation of CSR in polish practice is rather high. Only 10% of enterprises said that is definitely high, while 8% think that is definitely low, an 34% that is rather low.

Conclusion

Increased interest of companies in implementing corporate social responsibility to a certain extent can be seen as a sign of "maturity" business. Companies are no longer focused on generating profit, but take into account responsibility for their environment and community. Unfortunately, the level of

implementation of CSR practise in the growing up countries as Poland is not too high. Companies want to see own self as a entities which are responsibility. However, additional questions show, that they still primarily care about customers and the others groups aren't visible for them.

Small part of enterprises are engagement in sponsorship for charity. In area of environmental protection they implement more basic programs, as energy saving programs or saving natural resources or paper. They don't want to spend money for environment protection, only 11% spend 4-6% annual profits for environment, and the main area is the waste management, what referring with law and responsibilities of economic entities.

In fact, companies do not assess the level of CSR implementation in practice too high, which indicates, among others, for: 1) the further need of education in CSR area in developing countries, 2) support in the implementation of CSR in practise, 3) and perhaps rewarding the best companies in this area.

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DESIGNING OF AN ACTIVITY-BASED INFORMATION SYSTEM AS A PART OF MANAGEMENT ACCOUNTANTS EDUCATION

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Abstract: *Changes in accounting student education methods and programmes have been postulated for many years. The calls for changes concern especially the education of management accountants due to their changing role in organisations in recent years and as, according to Prof. R. Kaplan, they should become critical management information systems designers. The goal of this article is to present the process of designing the Activity-Based Information System (ABIS) applying Master thesis development at the Faculty of Management, the UTP University of Science and Technology, Poland, as an example. The article covers the issue of the changing role of management accountants and their skills desired by employers, ABIS designing process steps, short characteristics of the Activity-Based Costing model elaborated during Master thesis development and ABIS designing process benefits for the student.*

Keywords: *management accountants education, Activity-Based Costing, Activity-Based Information System.*

JEL classification: *A23, M42, I23*

Grant affiliation: *BS 9/2015.*

Introduction

Changes in accounting student education methods and programmes have been postulated for many years. The calls for changes concern especially the education of management accountants due to their changing role in organisations in recent years. Both, employers and various institutions, including the Pathway Commission, consider that accounting graduates should demonstrate such skills like critical thinking, problem-solving, decision making, communication and presentation skills, and use of information technology (Pathway Commission, 2012), (Wever, Kulesza, 2014). The skills most desired by employers are IT skills. Also the American Institute of Certified Public Accountants stresses that graduating accounting students must be able to “*use software to build models and simulations*” (AICPA, p. 5).

The changing role of management accountants was noted more than 20 years ago by R. Kaplan who claimed that, “*they should become critical management information systems designers*” (1995, p. 6). R. Kaplan is one of the inventors of the Activity-Based Costing, considered one of the most important management accounting concepts. Activity-Based information is essential for managers to have, which is claimed not only by management accountants but also by management experts, like P. Drucker, who already in 1995 declared that Activity-Based Costing would be essential to operational excellence in the next century.

Cokins (2001, p. 352) claimed in 2001 that the majority of academics had not exhibited much excitement about ABC concept relative to the levels of excitement that practitioners had demonstrated. That can be one of the reasons why many initial ABC models were poorly designed.

The analysis of the syllabi in accounting and management studies shows that at universities in Poland the ABC concept is still under-appreciated. Specifically, courses including the knowledge about ABC models designing and ABC systems implementation are still missing. At the Faculty of Management, the UTP University of Science and Technology, the students have the opportunity to learn the whole process of the ABC model designing and its implementation in the IT environment while developing their diploma theses in the computer laboratory of the Management Accounting and Controlling Systems (MAACS lab).

The goal of this article is to present the process of designing the Activity-Based Information System (ABIS) applying Master thesis development, as an example. Further on the article covers the research carried out in the MAACS laboratory, ABIS designing process steps, short characteristics of the Activity-Based Costing model elaborated throughout Master thesis development and ABIS designing process benefits for the student.

1 ABC models elaborated in the MAACS laboratory

The Laboratory of Management Accounting and Controlling Systems is one of the four business laboratories created as a part of the project '*Realization of II Stage of Regional Centre of Innovativeness*' in the years 2009-2013. Most of the diploma theses developed in MAACS lab have concerned Activity-Based Costing modelling with the use of Doctor Coster, software by ABC Akademia (previously referred to as ABC Explorer). The students performed their research in enterprises representing various branches and used specialised software for ABC modelling and calculations (Januszewski, Spiewak, 2014), (Januszewski, 2016). Since 2012, 13 diploma theses with the ABC software have been completed (TAB. 1). Two of the ABC models produced during Bachelor's thesis development (diploma thesis no 4 and 5) were the starting point for the research conducted for the Master's thesis purpose, with the goal to extend the ABC model to the Business Intelligence system by elaborating the reporting subsystem based on On-line Analytical Processing mechanism (diploma thesis no 9 and 10).

2 ABIS designing procedure

Activity-Based Information System is the final result of the ABC implementation process. According to Nair, ABIS can measure and model the relationships among resources, activities and cost objects as it uses ABC as its backbone (1999, p. 46). One can find in the applicable literature only few examples of ABC implementation methodology. One, designated rather for big organisations, has been presented by Miller (1995), while another one – by Nair (1999), who described a Sevenfold Way for Implementing Activity-Based Information System.

In the entire ABC implementation process the designing phase is considered most important and a failure in the model design is often the main cause of the failed ABC endeavour (Nair, 1999, p. 2). To design ABIS, the students developing their diploma thesis in the MAACS laboratory execute the following steps:

- ✓ analysis of the enterprise in terms of resources, processes, cost objects recognition and learning the data sources which determine the structure of the ABC model,
- ✓ defining the ABC model,
- ✓ implementing the model in the IT environment,
- ✓ gathering of the input data required for costing procedures,
- ✓ inputting data and testing the ABC model,
- ✓ making changes in the model forced by the testing results.

TAB. 1: ABC models developed in the MAACS laboratory over 2012-2017

No	Title of diploma thesis	Branch	Year
1	Computer Activity-Based Costing model development for Fruit and Vegetable Frozen Storage Plant	Fruit and vegetable frozen storage plant	2012
2	ABC Explorer software application for Activity-Based Costing modelling	Confectionery	2012
3	Computer Activity-Based Costing model for a foundry	Foundry	2013
4	Distribution channels profitability analysis with the printing facility as an example	Printing facility	2013
5	Client profitability evaluation with Activity-Based Costing concept	Yoghurt production	2013
6	Computer-aided Activity-Based Costing model in a cardboard packaging manufacturing company	Cardboard packaging manufacturing plant	2013
7	Activity-Based Costing in the customer profitability analysis with the use of ABC/M Explorer system	Beverages trading	2013
8	ABC model for MODUS outfit manufacturing enterprise	Outfit manufacturing	2015
9	Activity-Based Costing as Business Intelligence system with the printing facility as an example	Printing Facility	2015
10	Multidimensional analysis in Activity-Based Costing based on a dairy enterprise	Yoghurt production	2015
11	Activity-Based Costing model for the Plastics Processing Enterprise	Plastics Processing Industry	2016
12	Building a Computer Model of Activity Based Costing for the Production of Broccoli	Agriculture	2017
13	Assessment of Profitability of Production and Distribution of Concrete Company Production Using the Activity-Based Costing	Construction	2017

The author's experience suggests that in the designing process the first phase is of greatest importance. It concerns specifically the analysis of data sources since data accessibility shows a direct effect on the structure of the model. The data recorded in the enterprise information systems and the data which can be acquired in another way (e.g. by measuring, estimating) determine the resources, activities and cost objects for which there will be separate cost accounts defined, as well as what kind of resource cost drivers and activity cost drivers will be used for cost distribution. The analysis of the data sources involves getting to know the organisational structure and the groups of employers, process executed, suppliers and customers registers, fixed assets register, book-keeping

recording, report generated by IT systems, including purchase and sale system, production control system, inventory system, payroll system and others.

The main role in designing the cost accounts structure for resources is played by the granularity of the general ledger. It is very important to recognise in detail with what granularity costs by nature are recorded in the book-keeping system as they have to be assigned to the resources costs accounts defined in the ABC model. The activities cost accounts structure is mostly affected by the accessibility of the values for the resource cost drivers, including: the number of employers who execute a specific activity or the number of machine and labour hours devoted to different products manufacturing, space (m²) on which specific activity is executed. The structure of cost object cost accounts depends mainly on the goal of introducing the ABC, which usually is to state the profitability of what one wants to measure: products, group of products, customers, distribution channels, regions, etc. The second factor influencing the structure is the accessibility of the values for the activity cost drivers, including the number of dispatches for each customer, the number of orders proceeded, the number of packages or packages capacity prepared for each customer or customers' group etc.

In practice, some steps of the designing procedure are done concurrently, parallel and iteratively. For instance, the ABC model can be defined right away in the IT environment. Having prepared the first version of the model and trying to gather the input data, it can turn out that the same data is anyway not accessible, some part of the analysis phase must be repeated and the model - redefined.

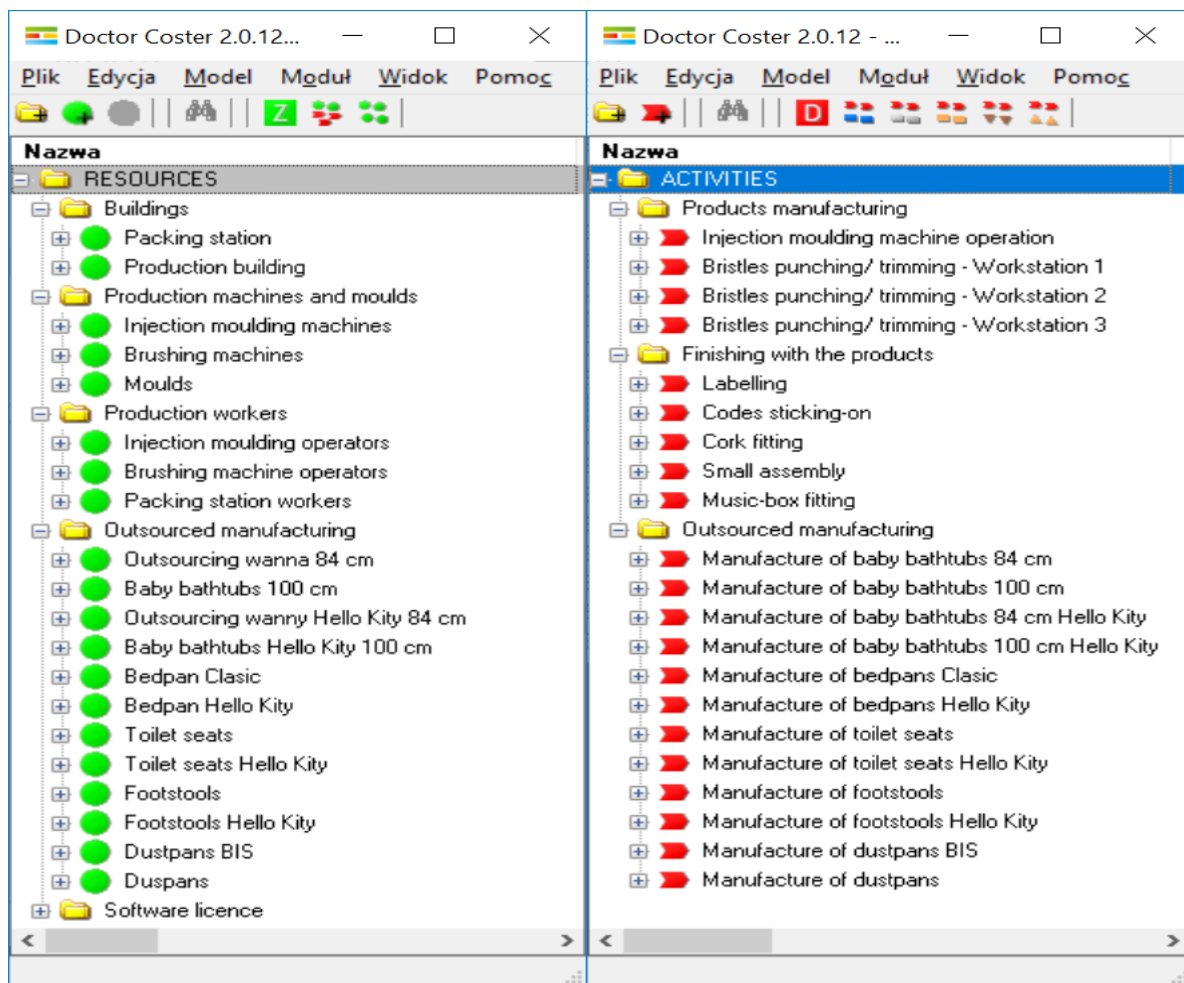
3 Characteristic of the ABC model elaborated for the ALPHA enterprise

Enterprise ALPHA employs 50 people; the company represents the plastics processing industry and manufactures two kinds of products: the first group includes everyday children and baby care and hygiene products (BABY brand), including bedpans, bathtubs, small buckets for nappies etc., while the second one – household appliances (AGD brand), including buckets, brooms, brushes, dustpans etc. The production involves the use of 11 specialized machinery and equipment, including six injection moulding machines with 17 various moulds for specific goods. The manufacture of some goods is outsourced, while ALPHA performs only the finishing process.

The main goal of the ABC project has been to build an ABC model which allows to assess the profitability of each product in terms of production costs.

The structure of the model developed, especially the structure of the resources module and, consequently, the structure of the activities module, was substantially effected by a very simplified, when you consider the production company, recording of cost by nature, in only 30 accounts. The structure of the model consists of (Fig. 1):

- ✓ 21 resources cost accounts in 5 resources groups: buildings (2 accounts), manufacturing workers (3 accounts), machines and moulds (3 accounts), outsourced manufacturing (11 accounts) and software licence (1 account),
- ✓ 21 activity cost accounts in 3 manufacturing processes: products manufacturing (4 accounts), finishing with the products (5 accounts), outsourced manufacturing (11 accounts),
- ✓ 31 cost accounts for home appliances and 47 cost accounts for BABY products.

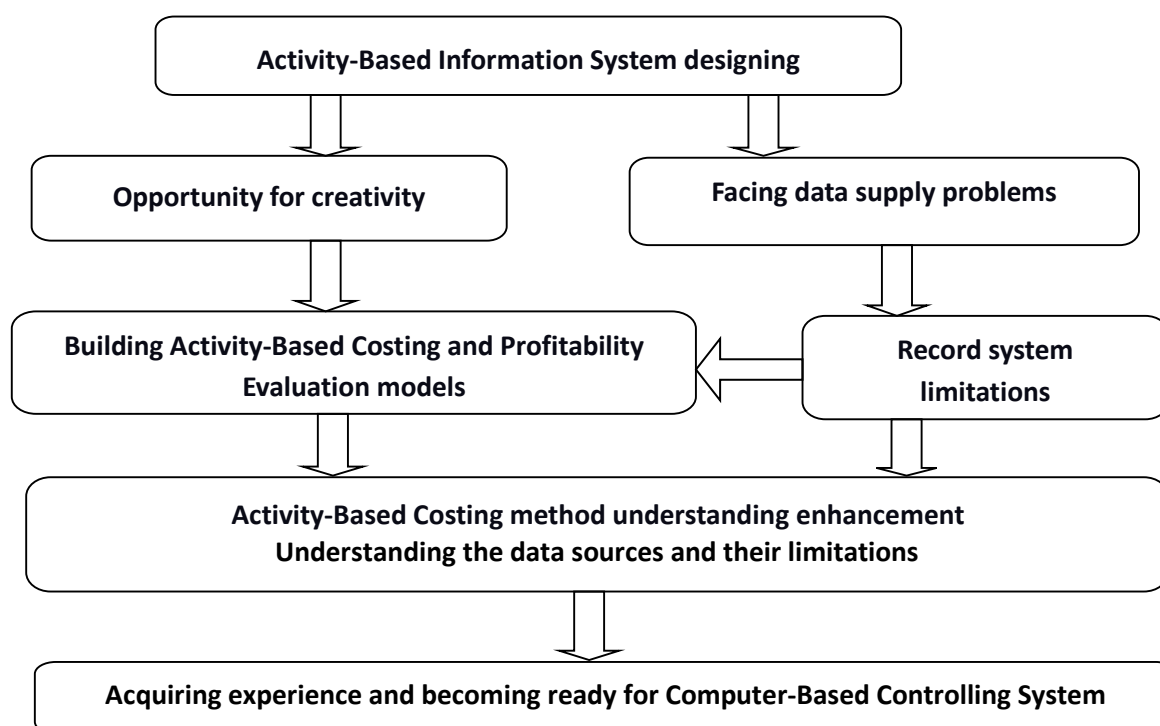
FIG. 1: Structure of the ABC model developed for ALPHA

Next to the development of the ABC model for indirect costs accounting, the evaluation of profitability in terms of product costs still required the preparation of data on material costs and on revenues from sales of respective products.

4 Benefits for students from ABIS designing

The preparation of the diploma thesis on the ABIS designing integrates three teaching research methods (Januszewski, 2018): case study approach, project design and computer modeling. Due to the detailed enterprise analysis, students can develop their analytical skills and learn critical thinking. The benefits from ABIS designing and the use of the specialised software are as follows (FIG. 2):

- ✓ It triggers students creativity since ABIS designing is concept-oriented research.
- ✓ It facilitates understanding Activity-Based Costing method.
- ✓ It allows understanding the role of the data sources and facilitates learning how their accessibility influences the final shape of the ABC model structure.
- ✓ It develops the students IT skills and provides an opportunity for learning the specific functionality of ABC modelling software.

FIG. 2: Learning benefits from ABIS designing phase

Conclusion

While building computer-aided controlling systems, e.g. ABIS, their designers face numerous problems which often result from the cost and quantity record system limitations. The research, which includes ABIS designing, helps acquiring precious experience in management accounting designing systems. Interestingly, experience in analysing the data available in the organization and defining the system limitations is crucial. Nair (1999, p. 47) claims that *“the importance of data collection is understood only after the first activity-based costing/management (ABC/M) exercise”*. Students developing their diploma theses in the MAACS laboratory can enjoy such an experience.

The knowledge of the Activity-Based Information Systems is important not only for management accountants. M. Nair deems that also managers, especially Chief Executive Officers, Chief Financial Officers and Chief Operational Officers must learn about technical and business aspects of these systems and their implementation (Nair, 1999, p.ix). One can conclude that the ABC concept and the principles of the ABIS implementation should be included in each curricula for each business study. The advantages of Activity Based Costing software application in the learning process have also been demonstrated by Tan and Ferreira at a big university in Australia (2012).

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THE 1% TAX DEDUCTION ON PERSONAL INCOME AS THE SOURCE OF FINANCING FOR PUBLIC BENEFIT ORGANIZATIONS IN POLAND

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Abstract: *Since 2003, the Polish taxpayer has had the right to transfer 1% of their income tax to a selected public benefit organization (PBO). Apart from the public funds, the donations and the public generosity, it has been a significant source of financing for these organizations. Since the beginning of the functioning of the 1% tax mechanism in Poland, the number of the taxpayers transferring the deduction has increased 170-fold, while the amount of the funds has increased 63-fold. The main aim of this article is to present the principles of the functioning of the 1% tax mechanism as a form of support for PBOs in Poland. Therefore, the entities authorized to obtain the 1% tax, as well as the current procedures associated with transferring the funds to those organizations by the authorities of the national tax administration, have been characterized. To show the scale of the discussed issue, an analysis of the evolution in the process of raising funds from the 1% tax on the part of the PBOs was carried out in the years 2004-2017.*

Keywords: *public benefit organizations (PBOs), personal income tax (PIT), 1% PIT mechanism*

JEL classification: *H24*

Grant affiliation:

Introduction

Poland is one of the countries that provide its taxpayers with the possibility to independently distribute a certain part (1%) of the due income tax to non-governmental organizations with a status of a public benefit organization (PBO). An organization receives such a rank, considered as an elite status, at the moment in which the information on the fulfillment of the conditions necessary to obtain such status is entered into the National Court Register. PBOs do not constitute any separate legal form, but they are a qualified type of non-profit organizations which have been granted numerous privileges. One of the privileges is the possibility to obtain income in the form of 1% personal income tax (PIT) deductions.

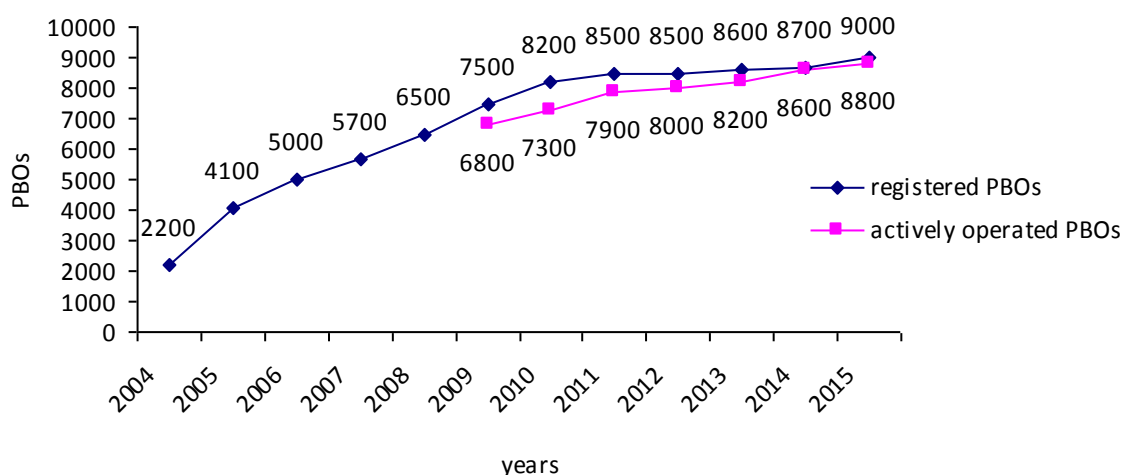
The 1% PIT mechanism was introduced in the Polish taxation system in 2004, while the legal basis underlying the provision of the 1% PIT deduction is the Act on Public Benefit and Volunteer Work passed in 2003. This deduction constitutes neither a donation, nor a tax exemption. From the social viewpoint, it is a manifestation of direct democracy, since taxpayers can decide for themselves to which organization that part of their due tax will be entrusted, or how it will be utilized. Unlike a donation, the 1% PIT deduction is not treated as a form of philanthropy, because this tax would have to be paid by the taxpayer to the state either way (Smołkowska, 2011).

1 The status of a public benefit organization in Poland

Public benefit organizations (PBOs) have been operating in Poland since 2004. The PBO status can be applied for by various non-profit organizations. According to the data for the year 2008, provided by the Ministry of Family, Labor, and Social Policy, the most common types of the organizations registered as PBOs are associations (67%) and foundations (26%). The remaining PBOs (7%) are church institutions, sports governing bodies and sports clubs, local economic governments, as well as shared-capital companies (joint-stock companies and limited liability companies). Such organizations can obtain a PBO status on the conditions that:

- they have been conducting public benefit activity continuously for at least 2 years, i.e. a socially useful activity in the field of 33 public tasks (defined in the Act on Public Benefit and Volunteer Work of 24 April 2003), inter alia, in the field of social care and assistance, activities for people with disabilities, protection and promotion of health, science, education, and upbringing, culture and art, environmental protection;
- they conduct public benefit activity for a general community or a specific group of entities, provided that this group has been distinguished due to a particularly difficult life or material situation in relation to the general society (in the case of associations, such activity cannot be carried out solely for the benefit of its members);
- if they conduct a business activity, it is only an additional item in relation to the public benefit activities;
- they do not operate to make profit, while the surplus of revenues over costs is spent on the public benefit activity (i.e. they do not allocate the profit among its members, founders, shareholders, and employees);
- they have a statutory collegial supervisory or inspection body, separate from the management body and independent from it in terms of internal control or supervision;
- there are undesirables in the management body, i.e. persons convicted by final judgment for an intentional offense prosecuted by public prosecution or for a fiscal offense;
- they are wary of bad practices, i.e. they established certain bans regarding the organization's assets/property in their statuses, e.g. a ban on transferring the organization's assets/property to its members or employees on principles other than those applying to third parties.

FIG. 1: The number of PBOs in Poland in the years 2004-2015



Source: Central Statistical Office of Poland

Over the period of the years 2004-2015, the number of PBOs in Poland increased fourfold (from 2200 to 9000), which is shown on figure 1. In 2015, 8800 PBOs operated actively, which constituted approximately 10% of the active non-profit entities able to apply for this status. This share has remained at the same level since 2012.

2 The 1% personal income tax mechanism in Poland and the principles for distribution of the resources to public benefit organizations

The 1% PIT mechanism has been introduced in Poland in order to increase the efficiency of the financial contributions for the organizations implementing public utility tasks. It has been decided that the citizens have better knowledge of the social needs and the problems to be solved, therefore they will be able to distribute public funds better than governmental organizations (Waniak-Michalak, Zarzycka, 2015). This idea was brought to Poland directly from Hungary, where a 1% write-off has been functioning since 1996 (Księżski, 2017). In the following years, similar legal regulations were passed in Slovakia (2000), Lithuania (2002), and Romania (2003).

Initially, i.e. in the years 2004-2007, the 1% PIT mechanism in Poland functioned as a tax exemption. The provision of the 1% PIT deduction was based on the taxpayers' obligation to independently deposit the funds from the 1% write-off into the bank account of a selected PBO. Then, in an annual tax return, they showed this write-off as a donation deductible from the income tax. This solution, which was burdensome to the taxpayers, constituted a significant barrier discouraging them from making such deductions.

Since 2008, contribution of the 1% PIT deduction has been much easier for the taxpayers. They do not have to make deposits into the bank accounts of selected PBOs; instead, they indicate the name and the NCR number of a selected PBO in the annual tax return which they file, whereas the transfer of the 1% assets is made by the taxation authorities (chiefs of the local tax offices), in accordance with the taxpayers' declarations. Owing to such solution, the order of the cash flows has been reversed, because first the entire tax amount goes to the National Treasury, then 1% of this tax is distributed among the PBOs, according to the taxpayers' will (Czetwertyński, 2016).

Currently, the possibility of providing a 1% tax contribution for a selected PBO is only available to the taxpayers who, in the previous year, obtained taxable income. This applies to the taxpayers who:

- are taxed in accordance with the taxation scale (18% and 32%);
- are taxed according to the 19% tax rate on the income from non-agricultural business activity or on the income from special sections of agricultural production;
- are taxed according to the 19% tax rate on the income derived from paid disposal of securities or derivatives;
- are taxed according to the 19% tax rate on the income from the sale of property and property rights;
- are taxed with a lump sum tax on registered income.

PBOs are obliged to allocate the funds from the 1% PIT exclusively for the public benefit activities specified in their statutes. Although the taxpayers can indicate a detailed purpose of the allocation of the contributed funds on their tax return (e.g. a specific beneficiary), the organizations are not legally obliged to take these indications into account. Such indications only serve as a signal for the PBOs regarding the activities which the taxpayers choose to support financially.

3 Financing the public benefit organizations in Poland using the 1% personal income tax mechanism – research results for the years 2004-2017

Comparative data on the allocation of the 1% PIT write-offs by the Polish PBOs, collected since the beginning of this mechanism's functioning, is presented in table 1. In the first year of this mechanism's functioning, only 80 thousand taxpayers (0.3% of the eligible) made the 1% PIT write-offs. During the subsequent 13 years, there occurred a 170-fold increase in the number of the taxpayers contributing the 1% PIT for PBOs. In 2017, 13.6 million taxpayers (60% of the eligible) made the 1% PIT write-off, transferring, on average, 49 PLN of their income tax to a selected PBO.

TAB. 1: Allocation of the 1% PIT deduction in Poland, in the years 2004-2017

Year	The number of the taxpayers contributing the 1% PIT (thousand persons)	The number of the PBOs receiving the 1% PIT	The 1% PIT inflows (in million PLN)	The average amount of a deduction for 1 PBO (thousand PLN)	The median (thousand PLN)
2004	80	no data	10.4	no data	no data
2005	681	no data	41.6	no data	no data
2006	1 157	no data	62.3	no data	no data
2007	1 604	no data	105.4	no data	no data
2008	5 135	5 354	298.3	55.7	no data
2009	7 325	6 038	381.5	63.2	no data
2010	8 624	7 128	360.9	50.6	no data
2011	10 135	6 533	403.9	61.8	5.8
2012	11 166	6 859	459.4	67.0	5.7
2013	11 537	7 110	482.2	67.8	5.5
2014	12 034	7 423	511.0	68.8	5.2
2015	12 457	7 888	560.0	71.0	5.0
2016	13 178	8 108	619.1	76.4	5.0
2017	13 614	8 238	660.2	80.1	4.9
Total	n/a	n/a	4.956	n/a	n/a

Source: Ministry of Finance of the Republic of Poland

The total amount of the assets transferred to PBOs increased 63-fold over the period of the years 2004-2017. In the first year of this mechanism's functioning, PBOs received a total of 10.4 million PLN (0.03% of the income tax due), while in 2017 the amount was 660.2 million PLN (0.76% of the income tax due) respectively. A total of 8238 PBOs received those funds. The conditions predetermining the receipt of these funds involved an earlier submission of a financial report and a substantive report on the activity in 2016 to the Ministry of Family, Labor, and Social Policy.

In the past 10 years, the average amount of the funds from the 1% PIT write-offs per 1 PBO has been quite high and constantly increasing. At the same time, however, the median has been decreasing, which shows a steadily growing stratification of the PBOs in terms of the 1% PIT amounts received. In 2017, the average 1% PIT inflows per 1 PBO amounted to 80.1 thousand PLN, while only in the case of 653 PBOs (8% of all recipients) the amounts of the funds obtained exceeded that average. Only 93 PBOs (1% of all recipients) received 1% PIT deduction funds exceeding 1 million PLN. The highest amount of such co-financing per 1 organization amounted to 148.9 million PLN (22% of the total pool

of the resources from the 1% PIT), while the lowest was 1.4 PLN respectively. This indicates a very uneven distribution of the 1% PIT assets among the PBOs, because half of these organizations received less than 4.9 thousand PLN. For years, high concentration of the 1% PIT inflows has been noticed in approximately 30 the same PBOs. These PBOs are the foundations most visible in the media, which receive about half of the total 1% PIT funds.

According to a study titled “Social Activity of Polish Men and Women” (Klon/Jawor Association in Poland, 2014) the interest in using the 1% PIT mechanism as a form of PBO support clearly correlates with the taxpayers’ education level, as well as their professional status and wealth. 1% PIT deductions are made by 57% of the taxpayers with higher education, 42% of those with secondary or vocational education, and only 15% of those with primary education. The greatest tendency for making 1% deductions for PBOs has been shown by middle-aged taxpayers (27-50 y/o), since over half of them do so (52%). Senior citizens (35%) and the youngest (23%) do so less frequently. The taxpayers from larger cities (with more than 50 thousand inhabitants) use the 1% PIT mechanism more often (44%), while the residents of smaller towns and villages do so less frequently (36%). The 1% PIT deduction is declared by the taxpayers from wealthier households (44%; households with income exceeding 2 thousand PLN), and only by 30% of the taxpayers from less wealthy households. Contribution of the 1% PIT deduction is also associated with the social activity of Poles. This form of PBO support is more often chosen by active persons involved in any form of volunteering.

The main reasons for not contributing the 1% PIT are:

- external factors, e.g. the taxpayer’s non-settlement with the taxation office, due to non-payment of tax (37%), preparation of the tax return by someone else, e.g. a spouse, an accountant, Social Insurance Institution (20%);
- lack of interest (13%);
- too low income and lack of a sense of meaningfulness of making such a write-off (11%);
- the taxpayer’s ignorance, e.g. regarding the potential beneficiaries (4%), the functioning of the 1% PIT mechanism (3%), or the existence of such possibility (1%);
- lack of confidence in PBOs (1%).

Conclusion

Since 2004, the 1% PIT deduction in Poland has been an increasingly popular source of PBO financing (though, for many PBOs, not the dominant one). What is more, the Polish taxpayers’ consciousness and interest in the 1% PIT mechanism has been increasing steadily. The awareness of the existence of the 1% PIT system is at a high level in Poland, since only a very small number of the surveyed Poles (approximately 1%) admit that they do not have any knowledge of this system.

In the years 2004-2017, a total of 5 billion PLN went to PBOs. The year 2017 was record-breaking in terms of the number of the contributing taxpayers and the amount of the funds transferred. However, despite the fact that in 2004, 13.6 million taxpayers contributed the 1% PIT, which at the number of the contributing taxpayers being 80 thousand is an impressive amount, 40% of the eligible taxpayers still did not take advantage of this privilege. This may be surprising, because making a 1% PIT deduction is an unengaging form of social activity; yet, many Poles decide to transfer their tax to the National Treasury in full.

The 1% PIT mechanism undoubtedly strengthens the non-governmental sector in Poland, giving greater acting opportunities to many organizations. In addition to the financial significance, it also has a social (civil) dimension, because using the tax, the taxpayer can participate in realizing many public and socially useful tasks to whose results he or she wishes to contribute (Musiałkiewicz, 2014).

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THE POSSIBILITIES OF A SYSTEMIC APPROACH IN CYBER-SECURITY OF MARKETING FOR A KNOWLEDGE-BASED SOCIETY

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Abstract: *The article lists basic professional concepts that create a language space for the expression of a selected portion of actual marketing environment and also the possibilities of transforming this new cyber-environment as a model designated for the modelling of processes in the new and necessary understanding of cyber-security. Another part of the article presents a description of modelling possible within the modelling environment in the newly established Laboratory of Applied Cyber-Security at the Faculty of Logistics and Crisis Management with the aim to obtain new understanding of the processes and their modelling and, in this case, to obtain in cyberspace suitably expressed model of the selected portion of marketing. Everything is designed for UTB students who are being prepared for a knowledge-based company with cyber-safe robo-technical means and with an environment of emerging applications of artificial intelligence equipped with powerful information and communication technologies and, of course, with a qualified social systems.*

Keywords: *marketing of cyber-space, cyber-security, cyber-security of marketing, applications of artificial intelligence*

JEL classification: C60, M31

Grant affiliation:

Introduction

With the growing importance of cybernetics and informatics, the importance and use of new means of cyber-attacks and cyber-defense and the corresponding security issues will also be increasing. As a result of the current international situation and due to the very rapid technological development in the world, it is necessary to ensure through research appropriate profile of cybernetics within the modern understanding of artificial intelligence and the corresponding new quality of life. As follows from the analysis of information sources in the world, related system-based issues with information technology (ICT) and applied technical cybernetics, including cyber-security (CS) will play an increasingly important role in the structure of the civilised world. Also, all that will be increasingly condition the operation of the relevant real systems on which depend the emerging new functions of the society (Dvořák, Konečný, Janková, 2017).

At the same time, the need increases to train the social system in the area of their coordination and systemic understanding of the situations and safety throughout the systemic range. As a new scientific discipline, cyber-security has recently seen very rapid development - both in terms of the development of the technological world and in legal, knowledge, marketing, procedural, and other

areas. To ensure the safety of important companies and organizations and of the population, of course, it will be necessary to produce a significant number of competent workers in these areas who will be able to combine the knowledge of the general concept of management and security with new realities of cyber-security, especially those related to the use of new and very important means of artificial intelligence in cyberspace.

It is appropriate to include in the current security situation in the world and in civilization in general a closer linking of the academic sphere with systems of cybernetics so that, if necessary, these systems will be able to encourage mobility of expertise and the necessary intelligence of all systems (i.e. precise weapon systems in the current cyber-war, unmanned intelligent agents - drones and other means of automatic management systems for the command of artificial means in new self-learning systems). The same is now developing in applications of electronic commercial activities (e-commerce), electronic business (e-business, e-shop), electronic banking (e-banking), the electronic environment of the state and public administration (e-government) and in many other areas of the so-called "newly used society digitisation". This initial stage focuses on processes of transformation from the existing information space to the new knowledge-based realm at the beginning of the knowledge-based society, including new environments of intelligent ICT resources in economic and also currently in the marketing area.

Education of experts with multidisciplinary approach in the field of management (cybernetics as the environments for the management and communication of information in living - social, and non-living - generated technical means). This is suitably supported at the Faculty of Logistics and Crisis Management (FLCM) by the establishment of newly construed focus of CS for many disciplines in the Laboratory of Applied Cyber-Security (LACS), whose equipment will facilitate understanding of the key technologies and procedures for dealing with cyber-security incidents, but especially in building a robust organization ready for modern threats. Therefore, this is not the preparation of niche experts in ICT or some security fields, but rather the education of well-needed qualified professionals of the social system to a multidisciplinary approach, with the possibility of practical use in organizations and also in marketing. The laboratories in which it will be gradually possible to model events caused by attacks on everything including information infrastructure (ICT) and on the newly conceived environment of applied cybernetics (ACS). The laboratories are also experimental and simulation environment and will be useful for the research and development of models of secure means for practice as well as for teaching and training of needed experts in the framework of standard operation on FLCM UTB, but also for the new commercial activity (e-marketing) in business and organizational sphere, in particular in the search for the possibilities of utilizing the new and promising means and models of artificial intelligence (in the projected knowledge basis of the models of optimal structures of products defined by CS needs) and in the new cyberspace of safety for the knowledge-based society (Bradáč, 1997).

1 Approach to the recognition of real environment

In social practice, we are faced with processes and phenomena which can be called objects. The study of a large number of objects in various areas of human cognition of the world has shown that a number of procedures which prove beneficial to studying certain objects in one area of knowledge may be used in studying objects in another area. It also become apparent that there are numerous analogies in relations between objects and their total, even when it comes to objects of completely

different nature, e.g. physical, technical, economic, social or even mathematical objects. This knowledge has led to the efforts to generalize the characteristics of relations between parts of objects, objects, their behaviour, etc. This required the creation a corresponding terminological apparatus which would facilitate the generalisation of knowledge gained in such research and learning. The reasons for this new so-called system approach are primarily the following:

- there is a general trend toward the unification of different natural and social sciences,
- such harmonisation may be subject to a general theory of systems,
- this theory can become an important means of shaping the exact theories of the living nature and society,
- by developing harmonizing principles we encounter in all areas of knowledge, general theory draws us closer to real environment and thus to achieving systemically construed objectives.

In the context of growing importance of the issue of systemically expressed real environment and of the dynamics of the real world of civilisation, and recently also both as a result of the international situation and as a result of unprecedented technological development, there is after the industrial revolution (in a technological revolution setting in) a need to strengthen and improve the real environment being in particular recognized in order to ensure an appropriate role of the new environment (by modelling on a model of the real environment) with the necessary intelligent information and communication technology (ICT) which condition the operation of important systems and which the basic functions of our society depend on (Smejkal, 2015).

At the same time, the need for professional preparation of a social system (with appropriate means of software ICT security) and also of a technical system (with appropriate technical hardware environment) becomes apparent, so that a new, intelligent and knowledge-developed cyberspace is gradually created, i.e. a cyberspace with state functions required for mathematical modelling. For optimal (appropriate target behaviour with the necessary mathematical criterion of optimality) models of companies and organizations of critical infrastructure - in particular in the areas of their coordination in limit (crisis and risk) situations. The existing legislation in the field of the new concept of cyber-security and protection of sensitive and, therefore, also personal data will bring about the necessary expansion in the numbers of experts. The above requirements can be met by increasing the technical and substantive education levels and also by the implementation of methods and acquisition of practical skills and knowledge utilizing modern knowledge-based education in modern experimental laboratories and in the appropriate modern scientific research base also in marketing in the knowledge-based society of the civilised world.

Along with this, the core and the necessary cyber-security (CS) will be further developed very quickly as an industry that has recently marked a rapid development - both in the area of technology and in the legal, crisis, procedural and other areas. In order to ensure the safety of important companies and organizations, it will be key to provide a large number of competent workers and also users education on a lifelong basis so that they will be able to combine the knowledge of general cybernetics and security with the new realities of the cyber-security field.

The education of experts with multidisciplinary approach in the field of management can be suitably supported by the new "Laboratories of Cyber-Security and Applied Cyber-Security" (LCS and LACS),

especially in the perspective cyberspace with the possibility of modelling and experimentation in the virtual environment of laboratories and utilizing artificial intelligence means in cyber-security (Konečný, Janková, Dvořák, 2017).

2 The Modelling Processes in an Experimental Laboratory

2.1 The possibility of a systemic approach to the modelling of the real environment

General theory of systems organizes knowledge about systems, describes, classifies and defines the systems. It defines it based on real objects, examines their properties, structure and behaviour. The very core of systems theory is a set of abstract objects which are general systems. These are formal logical constructions.

The System $S = \{ P, R \}$

where S is a purposively defined set of parts P :

$P = \{ p_i \}$, where $i = J$ (J being a set of indexes)

R is a set of links (relations, sessions) :

$R = \{ r_{i,j} \}$, $i, j = J$ between parts p_i and p_j

parts of the p_i system S are its elementary parts. Set P of all p_i parts is a universum system. Links are interdependences between p_i and p_j parts or interactions between these parts. These can be information links, expressed relations, etc.

The set of all links (relations) $R = \{ r_{i,j} \}$ between p_i and p_j system parts is the structure of the system. The structure of the system can be operational, technical, informational, time-related, organizational, etc. The specific structure of the system consists of so-called hierarchical structure, which expresses superordinate and subordinate relations between parts of the system. The quantity of parts in the system is characterised by its complexity. The more we learn the system (identifying mutual relations between components within the system), the deeper we examine the details of this system and the more parts and ties we discover. We usually end this process at a given level of knowledge (identification) of the system. In systems theory, the depth of knowledge is the level of distinction. Purposively defined set of components which do not belong only to the studied system but which have immediate significant relations to this system form the surrounding system. Links by which the system is affected from its surrounding environment are inputs (impulses). Links by which the system affects its surrounding environment are called outputs (feedback). In practice, we can normally unite parts in the defined system S which are by their nature similar to higher units called subsystems. System S may be composed of a number of subsystems. Examining complex systems, it is often necessary to degrade (decompose) them into interlinked subsystems. The opposite way of transforming the system is to assemble (compose) it. This is the concentration of individual subsystems so that the resulting system is formed by a minimum number of components and links between them.

System S with a certain (or specified) distinguishing level can be described:

- by the structure of the system, that is by the expression of parts P and relations R and also by the corresponding border parts. We know everything about this system (including its composition) and we can examine its behaviour under specified conditions,
- the behaviour of the system, that is by the expression of dependence between the set of inputs (input quantities affecting the border parts of the system) and the set of output system reaction (output quantities of the system affecting the immediate surrounding environment from system S border parts),
- by both the structure and the behaviour of the system, i.e. by all possible variants of the full expression of both the own composition (structure) of the system, and the behaviour (i.e. the reactions of the whole of the system to the impulses it receives from its surrounding environment).

The data obtained normally need to be communicated to someone. The means of information communication is language. Mother tongue is characterised by too much ambiguity. This is why verbal descriptions of systems are very complicated. Nevertheless, they are the most used to date, especially for the description of the so-called social systems and other systems.

Artificial languages are of significantly better quality, being unambiguous. These (Janková, Dvořák, 2014) may be the languages using the means of mathematics. Thus, the process of describing system S leads through its definition to the creation of its own model M: (used in LACS)

$$S \rightarrow M$$

In the process of identification (detection, identification, analysis, research) of a system, models of various classes are created. In this contribution, we will be dynamically modelling system S which changes its functional characteristics and structural qualities. At least one quantity in it is variable in time. They are expressed as differential equations, for instance.

Regarding the behaviour of S, we will be here modelling systems of the real environment as deterministic whose behaviour is clear-cut by the states of the system and by the relevant impulses,

Regarding global assessment of the real objects, we are considering here models for further modelling as systems:

- economic - these are purposive systems where the quantity of inputs to the system, with a measure for the value and the effect, suitably transform into a value expression of the outputs,
- social - these are again purposively defined systems where a significant set of parts is formed by a set of human individuals (with formal and informal structure), displaying various characteristics (health, nature, education, ...),
- technical - these are purposively established systems where, for instance, the transformation role is played by machines, devices etc., and the role of links is played by handling routes, material flows, etc.

2.2 The Modelling of Processes in the Cyber-Space of a Security Laboratory

The current world is also faced with a number of challenges of the dynamically developing theoretical areas, in particular in systems theory, recognition theory, methods of analysis of the real system and of the identification of systems using mathematical language as a means of communication for the current theoretical physics, used in the modern creation of mathematical models and used in modelling of real systems with the means and methods recognized by operating research, and also used in the perspective utilization of the new self-learning models in virtual environments. Further, it is used in the theories and utilization of information and communication technology (ICT), throughout the modern cybernetics, which was not recognized for years, (theoretical, technical and applied as the environment for the “management and communication in living and non-living organisms” - in short, in technical, technological and artificially generated systems).

We are also emphasizing here the theory of modelling, for example in marketing, and in particular the use of the best mathematical methods of operating research (by optimizing towards the processes of modelling sensitivity to marketing, optimization of psychological aspects with new means used in information wars in the world), further on models of real systems (marketing environment) associated with the new design possibilities (e.g. Computer-aided design - CAD used 2D or 3D programs) and also with modern modelling of the appropriate cyber-security of real systems and the associated designs for safe, optimal, reliable and effective real systems (based on the application of best-proven mathematical methods and on the emerging artificial intelligence, and of course on the appropriate methods of operational research); also in modern dynamically developed areas of highly promising models for the development and use of methods of learning of HW and SW means in adaptive ICT networks, and therefore also in artificial intelligence and the new (smart and intelligent) machines and devices, and now in particular in intelligent cyber-security systems (unmanned real means, autonomous self-learning means at the level of the robo-technical systems, automated systems management in risk environment, crisis situations, etc.).

The purpose of this contribution is to express a modern systemic utilization of models and modelling in the new cyberspace and express full practical use of the means of technical cybernetics and cyber-security for future practice of resistant and safe socio-technical systems, and also to express the need for the possibility of systematic approach in cyber-security of marketing for knowledge-based society.

Conclusion

The aim of this contribution is above all to draw attention to other possible systemic definition of the real environment and also to the possibility to express an environment of artificial intelligence in newly conceived cyberspace of the modern society and to utilize this environment in LACS as the new models of adaptive environment, and also to use new ideas of students and pedagogical staff of the university to solve models, and their modelling for modern use of virtual environment of the laboratories for scientific and publishing activities in highly promising solutions of real environments with a target behaviour of the self-learning model and with the background of cyber-security.

Our further cooperation will also be focused on the interesting field of cyber-security in the environment of marketing.

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TAXATION OF AGRICULTURE IN POLAND IN THE CONTEXT OF THE SUSTAINABLE DEVELOPMENT PARADIGM

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Abstract: *Sustainable development of rural areas requires the achievement of economic, social and environmental order. In addition, reciprocal action between them should keep the system in balance. At the same time, this development cannot lead to the disappearance of specific features of rural areas. It is implemented, inter alia, through state actions, including a properly shaped tax system. The aim of the article is to answer the question of whether taxation of agriculture in Poland promotes the implementation of sustainable development paradigm. In Poland, farmers do not pay income tax, only agricultural tax, which depends on the area of land owned. Such a shaped tax system certainly has a positive impact on the social and economic sphere of rural areas. As for the environmental sphere, it seems that it is neutral towards her. To sum up, the current tax system is conducive to the implementation of the sustainable development assumptions.*

Keywords: *sustainable development, agricultural tax, rural areas*

JEL classification: *G32, H24, Q14*

Grant affiliation:

Introduction

The term "paradigm" is ambiguous; therefore it is necessary to explain the meaning of it. The concept of T.S. Khun is the most popular in the literature on the subject, according to which this term is identified with the matrix of discipline, which is "[...] *a common property of all practising the given field of knowledge, matrix - because it is made of ordered components of various kinds, every of which needs further specifications*"(Khun, 1985). Such a paradigm consists of many elements, the most important of which are certain laws, theories, models and scientific values. The scholars rely in their research on specific models and rules they have learned while gaining their education. These models and sets of rules may become paradigms in the course of research. It should be emphasized that according to T. S. Khun "*paradigms may be more primitive, more binding and more complete than any set of research rules that can be unambiguously abstracted from them*"(Khun, 2001).

L. Nowak differently defines the idea of the paradigm. He argues that the paradigm is characterized by "[...] *certain concepts that define the type of explanation adopted in this field of science at a given time as a model*"(Nowak, 1991).

Due to the above, the question arises, which theory has a paradigmatic function in explaining and forecasting socio-economic development? In the social sciences, there is no one, single theory that would function as a paradigm because social and economic development is a complex process.

Presently, in the theory of economics, the neo-liberal paradigm of development is of the key importance. The foundations of this paradigm are the theories of economic growth, which assume that development is a directional process, aimed at continuous increase of the society material well-being. The process of this development is of the endogenous character, and thus is determined by factors controlled by the socio-economic system (Matysiak, & Struś, 2015)

The paradigm of sustainable development extends and refines the neoliberal paradigm. The economic development, which is understood as economic growth, still plays a key role in it; however, the goal of development is to preserve the sustainability of the ecosystem. The paradigm of sustainable development assumes that the source of environmental threats is the production technology. At the same time it should be emphasized that the excessive exploitation of the environment is directly related to the level of consumption, which in turn is too large in relation to the efficiency and environmental potential. Therefore, the radical paradigm of sustainable development should assume a reduction in consumption, which in turn is impossible to implement in a free market economy (Matysiak, & Struś, 2015).

1 The aim of the article and methodology of research

The concept of sustainable development is of the key importance for the development of rural areas, and the possibility of its implementation depends on the level of socio-economic development of a given country, including agriculture in particular. The basis for sustainable development is the natural environment; the economy is a tool for achieving this development, while its goal is to increase the quality of the society life. The institutional, spatial and sometimes moral and awareness dimensions (Adamowicz, & Dresler, 2006) are also added to this three-dimensional model of sustainable development. Additionally, the implementation of the sustainable development concept takes place through specific actions of the country, including a properly organized tax system.

The aim of the article is to answer the question: Does the taxation of agriculture in Poland foster the implementation of the sustainable development paradigm?

First of all, the implementation of the objective requires presenting the concept of sustainable development, then discussing the current system of agricultural taxation in Poland and analysing the impact of taxation on sustainable development of rural areas.

The research was carried out on the example of the Kondratowice rural commune, due to its agricultural nature. The article is a case study, data from the Polish FADN and data from the Central Statistical Office were used for the study. The analytical and descriptive methods were used in this article.

2 The concept of sustainable development

To the economic literature, the concept of sustainable development was introduced in 1987 during the deliberations of the World Commission on Environment and Development. The United Nations Conference, held in Rio de Janeiro in 1992, contributed to the promotion of the above-mentioned idea and to political action for its implementation (Adamowicz, 2006). The conference made it possible to create a series of documents of which task was to practically implement goals and principles of sustainable development on a global, national, regional and local scale. The most important of them was Agenda 21, defining the directions of activities at the turn of the 20th and

21st centuries. Agenda 21 has become the basic programming document, which presents the method of compiling and implementing sustainable development programs at the local level. Local and regional communities, including local government, non-governmental organizations, local leaders, and business representatives create and maintain technical, social and economic infrastructure, manage space, shape and protect the natural environment, and create the visions of development.

Summarizing, the sustainable development of a given area requires achievement of: economic, social and environmental standards. In addition, feedback between them should keep the system in balance. At the same time, this development cannot lead to the disappearance of specific features of rural areas, including the loss of the identity and value of rural life. There is a conflict between the pursuit of economic efficiency of farms and maintaining the social potential of the village. We are dealing here on the one hand with a relatively low income of farms, and hence lower profitability of the means of production involved, and on the other hand with poor access to basic services such as health care, nurseries and kindergartens, depopulation of the countryside and aging population (Baum, & Wielicki, 2007).

The choice of the optimal relationship between the economic and social spheres depends on the level of the society wealth. The specificity of Polish agriculture is a relatively high share of small farms (up to 5 ha), with the simultaneous functioning of large farms (over 300 ha), which focus primarily on achieving production goals, which often goes hand in hand with lowering landscape values and overexploitation of the environment (Zegar, 2012). Small farms can have a positive impact on the social and environmental spheres. Social, because they provide work and support for entire families, often nurturing traditional family and social patterns. Environmental, because they interfere with the environment to a small extent and support the traditional landscape of the village. Unfortunately, these farms are economically too weak to function without the state aid, which is implemented in Poland, among others through the agricultural taxation system.

3 The system of agriculture taxation in Poland

In Poland, farmers are taxed by agricultural tax, regulated by the provisions of the Act of 15th November 1984 on the Agricultural Tax (The Act, 1984). It should be emphasized that this is the only fiscal burden in Poland, which has not been reformed since 1989. At the same time, farmers are exempt from paying the income tax. The exception is revenues from the special departments of agricultural production. It should be noted that this way of agriculture taxation is currently unseen in other European Union countries.

The agricultural tax is paid from every hectare of agricultural land on the farm, also when it is used for purposes other than agricultural production. According to Art. 6, section 1 of the Act, the tax rate is equal to the average price of 2.5 quintals of rye from 1 conversion hectare. The amount of tax depends on the size of the farm, its location and the type of land, regardless of whether these lands are used for agriculture or are set aside.

In 1992, pursuant to the Personal Income Tax Act (the Act, 1991) and the Corporate Income Tax Act (the Act, 1992), the general taxation of people and enterprises with income tax was introduced. However, pursuant to Art. 2 section 1, point 1 of both laws, the agricultural activity with the exception of special departments of agricultural production was excluded from it.

Pursuant to the Act, agricultural activity is based on the production of plant or animal products in the unprocessed (natural) state from their own crops, breeding, or rearing, including seed production, nursery, breeding and reproduction, ground vegetable, greenhouse and tunnel production, ornamental plants production, cultivated mushrooms production, breeding and production of breeding material of animals, birds and insects, animal production of the industrial-farm type and fish farming. At the same time, it is also an activity in which the minimum periods of purchased animals and plants detention during which their biological growth occurs are at least:

- 1 month – in the case of plants,
- 16 days - in the case of high-intensity fattening of specialized geese and ducks,
- 6 weeks - in the case of other slaughter poultry,
- 2 months - in the case of other animals

counting from the date of purchase.

In Art. 10, section 1, point 4 of the Act, as a separate source of income, there are listed some special departments of agricultural production, both within the agricultural holding, in the meaning of the Agricultural Tax Act (i.e. land area classified in the land and building register as arable land or as wooded and bushy land on arable lands, with a total area exceeding 1 ha or 1 conversion ha), as well as outside the farm.

Income generated by natural persons from running special departments of agricultural production (including those in the form of partnerships) is established on the basis of the tax and revenue ledger or account books. It is also possible to use income estimation standards, which are subject to Personal Income Tax on general terms, i.e. according to tax scale (progressive tax) or 19% flat tax.

In January 2016, the provisions of the Act of 9 April 2015 amending the act on personal income tax and certain other acts entered into force (the Act, 2015). This Act regulated the taxation of revenues from the sale of plant and animal products processed in a way other than industrial, coming from own cultivation, breeding or farming.

It should be noted, however, that until the entry into force of new legal solutions, the manufacture and sale of such products was treated as an economic activity and therefore required registration. At the same time, in the light of the provisions of the Personal Income Tax Act, income tax had to be paid to it.

According to the new regulations, farmers were allowed to choose the form of income taxation for the food produced and processed by them. They may choose to tax on a general basis according to the scale (18 and 32%) or to pay a flat-rate tax on revenues of 2%.

4 The results of research

Despite the attempts to tax agricultural activity with income tax, agricultural tax remained the basic tax on agricultural activity in Poland. Its weight is particularly visible in rural communes. An example may be the rural commune of Kondratowice, in which the share of agricultural tax revenues in 2016

amounted to about 23% of the total own revenue of the commune, it should be noted that in the period under review, there is a systematic decline in the share of agricultural tax in own income total.

It is also worth emphasizing that in the analyzed municipality, the income from the agricultural tax outweighs the income from personal income tax.

TAB. 1: The share of agricultural tax and other selected local taxes in the own income of the Kondratowice commune in the years 2012-2015

Year	2014	2015	2016
Total own income	7 991 546,45	8 164 479,34	7 334 567,04
Income from agricultural tax	2 236 249,09	2 016 998,42	1 695 362,58
The share of agricultural tax in total own income in %	27,98	24,70	23,14

Source: author's calculations based on data from Central Statistical Office

Due to the lack of data on the amount of income received by farmers, it is difficult to clearly determine what impact on income tax would have on the commune budget. However, one can try to estimate the effects of the introduction of taxation based on the data of the Polish FADN and the Local Data Bank of the Central Statistical Office. For this purpose, FADN 2016 information and data on the number of farms and areas in hectares by area groups in the Kondratowice commune of 2010 were used. Data on the number of farms and area of agricultural holdings by area groups of agricultural land were obtained from the Local Data Bank.

The estimates were based on the assumption that agricultural activity will be taxed at a flat rate of 19%, which applies to all legal entities and may also be used by natural persons conducting business. It was also assumed that this tax will affect the municipality's account in full, while the agricultural tax will be abolished.

TAB. 2: Tax effects for farms from the Kondratowice commune in the case of taxation of agricultural activity with income tax

	Number of farms in the commune	Agricultural tax	Average agricultural tax per farm	Income tax	Average income tax per farm
Totality	409	1,695,362.58	4,145.14	2,715,575.95	6,639.55

Source: author's calculations based on data from Polish FADN and Central Statistical Office

According to the FADN data for 2016, the average income from a family farm amounted to PLN 34,945, the average income tax in 2016 would therefore amount to PLN 6,639.55. Therefore, PLN 2,715,755,95 due to income tax would be allocated to the municipal budget, ie PLN 1,020,213.37 more than due to the agricultural tax. At the same time, the income tax charge per farm would increase by PLN 2,494.41 a year. This means that taxation of agriculture with agricultural tax is more advantageous for farms.

Conclusion

The estimates show that the taxation of agricultural activity with income tax would be less favorable for farms than the agricultural tax system currently in force in agriculture taxation.

Such taxation system favours sustainable development, because relatively low taxation of agriculture positively affects the social sphere, as it limits the sphere of poverty, thus at the same time it prevents excessive outflow of people from the rural areas.

Due to relatively small tax burdens, small farms can survive in a market economy. Providing work, meals and maintenance to entire families perform an economic as well as social function. In small family farms, the traditional multi-generational family model dominates. Seniors and young parents with children live under one roof. Such a family model is of additional value in the situation of still limited access to nurseries and kindergartens in the countryside as it allows the young parents to take up additional paid employment. It should be emphasized that the active participation of seniors in family life prevents them from social exclusion, which unfortunately is often encountered in large cities.

The currently operating taxation system is also beneficial from an economic point of view, because a small tax burden increases the profitability of agricultural production. The lack of tax burden in this case is an incentive to choose exactly this way of earning money. It should be emphasized that large agricultural enterprises, which also do not pay income tax, also increase their profitability, thanks to which they can invest better surplus funds and generate additional jobs. So in this case, a positive impact on the economic and social spheres can be observed.

As far as the environmental sphere is concerned, it seems that taxation is neutral towards it. It is difficult to explicitly recognize that this system would shape incentives or anti-incentives for farmers' actions in the field of environmental protection. It can be only said that thanks to small farms, the traditional landscape of the village is still being preserved. However, these advantages are diminished by the large-scale farms.

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BUSINESS NETWORKS AND REPORTING THE ACHIEVEMENTS OF ENTERPRISES IN THE TOURISM INDUSTRY

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Abstract: *The content of the paper refers to the significance of the functioning of enterprises in the business network and an interest in the issues such as sharing knowledge, trust and cooperation; This concerns operational and strategic decisions in the field of development and behavior in relation to organizations in the environment, which is associated with the necessity to report and assess the results of the activity of enterprises in the network. The theoretical frameworks adopted in the paper are the theory of networks and their basic concepts. The objective of the paper is to analyze and assess theoretical and practical settlements in the field of management reporting of the business network of the tourism industry. In the research, there was used the case study. The results of the empirical research focus on the identification of the ways of measurement of achievements applied by the entities of the tourism industry located in the region of Southern Poland (Sudety). The value added of the study consists in ordering the reporting of information concerning the results of activities of network companies and presenting it in the form facilitating the reception by stakeholders of the tourism industry network.*

Keywords: *business network, efficiency of network operation, management reporting*

JEL classification: M21, D23, R12

Grant affiliation: *Częstochowa University of Technology*

Introduction

Business networks constitute the dimension of cooperation between organizations in the modern economy. The condition constituting the business network is the formation of close relationships enabling the exchange of resources between partners in order to create value added with partners; organizations belonging to the network gain an advantage over competitors outside the network due to the economic rent exceeding the costs resulting from commitment and maintaining relationships by enterprises (Soda & Zaheer, 2012); (Stańczyk-Hugiet & Gorgól, 2012). Network connections are characterized by: constant interaction, interdependence in terms of resources, entities and operations and infinity in the absence of clear boundaries and structure. The network is characterized by the infinity of connections and numerous relationships with the environment, which is characterized by an unlimited area of operation both in terms of the territory and subject (Czakon & Kawa, 2018; Alinaghian & Razmdoost, 2017).

One of the basic conditions for reasonable actions of enterprises is the measurement, assessment and exchange of the results of operations of enterprises in the network (Lowe & Rod, 2018). The appropriate reporting of the results of activities of enterprises within the network is the condition for

the proper implementation of management processes in terms of providing grounds for making decisions, their implementation and control. Moreover, it is the basis for the assessment of the proper use of resources, achievement of the assumed objectives and also the implementation of strategies of enterprises in the network (Czakon, 2010; Kościelniak & Łęgowik-Świącik, 2014).

1 Around creating business networks (selected issues)

Business network is a set of long-term connections and formal and informal relationships which occur between two or more entities (Hakansson & Snehota, 1989; Ratajczak-Mrozek, 2009). The process of formation of business network results neither from the implementation of the strategic plan of one strong company nor the decisions concerning the active, formal creation of the specific hierarchical, leadership or organizational structure; the company often becomes the participant of the network passively, unconsciously, as a result of the transactions entered (Koźmiński & Latusek-Jurczak, 2017).

The major research streams in network management are presented in Table 1.

TAB. 1: Major research streams in network management 2000-2016

Strategic nets:	Knowledge Perspective:	Innovations networks:
Net types Management capabilities o RBV & dynamic capabilities view	Knowledge transfer, sharing & co-creation Different types of learning Exploration vs. exploitation	Orchestration & actor types Radical vs. Incremental innovations Innovation construction vs. commercialization
Strategizing:	Cognitive view:	Institutional approach:
IMP vs. Strategy views Linking cognition and action Limits of managing: scope of action	Networks pictures & network theories Sense-making, visioning & agenda construction	Including institutional actors Collective action & changing institutions Network influencing via stakeholder groups
Years: 2000-2005	Years:2005-2010	Years:2010-2015

Source: Own study based on Moller & Halinen, 2015.

In the analyses of business networks, there are most often indicated three interrelated and interacting elements: actor bonds, activity links and resources ties. The presented elements create the ARA (Actors-Resources-Activities) model in which the network is the form of a continuous exchange of resources between the interrelated entities as a result of which there are established long-term relationships. The relationships can be perceived from the perspective of the content and functions of the connections; the content is the links between actors, operations and resources (Ratajczyk-Mrozek, 2010). The functions of the relationships refer to the processes such as: the emergence of the system which is new in terms of quality (quasi-organization), creating the result of the company by changing the structure of operations and exerting impact on all entities involved in the network. The ARA model was developed by the IMP Group (Industrial Marketing and Purchasing Group). The IMP group was established in 1976 by the researchers initially originating from five scientific centers of Europe; it is the forum for exchanging ideas and research results of scientists from 42 countries all over the world.

2 Research methods

The empirical research was mostly based on the pilot study survey covering the entities of the tourism industry of the region of Southern Poland (the Sudety region). The survey was conducted by the authors in the period of March-April 2018. The respondents were assumingly the persons responsible for the measurement of achievements in the tourism industry. The research included managers of the tourism industry companies, such as: agritourism companies, lodging providers, hotels, travel agencies, Instytut Gospodarki Turystycznej (Institute of Tourism Management), Agencja Rozwoju Turystycznego (Agency for Tourism Development). The obtained results of the survey (65 questionnaires) indicated that the surveyed entities represented a variety of tourism activities, different organizational and legal forms and differed from each other in terms of size of employment. The most numerous was agritourism farms (71%) employing up to 9 people; the other respondents (29%) were medium companies with the employment of up to 50 people. A large group of entities, since as much as 40%, operated in the market for more than 10 years and only 5% for not more than 1 year. The questionnaires were sent electronically and their rate of return amounted to 82%.

3 Reporting the results of business network operations from the perspective of the tourism industry

An example of the regional tourism organization-network, being an example of a good practice is Tourism Cluster located in the Sudety Region. The cluster was established for the optimum management of the tourist region; its main objective is to create innovative tourism products generating an increase in tourist flows. The entities of the emerging business network expect the development and implementation of the common strategy for the promotion of the region based on own funds of enterprises, municipal promotion budgets and funds obtained in the framework of EU programs. The operations within the strategy are to promote the Sudety Region by means of tourism products based on natural, landscape, cultural, architectural values as well as the ones associated with the unique cultural and historical heritage of the region. The entities of the network also count on an increase in the level and quality of tourism services and lobbying to improve transport connections: rail, bus and road for Poland and Germany. The entities of the arising tourism network, among others, are: agritourism companies, lodging providers, hotels, travel agencies, Instytut Gospodarki Turystycznej (Institute of Tourism Management), Agencja Rozwoju Turystycznego (Agency for Tourism Development).

The management of such a unique and unlimited combination of actors, operations and resources requires the reporting of the results of entities involved in the network. The entities of the discussed network did not decide on the creation of complex network structures or intensive activities of daily cooperation. The network activity is managed by the coordinator elected from among the network members. At the initiative of the coordinator, as a result of common discussions, there was made an attempt to build the common reporting system, due to which global data can be obtained, indicating the effects of the operations of entities within the network. One should underline the great maturity of the enterprises of the analyzed network in terms of management, recognizing an opportunity to compare themselves with other entities in the market, to build own specialization, to improve the quality of services for customers, coordination and networking resulting from cooperation. Moreover, the work on reporting itself already allowed for exchanging information on the work of individual entities, establishing a common understanding of terms important to them and discussing

the explanation of the mission in terms of the tourism development of the region. The collectively produced report includes:

- the list of business areas designated for monitoring,
- the list of meters for operations, including the definitions agreed for drawing up reports,
- a dictionary and a manual for new coordinators,
- clarifying the links between a dictionary and a public mission to be included in the annual report of activities.

In Table 2, there are presented the meters for reporting used by the entities of the tourism network with the largest number of indications.

TAB. 2: Exemplary meters for reporting the activity of entities in the tourism network (the results of the own survey).

Reporting area	Meters for the reporting of activities
Operating activities	<ul style="list-style-type: none"> – number of guests and tourists being served – percentage of the occupancy of accommodation establishments – changes in the farmhouse production volume and structure and their list: (e.g. the purchase of horses, starting organic production, increasing the area of vegetables) – number and list of information services provided by the specific entity – o number and list of educational and training services
Sales	<ul style="list-style-type: none"> – percentage of sales revenue obtained from major customers – number of served segments of the tourism market – number of services provided in the region <ul style="list-style-type: none"> – number of newly developed products and services
Finance	<ul style="list-style-type: none"> – growth in sales revenue – level of current liquidity – current assets/tangible assets relationship
Research and development	<ul style="list-style-type: none"> – number of completed projects – number of applications for pre-financing – number of people involved in research and development
Forms of cooperation (self-organization)	<ul style="list-style-type: none"> – number of (recommended) customer exchange – number of common promotions – number of trips to tourist fairs – number of guests from neighboring holdings – number and list of common events: barbecues, bonfires, sleigh rides, trips,

	meal preparations
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Source: Own study based on the survey.

Table 2 presents the ordered meters for reporting the activities of enterprises in the network broken down into business areas which are: operating (production and service) activities, nature of sales, finance, research and development and forms of mutual cooperation. The meters for reporting the activity of the network companies relate to five areas of the activity, such as: operating (production and service) activities, nature of sales, finance, research and development and forms of mutual cooperation. The areas and meters of reporting introduced by coordinators are the form of communication within the network and should be adjusted to its specificity, taking into account the stages of its development. The frequency of the reporting of entities within the network must be adjusted to individual preferences and needs of individual actors of the network, creating relevant working groups or other meeting areas.

Conclusions

The requirements of the changing and dynamic environment are the challenge in terms of the reporting of activities of the network actors to support decision-making processes of enterprises involved in the network. Summing up the obtained research results, it should be noted that the vast majority of the surveyed entities consciously report their achievements, particularly in the field of operating activities and in terms of sales and finance; the assessment of the financial policy of the surveyed companies based on the current liquidity and the structure of current assets deserves a special attention. There should be emphasized broad reporting of the forms of cooperation, which proves the maturity of activities of the network companies. Moreover, the use of different measures of achievements contributes to reducing the level of uncertainty in relation to the course of activities of the entities of the tourism industry in accordance with the assumed objectives. The surveyed respondents see the need for monitoring the value of the indicated meters for the assessment of the progress in the implementation of the adopted strategy and cognition of the dynamics of their generation. The reporting of activities of enterprises in the business network is the form of communication of enterprises with the environment, therefore, it could be available online since this enables the current monitoring of the level of specific meters and is for communication with stakeholders. The improvement in the reporting system requires the continuation of the research in this field and further operationalization of the gathered information relating to the activities of enterprises in the network. in order to prepare the methods and tools supporting decision-making on network development.

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THE ROLE OF LEADERSHIP IN OVERCOMING OF INTERCULTURAL CHALLENGES OF GLOBAL VIRTUAL TEAMS

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Abstract: *There is a general agreement among professionals and scientific community that the forces shaping future work trends and landscape will be continuously increasing global interdependence accompanied by the more and more intensive transitions to virtual forms of work. The virtual environment itself confronts global teams with specific challenges. However, in addition to these technical elements, global teams and their leaders also meet the challenges resulting from the multicultural nature of global teams. Leading globally means to be able to balance cultural differences and facilitate the collaboration across cultures. Some authors even suggest that the global virtual leader represents a behaviour model for other team members. What is the role of leader and leader's global mindset in overcoming and resolving culture-related challenges of a virtual environment? The aim of this contribution is to provide an overview of current concepts related to the leadership in the intercultural virtual environment.*

Keywords: *virtual teams, leadership, intercultural challengers, global teams, global mindset*

JEL classification: *Z1*

Grant affiliation: *IGA_FF_2018_002 The interpenetration of Eastern and Western thinking in the global economy and management*

Introduction

Working in a virtual environment means freedom of crossing the limits and boundaries which were beyond the imagination of professionals in the traditional physical settings. The world where the geographical distance disappeared through technology-mediated communication became the standard playground of human interaction and also the place where work is happening. The concepts which were developed and applied in the physical environment and practised using daily the face-to-face communication are being translated into virtual form. This virtual evolution brought us virtual forms of management and leadership. The organisations implementing virtual forms of work reap the benefits resulting from involvement of dispersed global workforce, this means the employees and team members offering the best skill and expertise in the global labour market. However, the geographical distribution of the workforce brings also cultural diversity and necessity to manage and lead across cultures.

In her classification of challenges the virtual team are facing Nemiro et al. (2008) defines two major types of challenges – challenges given and challenges created. Together with trust, both leadership and culture belong to the challenges which are created within the virtual teams. Although each of them represents a separate challenge there can be clearly identified mutual relation between

leadership, trust and cultural challenges. It can be supposed that it is the leadership, which plays the key role in surpassing the challenges of virtual teams. (Liao, 2017)

This contribution focuses in particular on the relationship between leadership and culture and wants to contribute to the clarification of the leader's role and the role of leader's global mindset in overcoming and resolving culture-related challenges in the virtual environment.

1 Leadership in the global virtual world

Although it is not easy to clearly and unambiguously define leadership, when comparing with management, which is supposed to create and maintain order and consistency, the leadership represents the dynamic element of change and movements. (Northouse, 2015) Leaders can either emerge or be assigned to lead and it seems that there is an ongoing shift from the power leadership to the leadership inspiring and motivating followers. (Northouse, 2015) Leadership in the virtual environment is limited by the fact that the leader is dependent on the electronic communication. Technical barrier often leads to shortcuts in communication without necessary feedback and hints. This may lead to misunderstands and even an offence of a team member. (Nemiro, Beyerlein, Bradley & Beyerlein, 2008)

There is a wide range of variables when defining each virtual team, such as intensity of virtual collaboration, where on the one end of the spectrum lie the teams using virtual work as a complementary tool and on the other end, there are fully virtual team, never meeting in person. The other defining factors are a cultural distance of the team members, size or structure of the team. This heterogeneous nature of the virtual teams means that a tailored approach is necessary when managing and leading teams.

Currently, one of the most popular leadership approaches is the transformational leadership (Northouse, 2015). Transformational leadership focuses on the transformation of attitudes, values and ethics of the followers, leading them to the defined goal (Northouse, 2015; Nemiro, Beyerlein, Bradley & Beyerlein, 2008). The transformational approach contrasts with the transactional approach which uses incentives and punishments to motivate the followers to complete the set goals. As Brewer suggests, the virtual teams are usually formed in order to complete specific purpose and tend to be more egalitarian. (Brewer, 2015) This, and also the desirability of an individual approach to each virtual team implies rather the suitability of transformational than the transactional approach. In the virtual environment, the transformational approach brings several advantages such as the interest in individuals and development of their positive qualities, which help to balance the lack of personal contact and increase of mutual trust within the team. (Nemiro, Beyerlein, Bradley & Beyerlein, 2008) Trust is the key element of successful teamwork and there is also the clear relation between trust and communication within the virtual teams. (Jarvenpaa, Knoll & Leidner, 1998) Importance of clear and regular communication (together with trust, ethical characteristics and decision-making abilities) is emphasised by Braga, as one of the key attributes of a virtual leader. (Nemiro, Beyerlein, Bradley & Beyerlein, 2008)

2 Global mindset

Already in the 1960s, Perlmutter (1968) pointed out that the complexity of the increasingly integrated world requires a new mindset. This new, global mindset can be generally defined as "the ability to think on a global scale" (Bouquet, 2005). Since its origin, there were developed several

definitions and approaches to this concept which were summarised by Bouquet (2005) who sees the ability to understand the business environment regardless to the national boundaries as the common element to the majority of these definitions. The interpretation of global mindset as the result of three connected stages – openness, knowledgeable and ability to integrate cultural diversity (Gupta, Govindarajan & Wang, 2008), corresponds with the models of acquisition of intercultural competences (Zakaria, 2017; Bennett, 2015)

FIG. 1: Three steps to the global mindset



Source: According to Gupta, et al. (2008)

A global mindset is a holistic concept which has a direct relation to the leadership and decision making in a global scale. (Cseh, Davis & Khilji, 2013) According to Cohen (2010), the leaders who properly acquire the global mindset can perform more effectively in the global setting. Here, the concept of global mindset touches the concept of cultural intelligence (CQ) which shows many similarities. Ramsay et al (2016) argue that for some purposes, the CQ concept described by Earley and Ang (2003) is more suitable than the concept of the global mindset. However, both global mindset and cultural intelligence are regarded as the key element of effective leadership in the global environment. (Geoffrey, 2014)

3 Cultural challenges and leadership

In the global virtual environment, the leaders and team members face challenges which are related to the national and cultural background of the team members. Besides the aspects directly related to cultural values, norms and attitudes there is a consensus that there is a relation between language and cultural understanding among the members of the team (Oertig & Buergi, 2006). At the individual level, the language defines culture and represents its central pillar (Kock, 2009). Both the

cultural and language differences, which may manifest for example in a different level of mastering the common language of the global team, create a bottleneck influencing the quality of the information exchange. The communication obstacles magnify especially the diversities. Besides the cultural and language filter the global virtual communication is also influenced by the technical filter. To collaborate successfully, the team has to overcome these obstacles and it is the virtual leader who can significantly facilitate the process of resolving these challenges (Nemiro, Beyerlein, Bradley & Beyerlein, 2008, p. 218). Another layer of complexity of the communication in global virtual teams is brought by the fact that the team itself also creates own culture (Nemiro, Beyerlein, Bradley & Beyerlein, 2008, p. 218) and the leader acts as a guardian of this so-called *intercultural*. (Lee, 2014)

The cultural diversity can manifest itself in different approaches to management, negotiations styles, decision making, time management and communication styles. As suggests Zakaria (2017) , there is a very close link between the communication style and cultural values. In this complex environment, the role of the leader is to balance the multicultural context.

To succeed, the virtual teams have to adapt to the culture related elements by the acquisition of intercultural competences – “a set of cognitive, affective, and behavioural skills” which are appropriately used in the intercultural concept and allow to perceive and adapt to the cultural differences (Bennett, 2015). These competences can be typically acquired by a combination of cognitive approach represented by formalised intercultural training and by an experiential approach where the acquisition of the intercultural competences happens during a real situation. In the experiential acquisition, the behaviour of the leader can serve as the model for other team members. (Zakaria, 2017) In both cases the process of acquisition of intercultural competences comprises of several levels, starting with the intercultural awareness and here the leader can play the role a guide, providing feedback to the team members. Zakaria points out that leaders should act as the disseminators of the intercultural awareness which they acquired through the cross-cultural training. (2017, p. 188)

Although there are clear boundaries between the role of leader (Bennett, 2015) and the role of coach, there is a suggestion that the executive coaching provided for teams and individual team members is one of the tasks of a global leader (Wildman & Griffith, 2015). Under certain circumstances, the leader-provided coaching may be an effective way to tackle some of the intercultural challenges as the virtual environment does not pose significant obstacles to the individual interaction between the coach and coachee. However, there is an opinion that the “western” style of coaching is not universally applicable and has to be adapted especially when dealing with the eastern cultures, influenced by the Confucian values as the coachee is culturally seen as an authority. (Kubatova, 2015; Nangalia & Nangalia, 2010).

Conclusion

Markets have merged into a worldwide playground and, as suggests Gupta et al. (2008), a mere presence on the key markets is not enough. To be successful, it is necessary to gain a global competitive advantage and make use of the geographic and cultural diversity. (Gupta, Govindarajan & Wang, 2008) Technology-mediated communication allows real-time collaboration across the globe and seemingly, there are no obstacles hindering the global business. Work in teams with various intensity and share of virtual work became standard for knowledge based sectors. The obverse of this near non-existence of physical boundaries is, however, the presence of other, at the first glance

less visible challenges. Global virtual leaders have to face these challenges but also to seek actively their remedy. The ability to master the cultural factors can significantly contribute the quality of business communication which can impact the global competitive advantage.

The role of leadership in the process of winning the global competitive advantage starts with the leaders themselves who should strive for being culturally fluent (Browne, Dreitlein, Manzoni & Mere, 2016) and the cultural intelligence and global mindset have to be incorporated into business strategy and leadership programs. (Geoffrey, 2014; Cohen, 2010) Cross-culturally competent leaders have the ability to inspire and motivate the team members to develop intercultural awareness.

The profile of successful global leader is closely related to the cultures the leader is dealing with (Solomon & Schell, 2009) The cultural distance among the team members can determine the specific approaches as well. The “western” leaders have to take this aspect into account in particular when dealing with the cultures based on Confucian values and cultural norms. Namely China, the rise of which as the new global player has been predicted for decades, has become an important element of the global scene. There is a noticeable shift in contribution to the global GDP in favour of China (*White paper on the future of Europe*, 2017) and it can be expected that the importance and role intercultural competent leaders will grow, especially in relation to the East-Asian cultural area.

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SELECTED PROBLEMS OF IMPLEMENTING SYSTEMS OF MANAGEMENT ACCOUNTING IN HOSPITALS IN POLAND

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Abstract: *Medical activity carried out by hospitals is characterized by the very complex nature of the conducted processes. Individual medical procedures require the use of many diverse resources, and their cost is also very high. This is why the traditional cost accounting applied in the past has now become insufficient. Hospitals have started to implement the systems of management accounting, and also IT systems which support the functioning of management accounting, which unfortunately in many cases does not function properly as a result of several factors. Based on their own implementations, the authors of this paper identify selected problems of implementing and functioning of management accounting systems in hospitals. The results of their research can help with improving the functioning of management accounting in hospitals.*

Keywords: *hospital, budgeting, management accounting*

JEL classification: *M41*

Grant affiliation: *U.*

Introduction

A characteristic feature of medical activity carried out in hospitals is the very complex nature of the conducted processes. Individual medical procedures require the use of many diverse resources, while their cost is also very high. For this reason, the traditional cost accounting applied in the past has now become insufficient. Hospitals have started, not without some teething problems, to implement systems of management accounting, and also the IT systems which support the functioning of management accounting. Unfortunately, there are many cases where management accounting does not function properly.

The aim of this article is to present selected problems of implementing and functioning of management accounting in hospitals. The authors used research material obtained in four hospitals of various sizes located in Poland. These were 3 specialist hospitals (oncological, research one, high specialist one) and one district hospital. The used methodology was case study analysis. The chosen hospitals were the subject of the implementation of budgeting systems, cost accounting and IT systems supporting controlling introduced by the authors. The presented results are done based on implementation of management accounting done by the authors. The results of the presented research can be helpful in improving the functioning of management accounting in hospitals.

1 The need to implement modern management accounting in hospitals

One of the most significant factors in the failure of implementations of the systems of financial controlling in hospitals seems to be the necessity to perform the contracted medical services without any regard for their profitability. Hospitals have to perform all the contracted medical procedures, whatever their profitability, since these are the conditions of public financing for the health service sector. A hospital has no option of withdrawing the provision of unprofitable services since the terms of its contract dictate the performance of the stipulated range of medical services. Their scope is set out by the financing institution, i.e. the one allocating public funds. For this reason the management of both the entire hospitals and the individual wards has to comply with carrying out all the contracted services, and therefore they are not interested in examining the profitability of individual medical services, but merely the overall result of the entire establishment.

For this reason it is worth to consider whether there is a need of implementing modern and costly economic systems of management which meet the high requirements posed by the contemporary management accounting. It seems that the needs of hospitals could be satisfied by the use of systems based on the rules of financial accounting providing synthetic data on the level of the entire establishment. However, in order to manage a hospital it is necessary to know the cost of individual processes as well as of the owned resources, such as the cost of running a hospital ward, the cost of individual medical facilities and the maintenance cost for the hospital premises.

Public hospitals have only a slight possibility of influencing the level of revenues, and they cannot abandon providing unprofitable services, it is possible though to undertake efforts aimed at the optimization of costs. Modern instruments of cost accounting allow to optimize the cost of own resources and of the carried out procedures, as well the degree of use of their own resources. Another reason pointing to the need for the functioning of modern management accounting is hospital funding by public means. A detailed and transparent system of management accounting can be used in order to justify the reasons for bearing high costs. Therefore, a thesis saying that a hospital has no need for implementing a detailed cost account seems untrue.

2 Tools of management accounting in a hospital

Among many tools of management accounting which should be applied in hospitals are, in particular: budget, profit and loss account, spreadsheet of patient treatment, in-house plan of accounts and the principles of allocating indirect costs (Kotapski R. 2016, pp.487-495), (Chalastra M., Kotapski R., Siemionek A. 2016, pp. 208-213). All these tools have to be mutually compatible, and their preparation requires the cooperation of medical doctors, nurses and economists since it needs the knowledge of both medicine and economics. Without medical knowledge in practice it would be difficult to prepare and implement the tools of management accounting related to the specifics of hospital functioning. Calculating the cost of treating a patient is a very complex task. The main reason is the involvement of many diverse resources. Medical knowledge is indispensable in presenting the complete process of treating a patient. This is based on the assessment of the resources which are indispensable for conducting a given medical procedure. Economic knowledge is required to evaluate the costs of the actions carried out by the said resources. Combining the expertise in these two diverse areas of knowledge is the key factor in the correct functioning of management accounting. Hospitals often employ economists in the position of a financial controller. However, the knowledge of finance which they acquired working for commercial enterprises cannot be directly applied to

hospitals. All the tools of management accounting tools have to include the specifics of the medical sector in the basis of their construction and the interpretation of data.

There is a wide spectrum of the potential tools of management accounting which can be implemented within an enterprise. When regarding hospitals, cost account deserves particular attention as a basic tool. The solutions implemented here will enable the construction of other systems of management accounting. In order to establish the cost of treating a patient in a hospital the following tasks should be carried out:

- identifying the resources required to perform individual medical activities,
- identifying actions and processes indispensable for treating a patient,
- determining the medication and medical materials which must be used in the process of treating a patient,
- determining the time required to perform individual activities and operations within the treatment process,
- conducting a calculation of the cost of labour on the part of the doctors and nurses involved, including the use of resources,
- calculating unit cost for the use of equipment and medical apparatus in the process of treating a patient,
- establishing the principles of calculating the general cost of a hospital ward in relation to treating a patient.

3 Analysis of the functioning of management accounting within the examined hospitals

The factors presented above relate to the recommended rules of the functioning of cost account in hospitals (Kotapski 2016, pp. 490-491). Unfortunately, the examined units in the 4 described hospitals demonstrated numerous faults of this system, and among these most significant ones are the following shortcomings:

- the distinction of the cost centres was too synthetical,
- incorrect calculation of supporting activities, both medical and non-medical,
- the cost of unused potential was not revealed,
- allocation of indirect costs was conducted with the use of inappropriate methods,
- the applied techniques were laborious.

Distinguishing the centres responsible for costs and the cost centres is an important element in the preparation of a system of management accounting, and it constitutes the point of departure for other work. In practice, in each of the examined hospitals the division into the centres responsible for costs and the cost-creation centres was insufficient. This problem can be demonstrated using the example of the costs of a hospital ward. Only the combined costs of an entire ward were identified, while the cost of its relevant resources such as specialist teams (i.e. doctors, nurses and other personnel), valuable medical equipment and hotel activity remained unknown. Due to these reasons

the first requirement would be to create a new internal plan of accounts which would remove the above-mentioned faults and enable a credible, precise and easy access to information about the revenues and costs of hospital activity.

Another shortcoming found in the functioning of cost account was the lack of the established principles of calculating the cost of individual medical services such as lab tests, USG, EEG, operations or even the actual cost of a patient's stay in the hospital. The cost calculation principles must also include the time involved in the use of the specified resources. It is difficult to calculate the cost of treating a patient without the knowledge of the activities carried out within this process. Thus, the principles of calculating the cost of services should be prepared in the form of spreadsheets of the costs.

One of the significant complaints made by medical personnel is the obligation to fill in many different documents. Should the proposed solutions of management accounting lead to an increased burden of paperwork, they will be met with a negative response on the part of medical staff. For this reason it is worth applying automatic standardized techniques since many medical procedures are largely repetitive. Hence it is worth applying in hospitals the rules of standard cost.

Another observation made during the research was the lack of homogenous reporting on their activity. In general, their cyclical reports consisted in financial reports, i.e. balance sheet, and profit and loss account. Some ad hoc reports were made, such as profit and loss account for individual hospital wards, however they were based on overly synthetical data. Yet there were no cyclical reports by the financial controller given to both the hospital directors and the management of hospital wards.

The records of managing the resources, including the volume of the medication used and the records of services provided to patients, required computerizing. It is practically impossible to manage hospital resources, including the calculation and accounting costs of hospital resources, without its reliable documentation and automatic access to data. A management accounting system has to be supplied with such data in order to calculate the cost of resources of individual hospital wards and specialist units. Computerization in this area seems to be a crucial factor in the aspect of the already mentioned bureaucracy.

4 Organizational conditions of the functioning of management accounting in hospitals

Appropriate organizational conditions are an important element in the functioning of management accounting in hospitals. Among the most relevant organizational requirements regarding the correct functioning of a management accounting system in hospitals are the following:

- the acceptance of such system by top management,
- stable staff turnover,
- employing a specialist in management accounting,
- economic education,
- increasing decentralisation of business management.

The implementation of management accounting in a hospital depends to a large degree on the determination on the part of its managers. Judging from the experience obtained during the

implementation of such a system in various enterprises, hospitals included, it can be unequivocally stated that without real support from the top management, in practice it is impossible to implement and to have a fully functioning system of management accounting. It is difficult to force a the centre of responsibility to actually apply the tools of management accounting without the supervision of the board of directors.

Another significant factor is also the turnover of management staff during the implementation of management accounting. Unfortunately, this situation is fairly frequent in the sector of public hospitals. The worst scenario is the situation when the top management changes during the process of implementing the system, since the new management may not be interested in continuing the work in that scope. The new direction may have a different concept of management. In the case of the change of the board of directors during the implementation of the system of management accounting, the pace of work slows down noticeably, or it may be even abandoned. This is a truly relevant factor due to the fact that systems are usually implemented in the course of a few years. Therefore, for the duration of the process it is recommended to maintain a stable concept of managing the establishment.

Another condition indispensable for the efficient functioning of management accounting in hospitals is the employment of a specialist in this field. This is best done already at the stage of creating the concept of a system of management accounting. As a result, that member of staff is able to participate in creating the system from its very inception. Moreover, he/she can carry out some of the tasks involved, such as putting in order the existing databases or formalizing the system of document circulation. At the same time, on the completion of the implementation process he/she is able to smoothly take over running the system of management accounting from the specialists who were implementing it.

In three cases of the implementation of a system of management accounting, among all those conducted by the authors themselves, a financial controller was not employed. This occurred despite the fact that the very concept contained as a necessary condition the employment of such a specialist. Following the completion of the implementation process and the start-up of the IT system to support budgeting, the system was actually not used. In one of the hospitals a specialist in controlling was employed only about a year after the implementation. However, that employee did not participate in the conceptual stage of work and it took him a long time to learn the principles of the system's functioning. Thus, employing a highly qualified specialist with a good knowledge of modern tools of controlling and of the specificity of hospitals' functioning is of paramount importance here.

Another crucial condition of the correct functioning of management accounting in hospitals is appropriate education in this field. Staff training should include financial controllers as well as managers of the centres of responsibility. Limited financial resources and medical requirements mean that business education does not have priority in hospitals. However, it cannot be expected that hospital staff will correctly apply a complex tool of management accounting without adequate knowledge on the subject. The hospital managerial staff, in particular at the level of managers of individual wards, is not interested in modern methods of management. This is due largely to their responsibility for the medical and not economic result.

The domination of responsibility for the medical result comes as another problem observed in the examined hospitals. The ward managers exercise an insufficient degree of influence on managing the finance of their units. This is related to the low level of decentralization in the business management. The managers are mostly qualified in performing medical tasks, while the tasks related to financial management are mostly linked to the level of hospital directors.

Conclusions

The specificity of functioning of public hospitals does not allow for such freedom in realising tasks aimed at optimization as is the case in commercial enterprises, since the medical sector is faced with many restrictions. For this reason implementing management accounting in hospitals seems to be justified due to the fact that the scope of optimization within public hospitals is much more limited. The well-functioning systems of management accounting bring notable advantages (Kotapski 2013, pp. 268-276). Unfortunately, many attempts at implementing such systems turned out to be ineffective. The aim of the article was to identify the main reasons for such a situation, and the analysis of these factors should be helpful in conducting similar undertakings.

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EFFECTIVENESS OF SPENDING FUNDS UNDER MEASURE 8.1 OF THE OPERATIONAL PROGRAM INNOVATIVE ECONOMY FOR SUPPORTING MICROENTERPRISES OF THE POMERANIAN VOIVODESHIP

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Abstract: *For many years of its membership, Poland received more money than it paid to the budget of the European Union. The funds received were used to support many segments of the Polish economy. It is recognized that limited access to financial resources is one of the main barriers to the development of the sector of micro, small and medium enterprises. For this reason, SME entities were supported in every financial perspective. At the same time, subsidizing the SME sector with EU funds is one of the areas that has been examined to a small extent. The research so far has focused mainly on the degree of use of EU funds. The main goal of the article is to analyze the quality of the use of EU funds on the example of the implementation of Measure 8.1 of the Innovative Economy Operational Program in the Pomeranian Voivodeship. The survival rate of the supported undertakings will also be presented.*

Keywords: *innovation, SME, subsidy, donation*

JEL classification: *H25, O31, O32*

Grant affiliation:

Introduction

The price of a product or service still remains a key decision element for customers. However, the times of the global economy have meant that a company wishing to stay on the market must also compete in other areas. A truly successful company must provide products that are also innovative, significantly different than those provided by other companies in the same market. Therefore, the governments of many countries, understanding the need for modernity, try to support those sectors of the economy that realize this need. Similarly, the Republic of Poland, somehow coerced by the regulations of the New Lisbon Strategy, has implemented many programs supporting the innovation of its enterprises. One of such programs was the Operational Program Innovative Economy, the activity of which was directed primarily to the sector of micro, small and medium enterprises and organizations cooperating with this sector.

1 Innovation as a key element of the development of the sector of micro, small and medium enterprises

It seems that entrepreneurship cannot flourish when it is deprived of the element of innovation (Zhao, 2005). It is pointed out that people who want to take up managerial and engineering positions in the future should at least be familiar with the innovation process (Martin, 1994).

The Guidelines of the Innovative Economy Operational Program (POIG, 2007) clearly state that innovation should be understood as introducing a new or significantly improved solution to the practice in relation to a product (good or service), process, marketing or organization. Therefore, the innovation is not the idea itself, but its effective implementation in the business environment.

The need to commercialize the effects of the innovation process (Kanter, 1988) and responding to market needs is often emphasized (Pavitt, 2006). This means that the correct innovation process should include the following elements:

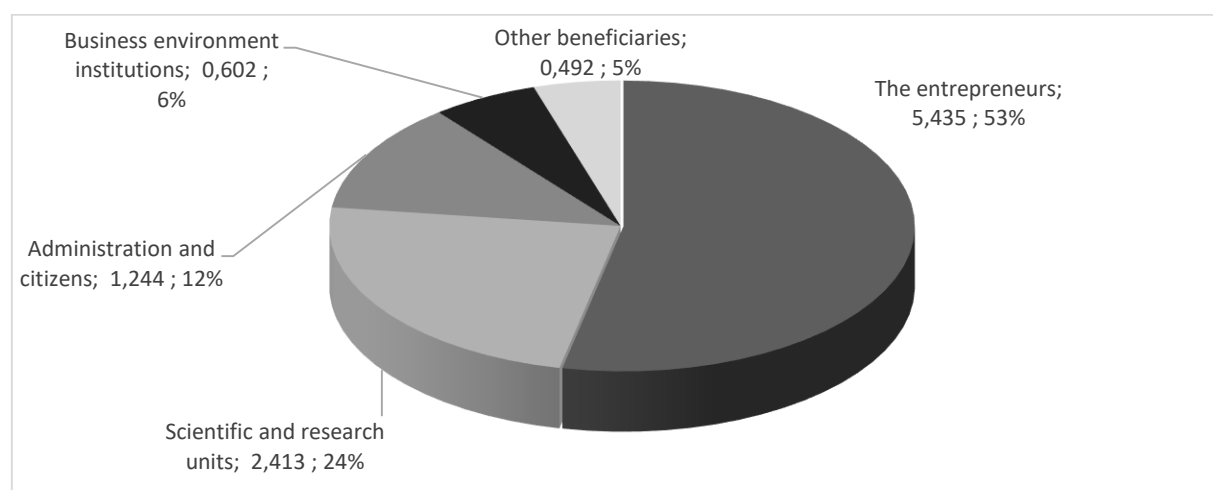
- determining the need for innovation and indicating the chances of its implementation,
- building support for this need in the organization,
- translating ideas into action (realization),
- achieving a market benefit from implementation.

The need to consider innovation in the management processes of virtually every organization is universally accepted if the society wants to remain stable regardless of other circumstances (Drucker, 2015). At the same time, it should be remembered that an unreasonable pursuit of otherness may also lead to an increase in the company's costs without any positive effects on the level of sales.

2 Implementation of the Operational Program Innovative Economy in Poland

The Operational Program Innovative Economy (hereinafter the OP IE) is an element of a passive model of supporting the sector of micro, small and medium enterprises (Kozłowski, 2016). Support is limited to transferring funds to quite broadly defined projects without knowledge transfer.

FIG. 1: Distribution of the IE OP resources by category of beneficiaries of the program in 2007-2013 (in billion EUR)

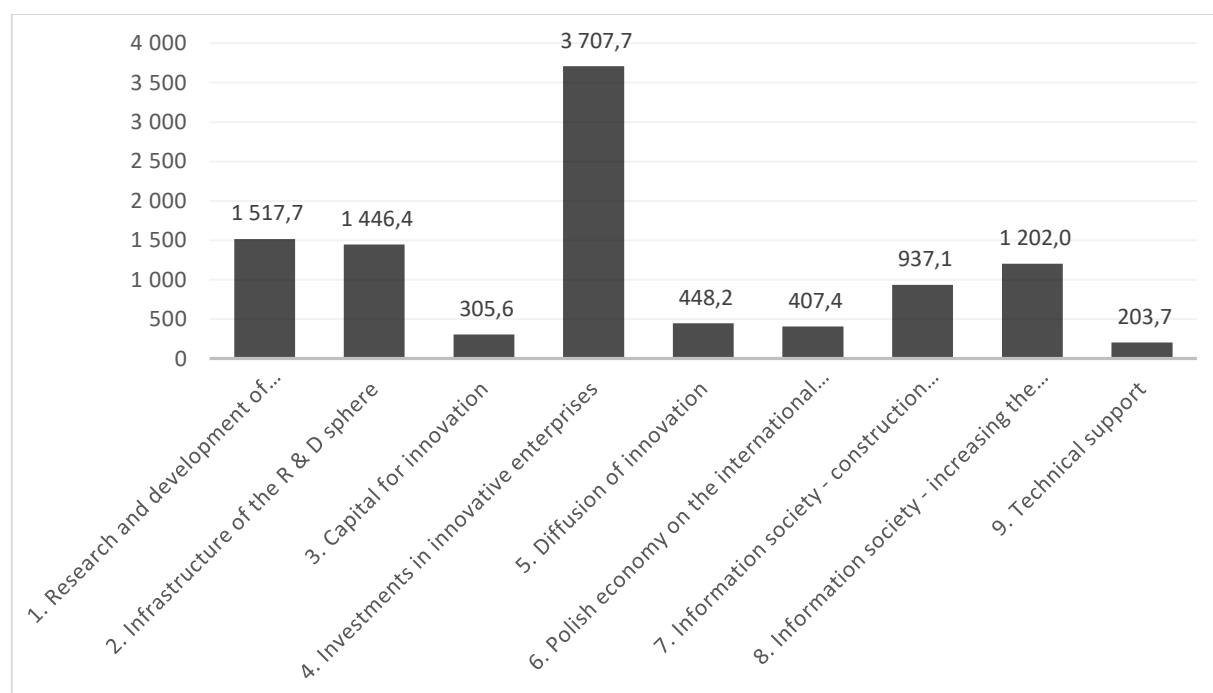


Source: own elaboration on the basis of: (www.poig.2007-2013.gov.pl, 2017).

The implementation of tasks set before the OP IE in 2007-2013 was supported by the amount of EUR 10.186 billion. At the same time EUR 8.658 billion (85.0%) came from the European Regional Development Fund, while the remaining EUR 1.528 billion (15.0%) was transferred from the budget of the Republic of Poland. Innovation support through the OP IE was carried out bi-directionally. On

the one hand, entrepreneurs and entities involved in innovative activities, such as research units or business environment institutions, were directly supported. On the other hand, efforts were made to develop the business environment in which innovative entities operate. However, the main beneficiaries of the OP IE were entrepreneurs who received EUR 5.4 billion (53.4% of the total IE OP resources) as well as research and scientific units which raised EUR 2.4 billion (23.7%), which is presented in Figure 1.

FIG. 2: Value of support provided under the Operational Program Innovative Economy in 2007-2013, broken down by priority axis (in millions of EUR)



Source: own elaboration on the basis of: (www.poisg.2007-2013.gov.pl, 2017).

The objective of the IE OP, which was the development of Poland based on innovative enterprises, was implemented through the designation of nine priority axes. The individual priority axes have been structured in such a way as to support separate groups of beneficiaries. However, only axis 3 "Capital for innovations" and axis 8 "Information society - increasing the innovativeness of the economy" were directed exclusively to the sector of micro, small and medium enterprises. At the same time, the applied allocation algorithm, presented in Figure 2, meant that only EUR 1,508 billion (14.8% of the total IE OP resources) were directly targeted as support for the SME sector.

3 Measure 8.1 of the Operational Program Innovative Economy as an element of the support system for innovation of Polish enterprises

Measure 8.1 "Supporting economic activity in the field of electronic economy" is part of the eighth priority axis "Information society - increasing the innovation of the economy" of the OP IE along with the following three measures:

- Measure 8.2. Supporting the implementation of B2B electronic business.

- Measure 8.3. Counteracting digital exclusion - inclusion.
- Measure 8.4. Providing access to the Internet at the "last mile" stage.

OP IE 8.1 was addressed only to newly established and operating micro and small enterprises existing for no longer than two years. It supported enterprises providing and updating digital services. The largest part, among 1,409.3 million allocated jointly for OP IE 8.1, was allocated to projects implemented in the Mazowieckie Voivodship - PLN 467.1 million (33.1% of the total of OP IE 8.1) and Wielkopolskie - PLN 279.9 million (19.9%). The distribution of funds distributed under OP IE 8.1, including the administrative division of Poland, is presented in TAB. 1.

TAB. 1: Distribution of subsidies under measure 8.1 of the Operational Program Innovative Economy in the years 2007-2013, including the administrative division of the Republic of Poland in PLN million

Financed with funds of	Nationwide	Mazowieckie	Wielkopolskie	Śląskie	Małopolskie	Dolnośląskie	Łódzkie	Pomorskie	Podkarpackie	Kujawsko-pomorskie	Zachodniopomorskie	Świętokrzyskie	Lubuskie	Lubelskie	Podlaskie	Opolskie	Warmińsko-mazurskie
UE	10,3	397,0	237,7	106,8	80,3	74,0	53,9	53,7	30,3	26,6	25,3	24,6	22,6	18,0	17,9	12,0	7,1
RP	1,8	70,1	42,2	18,9	14,2	13,1	9,5	9,5	5,4	4,7	4,4	4,3	4,0	3,2	3,2	2,1	1,4
Total	12,2	467,1	279,9	125,7	94,5	87,1	63,4	63,1	35,7	31,1	29,7	28,4	26,6	21,2	21,1	14,1	8,4
Total as %	0,9	33,1	19,9	8,9	6,7	6,2	4,5	4,5	2,5	2,2	2,1	2,0	1,9	1,5	1,5	1,0	0,6
Number of supported projects	7	896	520	246	178	182	129	141	83	65	60	59	49	41	53	31	23

Source: own elaboration on the basis of: (www.poig.2007-2013.gov.pl, 2017).

The dominance of the capital region and Wielkopolska is also reflected in the number of projects located in these areas, as shown in TAB 1. Out of 2,763 IE OP projects subsidised under measure 8.1 up to 896 were co-financed in the Mazowieckie Voivodship, and 520 in Wielkopolska.

As shown in TAB. 1, beneficiaries of OP IE 8.1 from the Pomorskie Voivodeship gained 63.1 million PLN (4.5% of the total of OP IE 8.1) under this measure, which placed the region at the seventh place among all voivodships. At the same time, 15% of funds came directly from the Polish budget.

4 Analysis of the implementation of Measure 8.1 of the Innovative Economy Operational Program in the Pomeranian Voivodship

Pomorskie Voivodeship is located on the Baltic Sea in the northern part of Poland. The main administrative center of the region is Gdańsk, inhabited by approximately 465 thousand residents. However, it is located in a direct distance to two other cities: Gdynia (246 thousand inhabitants) and Sopot (37 thousand inhabitants) with whom it creates an informal creation referred to as Tricity

(Tricity). Tri-City residents constitute about 32% of the total population of the region. The ports located in Gdansk and Gdynia jointly are the largest ports on the Baltic coast of the EU Member States, giving way to only three Russian ports.

Similarly, to the scale of the whole country, the capital city region has taken over the majority of OP IE 8.1 funds, so in Pomerania as many as 95 out of a total of 141 projects were located in the Tricity constituting the administrative center of the region (67.4%). What is more, the amount of PLN 22.6 million allocated to TriCity projects was disproportionately higher than the share in the number of projects and constituted as much as 78.1% of the total funds. The reason for this disproportion was primarily the low average co-financing of projects carried out outside the Tri-City (see TAB. 2).

TAB. 2: Support obtained by the sector of small and medium-sized enterprises in the West Pomeranian Voivodeship in 2007-2013, broken down into counties

County	Total amount of co-financing (in PLN)	Co-financing as % of total	Number of supported projects	Average project support
Gdańsk	20 711 781,63	38,6%	49	497 281,67
Gdynia	16 015 820,45	29,9%	35	538 346,91
Sopot	5 152 073,37	9,6%	11	551 023,89
Tczewski	4 336 374,87	8,1%	8	637 702,19
Kwidzyński	2 431 774,01	4,5%	5	572 182,12
Gdański	1 604 339,36	3,0%	5	377 491,62
Kartuski	1 320 210,78	2,5%	13	119 476,09
Wejherowski	901 325,42	1,7%	3	353 460,95
Pucki	477 695,75	0,9%	2	280 997,50
Nowodworski	415 548,00	0,8%	1	488 880,00
Kościerski	282 652,84	0,5%	9	36 948,08
Total	53 649 596,48	100,0%	141	447 639,52

Source: own elaboration on the basis of: (www.poig.2007-2013.gov.pl, 2017).

Due to the fact that the OP IE 8.1 refers to e-projects implemented via the Internet, the author considered the form and quality of presence on the Internet as a sign of activity or not of individual implementation. Therefore, the following was taken into account:

- existence of a website or application,
- frequency and date of the last update of content contained on the website or in the application,
- functionality of the website or application.

The status of project activity at the end of April 2018 is presented in TAB. 3.

A significant part (62.4%) of co-financed projects, just 3-4 years after their completion, is inactive. Most of them are completely absent from the Internet - their websites do not exist or are offered for sale. In limited cases, projects are limited to websites with beneficiary address data. Whereas active projects should be divided into two categories. The first group are functional projects that have not been updated in any way for more than two years. At the same time functional refers to projects offering a complete service for which co-financing was obtained. However, it can be assumed that at

least some of these ventures, like inactive projects, have been abandoned by their creators. The second category are functional projects that are constantly updated and streamlined. They represent only 26.2% of all co-financed projects under Measure 8.1 of the Operational Program Innovative Economy. At the same time, a significant part of them are like non-distinguishable Internet portals that are thousands on the Polish Internet. Only a few beneficiaries can be an example of truly innovative ventures – up to five projects.

TAB. 3: The state of implementation of projects co-financed in the years 2007-2013 in the Pomeranian Voivodeship from the measures of Measure 8.1 of the Innovative Economy Operational Program

Project status	Last activity	Total support of projects (in PLN)	Number of projects	Average project support (in PLN)
Inactive	No data	37 873 592,52	79	479 412,56
	2011	1 312 361,00	2	656 180,50
	2015	1 184 033,65	3	394 677,88
	2017	2 066 561,00	4	516 640,25
Active	No data	842 635,00	2	421 317,50
	2010	583 227,50	1	583 227,50
	2012	1 085 280,00	2	542 640,00
	2013	979 568,10	2	489 784,05
	2014	1 045 234,40	2	522 617,20
	2015	3 273 369,25	7	467 624,18
	2017	1 398 641,92	4	349 660,48
	2018	11 472 668,10	33	347 656,61

Source: own elaboration on the basis of: (www.poig.2007-2013.gov.pl, 2017).

At the same time, it should be noted that a significant part of existing projects are regular websites, whose performance and several-year financing should not exceed PLN 50,000. These websites are not advertised in any way and their updates are sporadic.

Conclusion

In contrast to the implementation of Measure 8.1 of OP IE in the West Pomeranian Voivodeship (Kozłowski, 2017), the implementation of this measure in the Pomeranian Voivodeship cannot be described as completely unsuccessful. Although in both cases a small part of the projects was active at the beginning of 2018, but at least four truly innovative projects were supported in the Pomeranian Voivodeship. In particular, funding for the Ivona speech synthesizer should be considered a particularly successful implementation. The obtained effect was an outstanding achievement on a global scale, and its quality can be confirmed by the purchase of the company creating it by Amazon.

It is incomprehensible why entities that do not operate online themselves were supported, although their main domain is legal services or obtaining subsidies for their clients. Such entities, after receiving subsidies, commissioned the execution of an "innovative" project for subcontractors.

Doubts also arise from the transparency of the way results of the OP IE 8.1 are publicly shown. The information is usually limited to the address data and title of the completed project. It seems that with quite considerable funds which these undertakings were supported, one should expect at least annual, standardized, widely available reports on the implementation of these projects.

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RISK FACTORS OF THE YIELDS IN THE CZECH BOND MARKET

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Abstract: *Interest rate risk accounts for a majority of the risk involved with fixed income investing. This article presents the results of the empirical analysis of the factors that explain changes in the Czech bond market. Applying the methods of the statistical factor analysis it is shown, that two factors are sufficient to explain most of the historical yield curve variation. Here are stated also some conclusions for hedging such portfolios.*

Keywords: *interest rate risk, factor analysis, principal components*

JEL classification: *C10, E43, G10*

Grant affiliation: *FVG/36/2018*

Introduction

Study of yield curve behavior has been an important part of financial market research as it provides us important information about the future expectation of growth, inflation, recession, etc. Especially during the last few years, we could observe high volatility of interest rates. Lot of hedge funds, pension funds, investment banks, debt offices and other assets and debt managers were affected by this increasing volatility. The yield of corporate and government bonds have increased significantly during the financial crisis. Modeling interest rates for the purposes of pricing of interest rate dependent cash flows and hedging the interest rate risk have been a topic of much interest to actuaries over recent decades (Soto, 2004, Juneja, 2012, Scherer & Avellaneda, 2002, Ceballos, 2014). These studies demonstrate both similarities and differences in international bond markets.

This paper describes the method of principal component analysis and its application to the selection of risk drivers for capital modeling purposes. The main idea behind the principal component analysis is that a high dimensional system can be approximated to a reasonable degree of accuracy by a system with a smaller number of dimensions by exploiting correlations between the system variables. Firstly, we deal briefly with some preliminary and background details, including an introduction to principal components and the intuition behind the associated reduced model. In the next section we apply the method on data obtained from the Czech bond market

1 Data and methods

1.1 Principal component method

In order to determine the factors that explain the substantial part of the yield volatility we apply the multivariate factor analysis (see for example Reymont & Jöreskog 1996, Pages, 2015). That means, we will estimate the yield curve changes by linear model in the form:

$$y_{mt} = \sum_{i=1}^n \alpha_{im} F_{it} + \varepsilon_{mt},$$

where

y_{mt} is the yield to maturity for maturity m at time t ,

F_{it} is the value of the i -th independent random factor at time t ,

α_{im} is the factor loading for the i -th factor for maturity m

ε_{mt} is the error term, representing the volatility unexplained by the factors.

To estimate the factor loadings we apply the principal component method. It works with the correlation matrix and its eigenvalues and eigenvectors. The most common steps can be described as follows:

1. Preparing the data, especially compute the correlation matrix.
2. Decide how many components to extract.
3. Extract and rotate the components.
4. Compute the factor loadings, communalities and portion of volatility that is explained by the factors.
5. Interpret the results.

The most common methods, how to select the number of factors are:

- The Kaiser-Harris criterion. It suggests retaining the components with eigenvalues greater than 1.
- Cattell scree test. The eigenvalues are plotted against their component numbers. Such plots typically demonstrate a bend or elbow, and the components above this sharp break are taken in account.
- Parallel analysis. We run simulations, extracting eigenvalues from random data matrices of the same size as the original matrix. If an eigenvalue based on real data is larger than the average corresponding eigenvalues from a set of random data matrices, that component is retained. (For more details see Hayton, Allen, & Scarpello, 2004).

1.2 Czech bond market

The Czech Treasury securities market includes T-bills and government bonds. Trading volumes in local-currency denominated bonds are relatively small in the secondary markets.

The primary market of corporate bonds was vivified particularly by activities of the Czech Securities Commission whose mission was to support development and protection of the capital market and also strengthen the investors' and issuers' trust in the capital market. In the context of integration of the financial market supervisors into the Czech National Bank, the Czech Securities Commission ceased to operate as of 31 March 2006. All its responsibilities were transferred to the Czech National Bank as from 1 April 2006.

Government securities shall be sold onshore on the primary market principally by auction to primary dealers or in the form of direct registration on the owner account of the Issuer. Actually, the Czech bond market includes 46 outstanding bond issues in the cumulative volume of 1 394 286 140 000CZK.

Our dataset consists of 430 weekly records of the yields to maturity for Czech government bonds with maturities in the range from 1 year up to 50 years. The source of the data was the investing.com portal, which provides daily tons of data about the financial markets. It as well includes the yields of the government bonds for most of the world countries. For purposes of this research were chosen the bonds with maturities of 1,2,3,4,5,6,7,9,10,15 and 50 years. So we have covered short-term, intermediate and as well long-term maturities.

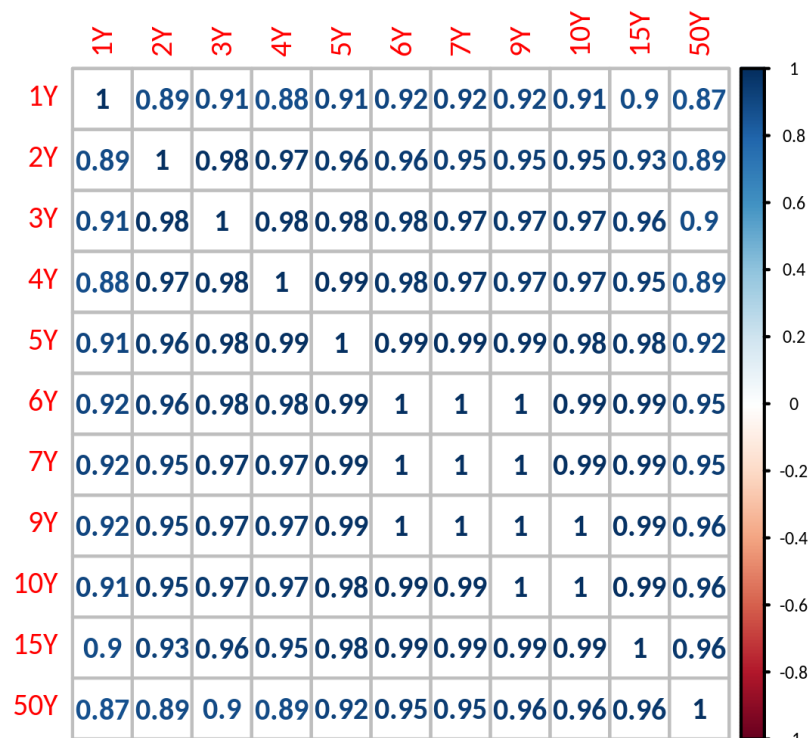
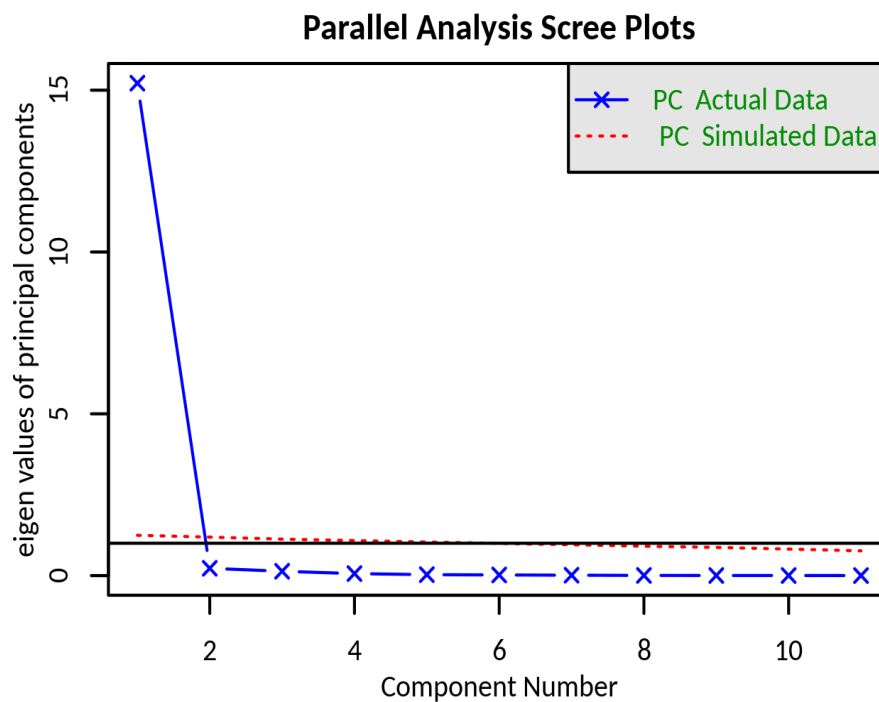
The essential sample characteristics of our dataset are summarized in TAB 1. There we find the mean of the yields, medians, standard deviations and as well their maximal values during the observed period from the 6-th September 2009 to the 26-th November 2017. This dates has no special meaning, they are selected only to have the same sample size of the weekly data for all maturities, how published on investing.com.

TAB. 1: Essential sample characteristics of the Czech government bond weekly yields in the period from the 6-th September 2009 to the 26-th November 2017. (Source: own processing, data by investing.com)

Bond maturity	Mean	Median	st deviation	Max
1 year	0.9034	0.5230	0.9262	3.0000
2 years	0.6156	0.3230	0.8408	2.5240
3 years	0.8413	0.5090	0.9920	3.5840
4 years	1.069	0.678	1.1138	3.581
5 years	1.274	0.992	1.1995	4.001
6 years	1.459	1.343	1.2366	4.134
7 years	1.669	1.537	1.3325	4.676
9 years	1.993	1.954	1.3608	4.925
10 years	2.141	2.010	1.3727	5.082
15 years	2.516	2.296	1.3958	5.799
50 years	3.651	4.002	1.2245	5.793

2 Results

The first step in the analysis is to compute the correlation matrix of yields for all maturities. Because a limited space, the resulting correlation matrix is illustrated as picture on FIG 1. There we can observe surprisingly high correlation coefficients between all maturities. In order to determine the number of components retained, we draw a scree plot. The result is illustrated on FIG 2. We easily see, that all three methods state only one principal component to be sufficient to explain the variability of the yields. Really, we have only one eigenvalue $\lambda_1=15.216$, which is greater than 1. On FIG 2 is also good visible the sharp break at the second eigenvalue.

FIG. 1: Correlation matrix of the weekly yields for all maturities. (Source: own processing).**FIG. 2: The scree plot for stating the number of the principal components. (Source: own processing).**

All numerical calculations have been made using the R statistical programming environment with the psych package. So we obtained the results that are summarized in TAB 2. Some minor inaccuracies between the factor loadings and communalities are caused by rounding errors. For the portion of

variance that is explained by the single factor we got 96% and the corresponding root mean square residuals value (RMSR) of the model is 0.01.

TAB. 2: Results of the principal component method with one explaining factor. (Source: own calculations.)

Maturity	Loadings	Communalities	Uniqueness
1 year	0.93	0.87	0.1337
2 years	0.97	0.94	0.0614
3 years	0.98	0.97	0.0341
4 years	0.98	0.96	0.0393
5 years	0.99	0.99	0.0135
6 years	1	0.99	0.0070
7 years	1	0.99	0.0087
9 years	1	0.99	0.0098
10 years	0.99	0.99	0.0106
15 years	0.99	0.97	0.0256
50 years	0.95	0.91	0.0940

This single factor can be interpreted as explaining different type of change in the shape of yield curve. It affects all maturities by very similar amount and also in the same direction. Therefore, we can interpret this factor as a parallel shift. The changes are not exactly parallel since the effect at the short and very long maturities is less than at the middle maturities from 5 to 10 years.

Conclusion

In this paper, we examine the common factor structure of government bond returns corresponding to the eleven maturities in the Czech bond market. We have used principal components analysis to identify the factors which are responsible for volatility of the yield curve. The study finds that the first principal component explains a major part of the total variance of interest rate changes. Compared with overseas studies (see for example Bolder, Johnson & Metzler, 2004, Ceballos 2014, Juneja 2012) only the shift factor is sufficient to explain substantial part of the variance in the yields in the Czech bond market, while the other require two or three factors. It means, that a single factor model can be commonly used for the pricing purposes and it allows efficient computation of the value of interest dependent cash flows. The result also indicates that it is going to be satisfactory for hedging. Therefore, the duration based immunization is good enough for the interest rate dependent portfolios.

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THE ANALYSIS OF THE COMPETENCIES AND PROFESSIONAL SKILLS IN THE PRESENTATION MATERIALS PREPARATION

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Abstract: *Communication and presenting skills belong to key competencies for the practice of managers, professionals as well as talents. Besides the art of presentation itself, the preparation of presentation materials is an important element as well. The aim of the conducted research was to assess the quality of the presentation materials prepared by the students of the management and IT fields. The results are based on an analysis of the set of the presentation materials prepared by the students within different subjects. The authors identify the key shortcomings in these materials. The authors focused on analyzing elements, such as the selection of the presentation tools, presentation structure or following the typographic rules.*

Keywords: *presentation skills, typesetting, presentation materials*

JEL classification: A20, A29, I20, I25

Grant affiliation:

Introduction

Dissemination of the results is one of the vitally important parts of any research activity. The dissemination of the research results can take place in various ways and it often requires the spoken presentation as well. Many works have been concerned in the rhetoric techniques (Cmíralová, 1992, Maříková, 2002), or in presentation strategies (Tracy, 2008).

However, besides the oral presentation, some form of visual presentation is very frequently necessary. Visual aids, such as the slides and computer overhead projections, are used as an important complement to the spoken word. On the other hand, much less attention is paid to the preparation of such materials, simply assuming that "any" powerpoint presentation is shared by everyone.

In the present paper, we are dealing with the preparation of such presentations. At first, we set out the main principles for the creation of such supporting materials. Further, based on the observation of many presentation materials, we analyze the occurrence and frequency of individual errors.

1 Basic principles of presentation preparation

A presentation without supporting material can be like an un-spiced meal. Supplementary audio-visual aids and handouts can liven up even the most mundane presentations, as long as they are not

overdone. In this part, we formulate guidelines for the effective preparation of presentations. These guidelines are based on some conclusions from quoted sources (Duarte, 2008) and on long-term experience, whether with the preparation of own presentations or observing and analyzing errors in student presentations. We gathered them in a few simple points, that we can assign as 10 commandments for the good presentation.

1. Choose the right tool. The decisive step for a successful presentation is the choice of a suitable tool. This one is quite often prescribed, but there are situations when we can choose. Each of them has its advantages and disadvantages that affect the possibility of using it. So it's good if we know more presentation tools.
2. Use sufficiently large and easily read fonts. It is important to choose sufficiently large fonts to ensure that everyone in the room can read the presented material. The unreadable material is worse than useless — it inspires a negative attitude by the audience to the work and, ultimately to the author. Simple fonts like Sans Serif and Tahoma are easier to read than fancier ones like Times New Roman. Avoid script, italic and novelty fonts. It is inappropriate to use more than two fonts at one time.
3. Leave neon in the 80s where it belongs. This means, choose font and color wisely. The presentation should have a font and color scheme, consider using a template and keep it the same throughout the entire presentation. Avoid red or dark font on dark backgrounds. Lighter backgrounds (with dark text) work best in bright environments. Display information in a way that makes complex information clear.
4. Keep the background simple and uncluttered. Do not fill white space with fancy backgrounds or logos - it can make the slide difficult to read.
5. Try to limit the material to 8 lines per slide. There can be only limited text and bullet points on the slides. Slides are not meant to be a legalized cheat sheet for the presentation, and the audience will tune the speaker out when reading directly from your bullets. The best way to display key information in the presentation slides and stay connected with the audience is by practicing the 4x4 rule. The 4x4 rule states that each slide should have no more than four bullets and each bullet should have no more than four words.
6. One idea per slide. There should be only one main idea on each slide which is stated in the heading. Therefore, it is necessary to be sure that each bullet point relates to the main idea. If it is impossible to fit all supporting points on one slide then move on to another. In such case, we can use a continued heading.
7. Limit tables to 4 rows/columns. Remember that unreadable content is worse than useless. Many large tables can be displayed more effectively as graphs.
8. Headlines vs. Headings It is better to take advantage of the limited space by creating the slide titles to read more like headlines instead of headings. It enables to devote valuable space below to other information. Headlines also make the slides easier to understand for the audience.
9. Keep in mind the time limit for your presentation. The ability to speak within certain time constraints is a crucial skill for any presenter. Care must be taken to find out the exact time limitations. One page of double-spaced 10 point print with 2.5 cm margins takes just over one minute to read. Therefore, the notes for a ten-minute presentation should not exceed eight pages in this format. Generally, that means no more than 1 slide per minute. If microphones are used it cause slower speaking.

10. Use animation wisely. Keep in mind, that animations are often time-consuming, so do not use animation techniques just for the sake of showing you can use them. The same remains valid as well for transitions. Moreover, the animation schemes and transition sounds will only distract the listeners from the ideas.

2 Methodology

This paper presents the results of the author's observations and analyzing the student presentation materials at seminars or at defending the bachelor or diploma thesis. The observations have been realized on two faculties both providing the managerial fields of study. Attention was paid especially to breaking the rules stated in the ten commandments above.

The research sample consists of 168 observations of the thesis defenses and 346 observations of the presentations at the seminars, that means 514 altogether. In all cases, it was presentations in the length from 15 to 20 minutes. We did not concern in the communication skills and verbal expression of the students but in the correctness of their supporting presentation materials. We adopt the observation as the main tool for the research but some additional information we got by direct questioning.

3 Results and findings

We will present our finding in the order that corresponds with our commandments. The numerical results of our observations are summarized in TAB 1 and TAB 2. TAB 1 is devoted to the analysis of the used tools and TAB 2 brings result about breaking the rules 2–10.

TAB. 1: The use of various presentation tools

Tool	Seminaries		Defenses		Altogether	
	Number	%	Number	%	Number	%
MS Powerpoint	315	91,04 %	140	83,33 %	455	88,52 %
Beamer	15	4,34 %	14	8,33 %	29	5,64 %
LO Impress	4	1,16 %	6	3,57 %	10	1,95 %
Other	12	3,47 %	8	4,76 %	20	3,89 %

3.1 Choosing the presentation tool

We have observed, that big majority of students have used the MS Powerpoint presentation. We searched for the causes by direct questioning. They declared only one simple reason: “We already know this tool” and very frequently also “I don't know another”. We consider knowing the tool as a good reason but what disturbing is, they did not consider the functions and abilities of the tool and are not interested in the substitutes.

3.2 The appearance of the slides

In the slides appearance evaluation, we were interested in saving the rules 2–4. The most frequently broken rule was using insufficiently large fonts on the slides. This is closely related to the effort to put as much text as possible. A large share of students still understands the presentation as a legalized cheat sheet. The presentation is so often converted to reading a slide. They as well frequently combine different fonts, use serified fonts. There is also a lot of color and color effects in the text,

including blinking that is distracting. The smallest share has mistakes associated with inappropriate background selection and loss of the content in the textures. The exact numbers are summarized in the first three rows of TAB 2.

TAB. 2: The use of various presentation tools

Rule number	Seminaries		Defenses		Altogether	
	Breaks	%	Breaks	%	Breaks	%
2	289	83,53 %	124	73,81 %	413	80,35 %
3	215	62,14 %	74	44,05 %	289	56,23 %
4	231	66,76 %	96	57,14 %	327	63,62 %
5	281	81,21 %	126	75,00 %	407	79,18 %
6	162	46,82 %	62	36,90 %	224	43,58 %
7	273	78,90 %	128	76,19 %	401	78,02 %
8	52	15,03 %	21	12,50 %	73	14,20 %
9	302	87,28 %	138	82,14 %	440	85,60 %
10	43	12,43 %	13	7,74 %	56	10,89 %

3.3 Limits for material per slide

Here is noticeable again that by filling the slides with the content itself, the slides are understood as the substitute for the knowledge. Trying to include as many texts as possible leads to violation of the 8-line limit and a limited number of the bullets per page. Similarly, when presenting the tabular data, there is an obvious attempt to reproduce in detail the complete tables. This causes their unacceptable diminution and loss of readability of their content. No difficulties have been observed in keeping one idea per slide. We have rather observe the opposite situation when one idea spreads over two or more slides.

3.4 Headings

Site headings do not cause more problems. Their brevity and simplicity are enforced by the pre-setting in the available presentation templates, provided with the program package. Students are mostly not interested in changing them.

3.5 Keeping the time limits

Observing the time limit is perhaps the toughest rule to fill. This is mainly due to the inexperience of students with presenting. It turns out that it is extremely difficult for them to accurately estimate how much material they are able to present in a short time. Usually, instead of presenting ideas, they tend to have a detailed presentation of their entire work, which is, of course, impossible.

3.6 Animations

Animations are virtually absent in student presentations. By direct questioning, we have verified that the main reason is not their reasonable limitation, but the complexity of the preparation. In any case, however, their minimum occurrence in time-limited presentations is a positive factor. Therefore, the last line in TAB 2 shows only the occurrence of animations in presentations.

As can be seen from TAB 2 in the defense of the bachelor and diploma thesis, the number of errors has decreased. This can be explained by gaining some experience in presenting seminar papers

during the study. The second important factor is that students are to a certain extent respecting guidelines from consultations with the supervisor.

Conclusion

Our research has brought us two important insights. One is that students mostly do not respect, or even do not know the principles of proper preparation of presentation materials. These sins are in particular the result of incorrect training in their previous education. Informatics teachings are often geared to mastering as many functionalities of the applications as possible. However, it does not provide any guidance on how should look the desired output.

The second fact that was shown by the results of the research is that fewer violations appear in all rules when preparing presentations for the purposes of defending the final thesis than in seminar papers. Though these findings are relatively positive, we still cannot be satisfied with the result.

Therefore, in both faculties, there were introduced subjects dealing with computer typesetting and typography as well as the electronic presentation of documents. The participants of these courses are a move to a better, but in this academic year, the first attendants get to the defense. It is therefore not possible to give an exact analysis of the improvements.

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ON THE DURABILITY OF KNOWLEDGE IN FINANCIAL AND INVESTMENT DECISION MAKING

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Abstract: *This article presents the results of the research on the durability of student knowledge in financial and investment decision making. The research was carried out in the form of a questionnaire survey on a selected sample of university students. The data obtained were analyzed by statistical methods and confirmed the presumption that long-term systematic education is required to maintain the competencies in the financial decision-making.*

Keywords: *financial literacy, financial education, finance, Industry 4.0.*

JEL classification: A20, A21, A23

Grant affiliation: FVG/40/2018

Introduction

Education leads to the positive changes across whole Europe and as well across the world. The justness of financial education stems not only from working life but also from personal life. Our lives are becoming more and more complex, and we need much more knowledge in the area of financial and investment decision making than was necessary for our parents. This need is concretized in the notion of financial literacy and does not concern only the younger generation.

In recent years, we have seen significant changes in higher education: traditional study programs are being modernized. Students have access to study materials through new technology, and teaching methods are changing. "Worldwide demand for higher education is expected to grow exponentially from 100 million students to 250 million by 2025" (European Commission (2017)). This is due to changes that are based on new technologies, which will completely change the qualitative requirements in the area of financial and investment decision making.

1 Age of robots and infrastructure of the knowledge

The ongoing changes will bring significant new challenges in terms of education, training, skills, lifelong learning, human resources management and the ability to manage complex job transitions throughout the life of an individual. At the same time, these challenges do not represent any novelty for us. As an example, we can mention the return to a dual education system that offers a combination of education and immediate practical experience. In countries such as Austria or Germany, where the system is fully functional, it facilitates the transition from education to employment to young people in particular. Based on the past, this system was on high-level and fully

used in the educational system of former Czechoslovakia before 1991. After a large decline of industrial enterprises and agricultural cooperatives, there was nobody to transmit special training and therefore the system has disappeared. Currently, the Czech Republic and the Czech Republic are returning to this combined education system (e.g. engineering, automotive).

Dynamic careers with periodic requalifying and lifelong learning will become trends in the future working life. This is the reason why interdisciplinary competencies and creative skills are at the forefront today. „There is increasing global competition for skills and, although most European countries remain near the top of international skills rankings, some have been overtaken by countries in Asia, Oceania and the Middle East“ (EC, 2017).

In the 21st century, universities have a unique role in education and the area of skills acquisition. This is evidenced by the prognosis confirming the trend of increasing number of jobs requiring a high level of education". In the EU between 2006 and 2020, the proportion of jobs requiring a high level of education will increase, from 25.1% to 31.3%. The number of jobs requiring intermediate qualification should also slightly increase from 48.3% to 50.1%. This would represent between 38.8 and 52.4 million jobs at high and medium levels of education. At the same time, the proportion of jobs requiring a low level of education would decrease from 26.2% to 18.5%, despite 10 million jobs on this level of education" (Švihlíková, 2014).

There are many pieces of research that confirm the close relationship between financial education and financial literacy (Lusardi, Yakoboski & Oggero, 2017, Fernandes, Lynch & Netemeyer, 2014). Large extensive researches, such as (Lusardi, & Mitchel, 2007), have as well confirmed the existence of a strong link between financial literacy and the well-being of households. The works of (Nicolini, Cude, & Chatterjee, 2013, Willis, 2011 and Huston, 2010) are devoted to searching for effective financial education. This article focuses on the durability of student knowledge in decision-making when it comes to financial and investment issues half-year after of completing the course.

2 Methods and data collection

Data was collected through a questionnaire survey. In our survey, we focused on the students of the managerial study program. Overall, we distributed 130 questionnaires among the students. Our aim was to verify that financial literacy skills need to be sustained and that they have a descending tendency when education is interrupted. Therefore, the questionnaires have been distributed twice, the first time immediately after finishing the course and second time with the half-year delay from enclosing the course. After sorting the questionnaires and removing the questionnaires with malicious or incomplete responses, we obtained a sample of 101 questionnaires. This means that the response rate was 77.7%.

In the first part of the questionnaire, we collected certain personal data such as gender, age, region of residence and similar. Other questions in this section asked students to report the importance they attach to financial literacy, their self-appraisal of their financial literacy and the way in which they make financial decisions.

The second part of the questionnaire was designed to test the actual level of respondents' financial literacy. This part of the questionnaire consisted of thirteen multiple-choice questions, each having four options, only one of which was correct. Each question included the option for students to say that they did not know or did not want to answer.

In order to analyze the influence of single factors on the results, we applied statistical tests. As the variances of the analyzed subsamples were different, we used the Welch t-test instead of the Student t test.

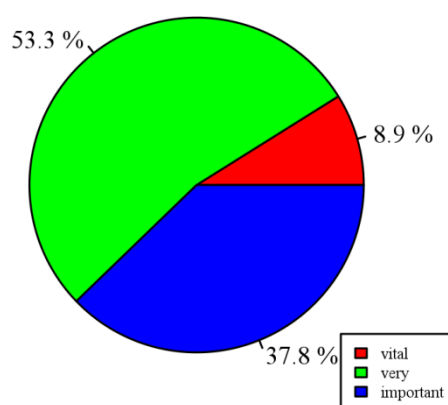
3 Results

Before we proceed to analyze the influence of the time delay factor on the level of financial literacy, we briefly evaluate the changes in the importance perceiving and in the self-reflection. The results are presented graphically on the pie charts in FIG 1 and FIG 2.

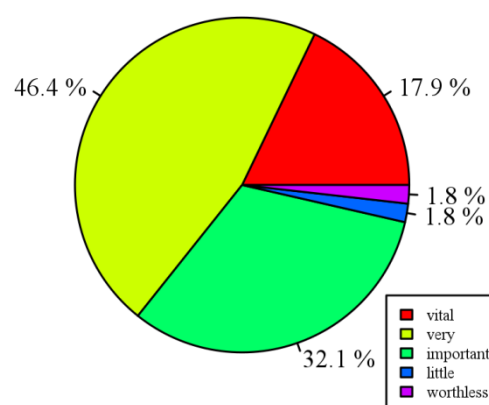
How we can observe from the graphs on FIG 1, immediately after finishing the course, all attendants consider the financial literacy to be important, very important or even vital. On the other hand, we can see, that after some time delay some students who find the financial literacy to be less important or unnecessary have emerged.

FIG. 1: The portions of the respondents with respect to their importance perceiving of the financial literacy. Left graph immediately after finishing the course, right with the half-year delay. Source: Own processing.

Percentage by the importance

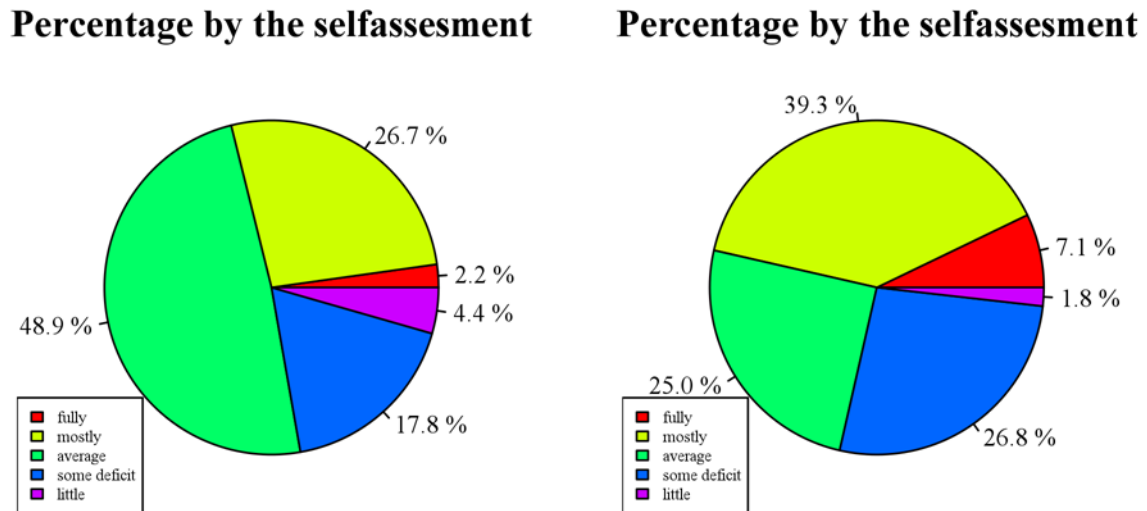


Percentage by the importance



Some structural changes we observe in self-appraisal. With a time delay, some decline in self-confidence and self-confidence may be observed. This was reflected in more than three times the growth of graduates who feel completely financially literate, and by one half has grown, the number of those who think they are mostly able to make the right decisions. On the contrary, the number of those who are considered themselves to be average declined by half, and the number of those who value themselves as very low-literate declined almost on one third. It is illustrated on FIG 2.

FIG. 2: The portions of the respondents with respect to their self-appraisal. Left graph immediately after finishing the course, right with the half-year delay. Source: Own processing.



TAB. 1: Numerical characteristics of the performance. (Source: own processing)

	Immediately after the course	With a half year delay
Mean	0.5076923	0.4684066
St. deviation	0.1029422	0.1804166
Median	0.5384615	0.4615385
Minimum	0.3076923	0.0769231
Maximum	0.7692308	0.8461538

TAB 2: Results of the one sided Welsch t-test that true difference in means immediately after completing the course and with one half-year delay is greater than 0. (Source: own processing)

	When measured	Mean	t-statistics	p-value
After completing	Immediately	50,77%	1,3746	0.08632
	Half-year delay	46,84%		

TAB 3: Numerical characteristics immediately after completing the course and with the half-year delay in the group with higher importance of financial literacy perceiving. (Source:own processing)

Characteristic	Immediately after the course	With half-year delay
Mean	0.5248869	0.5213675
St. deviation	0.09474962	0.1666244
Median	0.5384615	0.5384615
Maximum	0.7692308	0.8461538
Minimum	0.3076923	0.1538462

The essential numerical characteristics of our sample are summarized in TAB 1. Here is visible, that average performance has declined for approximately 4 percent points. If we look at the median, the difference is even more significant and makes more than 7 percent points. We also see a major fall in the weakest result, which dropped from a level exceeding 30 percent to less than 8 percent. This can be confirmed also by statistical test of the hypothesis that in both cases the attendants have reached the same average performance against the one-side alternative that immediately after completing the course was the average performance greater. The result we see the TAB 2. It confirms, that we can reject the hypothesis with the confidence level almost 92%.

TAB 4: Numerical characteristics immediately after completing the course and with the half-year delay in the group with less importance of financial literacy perceiving. (Source:own processing)

Characteristic	Immediately after the course	With half-year delay
Mean	0.4972527	0.3730769
St. deviation	0.1161363	0.1679284
Median	0.5384615	0.3461538
Maximum	0.6153846	0.6923077
Minimum	0.3076923	0.0769231

TAB 5: Results of the one sided Welsch t-test that true difference in means immediately after completing the course and with one half-year delay is greater than 0. Tested in the group with more importance of financial literacy perceiving. (Source: own processing)

	When measured	Mean	t-statistics	p-value
After completing	Immediately	52,49%	-0,7298	0.7658
	Half-year delay	52,14%		

TAB 6: Results of the one sided Welsch t-test that true difference in means immediately after completing the course and with one half-year delay is greater than 0. Tested in the group with less importance of financial literacy perceiving. (Source: own processing)

	When measured	Mean	t-statistics	p-value
After completing	Immediately	49,73%	3.2341	0.001365
	Half-year delay	37,31%		

If we sort the data according to the importance that graduates attribute to financial literacy, we get two sub-samples. Their characteristics are summarized in TAB 3 and TAB 4. It is clear from these tables that attendants who attribute financial literacy sufficient importance are able to maintain their skills. On the contrary, those who underestimate its importance are marked by a drop in their abilities. It is just this group, which also causes an overall decrease in the average result.

These assertions can be confirmed again by the statistical test of the equation of average performance hypothesis. While in the group of graduates who attribute financial literacy to high importance, we cannot reject the null hypothesis, in the second group, we reject it with a 99% confidence level. The results of the test are summarized in TAB 5 and TAB 6.

Conclusion

The aim of the research was to verify the durability of students' knowledge in financial and investment decision making. In line with previous research (Rybička & Kozubík, 2017 and Kozubík & Kozubíková & Rybička, 2017), it was again confirmed that those students who attach importance to financial literacy achieve better results. At the same time, the hypothesis was confirmed that breaking of the continuity of education leads to a decrease in the overall level of financial literacy. These results lead to the conclusion that the development of competences in financial decision-making should continue without interruption throughout the period when young people are making decisions that will frequently affect their entire future life.

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DETERMINANTS OF RUNNING A BUSINESS - EXAMPLE OF POLAND AND THE CZECH REPUBLIC

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Abstract: *Dynamic changes in the global economy bring new challenges to enterprises. It is extremely important to determine the factors limiting enterprise growth and determining its development. The reality that will be created by the country can facilitate and stimulate undertaking economic activity, or on the contrary, make it difficult to act. The aim of this publication will be to compare the business environment in Poland and Czech Republic. On the basis of data published by the World Bank Group in the Easy of Doing Business reports, a comparative analysis of indicators will be made. The study will cover such categories of business activities as: setting up a business, obtaining building permits, connecting to electricity networks, registering ownership, availability of loans, investment protection, tax regulations, foreign trade, contract enforcement, liquidation of an enterprise.*

Keywords: *enterprise, competitiveness, ease of doing business index.*

JEL classification: Q57, P52

Grant affiliation: Czestochowa University of Technology Grant.

Introduction

Economic development is an important element of the social functioning of nations. Changes in the global economy have been very dynamic in recent years. Each development comes with the need to adapt enterprises to the new economic situation. Enterprises must react quickly to the transformation taking place in the global economy. Changes in the external environment cause new creative opportunities to appear, that carry quite a high risk.

An enterprise is an entity separated legally, organizationally, technically, productively and economically, conducting business activity, being an entity of fundamental importance in a market economy. Entrepreneurship is a source of understanding, cognition and making optimal decisions. It allows to realistically assess the company's situation on the market, achieve the set goals and achieve a competitive advantage. Competitiveness can be defined as the ability to gain advantage over others (Nový, Zouharová, 2016, p. 348-354).

The enterprise is slightly isolated from the environment. According to the theory of social exchange, the success of the organization depends on the ability to use the properties of the environment. (Okřeǳlicka, Lemańska-Majdzik, 2017, p. 615-621). The competitiveness of enterprises depends on internal factors, that constitute management decision variables, as well as external factors resulting from the environment (Zieliński, 2015, p. 13).

As a result of the increased complexity and variability of the environment, business entities have less and less opportunities to influence them. In addition, the level of dependence of companies on external operating conditions increases to a greater extent (Mitek, Miciuła, 2012, p. 53-66). Their functioning depends on determinants remaining beyond their influence. It is worth knowing what the conditions for enterprise functioning in individual countries are. For this reason, an example of two neighboring countries will be analyzed, having the same time of functioning as part of a free market economy and a similar level of economic development. The comparative analysis which is based on the data published by the World Bank in the Easy of Doing Business reports will be a tool in this process.

1 Ease of Doing Business Index – methodology

Doing Business is a ratio developed by the World Bank Group, regarding the conditions of conducting business in a given country. By collecting and comprehensively analyzing comparable quantitative data provided by the business environment (representatives of authorities, lawyers, consultants, accountants and other professionals), objective reports are created. These rankings allow you to compare economies from different regions in a selected period of time. Doing Business encourages economies to compete for more effective regulation, offers tangible reference points for reforms, and serves as a source of information for researchers, journalists, the private sector and other interested in the booming economy. The first Doing Business Report, published in 2003, included 5 sets of indicators and 133 economies. In 2018, the report already includes 10 sets of indicators (see table 1) and 190 economies.

The methodology applied to the needs of Doing Business has been prepared with the aim of developing a simple to repeat way of comparing business running regulations. It has its advantages and limitations. Despite many efforts to maintain objectivity, this ranking is not without flaws. For example, this study does not include measuring the quality of fiscal management, macroeconomic stability, political security, skill level or qualifications of the workforce, the level of corruption and the condition of the infrastructure.

TAB. 1: Description of the components of the indicator

Topic	Indicator
Starting a Business	Procedure – (number) Time – (days) Cost – (% of income per capita) Paid-in min. capital (% of income per capita)
Dealing with Construction Permits	Procedures (number) Time (days) Cost (% of warehouse value) Building quality control index (0-15)
Getting Electricity	Procedure – (number) Time – (days) Cost – (% of income per capita) Reliability of supply and transparency of tariff index (0-8)
Registering Property	Procedures (number) Time (days) Cost (% of property value) Quality of the land administration index (0-30)
Getting Credit	Strength of legal rights index (0-12) Depth of credit information index (0-8) Credit registry coverage (% of adults) Credit bureau coverage (% of adults)
Protecting Minority Investors	Extent of conflict of interest regulation index (0-10) Extent of shareholder governance index (0-10)
Paying Taxes	Payments (number per year) Time (hours per year) Total tax and contribution rate (% of profit) Postfiling index (0-100)
Trading across Borders	Time to export: Border compliance (hours) Cost to export: Border compliance (USD) Time to export: Documentary compliance (hours) Cost to export: Documentary compliance (USD) Time to import: Border compliance (hours) Cost to import: Border compliance (USD) Time to import: Documentary compliance (hours) Cost to import: Documentary compliance (USD)
Enforcing Contracts	Time (days) Cost (% of claim value) Quality of judicial processes index (0-18)
Resolving Insolvency	Recovery rate (cents on the dollar) Time (years) Cost (% of estate) Outcome (0 as piecemeal sale and 1 as going concern) Strength of insolvency framework index (0-16)

Source: based on <http://www.doingbusiness.org> [05.05.18.].

2 Assessment of the business environment in Poland and the Czech Republic

In the World Bank's Doing Business report, which compares the business environment in 190 countries around the world, both Poland and Czech Republic ranked the highest in 2017. In the case of the Czech Republic, the promotion was significant, as compared to 2016, there was an increase of 9 positions, thanks to which the Czech Republic took the 27th place. On the other hand, Poland advanced by 1 position, taking the 24th place. In 2018 both Poland and the Czech Republic dropped by 3 positions in the ranking, taking the 27th and the 30th place, respectively, although the numerical index was slightly better than last year (for Poland 77.12 in Doing Business 2017 towards 77.30 in the next, while for the Czech Republic 77.24 in the report from 2017 to 77.27 in Doing Business 2018).

TAB. 2: Easy of Doing Business Index in Poland and the Czech Republic in 2016-2017

Ranking	Poland			Czech Republic		
	2018	2017	2016	2018	2017	2016
Ease of Doing Business Rank	27	24	25	30	27	36
Starting a Business	120	107	85	81	81	93
Dealing with Construction Permits	41	46	52	127	130	127
Getting Electricity	54	46	49	15	13	42
Registering Property	38	38	41	32	31	37
Getting Credit	29	20	19	42	32	28
Protecting Minority Investors	51	42	49	62	53	57
Paying Taxes	51	47	58	53	53	122
Trading across Borders	1	1	55	1	1	72
Enforcing Contracts	55	55	1	91	68	1
Resolving Insolvency	22	27	32	25	26	22

Source: based on <http://www.doingbusiness.org> [05.05.18].

The position of Poland against the background of the European Union in the rankings does not fall very good. You can see the need for change (Piersiala, 2016, p. 374-382). In the analyzed period, Poland was the least favorable compared to other countries in terms of regulations regarding time and procedures related to starting a business. The systematic decline in this position in the ranking was primarily due to the high cost of starting a business, a high level of capital required, and a long period associated with setting up a business. Although for several years there is a possibility of a

much faster and at the same time cheaper, Internet registration of a company, the so-called “S24”, still not enough entrepreneurs are aware of that, which unfortunately shows that it is not enough to pass laws, but it is also necessary to implement them effectively. It should be noted, that entrepreneurs are more likely to start a business in countries where there are fewer barriers to enter the market. This means, that the basic factor supporting formal entrepreneurship is the simplest process of starting a business, which entails other economic benefits, because there is a positive relationship between entrepreneurship, economic growth and the creation of new jobs.

In the reports from 2017-2018, in the field of establishing a business activity, the Czech Republic ranks much higher, because they are staying on the 81st place (after advancing 12 positions compared to 2016). In this country, after lowering the minimum capital requirement, it was also easier to start a business by reducing costs and time needed to register a company in business courts, enabling notaries to register companies directly via the online system, which had a very positive impact on the level of the analyzed ratio.

Similar to other countries, in Poland, the process of obtaining building permits was eased from the necessity to attach to the construction project, among others, delivery guarantee and media connection conditions. As a result of these changes, the position of Poland in this area has been systematically improving, because taking into account the first and last year of the survey, there was a promotion of 11 positions, from 52nd to 41st. The situation in the Czech Republic is quite different, because it is in this respect that the country has ranked the lowest, only at the 130th position in 2017 and in the other two years only by 3 positions higher. The reason for such a low evaluation is undoubtedly a large number of procedures (according to the 2018 report, there are 21), filling them in makes the process of obtaining construction permits very time-consuming and amounts to as many as 247 days.

In line with the World Bank’s announcement, the significant impact on Poland’s position in the 2017 and also later in the following years was the restructuring law in force since the beginning of 2016, facilitating creditors’ claims, accelerating proceedings in this area and giving the parties a greater influence on the proceedings. In addition, the new regulations introduced the principle of the priority of restructuring the company before its liquidation, which undoubtedly influenced positively the meter related to the liquidation of the company.

One of the elements hindering business operations both in Poland and in the Czech Republic, are taxes and requirements related to meeting tax obligations. In this respect, according to the latest report, Poland ranks 51st and the Czech Republic is 2 places lower. The Polish entrepreneur must meet 7 tax requirements making up a total of 40.5% of the company’s profits, dedicating 260 hours a year. However, in the Czech Republic, for a total of 8 different tax obligations, a little less than 248 hours should be reserved, however payments constitute 50% of the entrepreneur’s profits.

Although in the Czech Republic, the time needed to enforce contractual obligations is long (611 days), and in Poland even longer (685 days), however, taking related costs into account, expressed as a percentage of the claim, which in Poland is 19.4%, while in the Czech Republic 33.8%, means that Poland in this area in the reports from 2017-2018 took the same 55th position, while the Czech Republic after a significant improvement was only on 91st place in 2018.

Both countries have been a leader in the field of foreign trade for two years, but it should be emphasized that the first place in this category is occupied by several other countries.

Conclusion

In conclusion, it should be emphasized that the aim of the World Bank's report is to encourage individual countries to improve the conditions of running a business. By jumping into areas where results should be improved, it is conducive to creating a friendly business environment in a given country.

With each passing year, it is more and more difficult to get promoted in the ranking, because in individual countries, entrepreneurs are being treated in an equally intense way and creating conditions that facilitate running a business. In 2018, both Poland and Czech Republic performed slightly better than in the previous year, however, other countries covered by the analysis significantly improved the business environment, which is why the position of both countries decreased slightly. The constant improvement of business conditions means that despite the decline in the measure of freedom of economic activity, the surveyed countries are still in the forefront in this area and are still catching up to the most business-friendly economies. In the last report, covering the period between July 2016 and June 2017, 119 countries carried out 264 reforms, improving the conditions for creating new jobs, investing and competition. Despite the fact that Polish and Czech authorities undertake various activities.

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HOW CAN SOCIAL ENTERPRISES BENEFIT FROM CONTENT MARKETING? CUSTOMER PSYCHOLOGY

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Abstract: *In the corporate websites, blogs, and social networks era, content marketing is a tool that can help businesses build close relationships with their customers and employees. This approach could play an important role especially for social enterprises that should be able to engage their customers by telling the company's story. The aim of this research is to analyze the frequency of use of content marketing by social enterprises in Olomouc region in the Czech Republic.*

Keywords: *content marketing, social enterprise, customer*

JEL classification: *M31, M14*

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Introduction

A concise definition of content marketing comes from S. Decker, according to which this approach is based on the production of non-product oriented content, which must be informative, instructive or entertaining, and is published to attract the attention of potential customers (Procházka, Řezníček, 2014). In this paper, we will focus on content marketing in the form of:

- entertaining or educational online articles
- tutorials
- case studies
- recipes
- blogging
- infographics
- podcasts
- videos
- online corporate magazines
- eBooks
- images
- webinars

Content marketing is often associated with storytelling, which can be a key tool for engaging the customer. Pulizzi (2012), who focuses on the fact that storytelling is at the heart of modern marketing for many companies, deals with this theme. Storytelling from the point of view of customer psychology are highlighted by Procházka and Řezníček (2014), according to who stories

help to understand the information, influence the mind of the reader, stimulate emotions and thus help to sell the products of the company. Storytelling as an important tool is also mentioned by Woodside (2010). Content shared by social media from the point of view of psychological impact on the customer was reviewed by Ashley and Tuten (2014). Creating high-quality content is described by Jefferson and Tanton (2015). Viral marketing, which can be considered a content marketing in many cases, was analyzed by Jason and Dempsey (2010), who focused on factors that motivate people to communicate the content in this way. Holliman and Rowley (2010) argue that digital content marketing requires a change of approach described as "from selling to helping," when the sharing of useful information indirectly related to the product being sold is a typical feature of content marketing.

In this paper, we will deal with content marketing used by social enterprises. For social enterprise definition, the principles and indicators created by Ministry of Labour and Social Affairs in the Czech Republic are used. Social enterprise has to follow the social, economic and environmental principles and to fulfil these indicators:

- employees and/or members are regularly and systematically informed about the operation of the enterprise, about net income and about the fulfillment of the public benefit objectives
- people from disadvantaged groups account for more than 30% of employees and this information is publicly available (in case of work integration social enterprise)
- more than 50% of potential profits are reinvested in the development of a social enterprise and / or the fulfillment of the declared public benefit objectives, and information on the distribution and use of potential profits is publicly available
- management is independent of the external founder or owner
- revenue from sales of products and/or services accounts for at least 30% of the total revenue of the company
- an enterprise uses one of the standard methods of economic management and/or economic risk management
- the enterprise has formulated the principles of environmentally friendly business and fulfills them in practice
- the company communicates and cooperates with local subjects

The usefulness of content marketing for social enterprises is mentioned by Wegen (2014). However, social entrepreneurship is still being explored from other points of view. Some authors focus on customer's motivation to use social enterprise services (Allan, 2005, Hibbert, Hogg and Quinn, 2005). Other research deals with the motivation of social entrepreneurs (Braga, Proença and Ferreira, 2014). Social enterprises in the context of social investments and their measurement are examined by Ryan and Lyne (2008). Social firms are often supported from public sources, e.g. Oancea, Pospíšil and Drăgoescu (2017) focus on public investments. Starčević, Mijoč and Mijoč deals with the question of association between responsible business and financial performance (2016). Social business is explained by Yunus, the founder of Grameen Bank (2016).

And why can content marketing be useful for social enterprises?

- social enterprises in the Czech Republic fall into the category of micro, small and medium-sized companies

- they can't compete with large companies due to high outbound marketing costs
- inbound marketing is cheaper than outbound marketing
- using the content marketing, social enterprises should be able to better engage their customers

1 Methods and data

The aim of this research is to analyze content marketing in terms of its frequency of use by companies in Olomouc region in the Czech Republic.

Two hypotheses are then set in the research:

- H1: Most of social enterprises in Olomouc region in the Czech Republic that are indexed in the database of the Ministry of Labour and Social Affairs use corporate websites or social media profiles (these instruments are important for content marketing implementation)
- H2: These corporate websites or social media profiles are used as content marketing channels

The above mentioned hypotheses were verified on a sample of 17 social enterprises listed in the database and their communication channels. For testing H2, we searched for content marketing forms mentioned in Introduction of this paper. In this research, the content published on corporate websites or social media profiles that is not older than 1 year is included. We analyzed these social media profiles:

- Facebook
- YouTube
- Instagram

2 Results

2.1 Verification of hypothesis H1

Combinations of use of corporate websites or social media profiles by social enterprises in Olomouc region is as follows:

TAB. 1: Frequency of use of corporate websites or social media profiles by social enterprises in Olomouc region

Communication channel	Frequency
Only corporate websites	6
Only social media profiles	0
Corporate websites + social media profiles	11
Use of no channels	0

Source: Own research

Hypothesis H1 was proved.

2.2 Verification of hypothesis H2

As social enterprises fall into the category of micro, small and medium-sized companies that can not compete with large companies due to high outbound marketing costs, it may be a solution for these

companies to focus on inbound marketing, which includes content marketing. For social enterprises, content marketing can be particularly useful.

Frequency of use of content marketing by the analyzed social enterprises is as follows:

TAB 2: Number of social enterprises that use, or do not use content marketing

Use of content marketing	Number of social enterprises
Yes	2
No	15

Source: Own research

Hypothesis H2 was disproved.

Content marketing used by two social enterprises takes the form of educational online articles.

All of the other above-mentioned forms of content marketing, such as tutorials or recipes, infographics, videos or corporate magazines, are not too costly and suitable tools to make social enterprises more attractive. It is possible to find examples of the best practice in this area. Some forms of content marketing tools are used by Social Impact Award winners – social enterprises Pragulic and Forewear (blogging, educational videos and articles).

Conclusion

The aim of this research was to analyze content marketing in terms of its frequency of use by social enterprises operating in Olomouc region in the Czech Republic that are indexed in the database of the Ministry of Labour and Social Affairs. Based on the results of our research the first hypotheses, namely that most of these social enterprises use corporate websites and social media profiles that are important for implementation of content marketing, was proved. However, our second hypothesis – that these corporate websites and social media profiles are often used as content marketing tools, was disproved. Content marketing is scarcely used by social enterprises, although social enterprises could benefit from the content marketing forms like educational online articles, tutorials or recipes, infographics, videos or online corporate magazines, that are not too costly and could help to engage social enterprise customers.

The question remains, why content marketing is scarcely used by social enterprises. The answer may be the absence of marketing departments or specialists in SMEs or the specific attitude of social entrepreneurs who do not trust these forms of marketing.

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INTEGRATION OF „FEMININE“ AND „MASCULINE“ VALUES IN BUSINESS LEADERSHIP

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Abstract: *The aim of the paper is to document some recent changes in business leadership paradigm. Applying secondary research we prove that there is a growing social demand for a change in fundamental business leadership values. At the same time, more and more successful businesses are based on values which are referred to as "feminine". It has been recommended that leadership should be based on such "feminine" traits instead on traditional "masculine" traits. This knowledge is important for effective leadership and human resource management. On the other hand, some important questions arise: What do we really speak about when we use the terms "feminine" and "masculine"? Is it not just a stereotype which can have some negative consequences? Thus another aim of the paper is to propose some answers to these questions. We conclude that some changes in business leadership have been happening and this is beneficial for the whole society. However, we would not recommend using gender-related terms when discussing these shifts. We recommend finding more neutral terms.*

Keywords: *leadership, feminine traits, masculine traits, consciousness*

JEL classification: L21

Grant affiliation: IGA_FF_2018_002_The interpenetration of Eastern and Western thinking in the global economy and management.

Introduction

It is said (Kouzes & Posner, 2016) that only three things happen naturally in organizations – friction, confusion and underperformance; everything else requires leadership. Nowadays, the importance and role of leaders and leadership have been discussed from different points of view than it used to be. The reason is that our global society faces many serious problems. These problems are at least partly caused by businesses which generate financial wealth at the expense of social, cultural, environmental, intellectual, physical, and spiritual wellbeing. On the other hand, there is a growing group of businesses which are also profit-oriented, however, profit is neither their only nor main goal. Usually the first aim of their founders and the future leaders is to make the world a better place. They see some problem they want to solve or an opportunity to improve some aspect of the life of a broader or a narrower social group. Such companies are called conscious companies (Mackey & Sisodia, 2014) or companies of endearment (Sisodia, Sheth & Wolfe, 2014), but there are also other terms used. *Conscious company* or *company of endearment* are still-evolving and from the academic point of view not well-defined terms. In this text they are used as synonyms referring to businesses primary oriented to make the world a better place. Even though profit or increase in stock prices is not the main interest of these businesses, they are often very successful also in this area.

Companies like Costco, Alphabet (Google) or Starbucks can be given as a few examples (Wathen, 2017). So-called conscious leadership is one of the main pillars conscious businesses are built on.

Conscious leaders have and share an inspiring vision of the future and help people get there together. People today have individually more power and potential than in the past. Good leadership can enable these people to achieve extraordinary things, whereas poor leadership can make the same people accomplish little of value or even cause harm. However, according to Sisodia, Henry and Eckschmidt (2018) for too many people the primary motivations for being a leader are still power and material rewards. Bhat and Sisodia (2016) or Gerzema and D'Antonio (2013) suggest that it is because we have built systems that emphasize masculine values over feminine values. Both men and women have been conditioned to value leadership qualities traditionally considered masculine, e.g. hierarchy and individualism (Bhat & Sisodia, 2016). At the same time, the societies around the world have consistently devaluated qualities traditionally considered feminine. This one-sided notion of leadership causes problems like environmental degradation, social breakdown, or epidemics of stress and depression.

1 Masculine traits, feminine traits and the traits of an ideal leader

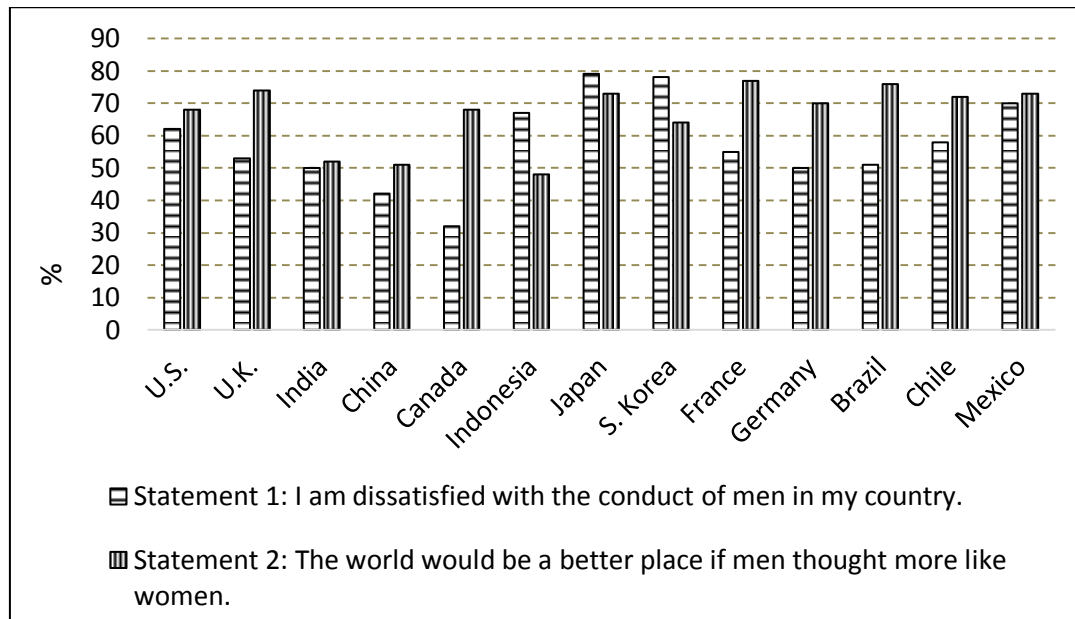
Speaking about masculine and feminine values and traits we should ask what do we actually mean? It is proved (UN Development Programme, 2013) that men really dominate economically and politically in all nations in the world. However, men and women are stereotyped and so are also masculine and feminine values. Moreover, the stereotypes could vary depending on different cultural values (Cuddy et al., 2015).

1.1. Masculine and feminine traits

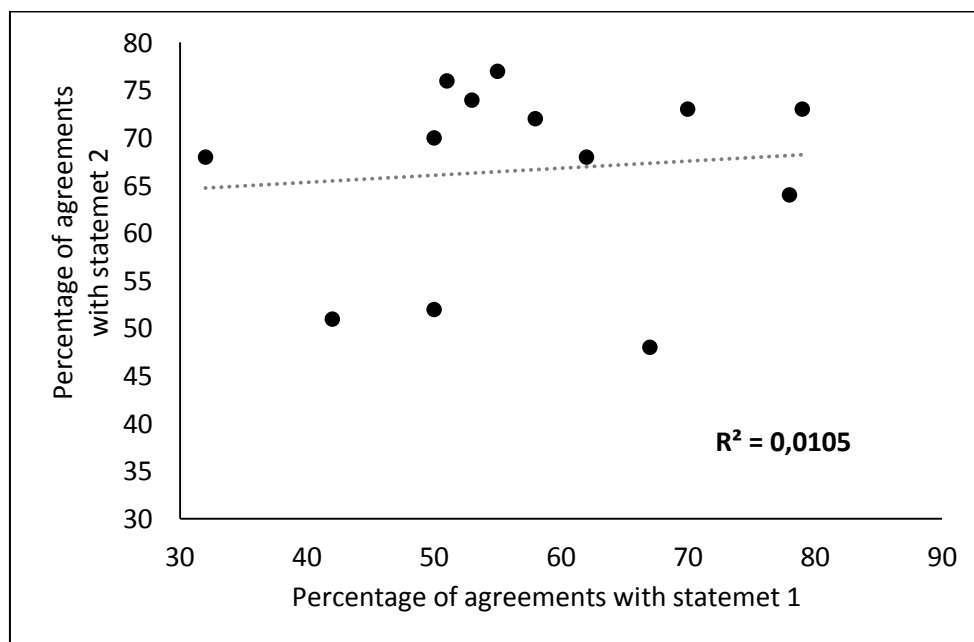
Between 2011 and 2013 Gerzema and D'Antonio (2013) conducted a special survey of sixty-four thousand people chosen to mirror the populations in thirteen countries – Brazil, Canada, Chile, China, France, Germany, India, Indonesia, Japan, Mexico, South Korea, the United Kingdom, and the United States. These countries generated almost two-thirds of the world's GDP. The aims of their survey were multifold. Further we present some parts of the survey and analyze the findings from other points of view then Gerzema and D'Antonio did.

One aim of the survey was to find how happy people are with the conduct of men in their countries. Another aim was whether they think that the world would be a better place if men thought more like women. The respondents were asked if they agree or disagree with the statement: "I am dissatisfied with the conduct of men in my country" (further statement 1). More than one half of the respondents agreed, specifically 57% (it was 54% among men). Then the respondents were asked if they agree with the statement: "The world would be a better place if men thought more like women" (further statement 2). In this case two thirds (66%) agreed (it was 63% among men). More detailed results (Gerzema & D'Antonio, 2013) are shown in figure 1.

In all countries more than a half of respondents expressed agreement with the statement 1, the only exception was Canada, where the agreement was about 30%. The highest agreement was achieved in Japan and South Korea – almost 80%. The agreement with the statement 2 was even higher – over 60% in ten countries and over 50% in two countries. Only in Indonesia agreed less than a half of respondents. The highest agreement, almost 80%, was achieved in France and Brazil.

FIG. 1: Agreement with statements

A question arises whether there is some relation between the percentage of agreement with the statement 1 and the percentage of agreement with the statement 2. It might be assumed that if people are not happy with the conduct of men in their countries, they would prefer that the men think more like women. The relation between the percentages of agreements is shown in figure 2.

FIG. 2: Relation between the percentages of agreements

It is apparent that there is no relation (correlation) between the percentages of agreements with the two statements. This is also confirmed by the value of correlation coefficient which is 0.1024. So even if most respondents were not happy with the conduct of men in their countries and at the same time most respondents agreed that the world would be a better place if the men thought more like women, it is not possible to conclude, that people would be happier with the conduct of men in their countries if the men thought more like women.

Gerzema and D'Antonio further examined which traits people consider masculine, feminine or neutral. They asked a half of their respondents in each country (it was 32 thousand people in total) to classify 123 different human behavioral traits as masculine, feminine, or neutral (Gerzema and D'Antonio speak about 125 traits, but in fact present 123 traits – author's note). The other half of respondents was given the same list but they were asked to rate the importance of these traits to certain concepts such as happiness, morality, success, and also leadership. Gerzema and D'Antonio found strong consistency across the countries in what traits were perceived masculine, feminine, or neutral. The lists of the traits (in alphabetical order) were as follows:

Masculine traits (40): Aggressive, Ambitious, Analytical, Arrogant, Assertive, Brave, Career oriented, Competent, Competitive, Confident, Consensus builder, Daring, Decisive, Devoted, Direct, Distinctive, Dominant, Driven, Dynamic, Focused, Gutsy, Hardworking, Independent, Innovative, Leader, Logical, Natural leader, Overbearing, Progressive, Proud, Resilient, Restrained, Rigid, Rugged, Selfish, Self-reliant, Straightforward, Strong, Stubborn, Unapproachable

Feminine traits (70): Adaptable, Affectionate, Articulate, Caring (Care was mentioned twice in the list of traits, in the publication (Gerzema & D'Antonio, 2013), they are just mentioned as Caring 1 and 2 - author's note), Charming, Committed, Community oriented, Conscientious, Cooperative, Creative, Curious, Dedicated, Dependable, Down to Earth, Emotional, Empathetic, Encouraging, Expressive, Family oriented, Free Spirited, Flexible, Friendly, Generous, Gentle, Giving, Glamorous, Good at multitasking, Good listener, Healthy, Helpful, Honest, Humble, Imaginative, Intuitive, Involved, Kind (Kindness was mentioned twice in the list of traits, in the same publication, they are just mentioned as Kind 1 and 2 - author's note), Loving, Loyal, Nimble, Nurturing, Obliging, Open to new ideas, Original, Passionate, Passive, Patient, Perceptive, Plans for future, Poised, Popular, Reasonable, Reliable, Selfless, Sensitive, Sensuous, Sincere, Social, Socially responsible, Stylish, Supportive, Team player, Trendy, Trustworthy, Understanding, Up to date, Unique, Upper class, Vulnerable

Neutral traits (13): Agile, Authentic, Candid, Carefree, Collaborative, Cunning, Different, Energetic, Fun, Intelligent, Simple, Traditional, Visionary

Only 13 traits out of 123 were classified as neutral. The respondents tended to decide if a trait is masculine or feminine. Most traits were classified as feminine, 70 out of 123. Table 1 shows the percentage distribution of the classification.

TAB. 1: Classification of traits according to respondents in %

Masculine	Neutral	Feminine
32%	11%	57%

1.2. The traits of an ideal leader

The other half of respondents was asked to choose the traits which are related to the above mentioned concepts. Further we deal with only with leadership. To describe ideal leadership the respondents choose the following traits (listed according to their significance, the most significant first): Patient, Expressive, Passionate, Intuitive, Flexible, Selfless, Loyal, Reasonable, Plans for future, Resilient, Independent, Proud, Analytical, Aggressive.

Gerzema and D'Antonio (2013) compared these 14 traits with the lists of feminine and masculine traits. They found that the first nine most strongly related traits are feminine and the remaining five values are masculine. They concluded that across the globe the society believes that an ideal modern way of leadership reflects more feminine traits than masculine traits. However, comparing the chosen percentage of feminine traits (table 1) with the nine feminine traits out of 14, it is obvious that the values are similar (nine is 64% out of 14). Nevertheless, Gerzema and D'Antonio advocate greater female participation in leadership in both public and private sphere. They describe feminine leadership as wise and quietly strong. The keys to success according to them are connectedness, humility, candor, patience, empathy, trustworthiness, openness, flexibility, vulnerability (the courage to be human and make mistakes), and balance. These qualities resemble according to them the character of the Greek goddess Athena.

2 Discussion

We believe that linking desirable leadership style and femininity so closely may give raise to undesirable consequences. Pullen and Vachhani (2018) point out that a very large body of literature was recently published on the topic of female leadership, however, the results are contradictory. They suggest that the potential for rethinking leadership begins by challenging the normalization of gender differences as they are expressed in the binary archetypes of masculine and feminine. They warn that the current conceptions of feminine leadership serve to strengthen gender stereotypes and this is problematic for leadership development.

Due Billing and Alvesson (2000) suggest that it is necessary to critically discuss the idea of gender labeling leadership as masculine or feminine, because using gender labels can have unfortunate consequences. One of them is the idea that a transformation of corporations and other organizations can be achieved just by getting more women into management. Moreover, it is not clear what people actually mean when they talk about masculinity and femininity. Masculinity and femininity are often viewed as antithesis. They agree that competitiveness should be supplemented by cooperation and intuition. But instead of the concepts of masculinity and femininity one could think about traits of subjectivities (orientations in thinking, feeling and valuing) that are potentially present in all persons.

Moreover, the way of "either Feminine – or Masculine" thinking is typical for western cultures. In Eastern cultures another way of thinking prevails, it is a "both Feminine and Masculine" way. Eastern cultures see an overlap between masculinity and femininity and persons who express a mix of feminine and masculine elements are even believed to be of a higher spiritual order (Gagné & Tweksbury, 1996). Nevertheless, in the research conducted by Gerzema and D'Antonio (2013) even in the Eastern countries the agreement that the world would be a better place if men thought more like women was quite strong. A deeper cross-cultural analysis of the problem is an important topic for the future research.

Conclusion

Nowadays new technology exemplified by the internet and social media has created and tightened interdependence among diverse individuals, organizations and cultures. Within this increased interdependence collaboration, teamwork and other forms of joint actions are of growing importance (Robinson, 2017). Leaders who easily identify mutual concerns of diverse groups can help in developing productive collaborative businesses.

When we compare the traits of an ideal leader and the keys to success reported by Gerzema and D'Antonio (2013) to the values conscious leadership is based on (Mackey & Sisodia, 2014), i.e. collaboration, caring, compassion, trust, accountability, transparency, integrity, and loyalty, we can see clear parallels. We believe that leadership matters and it matters today more than ever. We agree with Mackey and Sisodia (2014) that leadership must be based on the power of purpose, love, caring, and compassion. However, we think it is risky to link this concept strongly with feminine traits. We can call it conscious leadership or we can find another suitable neutral term. In any case, as Mackey and Sisodia (2014, p. 194) suggest, leadership should integrate the masculine and feminine, the heart and the mind, the spirit and the soul. It integrates Western systems and efficiency with Eastern wisdom and effectiveness.

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PUBLIC PROCUREMENT LAW AND THE CROWDING-OUT EFFECT, TAXES AND FINANCE

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Abstract: *Public procurement law lays out the processes and procedures that public agencies, authorities, or departments should follow when procuring work or service using public funds. The law stipulates the threshold at which public entities should use public procurement instead of private procurement. Effectively, public agencies spend a considerable amount of government revenue on public services. However, controversy exists on the relationship between government spending and private sector investment. It also remains unclear as to whether public procurement law improves financial management. Thus, the purpose of this study is to determine the relationship between public procurement law and the crowding-out effect, taxes, and finance. The study relies on quantitative research design where data was collected from a sample of 130 participants who comprised of German public procurement officials, German private investors, and the public. Using a questionnaire, the findings showed that public procurement law increases government spending that in turn crowds out the private sector instead of crowding-in. The need to fund projects often compels government to increase taxes and in turn incur budget deficits due to lack of adequate finances. However, public procurement laws enhance financial planning and control.*

Keywords: *public procurement law, crowding-out effect, financial management, taxation*

JEL classification: *K150, K230, O100*

Grant affiliation: *Not applicable.*

Introduction

Public procurement entails the acquisition of goods, works, and services by a public authority or a procuring entity with the aid of public funds. With the need to ensure a level playing field in the procurement process, countries have enacted public procurement laws to regulate the purchase of public services. The regulations govern the management and expenditure of public resources and effectively help in ensuring prudent financial management. However, the rise in public spending is considered to affect investment in the private sector in what is popularly known as crowding-out and crowding-in effect (Basar, Polat, & Oltulular, 2011; Devarajan Swaroop & Zou, 1996). Similarly, public procurement plays a critical role in financial management. It requires the concerned entities to follow the best practices and observe the principles of transparency, accountability, and efficiency in the procurement process. However, it remains unclear whether the public procurement regulation has a positive impact on financial management. Thus, this study aims to address the relation between public procurement and the crowding effect, finance, and taxes.

1 Objectives

1. To determine the relation between public procurement and the crowding-out effect.
2. To examine the relation between public procurement law and taxes.
3. To investigate the relation between public procurement law and finance.

2 Literature Review

2.1 Public Procurement Law

According to the World Bank Group (2018), most countries have enacted public procurement laws which outline the rules and processes that must be followed in public procurement. Most international financial organizations require countries to establish transparent and competitive bidding process in order to receive funding for infrastructural projects. According to the European Union (2018) over 250,000 public entities in the EU spend nearly 14% of the GDP on public services. In efforts to establish a level-playing field, the EU law lays out the harmonized procurement rules that stipulate the way public authorities purchase goods and service.

2.2 Public Procurement Law and Crowding-Out Effect and Taxes

Crowding out arises from expansionary fiscal actions. Increase in government spending through taxes or debt issuance may curtail investment in the private sector leading to a situation, where the sector feels crowded out (Carlson & Spencer, 1975). Further, Atukeren (2005) indicates that increased government expenditure arising from public procurement laws that requires government to publicly procure goods often leads to excessive borrowing in the capital markets. In turn, the interest rates increase due to the competition for the limited financial resources. As a result, the cost of obtaining capital increases for the private sector, which in turn slows down private investment (Erden & Holcombe, 2005). As Atukeren (2005) indicates, excessive government borrowing to finance public projects often makes the private sector unprofitable. The author indicates that investment in public infrastructure results to a positive impact on investment in the private sector in the short term. Atukeren (2005) also examined the connection between public procurement policies and private sector investment in green buildings. The study was guided by the need to determine whether a preference for public procurement stimulates the private sector to develop innovative products. They observed that public procurement policies motivate professionals to invest in their respective sectors and also fuels the demand for green buildings in the private sector. Thus, government procurement policies serve as a means for increasing investment in the public sector.

2.3 Public Procurement Law and Finances

Public procurement law and financial management are correlated. As Sarfo and Baah-Mintah (2003) indicate, financial management is comprised of all activities involved in obtaining and utilizing finances effectively. These activities include financial planning, financial control, and financial decision making. Public financial management lays emphasis on efficiency, effectiveness, and economy. Public procurement is critical towards achieving sound financial management by ensuring that there is value for money spent on public projects. According to Abebe (2014), public procurement regulations demand high standards of accountability, transparency, and efficiency to ensure efficient delivery of public services. The law calls on the respective parties to adopt the best practices in the management of public expenditure based on the three principles. Efficiency is critical as it ensures that the public obtains value for money. Transparency is also critical as it encourages

fair competition among the suppliers. Both transparency and accountability help in promoting integrity that, in turn, prevents corruption in the procurement process (Lynch & Kobo, 2013). Thus, these principles contribute towards efficient management of public resources and finances.

2.4 Summary and Gaps in the Studies

A close analysis of the literature shows the inconsistencies in the findings. While some studies argue that public procurement and by extension government spending creates the right conditions for private sector investment, other studies affirm the contrary. At the same time, some of the studies argue that public procurement squeezes funds from the public and compels governments to increase taxes in order to meet the costs of public procured services. It is also not clear as whether public procurement laws, improves the overall financial management in terms of planning, controlling, and debt management.

3 Methodology

The study adopted a quantitative research design. This approach was considered as the most valid one based on the purpose of the study. It would allow the researcher to collect data from a large sample size and make it possible to make generalizations. The quantitative approach was easy to operationalize and analyze the data due to the standardized data collection method (Mugenda & Mugenda, 1999). Over and above, the method was considered as the most appropriate based on the fact that the study aimed to establish relationships between the independent variable of public procurement law and dependent variables of crowding-out effect, taxes, and finance. The sample population included public procurement officials, economic experts, the public, and investors in the private sector. The diversity of the sample allowed the researcher to obtain more objective data by drawing responses from across the board. The selection of sample size was guided by Mugenda and Mugenda (2003) who indicates that a sample of between 10-30% of the targeted population is adequate for generalization. A total of 150 participants were recruited where some were from the Ministry of Education and others were investors in the private sector. With the need to ensure diversity in the sample, purposive sampling was used to access information from the right people. The respondents were conducted via email or telephone and informed about the purpose of the study. They were contacted to arrange for the convenient time to conduct the survey. They were then issued with the surveys through their respective email where they were required to fill them out and return completed survey forms via email. The researcher used closed ended questions to standardize the respondent's responses and reduce the time they would take to complete the questionnaires. Validity entails the degree to which the results reflect the issue or subject under study. It can also be defined as the extent to which a data collection instrument measures what it intends to measure (Ngechu, 2004). In this case, the validity of the findings was guaranteed by the use of the right survey instruments with questions that were tailored to answer the research questions. The reliability describes the degree to which the findings can be replicated by another study at a different point on the same population (Neuman, 2000). Reliability was guaranteed by the choice of a large sample size. In analyzing the data, the researcher checked the questionnaire for completeness to make ensure that the data was consistent. Descriptive and inferential statistics were used where the analyzed data was presented in tables.

4 Results

4.1 Demographic Information

A total of 150 participants were recruited and issued with the questionnaires. Out of this number only 130 of them completed and returned the surveys representing 87% response rate. This percentage implied that the data was significant for data analysis considering that Mugenda and Mugenda (2003) indicate that a 50% response rate and above is valid. Out of the 130 participants, 100 (77%) were men while the rest were women 30 (23%). A large portion of the respondents were officials in public procurement and finance departments in the Ministry of Education at 46%, followed by those in the private sector at 38%. The remaining were the public at 15.4%. Nearly 70% of the participants had a university education and above with the remaining having a college education and high school certificate in equal percentages. Indeed, this demographic information shows the diversity of the participants that collectively helped to improve the accuracy and generalizability of the findings.

TAB. 1: Showing Demographic Information

Variable		Number	Percentage
Gender	Male	100	77
	Female	30	23
Age	18-25	20	15
	26-35	50	38
	36-45	20	15
	46+	40	30
Occupation/ Designation	Public procurement officials in procurement and finance departments	60	46
	Private sector investors	50	38
	Public	20	15.4
Highest Education	University and above	90	69
	College	20	15
	High school	20	15
Nationality	German	110	84
	Expatriate	20	15

4.2 Relationship between Public Procurement Law and Crowding-out Effect

TAB. 2: Showing participant's responses on public procurement law and crowding effect

Question	Responses Yes		No	
	Number	%	Number	%
Public procurement law has streamlined the procurement process and enhanced the delivery of public services	110	84	20	15
Public procurement law has helped to develop key infrastructural facilities	80	62	50	38
Public procurement law has milked the financial resources that would be available to private investors	80	62	50	38
Public procurement law has reduced private investment	70	54	60	46

4.3 Relationship between Public Procurement Law and Taxes

TAB. 3: Showing participant's responses on the connection between public procurement and taxes

Question	Responses Yes		No	
	Number	%	Number	%
Public procurement law has increased taxation on the citizens	100	77	30	23
Public procurement law has led to a hike in the price of basic commodities to fund government spending on the projects	80	62	50	38

4.4 Relationship between Public Procurement Law and Finance

TAB. 4: Showing participant's responses on the impact of public procurement law on finance

Question	Responses Yes		No	
	Number	%	Number	%
Public procurement law has increased interest rates	80	62	50	38
Public procurement law has reduced the amount of money for the private sector	100	77	30	23
Public procurement law has increased budget deficits (poor financial debt management)	90	69	40	30.8
Public procurement law has improved financial planning	100	77%	30	23%
Public procurement law has improved financial control	90	69%	40	30.8%

5 Discussion

5.1 Public Procurement Law and Taxes

The public procurement law stipulates that government projects above a specified threshold should be awarded to contractors through the laid down processes and procedures. While procurement in the private sector is mainly funded by shareholders and the founders or owners, the funds utilized in public procurement originate from loans and grants as well as taxation. When asked whether the amount of taxes on the citizens have increased due to the public procurement law that requires government agencies, departments, and organizations to publicly procure goods and services, an overwhelming 77% of the respondents affirmed with a yes. This confirms that even the public procurement officials were aware of the deleterious impact of increased government spending on projects. In fact, one of the respondents indicated that the government cannot run without taxes from the citizens.

5.2 Public Procurement Law and Crowding-out Effect

When asked whether the public procurement law has resulted in crowding-out effect, 62% of the participants indicated that it has reduced the amount of financial resources available to the private sector, while another 54% stated that it has reduced investment in the private sector. The responses confirm the crowding effect that is brought about by increased government spending. The responses correspond with Carlson and Spencer (1975) who found out that increased government spending through taxes or debt issuance, often impedes investment in the private sector by making it feel crowded-out. For instance, massive government spending in the health sector would effectively kick out private investors due to the lack of demand for their service. If the citizens can receive adequate

health services at a lower cost, then it would not make any economic sense for a private investor to consider establishing a hospital to provide similar services. Thus, the feeling of being crowded-out arises as the investors perceive the government to have invaded in the sectors that should have been left for private investment. The responses from the participants conflict with those reported by Basar et al. (2011), Bazaumana (2004) and Miguel (1994) who observed that government spending increases investment in the private sector through a crowding-in effect.

5.3 Public Procurement Law and Finance

Regarding the relationship between the public procurement law and finance, 69% of the respondents indicated that it had an increased budget deficit. The law has made it mandatory for government agencies, departments, entities, and organizations to publicly procure goods. As a result, there is increased demand for money. When the government cannot secure financing from the taxes, it resorts to loans from international financial organizations and foreign countries. This phenomenon is quite evident in developing countries where governments have resorted to massive borrowing to finance public infrastructural projects. As a result, these countries have huge budget deficits. Similarly, when asked whether the public procurement law has reduced the financial resources available for the private sector, 77% of the respondents agreed. The competition for money increases when the government increases spending on infrastructure. As a result, the lenders prefer lending money to the government as opposed to private entities which in turn means that the private sector has a few resources to fuel investments. Similarly, the cost of capital increases, which is a disincentive to the private sector. When asked about the efficiency that public procurement law brings in the management of finances, an overwhelming majority indicated that it improves financial planning and control. The responses correspond with Maithya (2014) who found out that public procurement law, enhanced financial planning and control in public organizations. However, the present study established that public procurement regulations did not improve financial debt management. The fact that public procurement laws require the respective parties to follow the best practices and embrace the principle of accountability, transparency, fairness, and efficiency explains why the regulations enhance financial planning and control.

Conclusion

Public procurement law sets a level playing field for procuring public goods and works. The law requires public entities to embrace the best practices by observing the principles of fairness, accountability, and fairness, and efficiency. It is for this reason that it is considered as the cornerstone of efficient financial management in the public sector. However, it has unanticipated negative impacts on the private sector and taxation. The provision in the law that requires government entities, departments, or organizations to publicly procure services when they are of a certain threshold often leads to a crowding-out effect. As observed in this study, massive government spending must be funded by higher taxes or loans which implies that it increases taxation on the citizens and elevates the budget deficits. Similarly, by publicly procuring key services, governments edge out the private sector as they reduce the opportunities for the investor. Although critics argue that government spending provides a foundation through infrastructural projects that in turn increase the incentives for private investment, the present study found contrary results. Public procurement laws increase government spending where government borrow excessively from the capital market that in turn increases the interest rates that, in turn, increase the overall cost of capital for investors, which eventually lowers private invest. Over and above, public procurement law

improves financial planning and control, but it does not enhance financial debt management in public institutions and entities.

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THE APPLICATION OF THE LEAN MANAGEMENT APPROACH IN THE PROCESS OF EVOLUTION OF ENTERPRISE MANAGEMENT

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Abstract: *In the paper, there is depicted one of the techniques of lean management in the company, i.e. the 5S technique. There is presented in what way the implementation of the 5S technique triggers the evolution of enterprise management. The paper has been divided into two parts. In the first part, there has been approached the essence of the 5S technique along with the indication of stages of its implementation. The other part is the descriptive analysis concerning the implementation of the 5S in the surveyed manufacturing company. In the paper, there have been indicated the benefits resulting from the application of the approach in the area of the operation of the manufacturing company as well there has been proved the beneficial impact of the 5S technique on cost optimization in the manufacturing company.*

Keywords: *lean management, 5 S, waste, enterprise management*

JEL classification: *M11, M12, M21*

Grant affiliation:

Introduction

The changing environment of the company, growing competition and constant battle for customers force entrepreneurs to apply increasingly new methods and techniques of management supporting the maintenance of the company on the market (Lichtarski, 2007; Romanowska, 2016). In order to increase competitiveness, many enterprises refer to the Japanese philosophy, which provides some distinctive tools improving the organization of the implemented processes and affects the elimination of unnecessary costs (Azizi, Maleki, Moradi-Moghadam, Cruz-Machado, 2016). The overall concept consisting in cost-efficient management is known as *lean management* (Nogalski, Walentynowicz, 2004; Hamrol, 2000). Lean management of the company includes a set of actions which can be implemented in the enterprise for the benefit of cost optimization in response to the need to adjust the company to the market management conditions (Hamrol, 2018). The objective of the paper is to assess and learn the 5S technique in the area of enterprise management and to indicate its impact on cost optimization in the manufacturing company. In order to accomplish the objective of the paper, there have been used literature studies and descriptive analysis concerning the implementation of the 5S technique in the surveyed manufacturing company.

1 The 5S technique as the evolution of enterprise management

The subject literature concerning lean management of the enterprise is characterized by different tools and concepts in this field (Czekaj, Ziębicki, 2015; Koch, Misiurek, 2014). In spite of the fact that this subject matter is not new, the popularity of management is constantly evolving in Polish enterprises (Czekaj, 2010). In some enterprises operating in Poland, the concept of lean management transformed into a specific culture of these enterprises, particularly concerning large international companies which, through corporate trends, implemented these tools in their branches. However, many enterprises, especially the medium and small ones, require and need such a range of evolution of management in their daily operations (Dondela, Jelonek, 2016; Łęgowik-Świącik, Seroka-Stolka, 2014).

One of the main tools of the concept of lean management is the 5S technique (Hirano, 1995; Niewczas, 2010), which concerns the widely understood improvement of the workplace and is to simplify and increase the efficiency of the workplace. Moreover, the 5S technique affects an increase in security in the workplace and a reduction in waste (Nogalski, Szreder, Walentynowicz, 2005; Womack, Jones, 2003). The 5S technique (Borkowski, Jagusiak, 2007) amounts to the implementation of 5 principles in the enterprise relating to the workplace. In order to achieve the efficiency of the discussed technique, it is important to implement the subsequent actions gradually, continuously and in the specific order. The scope of activities and the name of the 5S technique comes from five Japanese words whose meaning is the following:

- **Seiri** (sort);
- **Seiton** (set in order);
- **Seiso** (shine/sweeping);
- **Seiketsu** (standardize);
- **Shitsuke** (sustain).

The order of the listed activities is significant since the first three ones are launched at the stage of the implementation of the 5S technique in the enterprise, whereas the subsequent two are used to maintain the introduced principles (Nabiałek, Olejniczak, 2015).

The first stage of the implementation of the 5S technique and, at the same time, the first S is the action of **seiri** (select or sort), which refers to the organization of objects close to the workplace so as to leave there only the items necessary to perform daily work. All unwanted objects must be removed from the workplace so as not to disturb or occupy the space for necessary objects. Only after selecting and sorting objects close to the workplace it is possible to proceed to the subsequent action of the 5S technique which is **seiton** (set in order). At this stage of the implementation of the 5S technique, the objects, which have been left in the workplace, must be distributed logically. For that purpose, there must be analyzed the frequency of the use of the other objects and they must be distributed in such a way that the items used the most frequently are the closest to the workplace and they are arranged in the order of their use. Assigning the objects some specific storage space is of the key importance for the efficiency of this technique.

Another S is **seiso** (shine), the activity which consists in sweeping the workplace, care for its aesthetics, cleanliness around the workplace, ergonomics and lighting. Therefore, this category of the 5S technique includes a set of activities to control the workplace along with the necessary inspection of the operated device or the part of the assembly line. The operation also affects the prevention of possible breakdowns.

Another action in the field of the 5S technique, i.e. **seiketsu** (standardize), is to maintain the implemented principles concerning the maintenance of law, order and cleanliness in the workplace operated. The implemented principles are written down in the form of procedures or instructions relating to work in the specific position. It is important that, in the process of formation of these procedures, there are involved the employees which the procedures actually refer to.

Shitsuke (sustain) is the last stage of the implementation of the 5S technique and consists in building a team focused on the maintenance of the technique of lean management of the enterprise. At this stage, there must be verified if the introduced principles are followed. There must be also created an efficient system of enforcement of staff loyalty towards the company and understanding and acceptance of the directions of evolution of its management. For this purpose, employees must be made aware that without their systematic actions and self-discipline the implementation of the 5S technique will not succeed. Employees must understand what role they play in the process of the implementation of lean management in the enterprise in which they work and what benefits for the company and themselves lean management will provide.

Summing up, the implementation of the 5S technique allows for creating a new organization culture of the company based on the evolution of enterprise management. Raising standards and stabilization of workplaces has a positive impact on improving the image of the company and reducing production costs, due to identification and elimination of waste, allows for increasing the performance of the company. The adjustment of workplaces to the performed actions allows for reducing the necessary production and administrative area and reducing downtimes, caused by disturbances resulting from poor organization of workplaces, allows for better control over the course of the manufacturing process (Łukasik, Puto, Brendzel-Skowera and Kościelniak, 2015; Nowakowska-Grunt, 2006).

2 The implementation of the 5S technique in the surveyed manufacturing company

The implementation of lean management in the surveyed manufacturing company was begun with the series of training courses for employees the aim of which was to familiarize the staff with the evolution of management in the company in which they work. Training sessions discussed in detail what tools of lean management will be implemented and what will be expected from employees (Czerska, 2002). The training also included the presentation of films which showed employees the effects of the implementation of the concept of *lean management* (Baskiewicz, 2017; Okręglicka, 2015) in other enterprises of the sector. The systematically conducted training blocks were also to reduce the possible panic and resentment among some of employees being afraid of the implemented tasks. Such gradual and slow implementation of lean management allowed for preparing employees for upcoming changes and thus employees accepted the evolution of management in their company.

The first stage of the implementation of the 5S technique, consisting in selecting and sorting objects located close to the workplace, was even welcomed by employees since it occurred that, in workplaces, there were too many unnecessary objects which impeded the movement in the workplace. This stage went smoothly since the division of objects situated next to the workplace into the necessary and unwanted ones did not cause difficulties to employees. However, the problem occurred in relation to the amount of unnecessary items. It turned out that the amount of unwanted objects significantly exceeded the expectations of the people responsible for the implementation of the 5S technique and the management of unwanted items was the biggest problem. The situation forced the need to find a special storage room for handy tools, which consequently proved a very good idea. For this purpose, there were also used tool shadow boards which facilitated putting away some widely available tools into proper places.

The second stage of the implementation of the 5S technique was setting in order, which consisted in the logical distribution of items left in the workplace, following the order of their use in the course of performed work. At this stage, there were not any problems since each employee knows well the conducted work and the order of utilized objects. Workplaces were also equipped with shadow boards and special containers for the tools used.

After the successful implementation of the second S, i.e. setting in order, there was a smooth transition to the subsequent stage, i.e. sweeping. The workplaces adjusted at the previous stage already looked neat. Strictly defined and permanent storage rooms for tools, objects or documents seemed an orderly workplace. Therefore, the attention was drawn to the efficiency of the operated device or technological line. Independent inspections, lubrication, cleaning were begun to be conducted. Each workplace was verified in terms of ergonomics, it was checked whether work is safe. Additionally, the walls in the production hall were repainted some fresh bright colors and there was the redecoration of the floors by sticking some special tapes to them marking the shortest distance to the spare parts warehouse (in red), the principal's office (in green) and to the canteen (in blue). At that point, the implementation of the 5S technique in the surveyed manufacturing company was finished. There were only the steps to be taken to maintain the principles introduced.

The effect of the implemented changes made a great impression but, for the long-term maintenance of the launched evolution of management, the implemented changes were in detail described in the form of the procedures for the application of the 5S technique in the surveyed company. It was described what objects are to be placed in specific workplaces, in what order they are to be arranged and used. Subsequently, it was described in what way the inspections of the operated devices must be performed, what they are to include and how often they are to be carried out. Each employee created the procedure for their workplace which subsequently had to be verified by the supervisor and the person responsible for the implementation of the specific tool of the concept of lean management in the surveyed manufacturing company.

At the last stage of the 5S technique, consisting in sustaining, there are systematically conducted monthly audits of 5S, when the managers of departments and the person responsible for the implementation of the 5S technique monitor workplaces. Due to the nature of work in the open production hall, employees are continuously in the area of visual control, which enforces the necessity to maintain the workplace in accordance with the adopted standards.

Summing up, the implementation of the 5S technique brought about a lot of benefits in the surveyed manufacturing company. By evolution of management, the implementation of the 5S technique allowed for introduction of significant organizational changes in the field of streamlining work in the operated workplaces. The implemented standardization of workplaces along with the use of shadow boards solved an essential problem associated with searching for necessary tools and objects, thus reducing waste of time. Active involvement of all employees in the operations related to the re-organization of own workplaces allowed for using the skills of employees and receiving support in the process of continuous improvement.

Conclusion

The implementation of the 5S technique is an operation favorable for modern enterprises. Due to low costs of the launching of this technique of lean management into the activity of the company, the implementation provides tangible benefits, which has been shown in the second part of the paper. Saving time, saving production area, increased security of employees, improving work, increasing ergonomics of the workplace, increased control over the production process, increased employees' satisfaction of the workplace, better organization of workplace equipment, increased awareness of employees in the field of their impact on the development of their own working environment are only selected advantages of the implementation of the 5S technique (Nogalski, Walentynowicz, 2006).

The objective of the paper has been accomplished. There has been made the assessment of and there has been presented the 5S technique in the field of enterprise management as well as there has been indicated its impact on an increase in cost management efficiency in the manufacturing company. The objective of the paper has been accomplished through the review of the literature on lean management and there has been conducted the descriptive analysis concerning the implementation of the 5S technique in the surveyed company. The descriptive analysis indicated the benefits for the company as the consequences of the implementation of the 5S technique and low costs of the implementation are an additional benefit of this technique. While relating to the title of the paper, it should be concluded that undertaking the activities in the area of lean management shows the process of evolution of modern enterprise management and the necessity to implement changes in management.

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THE ASSESSMENT OF SELECTED PARAMETERS SHAPING THE COMPANY BUSINESS MODEL

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Abstract: *In the paper, there has been discussed the problem of the assessment of the parameters shaping the company business model, while indicating its impact on the decision-making process of the surveyed company. In the first part of the paper, there has been presented the essence of the business model based on literature studies. The considerations presented in the second part include the results of the empirical research conducted on the basis of the financial data of UPS Inc., published on the website of the NASDAQ stock market of the logistics sector in the USA in years 2007-2016. The aim of the paper is to learn and assess the parameters shaping the business model of the company operating in an organizational network. The research methods applied to accomplish the objective are literature studies, descriptive analysis, trend analysis and Pearson's correlation coefficient. The problem of the parameters shaping the business model is important and up-to-date due to its impact on the decision-making processes in enterprises in the perspective of maintaining the competitive position on the market.*

Keywords: *business models, enterprise management*

JEL classification: *M21, M40, M41*

Grant affiliation:

Introduction

The issue of business models has taken on particular significance in the management science in recent years due to the fact that they are an instrument enabling the implementation of innovation and knowledge, allowing the adaptation of the best solutions in specific conditions. However, it should be remembered that managers must select the business model independently, taking into account current changes in the environment and the adaptability of the company. Therefore, the assessment of the extent of the implementation of the business strategy in terms of maintaining a competitive position in the market requires possessing the reliable information on competitors as well as the carriers of revenue and costs and the use of the resources possessed. Therefore, in the present paper, there has been formulated the research question – whether the business model creates the achievement of the competitive advantage of the surveyed company and what parameters of the model shape its activity system. As a consequence of this question, the objective of the paper has been to learn and assess the parameters shaping the business model of the company operating in the interorganisational network. In order to accomplish the objective of the paper, the following research methods have been applied: literature studies, descriptive analysis, trend analysis and Pearson's correlation coefficient to describe the relationship between the level of revenue and operating costs in the research period.

1 The essence of business models

G. Hamel states that the business model is the composition of the key strategy, strategic resources and the value network associated with customers (Hamel, 2000, p. 74). This author points out that the basis of the business model and its components is the potential profit, which is determined by the efficiency, uniqueness, internal cohesion and the idea and ability to generate profits. This means that the company does not create value exclusively for customers but has the ability to capture this value, therefore, the business model is the business theory tested and verified by the market (Magretta, 2002, pp. 87-92).

In turn, A. Osterwalder and Y. Pigneur emphasize that the business model is the conceptual and architectural implementation of the business strategy. It constitutes the basis for the implementation of business processes and is the offer of the company value for one or a few customer segments and the architecture of the company and its network of partners for creating the value and capital of relationships in order to generate beneficial and sustainable revenue streams (Osterwalder, Pigneur, 2002, p. 76, Osterwalder, Pigneur, 2010, p. 14).

H. Chesbrough and S. Rosenbloom, in their definition of the business model, take into account: value, strategy, resources and profit. In the opinion of the researchers, the business model articulates the position of value, identifies market segments, defines the structures of the value chain calculates the structures of costs and potential profits, describes the position of the company in the value chain, combining the supplier, the company and customers, formulates the strategy of competitors allowing the retention of profits (Chesbrough, Rosenbloom, 2002, p. 529).

A similar approach to business models is presented by A. Afuah and Ch. Tucci, mostly emphasizing the economic dimension of the business model, though. The authors claim that the business model plays a crucial role in achieving the primary objective of each company which is the profit (Afuah, Tucci, 2003, p. 19). As stated by A. Afuah, the business model can be understood as operations (activities) carried out by the company as well as the methods and time of their conduct, using resources in order to create the highest value for the customer (low costs or a distinctive product) and to secure the position for capturing value (Afuah, 2004, p. 9).

The business model is a tool presenting the logic of the operation of the company in the specific field, including the set of components and relationships taking place between these components (Nogalski, 2009, p. 7). This means that the business model defines the logic of the relationships between the resources disposed by the organization and the activities creating the value for broadly understood customers (Cyfert, Krzakiewicz, 2011, pp. 105-106). Moreover, the business model presents one of the significant problems conditioning the functioning of the company. (Brzóška, 2009, p. 6). At the same time, the business model becomes the mixture of strategy, tactics and operational activities, being, in the specific period, the key to achieving success in the specific business group (Niemczyk, 2010, pp. 203-207, Dziadkiewicz, Baskiewicz, 2016, pp. 65-74). It is worth pinpointing that the business model is a relatively isolated, multi-component conceptual object describing the conducting of business through articulating the logic of creating value for the customer and capturing a part of the value by the company (Falencikowski, 2012, p. 311). Although the business model includes different components it will definitely ought to explain the way of creating and capturing value and explain the mechanisms of generating profits (Drzewiecki, 2013, p. 70) and highlight the category of value in the company (Oliński, 2016, pp. 118-127).

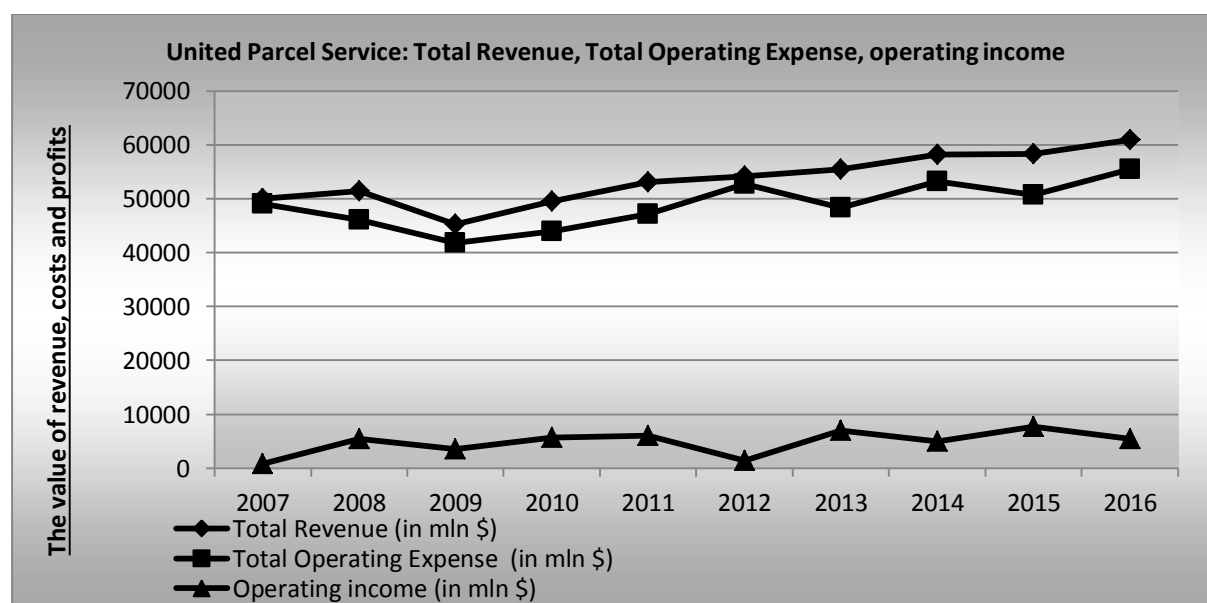
Summing up the review of the presented definitions, it should be concluded that building the business model ought to enable the company to achieve and maintain the advantage in the competitive market, which is however associated with risk. The risk of the business model can be neutralized by the application of the rule of the appropriate order of the strategic elements in accordance with the concept of “the blue ocean strategy” (Chan Kim, Mauborgne, 2007, pp. 42-43). Business models ought to aim at the improvement in the functioning of the company within the framework of the available resources, taking into account external and internal conditions.

2 Parameters shaping the business model and their assessment – the case study

The empirical research was conducted on the basis of the case study based on the financial data of the United Parcel Service Inc. (UPS) company, published on the website of the NASDAQ stock market of the logistics sector in the USA. The conduct of the research process using the case study allows for the presentation of the accurate and in-depth image of the explored phenomena and relationships.

In order to learn and assess the parameters shaping the business model of the UPS Inc. company there was examined the trend line of revenue and operating costs and operating profit over the years 2007-2016. When analyzing the level of the operating revenue in the United Parcel Service Inc. company, it can be observed that in 2008 there was an increase of 3% in the level of the operating costs. In 2009, the UPS Inc. company experienced the effects of the crisis in the form of a reduction in the operating revenue by 12%. In 2010, in the UPS Inc. company, the decision was taken on the gradual restoration of the market position, which was reflected in an increase in the level of the operating revenue in years 2010-2016 by 23%. The trend line of revenue, costs and operating profits in the UPS Inc. is presented in Fig. 1.

FIG. 1. The level of revenue, costs and operating profits in the UPS Inc. company in years 2007-2016



Source: Own study based on the data: www.nasdaq.com/symbol/ups

While examining the level of the operating costs (Fig. 1) in UPS Inc., it can be concluded that the company forecasted the crisis phenomena since in years 2007-2009 there was a steady drop in the

level of expenses. In subsequent years of the research period the UPS Inc. company increased the level of the incurred operating costs. However, in 2012 the level of the operating costs was only by 2% lower than the generated revenue, which significantly affected the financial result in that period. In subsequent years there can be noticed the fluctuations in the level of the operating costs. The year of 2013 reflects a strict control of the operating costs established by a reduction in their level by 9%, in order to equalize the level of the operating costs in 2014 with the level of 2012 (with better economic conditions). In 2015 there was another drop in the level of the analyzed costs, which increased in 2016, lowering the level of the operating profit.

When examining the level of the operating profit in the UPS Inc. company, there is observed an interesting trend (Fig. 1). The level of the operating profit in years 2007-2008 indicates an increase caused both by a rise in sales and a reduction in the operating costs. In 2009 there was a decline in the level of the operating profit. Interestingly, in the research period, there was a slowdown in sales, therefore the UPS Inc. company applied a strict control of the costs reducing their level by 10% compared to 2008. In subsequent years (2009-2011) the UPS Inc. company increased the level of the generated operating profit. The year of 2012 was characterized by a significant fall in the level of the operating profit caused both by an increase in the operating costs (by 12%) and poor (2%) sales growth. In 2013 there was an increase in the level of the operating profit due to another reduction in the operating costs. In subsequent years (2014-2016) there were the fluctuations in the level of the operating profit caused by the reaction to changes in the level of the operating costs.

3 Discussion

When making an attempt to assess the business model of the UPS Inc. company, functioning in the global network of logistics services, based on the results of the Pearson's correlation coefficient, there can be identified the main parameters of the process of management of the surveyed company. The development of the trend line of the operating revenue allows for the conclusion that the priority in the business model is building the position of the leader of the examined market segment. When examining the business model implemented by the UPS Inc. company it can be noticed that it is characterized by a strict control of the operating costs with the simultaneous implementation of the adaptation actions to the phenomena occurring in the external environment, which results in an increase in competitiveness in the specific market segment. The results of the conducted research imply that an important decision-making area in the surveyed company is the sales policy based both on the quality and the quantity of the services sold, which is to ensure maintaining the competitive advantage and capturing value. United Parcel Service Inc. represents a proactive business model directed to creating a specific value for the customer achieved due to the quality of the provided products and prediction of market trends.

Conclusion

When responding to the question whether the business model creates the achievement of the competitive advantage of the surveyed company and what parameters of the model shape its activity system it should be stated that the network business model ought to take into account sophisticated rules binding the resources, humans and costs performing the functions of the DNA code of the company in order to generate value adjusted to individual needs of customers (De Wit, Meyer, 2007, p. 147, Skowron-Grabowska, 2014, pp. 35–39). Therefore, enterprises creating network business models should take into account innovative activities that allow for narrowing the gap between the

organization and the changes in the environment (Romanowska, 2010, p. 8). The objective of the paper has been to learn and assess the parameters shaping the business model of the company operating in the interorganisational network. The main contribution of the paper is the in-depth understanding of the revenue and cost parameters at the operational level, which shape the business model of the logistics company cooperating in the network.

On the basis of the conducted research, it can be concluded that an important parameter exerting impact on shaping the business model in the surveyed company is revenue from sales since it implies the efficiency of the network and allows for developing decision-making options necessary for efficient management. A clear implication from the conducted research is the fact that the UPS company highlights the objective which is to maintain a long-term position of the market leader while not emphasizing profit maximization, which is indicated by the trend line of the revenue and operating costs in the research period, showing the existence of feedbacks occurring between these parameters. The recommendation for the surveyed company is the implementation of innovative solutions which will enable effective decision-making in order to improve the efficiency of cooperation in the network. The multi-dimensional nature of the problem of the business model of the company in the network has brought about that, in the paper, some of the considerations have been presented in general terms, which, on the one hand, has allowed the highlighting of the complexity of the discussed subject matter and, on the other, inspires for further research and exploration.

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ECONOMIC SITUATION OF SENIORS IN SLOVAK REPUBLIC

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Abstract: *Seniors by their abilities are a substantial component of Slovak society. An important characteristic of pensioners is not their age, but their role and function in society. In this context, it is necessary to point out, in particular, a significant weakening of the economic position of pensioners, in cases where the pension is the only source of their income. The amount of old-age pension received and various other forms of social assistance are inadequate to the level of their cost of living. People in retirement may be in a difficult financial situation because they have limited personal income. It often happens that seniors try to stay as long as possible in their current job instead of deserved rest, and some of them are looking for different ways to make a living. In this paper, we analyze the living costs of seniors, compare them to the current average amount of the old-age pension in Slovak Republic, and we also present the current situation in the financial payings of working pensioners from social insurance and the income tax point of view.*

Keywords: *senior, retirement age, poverty, pension*

JEL classification: *J 32, K 31, K 34*

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Introduction

Retirement is a major social and economic change for many people. Economic security for older people is a prerequisite for their social integration. For retirement age, it is important for older people to have their own income at a sufficient level. This is the basic prerequisite for their economic independence and autonomy. A characteristic feature of current retirees is that retirement pensions are the sole source of income for the vast majority of retirees. The living standards of seniors in Slovakia are very bad. To make our pensioner's standard living comparable with pensioner from advanced countries, the pension should be at least 80 percent of the average wage earned by a man when he was productive. Today, the average old-age pension is only about 40 percent of the average wage. If today's and future seniors want to maintain a good standard of living, they have to take care of themselves.

1 Living standard on retirement and poverty of seniors

Retirement change many things at our life, especially we must be prepared to reduce the standard of living. We have become accustomed to during our active lives. Although retirement could reduce our living cost by about a third, but our income will be decrease more than half. Therefore many of people stay at their work after they reach old-age pension.

The retirement age limit increased in Slovakia to 62 years and 139 days in year 2018, which increased the retirement age by 63 days. For comparison last year the retirement age was 62 years and 76 days. Increasing retirement age is due to an increase in average life expectancy common to men and women. Given these assumptions, we should have a retirement age of 67 years in Slovakia in year 2050. Extending retirement age is also linked to ensuring the long-term financial sustainability of the pension system. Social insurance by extending retirement age will save € 22.6 million in year 2018, € 26.6 million in year 2019 and € 32.9 million in year 2020.

TAB. 1: Comparison of retirement age in V4 countries

<i>Country</i>	<i>Retirement age for males/females</i>	<i>Planned changes in retirement ages male/female</i>
Czech Republic	62 years, 10 months / 58 years, 6 months	67 + (2041)
Hungary	62 years, 6 months	65 (2022)
Poland	65 years, 7 months/60 years, 7 months	67 (2020)/67 (2040)
Slovak Republic	62 years, 139 days	67 (2050)

Seniors by their abilities are an important component of Slovak society. An important characteristic of pensioners is not their age, but their function and function in society. In this context, it is important to point out, in particular, a significant weakening of the economic position of pensioners, especially in cases where the pension received is the sole source of income. As a result of exclusion from the labor market, retirees depend on the social benefits they receive in the form of a retirement pension. It is questionable whether the amount of old-age pension received and various other forms of social assistance are adequate to the level of the cost of living for the elderly. According to available statistics, up to 35% of them claim that their old-age pensions are insufficient to cover their living costs, without a partner and thus without two incomes, would fail to cover even the most basic needs. This gives rise to even greater fears of partners, which is conditioned not only emotionally but also existentially. The average monthly cost of senior life in Slovakia is € 374.78, see Table 2 below.

TAB. 2: Average monthly cost of seniors

<i>Type of expense</i>	<i>The amount</i>
Cost of living	155,97 €
Food	124,42 €
Medicines, medical devices	29,33 €
Clothes	13,32 €
New device	2,34 €
Repair of house/flat, electrical appliances	8,54 €
Recreation and culture	5,87 €
Post and telecommunications	15,68 €
Transport	10,68 €
Alcohol and tobacco	3,01 €
Other	5,62 €

The majority of their income is spent by seniors for cost of living. This is quite logical and justifiable as well as the fact that the second most expensive item in monthly cost is food. Followed with medication, post and telecommunication. The least money travels a month on a new device, since it can be assumed that buying a new device is not an item that needs to be invested on a daily basis. For alcohol and tobacco, seniors spend only € 3.01 on average per month.

Retirement may be a financial shock for seniors. That's why many of them get paid alongside the pension. Employment can mean an opportunity for seniors to avoid poverty. In 2017, in Slovakia was under 8% of old-age pensioners under the poverty line.

In general, poverty can be characterized as a social phenomenon that is specific part of society's life and has essentially three dimensions: economic, socio-psychological, and political. Poverty in an economic sense lies not only in the unequal accessibility of different resources for individual members of society but also in the different ability to use these resources. The socio-psychological dimension of poverty is linked to differentiated accessibility to the benefits essential to the dignified existence of individuals and groups in a given community. The political dimension of poverty means limited or no access to the decision-making process.

In Slovakia, the definition of poverty is used to be more synonymous with poverty then socially weak people, low-income households, and especially the concept of material need, which is legislatively defined and is actually a sign of poverty. The law of poverty does not define, but it also recognizes concept such as material need, the minimum of living standard and the associated minimum wage. In the conditions of the Slovak Republic, this issue is deal with by Act. No. 453/2004 amending Act. No. 599/2003 on Assistance in Material Need and Act No. 601/2003 on the minimum subsistence and amending certain laws as amended and amending and amending some laws. A material need is a situation where the income of citizen and natural persons who are treated together with citizen is below the minimum subsistence level and the citizen and natural person who are treated together with the citizen cannot be secure or increase their income by their own actions. A material need expresses a social situation where the basic material living conditions of citizen are not secured and the citizen has no means of securing them, or is unable to a acquire or exploit these means by their own means. The subsistence minimum is the socially recognized minimum income threshold of a natural person under which a state of materiál need arises. We distinguis two levels of subsistence: *living* (existence) and *social* minimum, which are also used in current Slovak legislation. Existence minimum expresses the minimum cost of basic, existential needs of the human being, meanind diet, necessary clothing and shelter, and 42 % of a average income in terms of relative method. Existence minimum is always lower than the social minimum and expresses the poverty line. The social minimum reflects the social minimum standard of living and guarantees at least socially acceptable levels and minimal cost of meeting life needs of a given society at a certain level of economics and social development. Not all polulation groups are equally at risk of poverty. In EU countries, the two most risky gorups at risk of poverty were identified. They are old people and people with lower education. In our submission, we focused of seniors.

The way to measure poverty depends of the cosen tools – indicators whose choice depends on how poverty is defined, and where the level and structure of poverty can be documented. Crucially the definition of poverty is the determination of the poverty line, traditionally based on income or expenditure. From the point of view of international comparision, the World Band is following

extreme poverty, with the limit of extreme poverty and defined amount of income is less than 1 or 2 US dollars in purchasing of poverty parity per day. In most developed countries, the baseline of poverty is the average income of a particular country, and the poverty line is usually 50 percent of the country's arithmetic average, in some countries it is also 40 or 60 %. In Slovakia, the poverty risk assessment threshold represents 60 % of the median national equivalent disposable income, and as the poverty line is not precisely defined, it can be assumed that it represents the minimum subsistence level.

The subsistence minimum is the limit of the monthly income when a person finds himself or herself in need. This is the minimum amount for survival. The sum of the subsistence minimum should be sufficient for basic human needs such as housing, one hot meal per day and basic dressing.

TAB. 3: Sums of the subsistence minimum from year 2009 to year 2018

<i>Effectiveness of the law from</i>	<i>Sum for one adult person per month in €</i>	<i>Sum for another jointly considered adult person in €</i>	<i>Sum for dependent child in €</i>
1. 7. 2018	205,07	143,06	93,61
1. 7. 2017	199,48	139,16	91,06
30. 6. 2014	198,09	138,19	90,42
1. 7. 2012	194,58	135,74	88,82
1. 7. 2011	189,83	132,42	86,65
1. 7. 2010	185,38	129,31	84,61
1. 7. 2009	185,19	129,18	84,52
1. 1. 2009	178,92	124,81	81,66

Over the past 20 years, average old-age pension in Slovakia have ranged from 43 to 48 percent of the average wage in a given year. For comparison, until the early 1990s, the average old-age pension was just 84 euros, the average gross monthly wage in the economy was 179 euros. For comparison in April 2018 was the sum of average old-age pension 440,33 euros. Based on the available statistics, up to 60 percent of seniors are poor, their old-age pension is less than 440,33. If a person has worked at least 30 years, he is entitled to a minimum pension of 271, 30 euros. If a person has worked at least 50 years, he is entitled to a minimum pension of 373 euros. A third of pensioners do not have the most basic needs. Therefore, most pensioners are looking for ways to improve their financial situation. They can take a job.

The ways in which an employer can employ pensioners in Slovakia to carry out a particular job are in principle two: employment or a contract for work performed outside the employment relationship. Employers often use agreements, mainly because they give them more flexibility. On the other hand, they also have their limitations.

The Labor Code in Slovakia considers the employment relationship as a standard method of employment of persons based on a written employment contract between the employee and the employer. However, according to the Labor Code, an orally agreed employment contract also applies if all its essential requirements have been agreed. However, claims from such a contract are legally difficult to enforce. In certain exceptional cases, the Labor Code allows the establishment of other labor relations. An employer may, for the fulfillment of his tasks or to meet his needs, contract exclusively with pensioners an agreement on work done outside the employment relationship: work-

performance agreement (in the case of work as defined by the result) and *work activity agreement* (in the case of a work activity defined by the type of work).

2 Job opportunities for retirees

Lack of qualified labor and an increase in unoccupied jobs increases the attractiveness of retirees in the labor market. Many companies prefer to reach out to the brigade from the ranks of seniors before they have to wait until their free place is filled with a full-time man. In combination with a 200-euro earnings bonus, which will start to apply from July 2018, pensioners are opening new opportunities for retirement.

Highest interest in seniors' work is that companies looking for people in positions where great physical force or fine motoring is not required. Pensioners can therefore find work mainly in administration, retail, education, but also in logistics or in hotels, restaurants, and gastronomy at all. For the future, demand for working pensioners can be expected to grow even further. We anticipate this trend especially in sectors that face a larger outflow of employees in better-paid industries, especially in industry. Workers' retirees will be more likely to be seen in checkout shops, at hotel reception, or in restaurants. Many companies will be forced to create more and more short-term jobs in the current situation. This is just right for people who just want to do a full-time job and do not look for a full-time job. It is therefore to be expected that working pensioners will continue to be employed in sectors where it is not yet commonplace today. Table 2 shows job positions, which are most likely by seniors further structuring of subchapters is indicated below.

TAB. 4: Most likely job positions for seniors

The most commonly used positions	Number of CVs
Administrator	66
Informer, Night security of objects	48
Charwoman	35
Driver	33
Salesman	31
Safety officer	27
Maid	23
Call operator	22
Warehouseman	21
Caretaker, Personal assistant	21
Auxiliary worker	18
Worker	16
Handyman	16
Receptionist	15
Treasurer	15

People who have reached retirement age can continue to work. Despite the fact that they are receiving a pension, they do not have to leave the job and the employer cannot give them a reason for that. If seniors work together with retirement, they can improve their income.

From July 2018, pensioners working on part time job will also be able to apply the social exemption clause. If the monthly income of old-age pensioner (who work on part time job) does not exceed 200 euros, the employee will not pay out of this income any social insurance (regardless of the type of

pension he receives). Employer will pay for him only accident and guarantee insurance, together of 1,05 % from his/her gross wage. If the income exceeding 200 €, the employers pay for old-age pensioners, accident, guarantee and pension insurance to the solidarity reserve, together at 19.80 % from the amount which exceeds 200 euros.

3 Comparison of the financial reward of working pensioner

Suppose that the old-age pensioner has a monthly fee of € 370, so he wants to have more money. The employer offers him a gross salary of 400 € per month. The pensioner can choose whether to work on a contract or on a deal. Now we compare these two opportunities. This chapter compare situation before July 2018.

Contract work:

- ▶ If a pensioner is employed for a contract, the employer will pay him/her monthly salaries for health insurance, sickness insurance and pension insurance totaling 9.4 percent. Payments take him every month to 37.60 euros.
- ▶ The pensioner's tax base is calculated by deducting the paid contributions from the gross wage. Its tax base will therefore be 362.40 euros. Of this amount, he pays 19 percent, which is 68.85 euros.
- ▶ After paying the tax and the deduction, this pensioner receives a net wage of EUR 293.55.
- ▶ When working on a contract, the employer must either arrange for lunch or provide meals of a minimum value of three euros for each day worked. The employer has to pay 55 per cent of his meal, of 1.65 Euros. In the month that has 20 business days, the employee on the board of the employer gets 33 euros.
- ▶ A full-time employee will also be entitled to five weeks of leave per calendar year. The employer must also provide him / her with paid leave in case of examination or treatment with a doctor. In such a case, the employee is entitled to a maximum of seven days of paid leave per year. If it is not enough for him, he / she will receive another free allowance without compensation.
- ▶ In the case of illness, he will receive a sickness benefit, which represents 25% of the gross wage for the first three days of incapacity and 55% of the gross salary as of the fourth day. He will also be entitled to nursing care, which reaches 55 percent of salary.
- ▶ Upon termination of employment, a pensioner may apply to the Social Insurance Company to increase his / her pension calculated on the basis of his / her total gross earnings.
- ▶ In addition to the gross wage, the employer will pay the levy of 31.2 percent. Therefore, the total cost of work will reach € 524.80 per month. After counting meal tickets, the cost of his employment will increase to 557.80 euros.

Part time job:

- ▶ In case of work on the agreement, the employer will deduct from the salary only the pension insurance contributions of 4 % of the gross wage. Every month, therefore, the bills take him 16 €.
- ▶ The tax base is calculated as a gross wage less paid contributions. The tax will therefore be paid out of EUR 384. The employer will get 19 percent out of this amount, which is 72.96 euros.
- ▶ The net salary of this pensioner will be € 311.04 after tax and deduction. Compared to if he worked on the deal, he would earn about 17.49 euros a month more. Since he will work on a deal, he will not receive meals. After counting the value of the meal tickets, his net income will be 15.51 euros less than if he worked on the contract.
- ▶ As a partner he will not be entitled to a paid holiday. In the case of a doctor's examination, the employer must release it, but only the unpaid leave.

- ▶ Because he will not pay sickness insurance, he will not be able to receive sickness or nursing benefits.
- ▶ You will be able to ask for an increase in your pension on completion of the work. Since it will have the same gross wage as in the case of contract work, the amount of the increase will be the same in both cases.
- ▶ The employer will pay 23.8 percent of his gross wages. The monthly costs for this agreement will therefore reach € 495.20. Compared to a retiree, the total cost of the work will be 29,60 euros less, and after counting the meal tickets, the employer's agreement will be € 62,60 cheaper than the employee for the contract.

The most advantageous option for employing a retired pensioner is through out-of-work arrangements (work-performance agreement, work agreement). Contrary to the employment relationship, both parties will save on deductions, and yet the old-age pensioner will be reimbursed for old-age insurance payments, which will allow the Social Insurance Company to convert it once a year into a retirement pension. From January 1st, 2018, a deduction is introduced to the Social Insurance Agency for old-age pensioners, invalid pensioners and early retirees - the employer only pays for symbolic accident and guarantee insurance, upon receiving up to 200 euros per month, no deduction is payable, in addition, the recipient of the early retirement pension can thus earn without loss of entitlement to early retirement pension.

Conclusion

Poverty and social exclusion of older people is a problem not only in Slovakia, but also in several countries in European union. The economic situation of older people in Slovakia is not easy. Their monthly earnings are very low and many of them are at the brink of poverty. The greatest concern about poverty is caused by low pensions, unexpected spending, and dependence on others. Without the help of a child or partner or taking jobs, many of seniors would have great difficulty to cover their monthly costs. This is the main reason why most of seniors work even after reaching retirement age. Legislation currently in force allows the retiree to make an old-age pension, thereby at least partially improving the quality of life in old age. In the submitted paper, we tried to briefly approach the economic situation of pensioners in Slovakia as well as the possibility of improving their financial situation.

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ATTITUDES TOWARDS HEALTHY FOOD CONSUMPTION AMONG ELDERLY POPULATION

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Abstract: *The objective of the paper is to explore food consumption among elderly and to indicate how different living conditions and gender influence actual food consumption behaviour in the segment of seniors. We identify differences in healthy food consumption based on gender, place of living and living conditions. Empirical research was conducted on a sample of 420 elderly participants aged above 60 years and living in their own flats. The statistical analysis consists of ANOVA F-test and Fisher's exact tests. We conclude that women living in urban areas and with a partner pay more attention to the foods and its impact on their health. The results of the research can be used in public health promotion to tailor the messages to the specifics of target elderly audience.*

Keywords: *healthy food consumption, information interest, healthy eating behaviour, seniors*

JEL classification: *M 30*

Grant affiliation: *The research was conducted within the Research project VEGA 1/0339/18 "Health conscious consumer behaviour: determinants, perspectives and intervention possibilities"*

Introduction

In analysing the problems of aging, there is a growing recognition for a need to focus on individual perceptions of health. The recognition to focus on health-related concerns among seniors calls also for the research in the area of food consumption and nutrition (Divine & Lepisto, 2005). Good and proper nutrition can significantly reduce the likelihood of developing a number of diseases. However, although the elderly have some general knowledge of the relationship between diet and health, eating attitudes remain often unhealthy and control of salt or fat content is ignored. Therefore, exploring healthy eating behaviour is an important task.

Several previous studies attempted to identify the relationship between demographic characteristics and attitudes towards healthy eating and eating behaviour, however little attention was given to the explanatory ability of personal and living conditions. Therefore, the objectives of the present study is to investigate how seniors' gender and living conditions affect their attitudes towards healthy eating and health information behaviour.

1 Theoretical background

Older people are generally regarded as consumers with higher health consciousness. It is assumed that seniors' knowledge about the impact of nutrition on their health, that is how older people evaluate relevant health-related information and how they adopt it in their food consumption, is

a prerequisite to healthy eating behaviour. Several studies confirm that people interested in health-related information adopt healthier food consumption. However, to achieve desired health behaviour, the information and promotional campaigns should be tailored to the living background, interests and specifics of the targeted audience. In other words, the content and form of the campaign has to be in line with the preferences of the target audience.

Public health communication campaigns and interventions have traditionally been based on the assumption that health-related knowledge and corresponding behaviour are automatically created, with repeating health-promoting information. However, in reality it may happen that those individuals whom health authorities are trying to target, ignore or do not fit with the message. They do not, for instance, share and prefer the same beliefs as those who create the health promotion programmes (Urquhart and Yeoman, 2010).

Several studies document that men more often than women associate health with personal well-being and not with preventing diseases and they exhibit lower motivation to engage with healthy food consumption (Stoller & Pollow, 1994). It has also been observed that men, due to gender role do not care hard about the nutritional content of their food consumption (Leigh & Fries, 1992). Studies examining demographic variables in healthy eating behaviour demonstrate that women, or those living in urban areas and embedded in a family environment exhibit more healthy food consumption behaviour than men, people living in rural areas or living alone.

Knowledge about how to influence older people in healthy diet is considered to be especially relevant in developing interventions aimed on changing behaviour towards appropriate diet.

2 Goals and Methods

The objective of the paper is to explore how seniors perceive health and use relevant health-related information to adopt healthy food behaviour. We identify differences in healthy food consumption based on gender, place of living and living conditions. Empirical research was conducted on a sample of 420 elderly participants aged above 60 years and living in their own flats. Within the elderly population three subgroups were identified and differences between particular groups were discussed. In the final sample 206 (49,0%) of the respondents were 60-70 years old, 176 (41,9%) were aged 71-80 years and 38 (9,1%) were over 80 years old. 263 (62,6%) in the sample were female and 157 (37,4%) were male, 236 (56,2%) were living in urban areas and 184 (43,8%) were living in rural areas, 148 (35,2%) live alone and 272 (64,8%) live with partner.

Healthy eating behaviour was measured on the degree to which the respondents expressed their agreement with the statement “I compile my diet according to healthy content of the foods” with 7-point Likert scale, ranging from “1=very much disagree” to “7=very much agree”. Health information interest was assessed by the statement “I am interested in information about the impact of food on health” on a 7-point Likert scale. Two sources of health related information, one from internal environment including family members and one from external environment including physicians and media, were investigated as a relevant information basis. Relevance of the information sources was measured by “I obtain health-related information from family members / physicians / media” again on 7-point scale.

ANOVA F-tests and Fisher's exact tests (2-sided) were used to analyse the data. ANOVA F-test is a method to test the hypothesis whether or not the means of several groups are equal and Fisher's exact test is a statistical significance test for categorical data, measuring the association between two variables in a 2x2 contingency table.

3 Results and Discussion

Table 1 illustrates the interest in information about the impact of the nutrition on health by gender, place of residence and living conditions. The findings suggest that gender was significantly related to interest in health-related information in all three age groups: among 60-70 years old respondents the male mean was 4,5 compared with the female mean of 5,3 ($F = 7,835$, $p = 0,003$), among 71-80 years old the difference in means was 0,9 in favour of women ($F = 3,414$, $p = 0,000$) and among 80+ years old the male mean was 4,6 compared with the high score of 5,6 for women ($F = 11,091$, $p = 0,000$). The mean score of women in the oldest age group 80+ was considerably high to the opposite of the mean score of men in the ages from 60 to 70 years, which was 4,5. The difference in means is gradually growing with increasing age in both genders. This result corresponds with the research of Liang et al. (1999).

Similar pattern of results was found in the variable place of residence, indicating significant relation between place of living and interest in health-related information. In all three age groups significant differences were identified between seniors living in urban and in rural areas.

Social aspect of eating represented by living conditions delivered contradictory results. Significant difference refers only to the youngest group. The mean score for seniors living alone was 4,7 compared with the score of seniors living with a partner 5,2 ($F = 17,546$, $p = 0,000$). In the population aged over 71 years living conditions do not play significant role in interest for information about the impact of nutrition on their health.

TAB. 1: Interest in information about the impact of the nutrition on health

Interest in information	60-70 years Mean (n)	71-80 years Mean (n)	80+ years Mean (n)
Males	4,5 (78)	4,6 (66)	4,6 (13)
Females	5,3 (128)	5,5 (110)	5,6 (25)
Total	5,0 (206)	5,2 (176)	5,2 (38)
F	7,835	3,414	11,091
Significance (p)	0,003	0,000	0,000
Urban	5,4 (116)	5,5 (94)	5,5 (26)
Rural	4,6 (90)	4,8 (82)	4,7 (12)
Total	5,0 (206)	5,2 (176)	5,2 (38)
F	26,315	22,742	20,346
Significance (p)	0,000	0,000	0,000
Living alone	4,7 (58)	4,9 (73)	4,9 (17)
Living with partner	5,2 (148)	5,4 (103)	5,4 (21)
Total	5,0 (206)	5,2 (176)	5,2 (38)
F	17,546	10,355	13,124
Significance (p)	0,000	N.S.	N.S.

The compilation of a diet is a result of the whole bundle of various influencing factors: economic, psychological, social, environmental, etc. Interest in health-focused information and its relation to nutrition is only one partial element when it comes to food consumption behaviour. Hence, it is desirable and suitable to investigate the eating behaviour based on the real compilation of a diet.

Our research revealed that gender, place of living and living conditions were highly and significantly associated with healthy eating behaviour across all age groups (Table 2).

TAB. 2: Diet compilation according to healthy content of the foods

Attention paid to healthy foods content	60-70 years Mean (n)	71-80 years Mean (n)	80+ years Mean (n)
Males	4,3 (78)	4,1 (66)	4,0 (13)
Females	5,1 (128)	5,0 (110)	4,8 (25)
Total	4,8 (206)	4,7 (176)	4,5 (38)
F	7,421	11,243	9,371
Significance (p)	0,000	0,002	0,000
Urban	4,9 (116)	4,8 (94)	4,6 (26)
Rural	4,6 (90)	4,4 (82)	4,3 (12)
Total	4,8 (206)	4,6 (176)	4,5 (38)
F	14,259	12,112	8,495
Significance (p)	0,000	0,001	N.S.
Living alone	4,5 (58)	4,4 (73)	4,3 (17)
Living with partner	5,0 (148)	4,8 (103)	4,6 (21)
Total	4,8 (206)	4,6 (176)	4,4 (38)
F	3,472	5,026	8,308
Significance (p)	0,000	0,000	N.S.

Gender has a strong impact on what and how people eat in the youngest age group 60-70 years with the mean score of men 4,3 compared to 5,1 of women ($F=7,421$, $p=0,000$), in the age group 71-80 years mean score of men 4,1 against 5,0 of women ($F=11,243$, $p=0,000$) and in the oldest age group mean score of men 4,0 to mean score of women 4,8 ($F=9,371$, $p=0,000$). The distribution of gender results in healthy food behaviour has a very similar pattern with the results indicating seniors' interest in healthy food information.

Mean score of women aged from 60 to 70 years was the highest 5,1, while the score of men aged 80+ the lowest 4,0. These findings show that the oldest male age group (80+) of the data set is least careful of how the foods they consume might affect their health in comparison with the younger groups.

The data analysis also revealed that the higher the age group, the lower is the reported healthy consumption behaviour. Particularly respondents representing the oldest senior group (80+) do not seem on average to be very careful about the healthy eating, which might be due to economic, social, psychological and various other reasons.

With regard to place of residence, differences in only younger age groups were found to be significant. The mean score for those living in urban areas was 4,9 versus 4,6 for seniors living in rural areas in the age group 60-70 years ($F=14,259$, $p=0,000$) and 4,8 versus 4,4 in the age group 71-80

years ($F=12,112$, $p=0,001$) respectively. The oldest aged 80+ did not exhibit significant differences in their eating behaviour.

As to living conditions the factor of living alone vs living with a partner has an impact on healthy eating behaviour in the age group 60-70 years (mean difference 0,5 in favour of living with partner, $F=3,472$, $p=0,000$) and in the age group 71-80 years (mean difference 0,4, $F=5,026$, $p=0,000$). Among 80+ years old the difference in means was not significant, suggesting that both place of residence and living conditions do not play significant role in eating behaviour of 80+ seniors.

Along with active involvement in searching for health-related information, people receive health information also without any active involvement. The most frequent information sources for most seniors are family members, physicians and media.

With regard to family members as a source of health-related information, there was in none of the age groups a significant difference between males and females; the distributions in each age group were very similar (Table 3). On the other hand, physicians and media were reported as a source of information by higher proportion of women than men in the age group 60-70 years (69% versus 65%, Fisher's exact test: $p=0,010$). Gender did not play a differentiating role in the choice of physicians and media as a source of information among 71-80 years and 80+ years (Table 4).

Opposite development in the choice of health information source was found in urban and rural population. While in rural population the proportion of family members as a principal source of information grows with increasing age, in urban population, on the other hand, with increasing age grows the proportion of information delivered from physician and media. Much bigger proportion of urban population compared to rural population reported gaining information from physicians and media in the age groups 71-80 (74% versus 66%, Fisher's exact test: $p=0,037$) and age group 80+ (74% versus 59%, Fisher's exact test: $p=0,029$) respectively.

TAB. 3: Source of information (family members)

Source of information	60-70 years	71-80 years	80+ years
Family members			
Males (%)	89% (70)	83% (55)	84% (11)
Females (%)	91% (117)	86% (94)	84% (21)
Total (%)	90% (187)	85% (149)	84% (32)
Fisher's exact 2x2 test	N.S.	N.S.	N.S.
Urban (%)	82% (95)	80% (75)	77% (20)
Rural (%)	85% (76)	87% (72)	83% (10)
Total (%)	83% (171)	83% (147)	79% (30)
Fisher's exact 2x2 test	N.S.	0,019	0,015
Living alone (%)	77% (45)	70% (51)	65% (11)
Living with partner (%)	84% (125)	85% (88)	86% (18)
Total (%)	82% (170)	79% (139)	76% (29)
Fisher's exact 2x2 test	0,031	0,014	0,003

TAB. 4: Source of information (physicians and media)

Source of information: Physicians + media	60-70 years	71-80 years	80+ years
Males (%)	65% (51)	67% (44)	62% (8)
Females (%)	69% (88)	67% (74)	64% (16)
Total (%)	67% (139)	67% (118)	63% (24)
Fisher's exact 2x2 test	0,010	N.S.	N.S.
Urban (%)	71% (82)	74% (70)	74% (19)
Rural (%)	68% (61)	66% (54)	59% (7)
Total (%)	69% (143)	70% (124)	68% (26)
Fisher's exact 2x2 test	N.S.	0,037	0,029
Living alone (%)	74% (43)	75% (55)	77% (13)
Living with partner (%)	72% (106)	70% (72)	67% (14)
Total (%)	72% (149)	72% (127)	71% (27)
Fisher's exact 2x2 test	N.S.	0,019	0,002

The difference in choosing family members as a source of information was recognized as statistically significant between seniors living alone and living with a partner across all age groups, with remarkable high difference in the oldest age group 80+ years (65% versus 86%, Fisher's exact test: $p=0,003$).

Conclusion

The present findings demonstrate that female seniors, seniors living in urban areas and living with a partner seem to be more proactive and participating in search for health-related knowledge and adopting healthy food consumption. The analysis of the sample proved that women, urban population and life in a family were statistically significantly ($p<0,05$) more interested in health-related information (apart from the age group 80+ years), paid more attention to their health and took much more attention to the effect of foods they purchase on their health than men, seniors in rural areas and living alone, in all the indicated age groups. Women and urban seniors reported receiving more health-related information from external sources than did men and rural population.

When it comes to health, women, urban seniors and those living in a family environment seem to be more involved, more attentive and better informed decision-makers. Thus, it can be concluded that gender, place of residence and living conditions play an important role in the patterns of healthy eating behaviour. This result is in line with previous research studies (Courtenay, 2000; Dean et al., 2009). The revealed differences in demographics-related healthy eating affect health behaviour and may influence a life expectancy gap between men and women and seniors living alone and in a family.

Even the general impression of older people presents them as people with higher health consciousness and awareness (Manafa & Wong, 2012) and people who are more concerned about their health condition, the actual eating behaviour does not correspond (due to various, mainly economic factors) to this picture. Despite the age-related influences on seniors' food consumption behaviour, the mean scores of females and urban population are consistently higher than scores of males and rural seniors.

The results of the research show that gender, place of residence and living conditions influence the patterns of healthy food consumption and need to be taken into consideration when designing health promotion campaigns and intervention programmes and activities toward healthy nutrition.

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ASSESSING ACCESS TO FINANCE IN SMALL AND MEDIUM ENTERPRISES SECTOR IN SLOVAKIA BY MEANS OF SBA'S INDICATORS

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Abstract: *The strategic aim of all businesses in the European Union is to increase their competitiveness. Especially the development of small and medium enterprises requires a complex and coordinated approach from all the authorities concerned. Problems concerning the small and medium enterprises come to the front nowadays in all European countries. The stated problems are projected into several strategic initiatives that define policies of the EU in concrete spheres. For the sphere of small and medium enterprises there is a key initiative “Small Business Act for Europe”. Small Business Act for Europe consists of a set of ten principles that lay down the measures for the support of small and medium enterprises in varied fields. One of the principles is the “Access to finance”. The aim of the paper is to present the “Access for finance” as one of the principles of the Small Business Act for Europe, to evaluate the results of implementing SBA incentives in Slovakia in the field of “Access to finance” and to formulate the main measures to be taken to improve the state in mentioned area.*

Keywords: *access to finance, small and medium enterprises, Small Business Act, Slovak Republic.*

JEL classification: *M10*

Grant affiliation: *VEGA 1/0408/18 “Eco-innovations as a part of innovation activities of small and medium enterprises in Slovakia: motives, trends and managerial challenges”.*

Introduction

To bring Europe back to growth and higher levels of employment Europe needs more entrepreneurs. Problems concerning entrepreneurial activity, entrepreneurial environment and especially the small and medium enterprises (SME) come to the front nowadays in all European countries (Kressel & Lento, 2012). The stated problems were projected into several strategic initiatives that define policies of the EU in concrete spheres. The basic document is the “Strategy Europe 2020” that is a basic strategic document of the EU. For the SMEs sector there is the key initiative “Small Business Act for Europe”. Implementing Small Business Act for Europe (SBA) represents the key appeal for the European Union and its member countries within the support of small and medium entrepreneurial activity and creation of suitable entrepreneurial environment, as well for the smallest enterprises (Belás, Demjan, Habánik, Hudáková & Sipko, 2015).

1 Small Business Act initiative in small and medium enterprises sector

Small Business Act creates new political framework that includes political and economic tools in the field of support of entrepreneurial activity. It consists of a set of ten principles that lay down the measures for the support of SMEs in varied fields (Small Business Act for Europe, 2008).

- Principle 1: to create an environment in which entrepreneurs and family businesses can thrive and entrepreneurship is rewarded.
- Principle 2: to ensure that honest entrepreneurs who have faced bankruptcy quickly get a second chance.
- Principle 3: to design rules according to the principle “think small first”.
- Principle 4: make public administration responsible to SMEs needs.
- Principle 5: to adapt public policy tools to SME needs to facilitate SME participation in public procurement and better use State Aid possibilities for SME.
- Principle 6: to facilitate SME access to finance and develop a legal and business environment supportive to timely payments in commercial transaction.
- Principle 7: to help SME to benefit more from the opportunities offered by the Single market.
- Principle 8: to promote the upgrading of skills in SME and all forms of innovation.
- Principle 9: to enable SME to turn environmental challenges into opportunities.
- Principle 10: to encourage and support SME to benefit from the growth of markets.

These principles have to be respected when suggesting the measures of complex character aimed at the support of SMEs development in the EU member countries. Implementation of measures of the Small Business Act is inevitable for reaching progress in the relation to ensure favourable and motivating entrepreneurial environment (Wagner & Hollenbeck, 2012).

The government of the Slovak Republic (SR) promised to implement the European principles for the development of small and medium entrepreneurship by means of the initiative of SBA in Slovakia. Exhaustive implementation of EU strategic initiative for the support of the development of SMEs in Slovakia is in charge of the Ministry of Economy of the SR and of the Small Business Agency of the SR, which is also the body responsible for the monitoring of SBA implementation (Prehľad základných skutočností o iniciatíve Small Business Act for Europe, 2012).

In 2013 a dedicated SBA working group was set up to ensure that the SBA is implemented properly. The activities of the working group include a preparation and implementation of significant measures and policies in the area of SMEs development, consultations on recommendations and tasks of the EU and preparation of measures supporting SMEs growth with aim to maintain sustainable SMEs growth. The group is made up of representatives of the Slovak Business Agency and 10 ministries with responsibilities relating to SMEs.

The Slovak government intends to implement the SBA under its SMEs development strategy, which is due to run until 2020. At this time the strategy is still in preparation. The strategy is intended to be the document focused directly on SMEs. At present the SBA is integrated into various support programmes, measures and initiatives developed by the Slovak ministries and agencies, mainly in the Strategy for Smart Specialisation of the Slovak Republic (RIS3).

2 Aim and methodology of research

The aim of the paper is to present the “Access for finance and developing a legal and business environment supportive to timely payments in commercial transaction” as one of the principles of the Small Business Act for Europe, to evaluate the results of implementing SBA incentives in Slovakia in the field of “Access to finance and developing a legal and business environment supportive to timely payments in commercial transaction” and to formulate the main measures to be taken to

improve the state in mentioned area. To fulfil the settled aim several scientific methods of examination namely the method of analysis, synthesis, induction, deduction and comparison will be used.

Following the aim of the paper we have formulated a set of research questions:

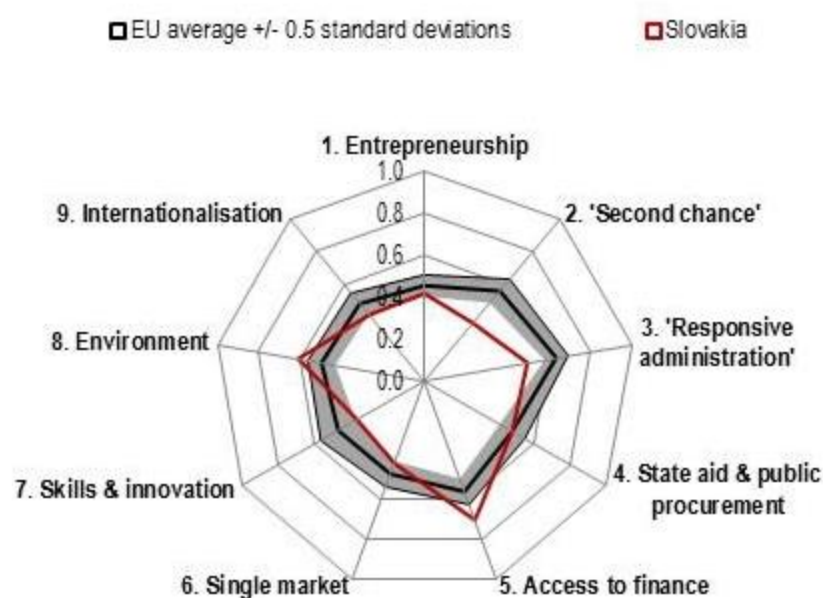
1. What is the state of implementing SBA's initiative in Slovak SME?
2. What is the state in the pillar "Access to finance" by SMEs (assessed by means of SBA's indicators)?
3. What are the main measures to be taken to improve the state in mentioned area?

To evaluate the state in implementing the SBA initiative in Slovak SME we will comment on main principles given in the SBA Fact Sheet 2017 – Slovakia. The evaluation is based on data showing performance in individual indicators according to the EU average. The stress will be given to the assessment of the state in implementing the SBA's initiative in the principle "Access to finance and developing a legal and business environment supportive to timely payments in commercial transaction" by means of SBA's indicators and to formulate main measures to be implemented to improve the state in this policy area (principle).

3 Access to finance by small and medium enterprises in Slovakia – findings and discussion

According the SBA fact Sheet 2017 – Slovakia's SBA profile is a mixed picture that combines areas where performance in implementing SBA's principles is strong ("Access to finance" and "Environment") with areas where it is lagging behind compared to the EU average ("Second chance", "Responsive administration", "Skills and innovation" and "Internationalisation").

FIG 1: SBA profile 2017 – Slovakia



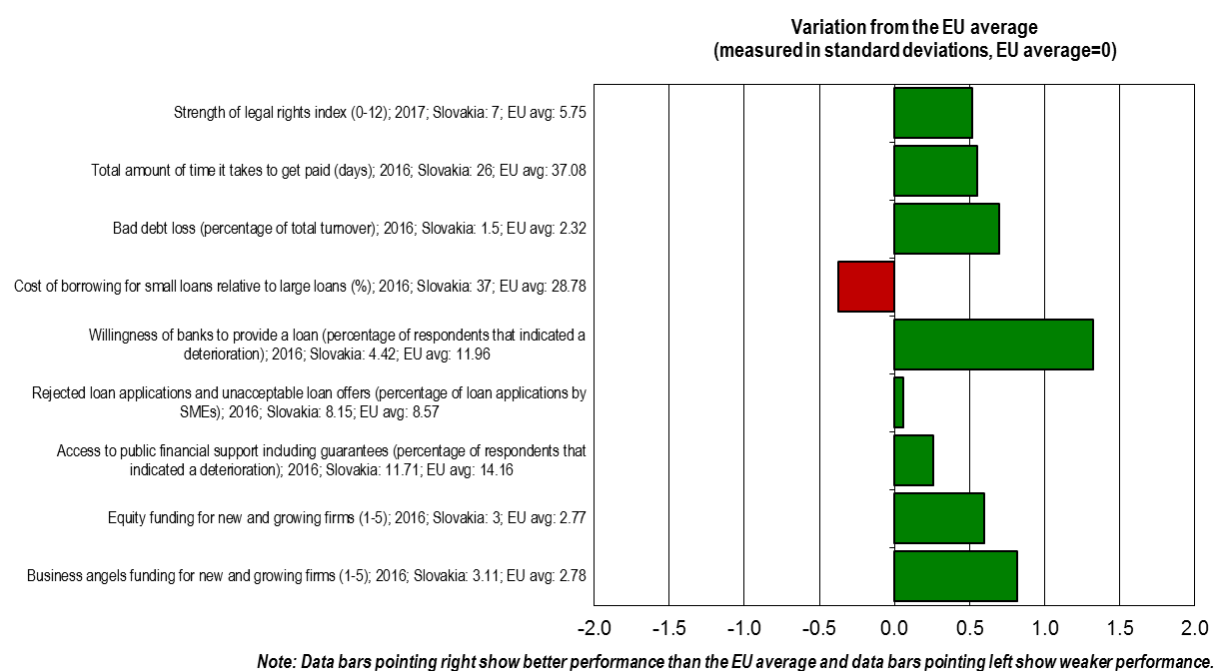
Source: SBA Fact Sheet Slovakia, 2017

The policy areas that demonstrated the most significant progress during the current reference period of 2016 to the first quarter of 2017 include “Think Small First” and “Responsive administration”. Under “Think Small First” one of the most important measures has been the introduction of the “Act on the Promotion of Small and Medium Enterprises”. It defines the areas for the application of the better regulation agenda and the SME’s test to assess the impact of proposed legislation on SME. Under “Responsive administration” the most important measure has introduced increases in tax deductibles for the self-employed. The amount that the self-employed can claim as expenses without evidence was increased, in terms of both percentage and maximum limit per year, reducing administrative burdens.

According to the Business Environment Index, the biggest concern for Slovak firms are inequality before law, the functioning of the political system, corruption and the ineffectiveness of the judiciary (Letovanec, 2016).

According to indicators in “Access to finance” Slovakia passed from being in line with the EU average last year to becoming one of the three best performers. It was above the EU average in almost all indicators.

FIG 2: Indicators on “Access to finance” – Slovakia



Source: SBA Fact Sheet Slovakia, 2017

To assess the access to finance by small and medium enterprises in the Slovak Republic we use the indicators used by the SBA’s Fact Sheets. In the Table 1 are presented the indicators of the pillar “Access to finance” for the EU (average) and for the Slovak Republic in the last two years 2016 and 2015.

The highest improvement in Slovakia is indicated in the percentage of rejected SME’s loan application. This indicator has dropped from 15.52% in 2015 to 8.15% in 2016. While in the year 2015

the indicator was by 60% higher than the EU average, in the year 2016 it is 5% less than the EU average. This is also due to the fact, that compared with banks in other EU countries, Slovak banks are now the second most willing to provide business loans.

Positively may be viewed also the decrease in the indicator bad loss debt (as a percentage of total turnover). This indicator has fallen from 5.2% in 2015 to 1.5% in 2016 and in comparison it is only 65% of the EU average.

TAB 1: SBA's indicators in the pillar "Access to finance" – EU and Slovakia

Indicator	2016		2015	
	EU	SR	EU	SR
Total amount of time it takes to get paid (in days)	37.08	26.00	34.96	19.33
Bad debt loss (percentage of total turnover)	2.32	1.5	3.76	5.2
Cost of borrowing for small loans relative to large loans (%)	28.78	37	25.22	42.32
Willingness of banks to provide a loan (% of respondents that indicated a deterioration)	11.96	4.42	13.01	4.29
Rejected loan application and unacceptable loan offers (percentage of loan application by SMEs)	8.57	8.15	9.64	15.52
Access to public financial support including guarantees (percentage of respondents indicating deterioration)	14.16	11.71	13.76	10.66
Equity funding for new and growing firms (1-5)	2.77	3.00	2.73	2.54
Business angels funding for new and growing firms (1-5)	2.78	3.11	2.67	3.2

Source: SBA Fact Sheet Slovakia, 2017, 2016

From the indicators given in the Table 1 is evident, that the negative change, however, has been the increase in the number of days it takes to get paid by the customer (average of B2C, B2B and public authorities), up from 19 days in 2015 to 26 days in 2016 – which is still better than the EU average. It is likely that this change has been mostly influenced by the rise in payment delays from public administrators.

According to the Country Report Slovakia (2017) the Slovak Republic is the country with the highest level of SME loans as a percentage of total outstanding business loans (more than 80% of loans go to SMEs). It has been showing a shift towards long-term lending (the share of short-term SME loans as a proportion of all SMEs loans decreased from 50% in 2007 to 35% in 2015), often used for investment purposes.

The percentage of respondents that indicated a deterioration in willingness of banks to provide a loan in the year 2016 in Slovakia was only 36% of the EU average.

Though it can be stated positive results in the willingness of banks to provide a loan, evident is high cost of borrowing for small loans relative to large loans. While in the year 2015 the cost of borrowing for small loans relative to large loans in percentage were by 68% higher than the EU average, in the year 2016 dropped to 37%, but it was still by 29% more than the EU average.

The percentage of respondents that indicated deterioration in access to public financial support including guarantees slightly increased in Slovakia in the year 2016 to 2015 (from 10.66% to 11.71%),

but it is still by 18% less than the EU average. This may be viewed positive, but SME still perceive slow improvement in public guarantees.

Since 2008 overall policy progress in access to finance has been moderate. Policies adopted in line with the SBA recommendations, which helped to create additional funding sources to support export initiatives and innovation projects. An example is “The innovation and technology fund” – a public venture capital fund that provides investment to innovative SME in all investment phases, but mostly to the seed and start-up phases.

Another important measure is the micro-loans programme, which was set up by the Slovak Business Agency to support micro SME. However, funding sources and programmes are needed to support early stage start-ups (SBA Fact Sheet - Slovakia, 2017).

Slovakia also lacks an adequate national grant programme to support start-ups. Since 2015, it has had a state-funded programme of support with early allocation of more than 1 million Euro, providing mentoring, advice and other types of non-financial support for start-ups. SME will be supported by measures financed from the ESIF in the new programming period from OP Research and Innovation (with an allocation of some EUR 400 million) (Letovanec, 2016).

The implementation of ESIF instruments (e.g. loans, guarantee schemes) builds on experience with the JEREMIE initiative targeting SMEs. Access to SME funding from EU sources delayed due to slow implementation of EU programmes (the Slovak government only recently started to push through several measures easing the financial burdens for early-stage businesses) (SBA Fact Sheet - Slovakia, 2017).

Conclusion

From the indicators given in the SBA Fact Sheet Slovakia (2017, 2016) is evident that the policy progress in “Access to finance” in Slovakia is evident. Though it can be stated positive results in this policy area, there is still much to do. SME perceive deterioration in access to public guarantees, evident is high cost of borrowing for small loans relative to large loans. For the future it will be necessary to focus in greater extent on funding of start-up businesses and small entrepreneurs and to supplement financial aid (in the form of grants or loans) by providing educational and consulting services and interconnect these aids.

To improve the state in implementing SBA initiatives, Slovakia needs to create suitable entrepreneurial environment for small and medium businesses (Letovanec, 2016). The biggest concern for Slovak firms is inequality before law, corruption and the ineffectiveness of the judiciary. Public administration needs to be more transparent and address widely perceived corruption. It should also better respond to SMEs needs by providing higher quality services.

It is primarily a business friendly environment in which both start-ups and experienced entrepreneurs could benefit from a wide range of instruments to support their business ideas. Failure in business should be perceived as an opportunity for repeated market entry and not automatically understood as a failure.

Moreover, entrepreneurship should be accepted as a relevant career choice and receive support in the educational process. Building entrepreneurial competencies at a young age might be utilized by both entrepreneurs as well as employees at a later stage.

The new EU multiannual financial framework for 2014-2020 offers for Slovakia a chance to support SMEs via a number of financial and non-financial instruments (loans, equity funding, regulatory impact assessment system, mentoring services, start-up promotion, etc.) as defined in the national Operational programmes. This might be the time to formulate a clear SME strategy utilizing the best EU international practices in a long-term framework. That would also accelerate the fulfilment of key SBA recommendations.

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OUTSOURCING AS A FORM OF COSTS OPTIMIZATION OF THE HOSPITALITY SUPPLEMENTARY ACTIVITIES

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Abstract: *Optimal use of sources is one of the most important factors of the company's success. In business processes we do not deal with cost reduction only, but also with effective spending of resources with the aim to reach required yield level. Cost optimization is an assumption for general prosperity. Tracking cost development is an ever-lasting process. In the booming period it generates the profit, in the period of crisis it helps the company survive. Cost savings can result in activities that are convenient to be implemented in a form of supplies. The company has to map those processes that are, from the point of economy, more advantageous to be executed by specialized businesses because if implemented by the company itself they do not reach a required level of effectiveness. Such a system of activities implementation is outsourcing. The main aim of this practice is cost savings. This article focuses on outsourcing of particularly selected activities provided within the hospitality industry.*

Keywords: *costs, outsourcing, effectiveness, cost optimization*

JEL classification: *D25, G3, G31*

Grant affiliation:

Introduction

Monitoring of costs and their optimization is a continuous process. An array of theories deals with this issue. There exist a lot of studies on the market written by domestic, as well as foreign authors who have analyzed the development of costs aimed at their optimal level related to their performance (Král, B. A kol. 2012). It is natural that not a single product can be produced without a particular amount of costs. Adequate costs are a pre-condition of a genuine profit. Businesses fight for the lowest costs while maintaining required quality. The aim is to reach costs optimization. From the side of customers the quality represents the prime criterion for the product value assessment being it an article or service. The quality decrease caused by costs cutting results in changes of their preferences. Businesses thus cannot follow the way of costs mere cutting. It is important to know costs conditionality and performances. In order to reach costs optimization, it is important to profoundly analyze all costs and their casual links with performances. Uneconomical spending of costs can cause economical weakening and loss of the market position. Executive management have to concentrate on efficient handling of resources in order to prevent them from wasting because that can lead to the decrease of the profit and weakening the efficiency of entrepreneurial activities. The company position is assessed according to the ratio indicator. We observe return of assets (ROA), return of sales (ROS) when the final value directly depends on the economic result as a difference between the revenue and costs. The following article focuses on the issue of costs development

concerning supplementary services in companies providing hospitality services in hotels. Apart for description of available sources the article deals with the analyses of costs spent on selected supplementary services. In order to confirm the significance of development monitoring of costs spent on supplementary services, the data acquired through the field and questionnaire surveys are presented.

1 Outsourcing - the tool for costs decrease

Costs are a generic term (Popesko, B., 2016). They can be analyzed from the accountant's point of view depending on the requirement of financial statements compilation for external users, and also from the point of the internal managerial accounting system. A number of the companies study the process of costs development only on the level of direct costs linked with production. Not all costs depend on the production volumes, some of them are spent without even constituting a direct part of a product or service. We talk about overheads costs, the company management do not pay sufficient attention to. Such costs can contribute to disproportionate increase in the total costs. A number of them have to be victimized without any company's production. Costs depend on implemented technologies, they are caused by the business management, arise in the process of purchasing of required sources and finally in the cause of their processing. In the process of the statistical monitoring of costs development we work with generic costs. External statements that are based on them set the macro-economical monitoring of costs demands depending on particular sectors in the country. Costs can be characterized in accordance with different criteria, however, it is not the aim of this article to deal with. The way leading to the costs optimization is the method of calculation, that is, the determination of adequate costs on a performance unit. There exists a number of calculation methods, various methods of particular costs types assignments, direct and indirect toward a particular calculation unit. Calculations are based on the general theory dealing with costs management of the company internal accountancy system, the fundament of which is the system of managerial accountancy. The current approach towards costs monitoring is based on the facility management approach (Booty, F., 2009). The core aims at the main entrepreneurial activity, other supplementary activities without which the core business cannot be executed. Therefore they can be implemented by specialized companies. The company has to decide whether its supplementary activities should be executed by its own employees, or by an external firm. We talk about outsourcing (outside resource using). The costs management is connected with costs optimization. The original idea refers to the founder of modern economics, Adam Smith, who fostered the thought that the specialization is important for the company productivity development. There exists a number of outsourcing definitions based on, e.g. approach of 'produce or buy' (Dvořáček, J., Tyll, L., 2010), or render regularly repeated activities to an external provider, etc. In the 80s of the 20th century international concerns as Kodak, Wero, GM and others, used that outsourcing information system in their internal management processes (Bruckner, T., Voříšek, J., 1998). That trend continued and at the beginning of the 21st century almost 80% of US companies used this form. The reason of the external providers use is the decrease of operating costs, including payroll costs, decrease of investments costs, lack of the company's own capacity in the process of internal implementation of particular activities, risk devolution, improvement of quality process improvement of cash flow, etc. This system of outsourcing can cause the risks linked with the control losses of particular activities, irregular and low quality services, possible leak of internal or confidential information, or formation of some additional costs. In the Czech Republic the system came into its existence in the 90s of the 20th century as a consequence of the market economy establishment. In

order to introduce the system of outsourcing the company has to select the range of supplementary activities and their economic advantages (Vyskočil, V.K., 2009). There does not exist any model for the management of these activities. It always depends on the company type and its activities. A profound analysis is needed in order to reach the optimization of the supplementary activities.

2 Outsourcing of supplementary services in the hotel industry

The main hotel segment is the accommodation service. A number of supplementary services are connected with this segment that a guest does not see, however, without these services a hotel cannot provide them in their full complexity. These are just the supplementary services that can be executed as outsourcing. The reasons for the outsourcing system use can vary. Competitive purposes secure an advantage against competitors; factual reasons support an improvement of the core activities to be executed on a higher quality level. Organizational issues cause simplicity of managerial duties and narrow of the company organizational structure. Parking lots at hotels are hired; hotels do not take responsibilities for parked vehicles. Minor maintenance services are executed by hired specialists. There are savings in the segment of ITs, including its software, in maintenance of web presentations, programming, info and reservation systems are implemented via IT technologies outsourcing. Security agencies take care of hotels and garages guarding. Hotels entrust their marketing activities to specialized agencies because an appropriate promotion leads to higher positive results of their activities (Gastro Trend, 2014). In case of this study, we consider financial savings to be the most important part of the issue. External companies that work for hotels ensure the housekeeping services – cleaning, chambermaids' work, laundry, ironing. These services rank among generally hired ones at the external market. Hotels usually face the decision – should we run our own laundry, or should we outsource this service? The advantages of a selected variation of services are described in the following table.

TAB. 1: Our own laundry – pros and cons

External laundry	Our own laundry
Recommendation of convenient linen	Lower operational costs, high investments in machinery
Linen available at its quantity	One's own selection of linen, machinery
No costs on one's own linen purchasing	Individual selection of washing detergents
Savings in storage room, staff	Direct supervision of washed laundry quality
No need to care for linen repair	Flexibility
Savings in arrangements of the hotel's own laundry segment	Lower number of bed linen sets
Usual operational services costs	Usual operational costs, wage costs including legal payments, depreciation of facilities

Source: authors' own

Hotel housekeeping is considered to be the most frequent service provided by an external company. The analysis of the spending costs is presented in this article on an example of a 4-star hotel with approximately 90 rooms, that belongs to a hotel chain. There work 8 chambermaids. Housekeeping calculations include all the operations executed by a chambermaid in order a guest is provided a perfectly cleaned hotel room (namely – a clean litter bin, changed bed linen and dusted furniture, cleaned bathroom – washed WC, shower/bath tub, polished mirror, batteries, changed bath towels,

supplied sanitary items, cleaned floor, etc.). Calculated costs amount includes prices of purchased products, cleansing detergents, as well as costs of wages, including taxes, social and health insurance. The costs amount was calculated on the basis of initial prices of needed housekeeping items and consequently presented as an average consumption per one room. Appliances constitute fixed costs, as well as costs of hotel linen and other textile products. The prices are given in Euros.

TAB. 2: Costs of housekeeping

	Purchasing prices	Costs of 8 chambermaids wages	Annual costs	Note (examples of items)
Cleansing detergents	172	1376	10604,40	Cleansing det. Of glass, dust, jalousies, bathrooms, mops, etc.
Appliances	172,75	1382	1382	Steam cleaner, vacuum cleaner (both 2-year use)
Bathroom accessories	72,57	25125,40	252947,50	Shampoo, soap, gel, etc.
Hotel textile products (98 rooms)	160,61	180329	320169	Towels, bath towels, bed linen, bath mats
Costs of wages	1061,72	8493,76	101925,12	Wages, incl. legal payments
Total	1639.65	216706,16	687028,02	

Source: authors' own, internal research results

The company hired an outsourcing firm that analyzed the services and concluded a contract with them. The price for a monthly housekeeping of a room was settled at 90 Euros that is 105 840 Euros per year. Direct costs of laundry washing in one's own laundry are 64 386 Euros (based on the hotel research). The outsourcing company arranges delivery of clean linen. The price for bed linen washing was agreed at 2 Euros that makes 71 540 Euros for 98 rooms per year. The hotel will not have to invest into the washing machines alternation that will bring further savings. The outsourcing company delivers bathroom items, including the hygienic facilities according to agreed prices. The annual costs reach 240 000 Euros

TAB. 3: Total costs recapitulation

	Hotel costs	Outsourcing company	Costs comparison
Cleansing detergents, appliances	264 933,90	240 000	- 24 033,90
Wage costs incl. legal payments	101925,12	0	+ 3 914,88
Contracted housekeeping costs	0	105 840	
Hotel textile products	320 169	308 600	- 11 569,00
Laundry service	64 386	71 540	+ 7 154,00
Total			+ 24 534,02

Source: authors' own, internal research results

The savings are based on the total comparison of costs and reach the amount of 24 534.02 Euros per year. The hotel does not have to take care of cleansing detergents purchasing, does not have to alternate housekeeping facilities. The outsourcing company takes care of the hotel laundry, needed alternations and supplies. The hotel rents linen, the contracted partner has taken over all required services. The research also revealed that the wage savings are replaced with costs of housekeeping. The increase of costs is balanced by savings in other segments of hotel operations. If we compare all the savings and costs increase, it is obvious that the outsourcing of hotel services pays off. This trend is similar in other addressed hotel establishments. The results are not rare, particular savings, however, will always depend on agreed terms of outsourcing provisions.

3 Discussion

The outsourcing situation in different hotel establishments is presented as the results of the questionnaire research. The research was implemented in April this year by part-time students of the Institute of Hospitality Management in Prague. The addressed students are directly concerned with these supplementary services, more over some of them are responsible for their implementation that is for the establishments' economy. That is why we can come to a conclusion that the obtained data correspond with the situation in the mentioned segment of hotel services and the data can be verified.

TAB. 4: Utilization of outsourcing services in selected establishments

Establishment type	Hotel	Gastronomic facility	Others
No of addressed facilities	28	12	4
Size of a facility: No of beds/places			
Up to 30	0	2	
Up to 60	4	4	
Up to 90	10	0	
More	14	6	
Outsourcing in use : yes	28	8	3
no	0	4	1
Types of services: housekeeping	14	2	0
laundry	18	4	0
security	16	0	0
finances	6	2	3
other	4	0	0
Establishment locality: Prague	14	4	0
Other regions	14	4	3
Outsourcing services types of advantages			
- Quality	6	2	0
- Financial savings	14	0	0
- Lower No of employees	20	4	1
- Insufficient one's own capacity	18	4	2
Satisfaction with services: yes	24	4	3
no	4	4	0

Source: authors' own elaboration of questionnaire research

In the course of the research there were 44 respondents addressed. All of them answered the questions. The aim of the research was targeted at the findings concerning outsourcing of supplementary services provided by accommodation establishments and gastronomic facilities. It is obvious that these facilities utilize the system of outsourcing without taking into consideration their size. Large establishments that have sufficient capital hire the outsourcing system of services as well as the smaller ones that are limited in their capacity. It is not important at all where the company is located. The companies providing outsourcing offer their services at all localities. Specialized firms operate in smaller towns and their outsourcing services provisions represent a convenient business activity. Hotel establishments utilize this system mostly, gastronomic facilities represent 50%. This situation is affected by the character of their operations that create the essential contents of their business operations. Hotel establishments utilize this system mainly in the segment of linen laundry. Housekeeping and security services are, more or less, on the same level. An assessment of the economic advantage represents a significant criterion for a particular establishment. Lower number of internal employees is at the top. This fact is influenced by the legislation of wage costs. Employers have to regularly pay levies regulated by social policy, unemployment policy, as well as they have to contribute to the fund of health insurance. These payments constitute approximately one third of wage costs. It is thus logical that companies seek for possible savings. Outsourcing provisions decrease not only their costs but also improve their cash flow that is needed for the monitoring of permanent solvency and liquidity. Another limiting factor in the Czech Republic is the wage system development. It is not only an increase of a minimum wage but, due to a positive development of the economy, the wage level is increasing generally. From the point of the company costs optimization this situation is not advantageous. An insufficient one's own operating and technical capacity is connected with possible investments into the company's facilities. The enterprises that had already invested into the essential equipment needed for core services provisions do not have enough capital for the machinery facilitating supplementary services provisions. It is logical that such companies rent outsourcing system of services. There is a warning signal – quality assessment. A substantial number of companies are satisfied with the system, however, 20% are not.

Conclusion

Each hotelier has to decide whether the outsourcing system of services pays off or not. The solution depends on motivating factors of quality and quantity. From the quantity point we are concerned with costs savings. A qualified assessment of advantages constitutes rational prerequisite of savings. A correct contract with a provider can prevent a critical situation that can be caused by higher costs, or when the services provided by an external company do not meet needed requirements from the point of time and scale. The outsourcing system represents current entrepreneurial environment. It cannot bring savings without the qualified economic balance sheet. The cooperation has to be based on mutual trust, flexibility and innovation processes of provided services.

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VARIABLE CUSTOMER COST ACCOUNTING MODEL IN COMMERCIAL ENTERPRISES

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Abstract: *In order to be able to continue their economic activity, commercial enterprises need to maintain profitable customer relations. In order to determine the profitability of a customer relationship, it is necessary to keep a cost account that is capable of providing adequate information about the customer costs. One of the cost accounts that can be used to determine the customer costs is the variable customers cost account. The aim of the article is to present the main assumptions of the customer cost accounting model using the principles of variable cost accounting. The model of this cost calculation can be used by any trader who keeps accounts. The multi-stage and multi-block profit and loss account of the trading company, in which the customer is the main cost object, is an extension of this cost centre. When creating the model of variable cost accounting for the customer, research methods were used: synthesis and deduction.*

Keywords: *customer, cost accounting, variable cost accounting*

JEL classification: *M41, O16*

Grant affiliation:

Introduction

In the business practice of commercial enterprises, indirect costs, especially those related to the acquisition of new customers and intensification of sales to existing customers, are constantly increasing their share in the total cost structure. For this reason, a systematic full cost accounting, which is widely used, will have limited possibilities to assist business managers in establishing the costs of their customers. The main disadvantage of this cost account is the contractual method of settling indirect costs between customers using allocation keys (Kinney & Raiborn, 2011, p. 29). This division introduces the necessity of proportionalisation of indirect costs, which makes these costs suboptimal. Therefore, these procedures are not objective, as each change in the allocation key for the allocation of indirect costs results in a different distribution of those costs among customers.

Systematic customer costing for the sector of small and medium enterprises (at least in part) will be the most effective solution due to the low outlays associated with the implementation and maintenance of this type of costing account (Lew & Szczypa, 2017, p.384). However, the usefulness of this type of costing is limited by its drawbacks, which have a significant impact on the ability of commercial companies to support decisions in the short term (Lew, Pacana & Kulpa, 2017). The solution to this problem is the concept of variable cost accounting for customers.

The aim of the article is to present the main assumptions of the customer cost accounting model using the principles of variable cost accounting. When creating the model of variable cost accounting for the customer, research methods were used: synthesis and deduction.

1 Variable customer cost accounting model

Problematic cost accounts are the development and adaptation of the general accounting theory and cost accounting to the needs of specific companies, and they also analyse the applicability of the accounting subsystems in these companies. Thus, the solution to the basic problems of the full cost accounting of the customer is the partial cost accounting, and in particular the variable cost calculation of the customer. Its essence is based on the division of the total costs of customer relations into costs:

- depending on the volume of sales, variable customer costs,
- fixed costs, irrespective of the volume of sales.

Costs that depend on the volume of goods sold (variable costs) are largely costs that bring value to customers and the value of goods sold. Costs regardless of the size of the goods sold (fixed costs) are the remainder of the costs that bring value to the customer and the total costs that do not bring value to the customer. In order to determine the customer's costs, the calculation of the customer's variable costs shall be simplified:

- the variable costs of the customer are proportional (linear) to the changes in the volume of sales of goods,
- other costs are treated as fixed costs.

However, the reality is that the response rate of variable costs is a compilation of changes of a proportional, progressive and degressive nature. Fixed costs are not fixed in the long term, but they are subject to rapid changes when certain thresholds for the sale of goods are exceeded. These changes determine the short-term usefulness of the customer's cost account in making decisions.

The essence of the customer variable cost accounting model is to break down the total costs of a trading enterprise into the costs of activities that create value for the customer and the costs of activities that do not create value for the customer. On the other hand, the costs of activities that create value for the customer should be divided into variable costs of customers and fixed costs of customers.

In the variable cost calculation of a customer, the total cost of the customer can be expressed by an expression:

$$C_{VC} = \sum_{i=1}^n C_{VUi} \times Q_i + \sum_{k=1}^m C_{VUGk} \times G_k$$

where:

C_{VC} – variable customer costs,

C_{VUi} – variable unit cost of i -type,

Q_i – amount of customers related to the variable unit cost of i -type,

C_{VUGk} – variable unit cost of k -type goods,

G_k – amount of goods related to the variable unit cost of k -type.

The total costs of the customers additionally include fixed costs of activities bringing value to the customers:

$$C_{TC} = C_{VC} + C_{FC}$$

where:

C_{TC} – total costs of customers,

C_{VC} – variable customers costs,

C_{FC} – fixed costs of customers.

The total costs of a commercial company can be presented:

$$C_T = C_{TC} + C_{NC}$$

where:

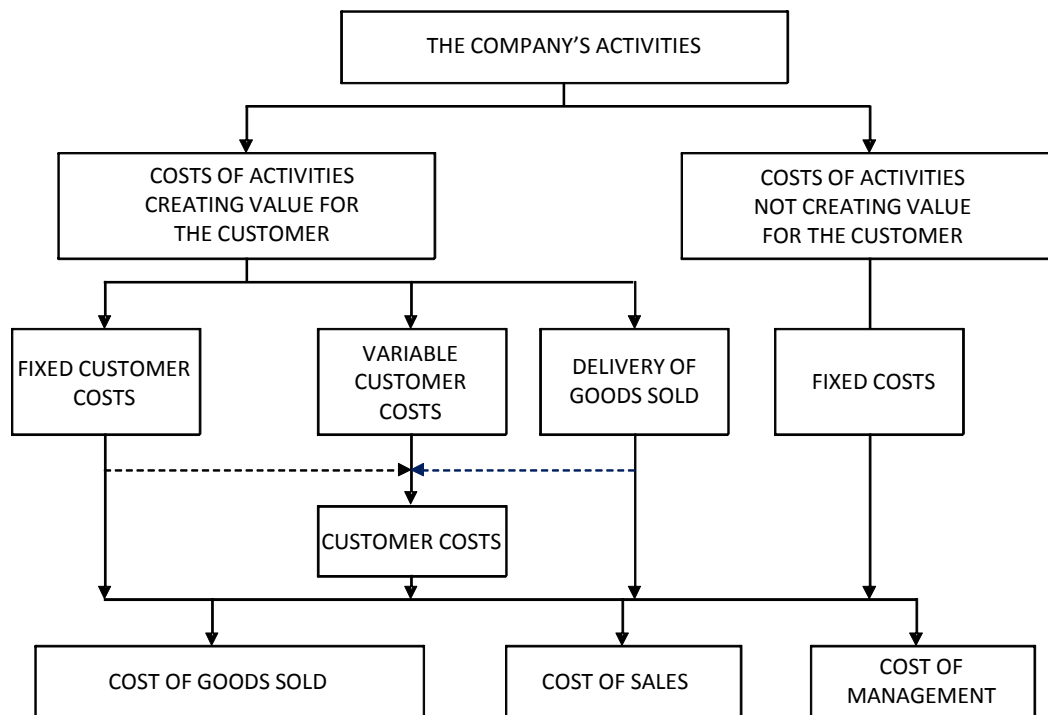
C_T – total costs of the company,

C_{TC} – total costs of customers,

C_{NC} – fixed costs of activities that do not create value for customers.

The model of the variable cost account of the customer integrated with the financial accounting system is presented in Fig. 1.

FIG. 1: Variable customer cost accounting model integrated with the financial accounting system



Source: own.

In the situation of integration of the customer's variable cost account with the financial accounting system, it will be relatively difficult to determine the customer's actual fixed and variable costs in a systematic manner, using accounting records that accept only cost categories resulting from statutory regulations (Act, 1994). Integration of the "traditional" cost account with the variable cost account of customers is possible by appropriate extension of the analytical records or by using an

additional set of accounts, which will comprehensively deal with the recording of costs in terms of their degree of reaction to changes in the volume of sales of goods.

When assessing the usefulness of variable cost accounting for a customer, the advantages of this solution should be mentioned:

- provision of information on the customer's unit variable costs - creating value for the customer,
- providing information on fixed costs, independent of changes in the volume of sales of goods,
- enabling the process of controlling the costs associated with the sale of goods and individual customers,
- providing better information for short-term decision making.

The advantages of this cost calculation are decisive when traders decide to implement and maintain this cost calculation. However, this bill also has drawbacks. Its main drawbacks are as follows:

- the simplification that all costs can be clearly divided into variable costs that vary proportionally and other costs that are treated as fixed,
- difficulties in obtaining information on fixed and variable costs on a systematic basis,
- real difficulties in dividing costs into fixed and variable costs,
- focusing on the gross margin (defined as the difference between sales revenues and variable costs of customers), which may weaken the activities aimed at optimising fixed costs,
- the impossibility of full integration into a systematic cost accounting system.

The variable cost account of customers integrated into the financial accounting system is also not free from the basic flaw of the full cost account of the customer. This flaw is the necessity to settle fixed costs on individual customers (it is enforced by reporting requirements), which, similarly as in the case of a full cost account of a customer, results in suboptimisation of general costs of a given customer. Some authors suggest that fixed costs should be accounted for in relation to sales revenues (Nita, 2008, p. 204), but this is not the case. It causes a kind of "punishment" of the client with additional costs depending on the income obtained thanks to the client, which boils down to the fact of charging the client with the higher costs the higher the income gained thanks to him by the commercial company. The correct solution in this situation is to settle fixed costs proportionally to the sum of variable costs of a given customer, which should additionally intensify the mechanisms of optimizing these costs in the trading company, as this solution increases the "force" of costs impact.

Summarizing the classification of costs in the client's variable cost account, it should be stated that they can be divided into the following categories:

- 1) fixed costs or other standby costs, incurred irrespective of the sales value (e.g. part of personnel costs, depreciation of fixed assets, local taxes and charges, rent, consumption of energy, etc.),
- 2) variable costs or so-called costs of occupancy, depending on the sales value (costs of obtaining and issuing an order, specification and packaging of the delivery, internal and external transport, delivery insurance, commission part of the remuneration of sales employees, etc.),

- 3) special costs (also included in variable costs), i.e. costs incurred in an irregular manner related to decisions made depending on the situation in relations with a given customer (costs of special orders, discounts, ad hoc promotional activities, etc.).

In determining variable costs, account must be taken of the fact that these costs do not depend solely on the value of sales to the customer concerned. They will also depend on the variety of product ranges, delivery distances and payment terms (the effect of lost benefits due to crediting customers).

When determining the special costs, the company is never certain to incur them to the end, because it depends on the specific actions that will be forced upon it, usually through specific actions of customers. The amount of these costs will also depend on the tools the trader uses to carry out these activities. The protection of a trader in the event of abnormal operations may also result in fixed costs linked, for example, to the need to maintain larger stocks of goods.

The drawbacks of this cost accounting make the use of variable cost accounting integrated into the 'traditional' cost accounting inappropriate for traders wishing to analyse in detail the profitability of their customers.

2 Model of multi-stage and multi-block variable customer cost accounting

The needs of detailed, not distorted by suboptimization costs, customer profitability analyses can be satisfied by the concept of segmental variable cost accounting of the customer. The basic variants of the segmental variable cost account of the customer include:

- multi-stage variable customer cost account,
- multi-block variable customer cost account.

The multi-stage variable cost account of the customer assumes consideration of fixed costs in segments assigned to different processes of the company (Szczypta, 2014, p. 82). Multi-block variable cost accounting of a client is applied in the case of analyses conducted in the cross-section of individual clients, and not in the whole group of them. However, the best management results can be obtained by combining these two accounts to form a multi-stage and multi-block customer variable cost (performance) account. This account is kept as a system parallel to the 'traditional' cost accounting system. In such a situation, the financial accounting system is considered to be the most important information system for providing information to the customer's cost account, although it should be borne in mind that this is information determined in accordance with financial accounting rules (which means that not all information can be provided by this system). This information is of particular importance for the maintenance of a multi-stage and multi-block client cost account *ex post* in order to compare performance with the assumptions of that account *ex ante*.

The concept of a multi-stage and multi-block cost account of a customer using a variable cost account is based on the presentation of fixed costs not as a single segment recognized in the financial result of a given period or settled into basic cost objects, but divided into many segments, concerning cost objects of interest to the trading company. Individual segments are created on the basis of information from source documents and other non-accounting sources. The segments of the multi-stage and multi-block customer cost accounts focus on the key cost items affecting the differentiation of customer profitability (Lew, 2017, p. 25). Fixed costs may be determined in this

account for any number of cost objects which are hierarchically ordered and institutionally linked (Maruszewska, 2012, p. 4).

In a customer's multi-step and multi-block costing analysis, the output variable is the net sales revenue of the trading enterprise. Identification and presentation of costs of particular cost objects in subsequent segments allows to make comparisons of these values in order to determine partial results in the form of coverage margins realized on these cost objects. An example of a simplified formula for a multi-stage and multi-block customer cost account is shown in Table 1.

TAB. 1: Multi-stage and multi-block customer costing account

No.	ENTRY	CUSTOMER 1		CUSTOMER N...		TOTAL SALES DEPARTMENT T
		Product 1	Product n...	Product 1	Product n...	
1.	Net income from sales	x	x	x	x	x
2.	Discounts and rebates	x	x	x	x	x
3.	Value of goods sold	x	x	x	x	x
4.	Coverage margin I	x	x	x	x	x
5.	Costs related to goods	x	x	x	x	x
6.	Coverage margin II	x	x	x	x	x
7.	Sum of coverage margins II per customer	xx		xx		x
8.	Variable costs of customers	xx		xx		x
9.	Coverage margin III	xx		xx		xx
10.	Costs of loss of profit	xx		xx		xx
11.	Coverage margin IV	xx		xx		xx
12.	Total coverage margins per customer group	xxx				xxx
13.	Fixed costs of a customer group	xxx				xxx
14.	Coverage margin V	xxx				xxx
15.	Company's fixed costs	xxx				xxx
16.	Net profit (loss) on sales	xxx				xxx

Source: Own.

Decomposition of fixed, variable costs and coverage margins increases the value of the variable cost information account and increases the level of control and, consequently, the level of management of individual costs shaping the profitability of customers and the entire trading enterprise.

The multi-stage and multi-block customer cost accounting, which can also be summarised in a customer-oriented profit and loss account in this way, provides multifaceted information on the performance of companies. It is a tool for analysing and optimising customer profitability, which is relatively easy and cheap to use, and therefore available to virtually every commercial company for which the main priority is the customer.

Conclusion

The application of the customer variable cost accounting model will make it possible to determine the actual customer cost and, consequently, the profitability of relations with individual customers. Determining the actual profitability of individual customers enables the improvement of financial result by eliminating unprofitable customers. R.S. Kaplan (1989) proved that the high revenues generated by a given customer do not guarantee a profit from that customer. That is why it is so important to determine the actual costs of individual customers. In the developed model of variable customer cost accounting, the most important element should be considered to be the division of costs into those that create value for customers and those that do not create value for customers. This separation allows managers to focus on the activities that generate revenue. At the same time, determining the costs of activities that do not create value for the customer allows to eliminate or limit these activities.

The concept of multi-stage and multi-block customer cost accounting can be applied to every commercial company. The MS Excel package is sufficient to keep this customer cost account. The implementation and use of this account is a cheap and effective way of obtaining important information for establishing profitable relations with customers. In addition to setting the margin of customers, it is also possible to set the margin of goods, dealers, individual shops and other variables whose profitability is of interest to traders.

Research into new cost accounting models that can be applied in practice by enterprises should be continued. An interesting area of research is the integration of different cost accounting models and the exploitation of synergies.

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EFFECTIVENESS OF FISCAL AND MONETARY POLICY IN RELATION TO THE MACROECONOMIC DEVELOPMENT IN SOME EU COUNTRIES IN 2004 - 2017

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Abstract: *Turbulent processes occurring at the beginning of the 21st century in the global economy as well as in the EU economy reopened a debate on the effectiveness of fiscal and monetary policy. These processes have created a space for verification of economic theories and paradigms. At the same time, these processes raised questions how the proposed measures were reflected in the development of the most important macroeconomic indicators in some EU countries and to what extent it was affected by the measures of monetary and fiscal policy. The assertions of several economists that monetary policy will contribute to more efficient allocation of production resources and stimulate and stabilize the economy's performance have not been confirmed. Therefore, many economists propose to stimulate the economy using fiscal policy instruments. A special feature of economic development, especially after 2008, was that fiscal and monetary policies have their limits, which is reflected in the development of major macroeconomic indicators. This fact is illustrated on the specific data of some EU countries, on the basis of which we try to identify the arguments for and against fiscal respectively monetary policy.*

Keywords: *fiscal policy, monetary policy, performance of the economy*

JEL classification: *E52, E62*

Grant affiliation: *Project VEGA No. 1/0246/16 Efficiency of fiscal and monetary policy during the economic cycle.*

Introduction

Since the accession of Slovakia to the European Union on 1 May 2004, the Slovak economy was interested in joining the Monetary Union and implementing euro as common European currency. Due to this goal it was necessary to meet convergence criteria, known as the Maastricht criteria. Slovakia fulfilled the Maastricht criteria in 2008 and from 1 January 2009 became a member of the EMU. Development of macroeconomic indicators after entering the eurozone was affected by global financial, economic and debt crisis.

The precondition for meeting the Maastricht criteria was primarily to increase the economic performance and ensure the faster growth in the competitiveness of the Slovak economy. It can be said that Slovakia recorded one of the highest real GDP growth among the V4 countries for 2004-2008.

1 Selected determinants of macroeconomic developments in V4 countries

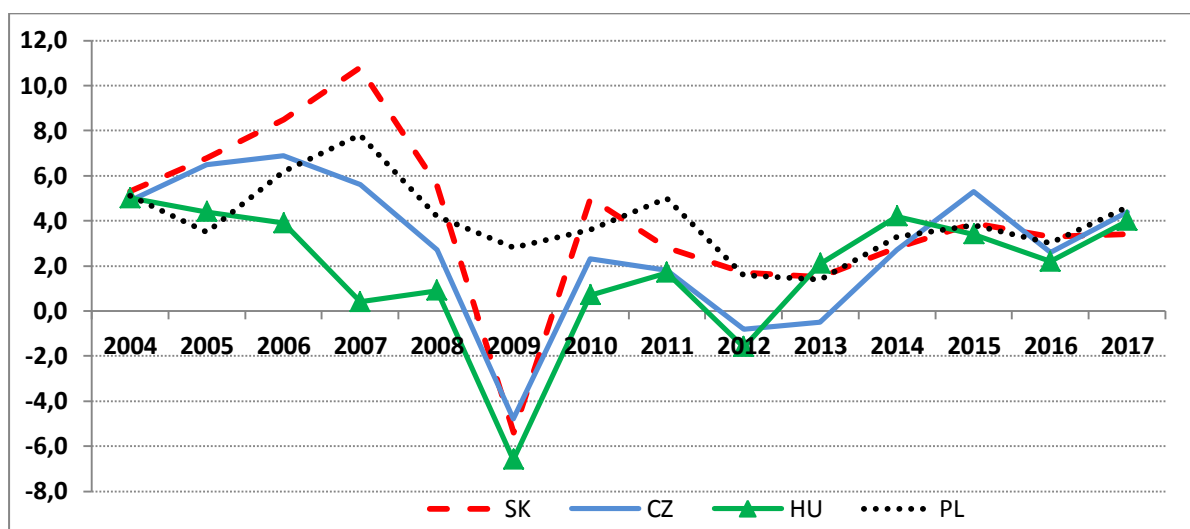
In 2004-2007, the economic growth was driven by a very strong rise in labour productivity with relatively weaker growth in unemployment. In 2008, the rate of economic growth slowed down and gradually led to significant economic turnaround. In 2009, the dynamics of GDP growth slowed down by - 5.7%, which brought the Slovak economy to recession. Exports and investment recorded the biggest annual decline. The recession which origin dates back to 2008, had a very universal and global nature, affecting not only the developed but also emerging and developing economies.

TAB. 1: Real GDP growth rate (in %)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
SK	5.3	6.8	8.5	10.8	5.6	-5.4	5.0	2.8	1.7	1.5	2.8	3.9	3.3	3.4
CZ	4.9	6.5	6.9	5.6	2.7	-4.8	2.3	1.8	-0.8	-0.5	2.7	5.3	2.6	4.4
HU	5.0	4.4	3.9	0.4	0.9	-6.6	0.7	1.7	-1.6	2.1	4.2	3.4	2.2	4.0
PL	5.1	3.5	6.2	7.8	4.2	2.8	3.6	5.0	1.6	1.4	3.3	3.8	3.0	4.6

Source: Eurostat, 2018

FIG. 1: Real GDP growth rate (in %)



Source: Eurostat, 2018

The results of the economic development in 2010 no longer recorded a fall in the GDP and exports, which contributed to the fact that the Slovak economy reached a phase of expansion. The recession in 2009 pointed to some of the positive benefits of European integration, but also uncovered many of its shortcomings (Krugman, 2009). A serious problem is the asymmetric structure of the eurozone with a common monetary policy and with nineteen different fiscal policies; the lack of enforcement of the Stability and Growth Pact rules, the lack of effective coordination of economic policies as well as different competitiveness of the EU Member States and the Euro-zone.

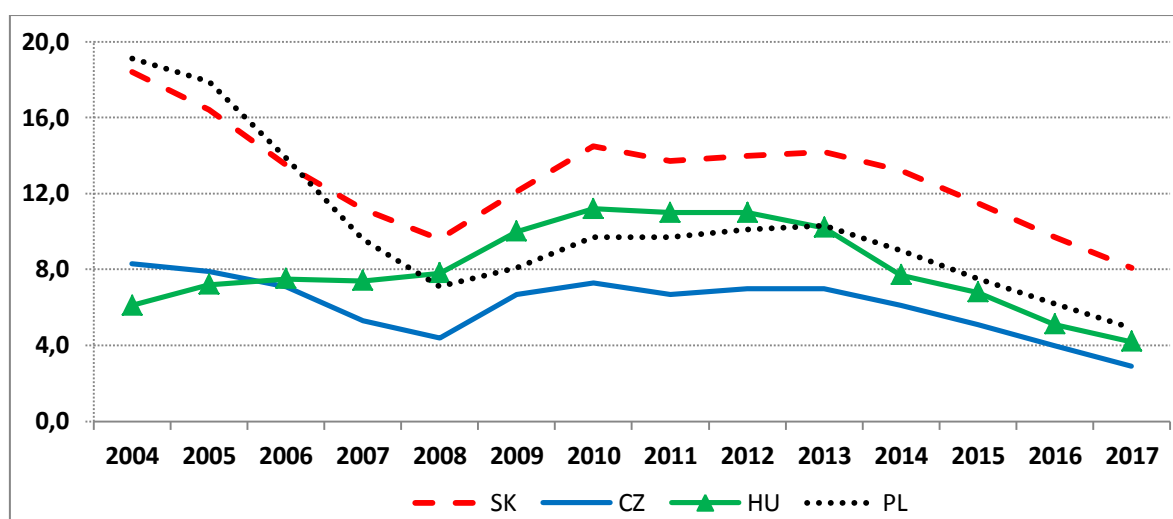
In 2011-2016, the growth of the economy was accompanied by a weak increase in labour productivity. Slovak economy was rapidly recovering after the crisis (after 2010) and all V4 economies started to grow. In particular, after 2013, the dominance of the Slovak and Polish economies disappeared and in subsequent years their growth was comparable to other V4 countries. Changes in the performance of the economy were also reflected in the development of unemployment.

TAB. 2: Unemployment rate (in %)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
SK	18.4	16.4	13.5	11.2	9.6	12.1	14.5	13.7	14.0	14.2	13.2	11.5	9.7	8.1
CZ	8.3	7.9	7.1	5.3	4.4	6.7	7.3	6.7	7.0	7.0	6.1	5.1	4.0	2.9
HU	6.1	7.2	7.5	7.4	7.8	10.0	11.2	11.0	11.0	10.2	7.7	6.8	5.1	4.2
PL	19.1	17.9	13.9	9.6	7.1	8.1	9.7	9.7	10.1	10.3	9.0	7.5	6.2	4.9

Source: Eurostat, 2018

FIG. 2: Unemployment rate (in %)



Source: Eurostat, 2018

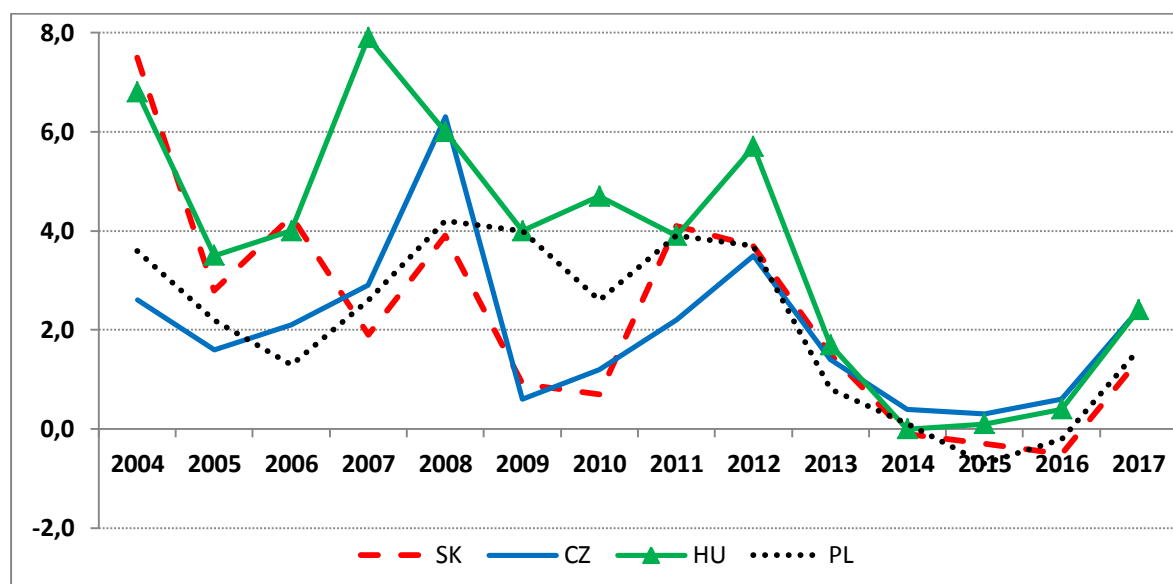
It is remarkable that in recent years the relationship between the economic growth and employment, respectively unemployment has been different from what used to be in the past. This means that even with the relatively lower growth of the economy, there has been a significant reduction in unemployment in recent years. In the years 2016 and 2017, favourable economic development continued in the labour market in Slovakia. The high number of vacancies combined with a low unemployment began to signal a possible overheating of the labour market in Slovakia. However, the long-term unemployment rate still remains a problem (SAV, 2017).

TAB. 3: Inflation rate – HICP (in %)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
SK	7.5	2.8	4.3	1.9	3.9	0.9	0.7	4.1	3.7	1.5	-0.1	-0.3	-0.5	1.4
CZ	2.6	1.6	2.1	2.9	6.3	0.6	1.2	2.2	3.5	1.4	0.4	0.3	0.6	2.4
HU	6.8	3.5	4.0	7.9	6.0	4.0	4.7	3.9	5.7	1.7	0.0	0.1	0.4	2.4
PL	3.6	2.2	1.3	2.6	4.2	4.0	2.6	3.9	3.7	0.8	0.1	-0.7	-0.2	1.6

Source: Eurostat, 2018

The implementation of monetary and fiscal policies of the EU Member States was largely determined by their direction to the eurozone. A rapid growth of energy and food prices caused that Slovakia did not meet the inflation criterion. During 2007, there was a drop on year-on-year price growth and since August 2007 Slovakia started to meet the inflation criterion set by the European Commission.

FIG. 3: Inflation rate – HICP (in %)

Source: Eurostat, 2018

After entering the euro area from 1 January 2009, Slovakia is obliged to meet the criteria of the Stability and Growth Pact and to implement the monetary policy of the ECB. It aims to maintain the inflation target – the annual increase in the price level below, but close to 2%. Since March 2015, the ECB began to implement so-called quantitative easing (QE) in order to meet the inflation target. Nevertheless, the inflation target was not achieved either in Slovakia or in the eurozone. In 2016, inflation was kept close to zero or slightly negative levels. The monetary policy of the ECB is based on the arguments of those economists who are pushing for an expansionary monetary policy. According to them, if a drop in aggregate demand is caused by reducing private spending, the most effective solution is not to compensate it through public spending. It is more effective to increase private spending, which can be achieved by increasing the amount of money in circulation, i.e. by expansive monetary policy, for example, through QE of the ECB (NBS, 2017).

The fall in price level has also occurred after 2013. Deflation tendencies lasted for a relatively long period not only in Slovakia but also in Poland; in the Czech Republic and Hungary stagnated or increased marginally. Stagnation of the price level was typical for the whole EU, with inflation in the eurozone reaching 0.2%.

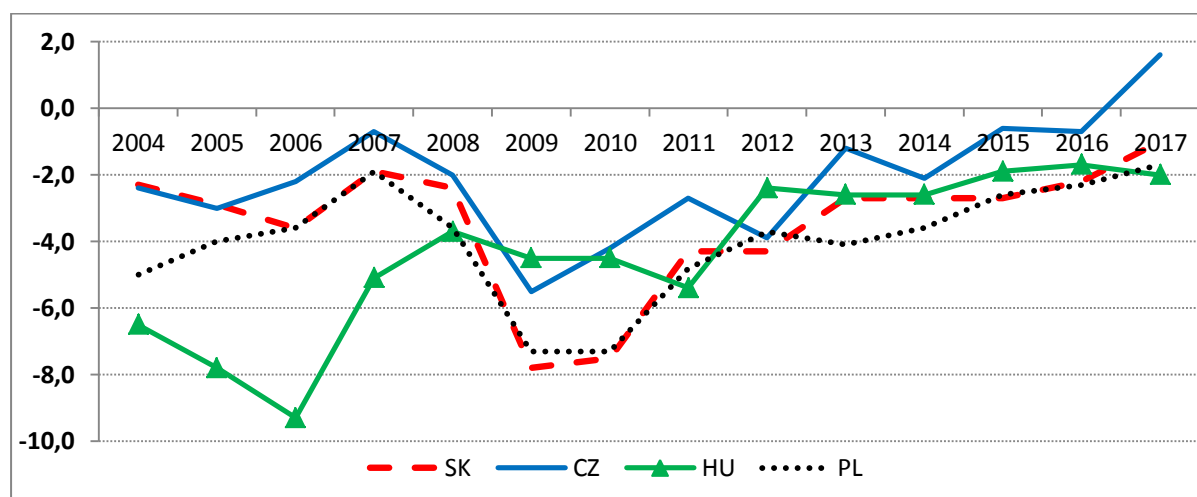
An important feature of the effectively implemented fiscal policy is a development of the state budget, which is one of the indicators for the eurozone entry. After entering the eurozone, countries must meet the criteria of the Stability and Growth Pact. The budget deficit is considered to be excessive if it exceeds 3% of GDP. Before entering the eurozone, Slovakia met the budgetary criterion in 2003-2008. In the following years, development was fluctuating as a result of the crisis in 2009-2010.

TAB. 4: Government deficit in V4 countries (in % of GDP)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
SK	-2.3	-2.9	-3.6	-1.9	-2.4	-7.8	-7.5	-4.3	-4.3	-2.7	-2.7	-2.7	-2.2	-1.0
CZ	-2.4	-3.0	-2.2	-0.7	-2.0	-5.5	-4.2	-2.7	-3.9	-1.2	-2.1	-0.6	-0.7	1.6
HU	-6.5	-7.8	-9.3	-5.1	-3.7	-4.5	-4.5	-5.4	-2.4	-2.6	-2.6	-1.9	-1.7	-2.0
PL	-5.0	-4.0	-3.6	-1.9	-3.6	-7.3	-7.3	-4.8	-3.7	-4.1	-3.6	-2.6	-2.3	-1.7

Source: Eurostat, 2018

FIG. 4: Government deficit in V4 countries (in % of GDP)



Source: Eurostat, 2018

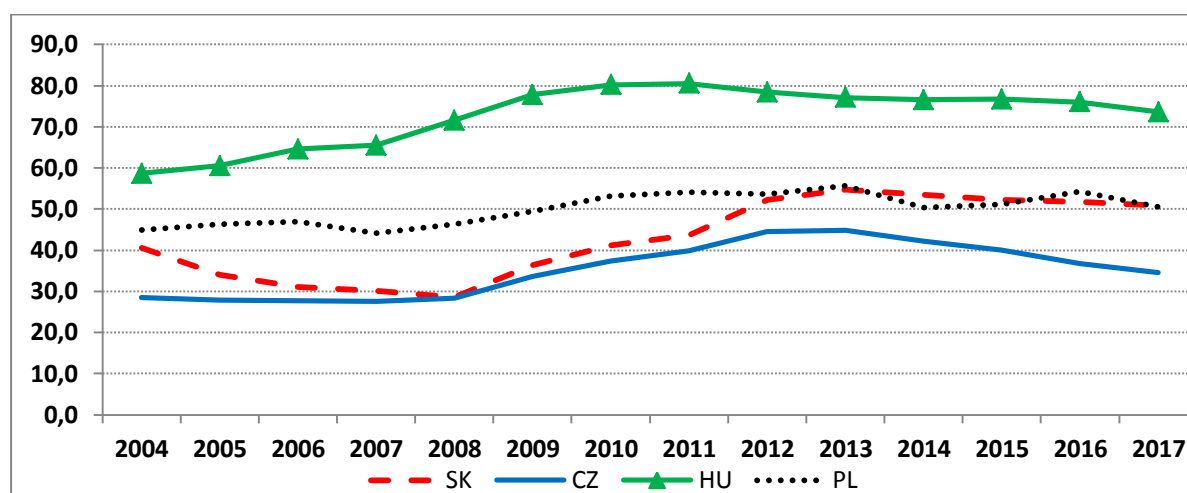
Representatives and supporters of various macroeconomics schools have different views on budget deficits. Supporters of Keynesian opinions advocate that, in the recession, the state should increase government spending and support an increase in aggregate demand, even at the expense of a deficit growth. What is important, however, is not only to increase the absolute amount of expenditure but their gradual division at time. During the expansion period, the state should relatively reduce spending. The ultimate goal should be to compare deficits in the phase of recession and the surplus in the phase of expansion in the medium term in order to ensure a balanced budget.

Such an approach entails great risks because the spending programs are easy to implement but it is much more difficult to cancel them when the economy is in the phase of expansion. And this can cause a chain reaction of persistent budget deficits. A logical argument for fiscal policy based on expenditure is to provide households and consumers with income they lack due to the reduction in aggregate spending. Experience shows that fiscal policy is more effective in large and less open economies. An alternative approach, based mainly on the views of liberal and conservative schools, criticizes and rejects this approach. The practical argument of criticism of fiscal policy based on expenditure is a relatively long and complicated legislative process, associated with a time delay. Therefore, supporters of this approach prefer monetary policy over fiscal policy. A negative consequence of budget deficits is the public debt that is generated by the accumulation of annual deficits. The experience of many countries confirms that the large budget deficits are causing the unsustainable growth of public debt, which can be difficult to stop and stabilize. It can be stopped only if the primary budget deficit turns into a surplus. The Stability and Growth Pact, which was adopted in 1997, set up a framework for the effective coordination of fiscal policies of the eurozone countries. In 2012, the European Stability Mechanism (ESM) was approved as a permanent crisis mechanism aimed at fighting the debt crisis. If the rules of the Stability and Growth Pact are not met, the country is subject to sanctions. In 2011, Slovakia adopted Act on budget responsibility or so-called debt brake law and established the Council for Budget Responsibility, which main task is to evaluate the rules of budgetary responsibility. From 2007 to 2012, the public debt in the most developed countries of the world increased on average by 23%. Tendency to increase government deficits and increasing public debt indicates the absent and ineffective fiscal policy and fiscal discipline (Reinhart & Rogoff, 2009).

TAB. 5: Public debt in V4 countries (in % of GDP)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
SK	40.6	34.1	31.0	30.1	28.5	36.3	41.2	43.7	52.2	54.7	53.5	52.3	51.8	50.9
CZ	28.5	27.9	27.7	27.5	28.3	33.6	37.4	39.8	44.5	44.9	42.2	40.0	36.8	34.6
HU	58.7	60.5	64.6	65.5	71.6	77.8	80.2	80.5	78.4	77.1	76.6	76.7	76.0	73.6
PL	45.0	46.4	46.9	44.2	46.3	49.4	53.1	54.1	53.7	55.7	50.3	51.1	54.2	50.6

Source: Eurostat, 2018

FIG. 5: Public debt in V4 countries (in % of GDP)

Source: Eurostat, 2018

It is remarkable that new EU Member States are improving the debt position of the EU. It is also applicable to V4 countries. Only Hungary exceeds the allowed 60% of GDP threshold. After the adoption of the euro (1 January 2009), the government deficit increased over the next few years and Slovakia failed to meet the deficit criterion of the Stability and Growth Pact.

Conclusion

Contemporary macroeconomics accepts the creation of the government deficit and public debt with certain modifications. Therefore, in certain phases of the economic and political cycle, the government is not interested in reducing spending but just the opposite. There is so-called fiscal illusion, which means that a perception of government spending is inaccurate and imperfect. If government spending exceeds revenue, debt arises and its repayment pushes to raise taxes. Experience shows that people perceive high taxes much more critical and negative than high public debt (Dujava, 2016).

Debt growth as well as growth in government spending causes crowding out of the private sector and private investment and a slowdown in the economic activity of the firms (Novák & Suntrayuth, 2015). In this context, there is a question whether debt financing means shifting the burden to the future generations. It is important to distinguish if borrowed money is consumed by the current generation or is invested, so the revenue from capital expenditure will be used by the next generation. Therefore, such a shift of burden in terms of intergenerational morality is fair.

Experience and research studies of many authors confirm that debt levels greatly affect the rate of economic growth. Lower public debt helps to higher real GDP growth rates. The debt above 90% reduces the economic growth due to the higher long-term interest rates, higher tax rates, rising inflation and the overall macroeconomic uncertainty. Some research studies conclude that 10% debt growth reduces economic growth by 0.1% (Cecchetti et al., 2011). The high debt burden, which is characteristic for the EU and the eurozone, reduces the long-term economic growth.

In Slovakia, a favorable macroeconomic development should continue in the near future. In 2018 and 2019, economic growth should accelerate to 4.2% and then to 4.6% with further decreases in

unemployment (MF SR, 2017). According to the EC forecast, the deficit and debt should continue to decline in the EU (Európska komisia, 2017). And Slovakia should meet the both fiscal rules with reserve.

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MOTIVATION OF EMPLOYEES OF CZECH SMES IN TERMS OF AGE

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Abstract: *The aim of the article is to determine the motivation factors preferences for employees by age and to determine the statistically significant differences. This paper presents the outputs of research on motivational staff preferences in the Czech Republic. The sample is made up of employees of small and medium-sized enterprises. The outputs of the article are the basis for improving incentive programs for employees by enterprises who want to make these programs more effective.*

Keywords: *motivation, motivational factors, satisfaction of employees, SMEs.*

JEL classification: *M1 Business Administration*

Grant affiliation:

Introduction

The ideal motivation system is in the job itself, which must be compliant and fulfilling for employees. Behaviour from a business perspective emphasizes internal motivation. This approach has a long tradition of motivation based on the theory of organization. Internal motivation is also elaborated on the basis of the cost theory transaction critique (Levin et al., 2012). The authors (Hu et al., 2007; Dubravská et al., 2015) emphasize their internal motivation in terms of identifying the strategic goals of the enterprise, sharing goals and fulfilling standards for their own interest (Kucharčíková, 2013). Internal motivation is not just an add-on to motivation induced by prices (external stimuli). Under certain conditions, the use of the pricing system interferes with internal motivation (Levin et al., 2012). Behavioural advocates tend to look only at the positive aspects of internal motivation (Kampf et al., 2017; Lorincová et al., 2016). They see internal motivation as an indisputable business advantage because it reduces transaction costs and increases confidence and social capital. However, internally motivated employees may not always work for the benefit of their employers. So, internal motivation has its disadvantages as well as its advantages (Hu et al., 2007)).

The motivation programs (Provazník, 2002) are designed to strengthen employees' loyalty to the business and to encourage employees to develop themselves. This is an internal business guideline on how to apply stimulus resources to achieve business goals (Mura, 2012; Kucharčíková, 2014). In order to create proper and effective motivation programs, an analysis of the underlying facts in an enterprise must be carried out to determine what all the aspects have a significant impact on the functioning of the enterprise (Caha, 2017a; Caha, 2017b), the willingness of employees to work and their performance.

1 Methodology

The aim of the article is to determine the motivation factors preferences for employees by age and to determine the statistically significant differences. This paper presents the outputs of research on motivational staff preferences in the Czech Republic. The sample is made up of 1201 employees of small and medium-sized enterprises. The outputs of the article are the basis for improving incentive programs for employees by enterprises who want to make these programs more effective. The questionnaire aimed at identifying employee motivation preferences was used to obtain data. Respondents were approached personally and by e-mail, and a sample of respondents was chosen by the random selection method from a basic sample of SME employees in the Czech Republic. They were able to evaluate the motivation factor preferences on the Linkert scale from 1-5, where 1 means unimportant, 2 - little important, 3 - neutral, 4 - important and 5 - very important. In the questionnaire, there were 30 motivation factors evaluated. For clarity of assessment, these factors are merged into groups in the article:

- Career factors: opportunity to apply one's own ability, moving up corporate ladder, competences, prestige of work position, individual decision making, self-actualization, education and personal growth, recognition.
- Working factors: physical effort at work, job security, work object and type of work, information about performance results, working time, work environment, work performance, workplace safety, stress /elimination of stress in the workplace/.
- Social factors: prestige / name of the company, social benefits, mission of the company, region's development, company relation to the environment, free time.
- Financial factors: further financial reward, fair appraisal system, and basic salary.
- Relationship factors: atmosphere in the workplace, good work team, communication in the workplace, supervisor's approach.

The data obtained was processed using basic descriptive statistics. Based on the research we conducted, we investigated whether there were significant differences in employee motivation within the age categories. For this analysis, the Student t test method was used. This is a verification of the significance of the difference in the arithmetic mean of the individual motivation factors in the monitored enterprises so that at the chosen level of significance α it is excluded that the observed differences between the arithmetic mean were not due solely to the representation error. Table 1 shows the characteristics of the respondents.

TAB. 1: The structure of respondents

		Age		Position			Total
		up to 40 years	41 years and over	blue-collar workers	white-collar workers	managers	
Gender	Men	385	213	313	211	74	598
	Women	354	249	187	372	4	603
Total		739	462	500	583	118	1201

Source: author

2 Results and discussion

In the research, there were four categories of employees according to the age (up to 30 years, 31 – 40 years, 41 - 50 years and 51 years and over). For clearly presented preferences of respondents by Student's t-test, there are grouping categories on up to category up to 40 years and 41 years and over. Table 2 shows the average preferences of the all four categories.

TAB. 2: Arithmetic average of employee's preferences according to age

The group of motivational factors	Age category	N	Sum average of the motivational factor group	Average of motivational group
Career	up to 30 years	391	31,60	3,95
	31 – 40 years	343	31,34	3,92
	41 - 50 years	302	31,61	3,95
	51 years and over	159	31,82	3,98
Working	up to 30 years	391	36,08	4,01
	31 – 40 years	343	36,15	4,02
	41 - 50 years	302	36,29	4,03
	51 years and over	159	36,72	4,08
Social	up to 30 years	391	22,58	3,76
	31 – 40 years	343	22,45	3,74
	41 - 50 years	302	22,99	3,83
	51 years and over	159	23,42	3,90
Financial	up to 30 years	391	13,06	4,35
	31 – 40 years	343	12,82	4,27
	41 - 50 years	302	13,00	4,33
	51 years and over	159	13,22	4,41
Relationship	up to 30 years	391	17,13	4,28
	31 – 40 years	343	16,95	4,24
	41 - 50 years	302	16,84	4,21
	51 years and over	159	17,06	4,26

Source: author

Table 2 shows that the highest requirements are placed on financial factors. Employees over 51 and employees under 30 years of age place more emphasis on these aspects. The second most important motivational group is the relationship motivational factors, and the third group in terms of working motivational factors. A group of social motivation factors is the group with the lowest emphasis on the part of employees. The question for consideration is whether the preferences within the age categories significantly differ statistically. This was investigated using the Student Independent t-test. This test was performed for all variants of age category comparisons. Based on the test performed, it was found that:

- Work group preferences of up to 30 and 31 to 40 years of age category are not statistically significantly different.

- The preferences of workers up to 30 years of age in compare 41 to 50 age category are not statistically significantly different,
- The preferences of workers up to 30 years of age with the age category above 51 years are statistically significantly different for the social group of motivational factors. The higher age category of employees has higher demands on social motivational factors.
- The preferences of workers from 31 to 40 years of age, with the age category of 14 to 50 years, are not statistically significantly different.
- The preferences of workers, from the age group of 31 to 40 with the age category above 51 years, are statistically significantly different for the social and financial groups of motivational factors. For both motivational groups of factors, the more emphasis is placed on workers over 51 years of age.
- The preferences of workers, from 41 to 50 years of age with the age category above 51 years, are not statistically significantly different.

Table 3 presents the results of the t-test within the associated age categories: under 40 and over 41 years. Preferences of these age categories differ significantly only in the case of a group of social motivation factors. An older age category of employees (over 51) puts more emphasis on social motivation factors.

TAB. 3: Independent sample t-test of age categories of employees

The group of motivational factors	Age category		Equal variances assumed	Levene's Test for Equality of Variances		t-test for Equality of Means						
	up to 40 years	40 years and over		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
											Lower	Upper
Career	3,93	3,95	Yes	3,650	0,056	-0,581	1199	0,562	-0,17439	0,30030	-0,76357	0,41479
			No			-0,565	889,155	0,573	-0,17439	0,30891	-0,78066	0,43189
Working	4,01	4,04	Yes	0,938	0,333	-1,013	1199	0,311	-0,30003	0,29631	-0,88137	0,28132
			No			-0,992	913,990	0,321	-0,30003	0,30239	-0,89349	0,29343
Social	3,75	3,85	Yes	1,098	0,295	-2,398	1199	0,017	-0,59510	0,24816	-1,08198	-0,10821
			No			-2,366	935,480	0,018	-0,59510	0,25154	-1,08875	-0,10144
Financial	4,31	4,35	Yes	0,708	0,400	-0,881	1199	0,379	-0,10743	0,12198	-0,34674	0,13189
			No			-0,858	896,930	0,391	-0,10743	0,12516	-0,35307	0,13822
Relationships	4,26	4,22	Yes	5,547	0,019	0,977	1199	0,329	0,14747	0,15093	-0,14865	0,44358
			No			0,942	862,696	0,347	0,14747	0,15660	-0,15989	0,45483

Source: author

Conclusion

A properly designed and implemented incentive program contributes to the economic prosperity of the business, promotes employee motivation, employee performance, and leads to overall employee satisfaction. To create motivation programs, it is necessary to find out whether the employees in the company are satisfied or dissatisfied, to what extent they are satisfied (dissatisfied) and what their motivation is. On the basis of this, we can take certain measures and, after making changes, find out through feedback about the benefits of change. The satisfaction or dissatisfaction of a person is a relatively subjective experience of the worker's work and working conditions (Houston, 2014).

The evaluation of the employee preferences data shows the highest preference of the group of financial motivation factors. In the context of similar research, there are the highest preferences placed above all on the subject of the relationship motivational factors (Bartakova et al., 2017; Hitka et al., 2018; Hitka et al., 2015). The difference may be due to a higher dissatisfaction with the financial appreciation of SMEs. Employees of SMEs place the second highest emphasis on the relationship motivation factory and then on the job (Mura & Buleca, 2014). The least preference is for social motivation factors. From an age perspective, there are no significant differences in preferences except for the social factory, when older age groups have greater demands on this group. Also, workers' preferences, from 31 to 40 years of age, aged 51+, are statistically significantly different within the financial groups of motivational factors. Workers over 51 years place higher emphasis on the financial motivators.

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COMPARISON OF APPLIED COUNTERCYCLICAL FISCAL POLICY IN SELECTED EUROZONE COUNTRIES AND IDENTIFICATION OF DIFFERENCES IN ITS EFFECTIVENESS

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Abstract: *The objective of the paper is a critical analysis of the measures, changes and instruments to stabilize the Eurozone in the field of fiscal policy, as well as their compliance or non-compliance with the economic theory. The pre-crisis theoretical and, to a great extent, economic-political consensus was the theses that the stabilization of aggregate demand is, mainly in large economies, the role of monetary policy. The role of fiscal policy was to set up an appropriate tax and subsidy system to ensure optimal growth of the potential economic product in the conditions of sustainable debt levels. The crisis has eroded this consensus, as the fall in interest rates to a level close to zero in many economically advanced countries has significantly reduced the effectiveness of standard economic policy instruments. These conclusions are consistent with the standard Keynesian theory, according to which, when capacities in the economy are free, expansive fiscal policy is extremely effective.*

Keywords: *economic cycle, government, fiscal policy, countercyclical measures*

JEL classification: *E32, E6, H3*

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Introduction

John Maynard Keynes, Friedrich Hayek and Irving Fisher, and their work from 1930s have initiated a long-term research on the economic cycle. Greg Mankiw from Harvard University speaks of economic cycle as the area he has most devoted himself to. At the same time, it is an area where economists face the most important issues without getting clear answers (Mankiw, 2009). John Cochrane from University of Chicago wrote the following: *"Why does it stagnate? I do not know, I do not think anyone knows it at all. Nothing in traditional macroeconomics explains, why economies are stagnating."* Robert Lucas, probably the most influential economist since Keynes, said in 2012: *"I was first convinced that all depressions are of monetary origin. Now I think that post-war recession is by*

far the most important example of how important are the real shocks. However, I am still convinced that it was a financial shock, which played a decisive role in the 1930s and in 2008." The development of Lucas' views essentially corresponds to, how the whole academic view changed (Barlevy, 2005). In the 1970s, economists were to a great extent convinced that the recession is triggered by monetary restrictions. Later, they were focused on models that were based mainly on decreasing number of new technologies. But the recession in the early 1980s turned attention back to monetary policy. After 2008, the focus was on examining the financial crises (Wren-Lewis, 2011). There is also

a different view on how to deal with recessions. A dominant branch of economics argues that coping with recession is the role of central banks. But it also amends that if rates fall to zero, monetary policy will not do much anymore. It should be then replaced by a new fiscal policy (Krugman, 2010). On the contrary, new classical economics members claim that nothing can be done against recessions. In our contribution, we will deal with the comparison of fiscal policies in the pre-crisis period until 2008 and the post-crisis period in selected EU countries - namely in Hungary, Poland, the Slovak Republic and Slovenia.

1 Economic crisis and fiscal policy

One of the negative effects of the economic crisis is a sharp drop in aggregate demand, coupled with a decline in consumer demand, an increase in uncertainty, and a consequent decline in investment demand by companies. Economic policy measures associated with a counter-cyclical focus on the domestic and foreign components of aggregate demand are pricey and put pressure on the rise in the general government deficit. Accepting discretionary counter-cyclical measures hits the problem of adopting austerity measures on the revenue and expenditure side of the government budget (Čolláková, Machlica, Melioris, Pécsyová & Šrámková, 2014). To some extent, deliberate fiscal policy measures may be controversial, yielding only short-term results and, in the end, the negative impacts of the economic crisis are not reduced, but can be further exacerbated. The extent of damage caused by individual economies is largely determined by parameters such as domestic market size, overall output structure, openness of the economy or labour market flexibility. The economic crisis of 2008, given the short period during which its negative impacts began to spread between EU economies, has indicated the failure of governments to take an effective action. Anti-cyclical measures were not sufficiently effective, so that national governments were forced to rely on discretionary measures. Dropouts on the revenue side led to excessive deficits and an increase in government debt, which significantly reduced financial possibilities for adopting counter-cyclical discretionary measures (Hajnovičová, 2011).

The economic crisis negatively affected individual selected economies, irrespective of their economic maturity. Especially the openness of the economy and the structure of economic product most notable affected negative consequences of the economic crisis. Higher levels of aggregate supply diversification and lower openness of the economy are emerging as important factors increasing resistance to external shocks. However, in the case of very strong and flat external shocks, these factors cannot prevent crises (Frendáková, 2011).

The recovery of significant business partners' demand on markets has contributed to the recovery of economic growth in the countries most affected by the crisis. The counter-cyclical measures themselves had only a one-off or short-term effect operating selectively on a specific segment of the domestic economy. In market conditions, however, the role of the government in mitigating the negative consequences of the crisis cannot be underestimated, but also not overrated. Mitigating the negative effects of cyclical development on output and employment belongs to the key priorities of government, regardless of its political orientation (Frendáková, 2011).

2 Fiscal impacts of economic crisis

The economic crisis has caused decrease in economic activity in the monitored countries. As a result, the basic parameters of fiscal policies have deteriorated. Individual countries have experienced this

negative development at a different state of public finances. While Slovenia had the budget deficit before the crisis within 1 % of GDP, other countries showed slightly higher values (Hungary the highest – 4 %), but a declining trend. The relatively stable government debt with a declining trend was recorded by Slovenia, Poland and the Slovak Republic. In the pre-crisis period, Hungary recorded a negative trend.

Shortly after the outbreak of the economic crisis, the parameters of economic development have deteriorated sharply and a question about the effectiveness of counter-cyclical measures of the government's economic policy has arisen. As mentioned above, this issue is the subject of discussions in academic as well as in economic-political circles.

The economic crisis, as a major economic problem, has several features that we can summarize as follows:

1. The EU countries are not affected by the economic crisis with an equal intensity. The differences are also within the range of negative impacts across sectors of national economies.
2. The economic crisis has hit both the demand side and the supply side of the aggregate market, rapidly expanding to other EU countries as a result of their interconnection through various transmission channels.
3. The effectiveness of both, national and transnational, non-coordinated, stimulus measures taken by individual governments, has proven to be relatively low after a certain time. This can be a strong link between the EU economies.
4. Individual stabilization and stimulus measures, both national and transnational, may cause distortions on national markets as well as on the EU single market. In this context, it can be expected that the overall decline in allocation efficiency in crisis-affected countries may also have a negative impact on the adoption of various protectionist measures by EU governments (Myrdala, 2011).

2.1 Hungary

Of all selected countries, the highest share of government spending on GDP (on average almost 50 %) is clearly visible in the pre-crisis period in Hungary. While government spending grew, revenues showed a decreasing trend, which greatly exacerbated fiscal imbalances. The trend was reversed in 2007, as a result of government consolidation measures. The impact of the crisis has negated this consolidation effort, resulting in an increase in the gross public debt dynamics, which increased up to 83 % of GDP in 2010. The government subsequently adopted austerity measures, such as decline in salaries of civil servants, thus reducing both, total expenditure and GDP (Eurostat, 2011).

2.2 Poland

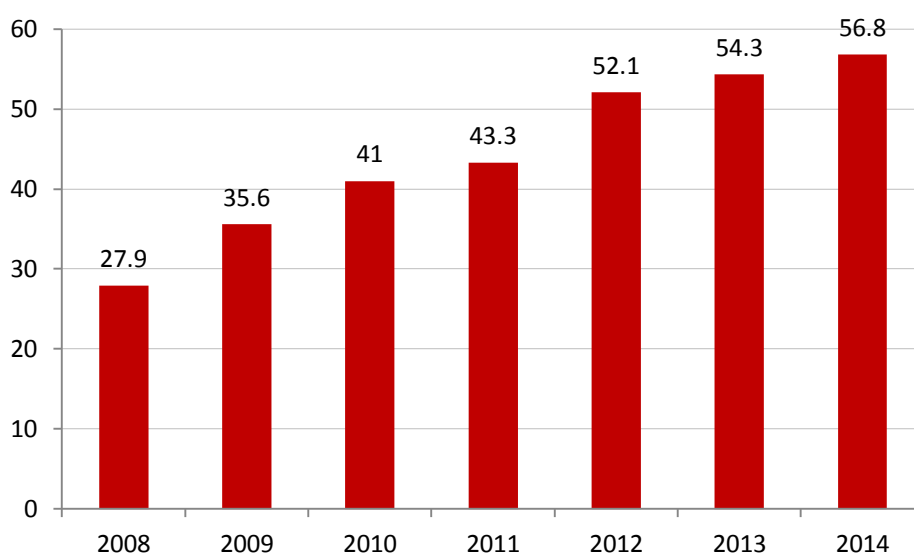
In the pre-crisis period, the Polish government has gradually managed to consolidate public finances and hold up the rise in public debt due to the revival of the Polish economy (at 49.6 % of GDP in 2006). Average GDP growth before the crisis was around 5 %. Despite the decline in GDP growth rates in 2009 (0.6 %), Poland was the only country within selected countries, where real GDP was not downgraded altogether. This may be explained by lower openness and size of Polish economy. Significant reduction in economic growth, however, was signed on the deterioration of fiscal management parameters. The government budget deficit was close to 8 % of GDP at the end of 2010. Due to a fall in government revenues based on persistent unemployment, the negative fiscal

deficit was not possible being stopped, resulting in an increase in government debt up to 55.4 % of GDP in 2010 (Eurostat, 2011).

2.3 Slovak Republic

In the pre-crisis period, Slovakia managed to gradually reduce its gross public debt, which also contributed to privatization revenues. Prior to the crisis, there was a gradual reduction in the share of government spending on GDP. This was caused by an absolute decrease in expenditure but also a faster rate of real GDP growth compared to a rise in public spending. A similar trend was also on the revenue side, but their growth lagged behind the growth rate of GDP. This trend can partly be attributed to growing exports (as they do not apply to exported output on product taxes). While in the pre-crisis period, the average GDP growth rate was high (on average more than 8 %), in 2009 it was followed by an absolute decline. As a result of the economic crisis, the budget deficit was significantly increased up to 8.2 % of GDP at the beginning of 2010. The fall in performance coupled with the government's delayed response to the expenditure side led to an increase in government spending on GDP. An increase in the government budget deficit was also reflected in the rise of public debt and its share of GDP (Hajnovičová, 2011) (FIG.1).

FIG. 1: Government debt in % of GDP in the Slovak Republic



Source: Eurostat, 2014

2.4 Slovenia

Approximately since 2004 until the beginning of the crisis, the Slovenian government managed to reduce the budget deficit as well as the share of government spending on GDP. By the end of 2007, the deficit had fallen to 0.1 % of GDP. The government's consolidation measures also allowed a moderate reduction in government debt below the level of 30 % of GDP. In the pre-crisis period, revenues were also stable in the government budget. Interestingly, the structure of tax revenues in the pre-crisis period has increased the share of direct tax revenues while reducing the share of indirect tax revenue. This relatively unusual trend was not recorded in any of the other selected

countries, which in the pre-crisis period meant the transfer of the tax burden from consumption to production (Eurostat, 2014).

The deterioration in budget performance and the growth of public debt during the crisis did not create enough room for governments to take financially demanding counter-cyclical measures (TAB.2). The deterioration in budget performance has led to the adoption of austerity measures on the revenue and expenditure side of the government budget. The sustainability of fiscal policy development has become the top priority of governments in the context of the debt crisis in the respective EU countries.

TAB. 2: Deficit and debt of selected EU countries in 2011 and 2012 in % of GDP

Country/Year	Debt/GDP		Deficit/GDP	
	2011	2012	2011	2012
Hungary	81,4	79,2	+4,3	-1,9
Poland	56,2	55,6	-5,0	-3,9
Slovenia	46,9	54,1	-6,4	-4,0
Slovakia	43,3	52,1	-5,1	-4,3

Source: Eurostat, 2014

Conclusion

The issue of economic cycles is one of the most discussed in modern macroeconomics. The range of opinions is very varied. On the one side, there are opinions favouring counter-cyclical measures through fiscal and monetary policies. On the opposite side, there are opinions criticizing fiscal and monetary intervention as a type of risky management that attempts to halt the natural occurrence of economic cycles and their accompanying market cycles.

The problem is not that the macroeconomists are not discerning enough, or that their view is too politicized. The problem is data. Economic cycles are long, and those that resemble each other are very distant. It is therefore difficult to say, which strategy would really be effective or whether the improvement would come without it. In our opinion, it helps to compare developments in individual countries, but we also face considerable constraints here. We do not know much about cycles because we do not have the tools to reliably analyse them.

The decline in performance as a result of the economic crisis in the monitored economies has shown that governments' efforts to mitigate the effects of the economic crisis are confronted with national budget possibilities. Incentive fiscal policy possibilities in respective countries thus came into direct conflict with the need to consolidate the government budget as well as the budgets of other components of public finances. The worsening of budget management, coupled with the acceleration of public debt, did not create enough space for these countries to adopt sufficiently effective counter-cyclical measures. Restricted budget options have significantly reduced the potential for

stimulating economic growth and restoring growth trajectories. A sharp deterioration in budget performance has led to austerity measures on the revenue and expenditure side of national budgets. Mitigating fiscal imbalances led to a negative endogenous demand shock, which was reflected in a slower return to pre-crisis levels of the economy performance.

Under the conditions of a high degree of monetary integration (a specific example of Slovakia and Slovenia), there is a formal increase in the importance of fiscal policy within the economic and political regulatory framework, opposed to the relatively low practical applicability under the conditions of the economic crisis in 2008. At the same time, the governments in each country were not sufficiently prepared to react flexibly to negative external shocks and their implications for national economies. In general, this reduces the incentive effect and the possibilities of fiscal policy in the period when its position is strengthened by means of economic policy instruments at the cost of monetary policy.

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GUESTS' SATISFACTION WITH ONE-STAR HOTELS

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Abstract: *This paper focuses on total guests' satisfaction with their stay in chosen one-star hotels, located in Berlin, Germany. The aim is to find out whether the guests' satisfaction is dependent on these following factors: purpose of the stay (business or leisure trip), type of participants (couple, family with children, group or solo traveller) and length of stay (1-2 nights, 3-4 nights, 5-6 nights or 7 nights and more). The total guests' satisfaction can range from 0.00 to 10.00 – the higher score, the higher level of satisfaction was reached. From the overall view, guests mostly rated their stay between 7.50 and 10.00, i.e. they were mostly very satisfied. Statistical results indicate that purpose of the stay and type of participants influence total guests' satisfaction whereas length of the stay does not influence it.*

Keywords: *guests' satisfaction, one-star hotels, online hotel reviews, Booking.com, Germany*

JEL classification: *M31*

Introduction

Accommodation facilities serving tourism participants are divided into particular categories. According to the Official Unified Classification of Accommodation Facilities in the Czech Republic (Asociace hotelů a restaurací České republiky, n.d.) which is a part of the European system called Hotelstars Union, there are distinguished hotels, motels, pensions, specific spa facilities, dependencies and other accommodation facilities (camps, tourists lodging houses, cottage settlements). Accommodation facilities are divided into five different types: Tourist, Economy, Standard, First Class and Luxury. It should be highlighted that it is a voluntary Classification (Rygllová, Burian, Vajčnerová, 2011); i.e. it can happen in business practice that although a certain accommodation facility is presented as a pension, it does not have the specified features of this type of accommodation facility at all.

Guests can express their opinions on provided services during their stay through giving feedback, which is a valuable information source for further development of the particular accommodation facility (Jha, 2010). Portals such as Booking.com, TripAdvisor, Google and Hotels.com are very popular – these portals allow inserting online reviews – according to one study, 78% of all online reviews come from these four portals and the most popular one is Booking.com (Revinat.com, 2017). Guest reviews logically reflect the level of their satisfaction, i.e. the subjectively perceived value – from the point of view of exact terminology, this is the so-called value for the customer. Kotler et al. (2007, p. 536) defines the value for the customer as the sum of “the value of the product, services, employees and image that the buyer receives from the marketing offer”. From the theoretical point of view, this topic concerns value creation (for instance, see Antonella, Snehota, 2014).

In general, satisfaction depends on the customer's expectations of what product (whether in the form of a physical product or an intangible service) will bring. This means that expectations are confronted with reality: if the benefit of the selected product does not exceed expectations, the customer will be logically disappointed. If the benefits of the product will match the expectations, the customer will be satisfied. However, if the benefits of the product exceed expectations, the customer will be very satisfied, respectively enthusiastic. Customer expectations arise on the basis of their past buying experience. Other aspects that considerably affect customer expectations include opinions of friends and acquaintances, offers of a given business entity as well as competitive offers. (Kotler et al., 2007) The way, how the business entity presents itself, shapes customer expectations. Customers compare offers to each other (Stacho, Gubíniová, Bartáková, 2015) and decide which one will bring them the biggest value.

1 Aims and methods

The aim of this paper is to determine whether the overall satisfaction of guests in chosen accommodation facilities is influenced by the following factors: (1) the purpose of guests' stay (distinguished between "business trip" and "leisure trip"); (2) the type of tourism participants ("couple" versus "family with children" vs. "group" vs. "solo traveller" are distinguished); and (3) the length of guests' stay ("1-2 nights" versus "3-4 nights" vs. "5-6 nights" vs. "7 nights or more" are distinguished).

For the purpose of the analysis, accommodation facilities located in Berlin (Germany), presenting themselves on Booking.com as one-star hotels, were chosen. It should be emphasized that the description of the accommodation is purely in the competence of the accommodation facilities (Booking.com, 2018), so if it wants to present its accommodation facility as a three-star hotel, although it does not meet the classification standards for this category, it can do.

The chosen accommodation facilities for the purpose of this paper are summarized in Tab. 1. Necessary data in the form of individual guest reviews was obtained from Booking.com (1996-2018) – only such reviews which were provided from 1/2016 to 11/2017 were included in the analysis. In total, 492 unique reviews were analysed.

TAB. 1: Chosen accommodation facilities and the number of reviews included in the analysis

Name	Analysed reviews	Name	Analysed reviews
Hotel-Pension Spree	54	Hotel Pension Dahlem	50
Ibis budget Berlin Kurfürstendamm	56	Berlin - Apartments Friedrichshain	49
Ibis budget Berlin Potsdamer Platz	52	Generator Berlin Prenzlauer Berg	20
Industriepalast Hostel & Hotel Berlin	52	Three Little Pigs Hostel Berlin	73
Hotel Bongard	48	OSTEL - Das DDR Hostel	38

Source: Own processing.

During the statistical processing, methods of descriptive statistics and suitable charts were used for the initial orientation to the collected data. Subsequently, Mann-Whitney test and Kruskal-Wallis test were used.

2 Analysed factors – results and discussion

This section contains results of analysed factors and discussion. Before analysing the three above mentioned factors in detail (i.e. the purpose of guests' stay, the type of tourism participants and the length of guests' stay), it is useful to analyse the overall guests' satisfaction firstly (regardless of these specific factors). Tab. 2 presents the overall guests' satisfaction.

TAB. 2: The overall guests' satisfaction in chosen accommodation facilities

Rating of the stay indicating the overall guests' satisfaction	Number of guests	
	absolute	relative
0.00 — 2.40	0	0.00%
2.50 — 4.90	31	6.30%
5.00 — 7.40	119	24.19%
7.50 — 10.00	342	69.51%
In total	492	100.00 %

Source: Own processing.

Note: Rating 10.00 is the maximum, indicating the highest level of guests' satisfaction.

Tab. 2 shows that guests very often rated their stay in the range between 7.50 and 10.00, i.e. they were most often very satisfied with their stay. A quarter of guests rated their stay in the range between 5.00 and 7.40. The lowest rating, i.e. between 0.00 and 2.40, was not given by any of the guests.

If these ratings are compared with the study by Solarová and Švec (2017) who explored in the similar way the satisfaction of guests in five-star hotels located in Berlin, it is possible to conclude that guests in five-star hotels rated their stay better than guests in one-star hotels: while in five-star hotels, 87.14% of guests rated their stay in the range between 7.50 and 10.00, in one-star hotels it was fewer (69.51%). The lowest rating (between 0.00 and 2.40) was not given by any of the guests in five-star hotels - it is the same case as in one-star hotels.

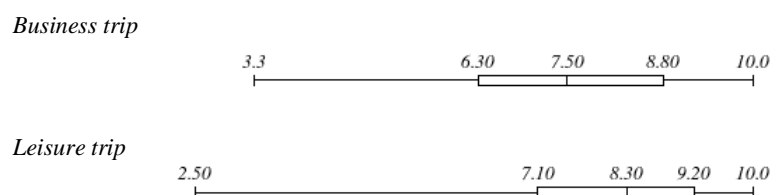
2.1 Purpose of the stay

The purpose of guests' stay was the first factor which was analysed whether it had an impact on the overall guests' satisfaction or not. The total satisfaction of the guests can range from 0.00 to 10.00 (number 10.00 is the highest rating, indicating the highest level of guest's satisfaction). When analysing the purpose of the stay, there are only two options: "business trip" and "leisure trip".

TAB. 3: Data summarization – factor "Purpose of the stay"

Purpose of the stay	Number of analysed	Guests' satisfaction (it ranges from 0.00 to 10.00)				
		Median	Average	Minimum	Maximum	St. dev.
Business trip	87	7.50	7.24	3.30	10.00	1.83
Leisure trip	405	8.30	8.03	2.50	10.00	1.59

Source: Own processing.

FIG. 1. Boxplot charts – factor “Purpose of the stay”

Source: Own processing, using Boxplot Grapher (n.d.).

Note: Values from the left to the right: minimum, first quartile, median, third quartile and maximum.

It is obvious from Tab. 3 that the average guests' satisfaction on holiday ("Leisure trip") was higher than the satisfaction of those who were on "Business trip" (this is confirmed by median and average, see Tab. 3). The guests' satisfaction on "Leisure trip" was more consistent (the standard deviation as a deviation from the average is lower than in the case of business travellers; also the difference between the first and the third quartile is lower in the case of guests who were on their "Leisure trip"). This statement may appear to be inconsistent with the variation spread, calculated as the difference between the minimum and the maximum (visible in Fig. 1): the difference is higher for holiday guests ("Leisure trip") than for business travellers ("Business trip").

Mann-Whitney test was used to assess whether guest satisfaction really depends on the purpose of their stay (H_0 : the purpose of the stay does not affect the overall satisfaction of the guests vs. H_a : the purpose of the stay affects the overall satisfaction). Test statistic U is 13072.5; Z -score = 3.77717; p -value = 0.00016. This means that the purpose of the stay has an effect on the guests' satisfaction – in other words, guests' satisfaction depends on the purpose of their trip (level of significance = 5%). Based on this result, it is possible to conclude that business travellers are more critical and more demanding because their expectations have not been met to that extent as it was in the case of guests on leisure trip.

If this result of the statistical test is compared with the result of the study by Solarová and Švec (2017) who examined the guests' satisfaction in the five-star hotels in Berlin in connection with the purpose of their stay, it was also found that even in the case of five-star hotels, the overall satisfaction of the guests on leisure trip is significantly higher than the satisfaction of guests on business trip. Guests' satisfaction in five-star hotels is even higher (average satisfaction of guests on business trip = 8.36; average satisfaction of the guests on leisure trip = 8.99) than the guests' satisfaction in one-star hotels (see Tab. 3). This result is quite logical: five-star hotels usually offer a higher level of services than one-star hotels. However, it should be also noted that clientele of these two different types of hotels is usually different – guests in five-star hotels will certainly have higher service expectations than guests in one-star hotels.

2.2 Type of tourism participants

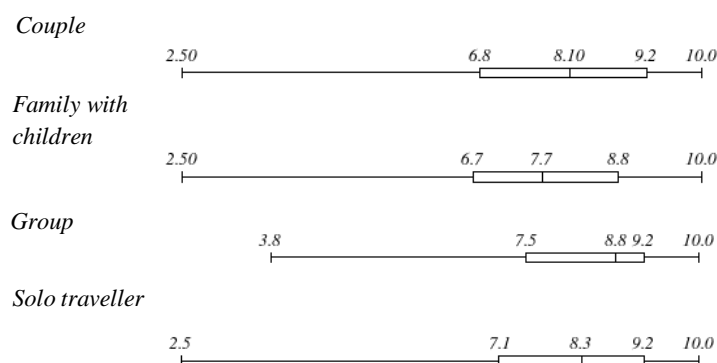
Type of tourism participants was the second factor which was analysed whether it had an impact on the overall guests' satisfaction or not. When analysing the type of tourism participants, there are four options: "couple", "family with children", "group" and "solo traveller".

TAB. 4: Data summarization – factor “Type of tourism participants”

Type of tourism participants	Number of analysed	Guests' satisfaction (it ranges from 0.00 to 10.00)				
		Median	Average	Minimum	Maximum	St. dev.
Couple	112	8.10	7.85	2.50	10.00	1.63
Family with children	64	7.70	7.38	2.50	10.00	2.01
Group	105	8.80	8.18	3.80	10.00	1.42
Solo traveller	211	8.30	7.93	2.50	10.00	1.64

Source: Own processing.

As Tab. 4 shows, it is clear that the highest average guests' satisfaction and the highest median is reached by the “Group” as one of the types of tourism participants. At the same time, this type of participant has the lowest standard deviation, the lowest variation range: the difference between the minimum and the maximum is the lowest among the other types of participants and also the interquartile range is the lowest, i.e. the difference between the first and the third quartile is the lowest (see Fig. 2). On the contrary, the lowest average overall guests' satisfaction and the lowest median is reached by the “Family with children”, which at the same time reached the highest standard deviation indicating the inconsistency in satisfaction.

FIG. 2. Boxplot charts – factor “Type of tourism participants”

Source: Own processing, using Boxplot Grapher (n.d.).

Note: Values from the left to the right: minimum, first quartile, median, third quartile and maximum.

In order to determine whether the guests' satisfaction depends on the type of tourism participants, Kruskal-Wallis test was used (H_0 : the type of tourism participants does not affect the guests' satisfaction versus H_a : the type of tourism participants influences the guests' satisfaction). Test statistic H is 6.8159; p -value = 0.078. Then it is clear that the type of tourism participants does not affect the guests' satisfaction of guests (at the 5% level of significance). However, if there is the 10% level of significance, then it is possible to claim that the type of tourism participants has an impact on the guests' satisfaction; in other words: the guests' satisfaction in this case depends on the type of tourism participants.

If this result of the statistical test is compared with the results contained in the study by Solarová and Švec (2017) who examined the satisfaction of guests in the five-star hotels in Berlin in connection to the type of tourism participants, there is a difference: while in five-star hotels the guests' satisfaction does not depend on the type of tourism participants (in both cases: 5% and also 10% level of significance), in one-star hotels the dependence was found for the 10% level of significance. Despite this finding,

however, Solarová and Švec (2017) state that “Couple” as one of the types of tourism participants reached the highest level of satisfaction in the case of five-star hotels (average satisfaction = 8.97), while “Solo traveller” was satisfied at least (average satisfaction = 8.70). It is necessary to add that the complete comparability of the results presented here with the study by Solarová and Švec (2017) is not possible since these authors did not specifically evaluate the type “Family with children”. So it can only be assumed that this type of participants may have been considered as a part of the type “Group”.

2.3 Length of the stay

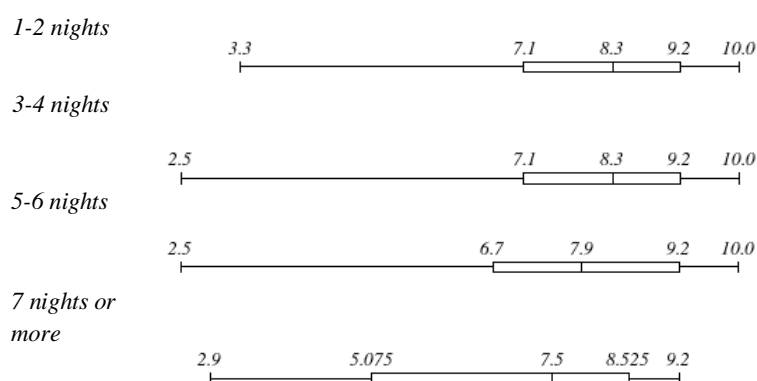
Length of guests’ stay was the third factor which was analysed whether it had an impact on the overall guests’ satisfaction or not. When analysing the length of the stay, there are four options: “1-2 nights”, “3-4 nights”, “5-6 nights” and “7 nights or more”.

TAB. 5: Data summarization – factor “Length of the stay”

Length of the stay	Number of analysed	Guests’ satisfaction (it ranges from 0.00 to 10.00)				
		Median	Average	Minimum	Maximum	St. dev.
1-2 nights	250	8.30	7.86	3.30	10.00	1.63
3-4 nights	193	8.30	8.00	2.50	10.00	1.65
5-6 nights	43	7.90	7.78	2.50	10.00	1.71
7 nights or more	6	7.50	7.78	2.90	9.20	2.44

Source: Own processing.

FIG. 3. Boxplot charts – factor “Length of the stay”



Source: Own processing, using Boxplot Grapher (n.d.).

Note: Values from the left to the right: minimum, first quartile, median, third quartile and maximum.

From Tab. 5 it is obvious that the highest average guests’ satisfaction was reached in the case of a stay with the length “3-4 nights”, however the median value was the same as in the case of a stay with the length “1-2 nights”. The lowest variation spread was found for stays of “7 nights or more” (the difference between the minimum and the maximum is 6.30); however, at the same time, this length of stay was characterized by the highest interquartile range (the difference between the first and third quartile is 3.45 - this is evident from Fig. 3). The fluctuations in the guests’ ratings of a stay for “7 nights or more” are perhaps due to the fact that there were only few reviews in this category (in terms of absolute numbers).

Even in this case, it was determined whether the guests' satisfaction depends on the length of the stay, so Kruskal-Wallis test was used for this purpose (Ho: the length of the stay does not affect the guests' satisfaction vs. Ha: the length of the stay affects the guests' satisfaction). Test statistic H is 2.8337; p-value = 0.41798. It indicates that the length of stay does not affect the guests' satisfaction (at the 5% level of significance). The conclusion would be identical even if the level of significance was 10%. In other words, guests' satisfaction from a statistical point of view does not depend on the length of the stay.

If this result of the statistical test is compared with the result in the study by Solarová and Švec (2017), who examined the guests' satisfaction in five-star hotels in Berlin, also in connection to the length of the stay, it can be said that even in one-star or in five-star hotel the guests' satisfaction does not depend on the length of the stay, in other words – the length of the stay does not affect the guests' satisfaction.

Conclusion

This paper examines whether the overall satisfaction of guests in chosen accommodation facilities is influenced by selected factors such as purpose of the stay, type of tourism participants and length of the stay. The total satisfaction of the guests can range from 0.00 to 10.00 (number 10.00 is the highest rating, indicating the highest level of guest's satisfaction). The paper focuses on one-star hotels located in Berlin, Germany. From the overall view, guests mostly rated their stay between 7.50 and 10.00, i.e. they were often very satisfied.

The statistical analysis of the above mentioned factors has shown that while purpose of the stay and type of tourism participants can influence the overall satisfaction of the guest, this cannot be said about the length of the stay.

From the point of view of the purpose of the stay, guests on their business trip seem to be much more critical and perhaps even more demanding because their rating is lower than that given by holiday guests. As for the type of tourism participants, the most satisfied appear to be guests travelling in groups and on the other hand the least satisfied are the families with children. The rating is guests' feedback that reflects the extent to which guests' expectations were met: the lower the rating, the less met the expectations of the guest. From this perspective it means that the most demanding are guests on their business trips and also families with children.

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THE MODELING OF THE SOCIO-ECONOMIC DEVELOPMENT IN THE EUROPEAN UNION COUNTRIES

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Abstract: *The purpose of the publication is the modeling of the socio-economic development determinants in the European Union countries. It will be prepared for the following determinants: economy and finance, science and technology, health, education and living conditions. The source data will be obtained from Eurostat databases. The synthetic index of the socioeconomic development in the European Union countries will be created as the mean of the indices calculated for each determinant. And finally, the model will be prepared in which particular determinant will be independent variable. On the basis of this model it will be explained which determinants in the most important way influence on the socio-economic development in the European Union countries.*

Keywords: *socio-economic development, the European Union countries, modeling, synthetic index, development index*

JEL classification: C240

Grant affiliation:

Introduction

Human Development Index (HDI) is a synthetic indicator describing the effects in the terms of socio-economic development of individual countries. This system was introduced by the United Nations for the purpose of international comparisons. The index was developed in 1990 by Pakistani economist Mahbub ul Haq. Since 1993 it has been used in the annual reports for the Agenda of the United Nations Development Programme (UNDP).

HDI is a synthetic measure based on the average of indicators covering three basic spheres of life:

1. The sphere of health, which is assessed by the ratio of the average life expectancy.
2. The sphere of education, which is assessed on the basis of the rate of educational attainment, as measured by two indicators of educational designated for the adult population, i.e.: literacy (the share of people who could read and write with understanding) and schooling (the average time of education, understood as the average number years of schooling).
3. The sphere of income, which is assessed on the basis of GNP (US \$) per capita, calculated according to purchasing power parity (PPP \$).

Development is defined as a planned and comprehensive economic, social, cultural and political process in a defined geographic area, that is rights-based and ecologically oriented and aims to continually improve the well-being of the entire population and all of its individuals [Fritz (2010)].

Socio-economic development embraces changes taking place in the social sphere, mostly of an economic nature. Even though economic aspects come to the fore in the research on change in the economy (a study of economic phenomena and processes), they cannot be isolated from social aspects. Hence a more apt term for the change and the development is 'change and socio-economic development' combining the two aspects [Chojnicki (2010)].

The purpose of the publication is the modeling of the socio-economic development determinants and the answer to the question which of the identified determinants have the greatest impact on the socio-economic development in the EU countries. It will be prepared for the following determinants:

1. Economy and Finance
2. Science and Technology
3. Health
4. Education
5. Living Conditions

Due to the fact that the synthetic measure has been supplemented with additional determinants (Science and Technology, Living conditions), it can be called a new measure of the study of social and economic development.

The necessity of finding a new measurement of the socio-economic development of societies is emphasized by international organizations and especially scientists. The universally used GDP indicator is only a measurement of economic progress and does not take into consideration the quality of human life [Szirmai (2015), Mierzyńska (2011)].

1 Metodology of research

The construction of the synthetic measure of development requires the division of diagnostic variables set to stimulants and destimulants. Variables included in the set of stimulants have been marked with the sign (+), while the (-) granted destimulants.

The transformation of destimulants to stimulants will be made according to the following formula:

$$x_{ij}^{\{S\}} = \max_i x_{ij}^{\{D\}} - x_{ij}^{\{D\}} \quad (1)$$

where:

x_{ij} – value of the j-th variable for the i-th country,

S symbol indicates stimulant, while the symbol D destimulant.

Then, after the transformation of destimulants to stimulants, the normalization of variables will be used according to the following formula:

$$u_{ij} = \frac{x_{ij}}{\max_i \{x_{ij}\}} \quad (i = 1, \dots, n; j = 1, \dots, m) \quad (2)$$

where:

u_{ij} – normalized value of the j-th variable for the i-th country,

n – number of countries,

m – number of variables.

Synthetic measure of the socio-economic development will be calculated by the following formula:

$$u_i = \frac{1}{r} \sum_{q=1}^r u_{iq}, (i = 1, \dots, n; q = 1, \dots, r) \quad (3)$$

where:

u_{iq} – synthetic variable value for the i -th country calculated on the basis of the variables belonging to the q -th determinant,
 r – number of determinants.

In contrast, measures of socio-economic development according to separate determinants will be calculated using the following formula [Zeliaś 2004]:

$$u_{iq} = \frac{1}{m} \sum_{j=1}^m u_{ij}, (i = 1, \dots, n; j = 1, \dots, m) \quad (4)$$

A detailed list of indicators used for the construction of indicators for individual determinants of socio-economic development has been given on the next page. Indicators have been selected based on the availability of Eurostat data.

I. Economy and Finance

1. Unemployment rate (-)
2. GDP per capita 1 (+)
3. Indicator of real expenditure per 1 inhabitant (+)
4. The number of poor people per 1000 inhabitants (-)

II. Science and Technology

1. Gross domestic expenditure on R&D (% of total expenses) (+)
2. Human resources in science and technology (% of the active population) (+)
3. The number of patent applications submitted to the European Patent Office per million inhabitants (+)
4. The number of researchers per 1000 inhabitants (+)

III. Health

1. Self-perceived long-standing limitations in usual activities due to health problem (-)
2. Self-reported unmet needs for medical care due to being too expensive (-)
3. Healthy life years (+)
4. Number of doctors per 1000 inhabitants (+)
5. Number of beds in hospitals per 100 000 inhabitants (+)

IV. Education

1. Participation rate in education and training (persons aged 25 to 64 years old) (+)
2. The percentage of people with at most lower secondary education and with no further education at the age of 18-24 years old (-)
3. The percentage of people obtaining a higher education between the age of 20 and 24 years old (+)
4. The percentage of people gaining or with higher education aged 15 to 64 (+)
5. The percentage of people with secondary education between the age of 15 to 64 (+)

V. Living Conditions

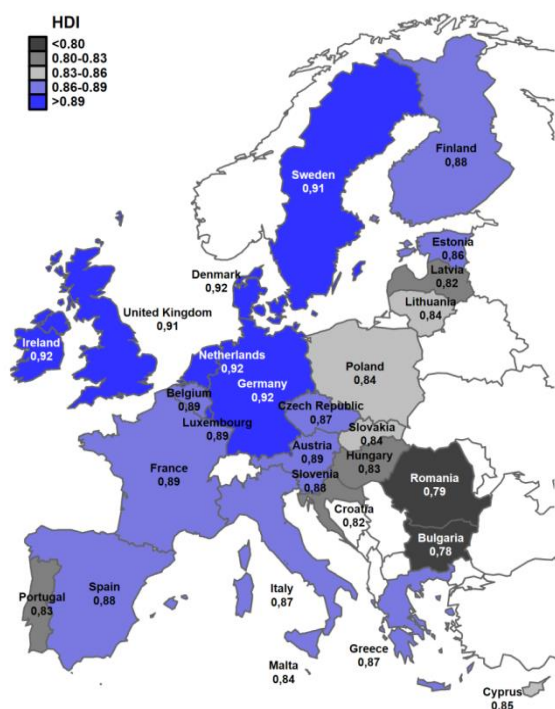
1. The percentage of people who are unable to meet unexpected financial expenses (-)
2. The percentage of people who are not able/unable to make 'ends meet' (-)
3. The rate of people at risk of poverty (-)
4. Share of people living in under-occupied dwellings (+)

2 Research results

The research for the European Union countries has already been prepared. On the 1. Graph the values of HDI index for EU countries are presented. The distribution of HDI values in the EU countries is not very diverse (Figure 1), if it is assumed that - hypothetically, this indicator may have values from 0 to 1. In addition, it is a substantive conclusion - HDI is characterized by very low sensitivity for changes in conditions life. Partial indicators included in the HDI: GDP, life expectancy and indicators related to the level of education show high stability over time.

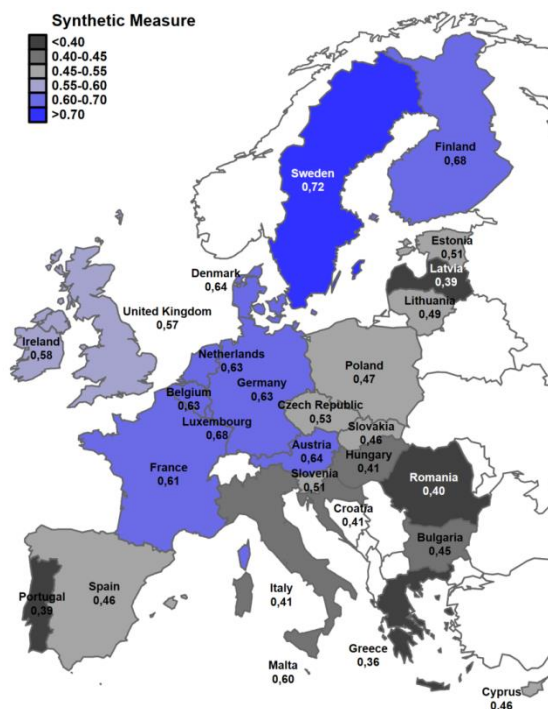
Therefore, HDI values, for example, the financial crisis of 2008, which afflicted a country such as Greece, Spain or Ireland, hardly shows, while living standards in the dynamically developing countries of the "new" Union are relatively low (Poland, the Czech Republic, Hungary, etc.).

FIG. 1: Values for HDI measure



(Source: author's own study)

FIG. 2: Values for 'Synthetic measure'



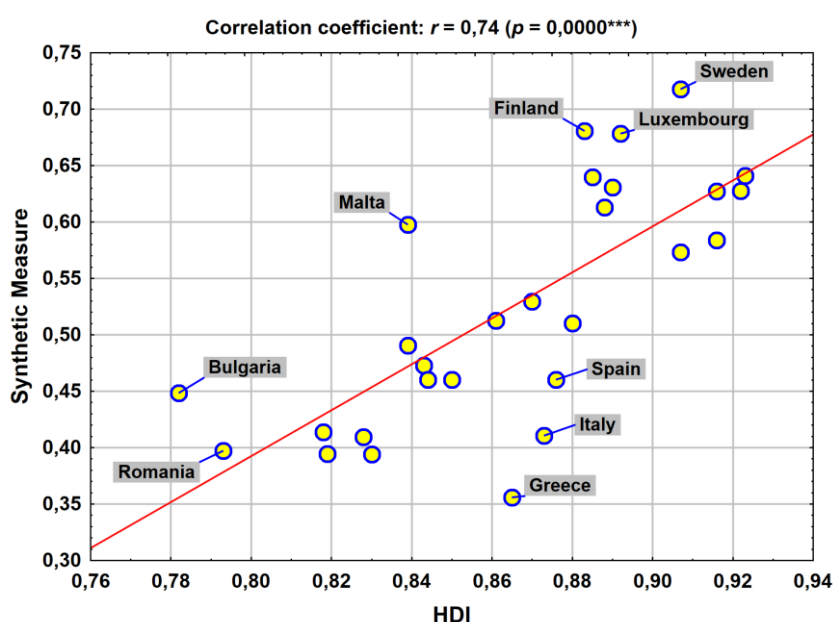
(Source: author's own study)

The proposed construction of a synthetic measure of socio-economic development is based on five pillars [Migata-Warchoń (2017)]. On the basis of the values of synthetic measures for each determinant of socio-economic development, the final synthetic measure was calculated (figure 2). According to the low correlation between variables, the synthetic index was calculated on the basis of all of the analysed indicators.

The scatterplot shows how the values of the new measure are correlated with HDI. The linear correlation coefficient is quite high ($r = 0.74$), but at the same time significant differences in the relative positions of some countries in both rankings can be seen.

- in the modified ranking, countries affected by the crisis took significantly worse places: Greece, Italy and Spain;
- Romania's position is slightly better, and definitely better than Bulgaria's;
- the leaders of the ranking have changed - in the proposed version the best in socio-economic development is characteristic for Sweden, Luxembourg and Finland (according to HDI, the leaders in the EU are: Germany, the Netherlands and Ireland).

FIG. 3: Scatter chart for HDI and 'Synthetic measure'



(Source: author's own study)

Table no. 1 presents the values of Pearson's linear correlation coefficient between individual determinants and a synthetic measure. In the conducted research it was obtained that the determinants of 'Science and Technology' and 'Living conditions' are the most correlated with the synthetic measure. The relationship between the synthetic indicator and the HDI index was obtained at the level of 0.74, which means a high positive correlation. However, attention should be paid to the fact that the determinants for which the HDI ratio has been supplemented are the most correlated with the synthetic measure, and therefore it seems reasonable that the life-quality measure should be constructed on the basis of a larger number of indicators.

TAB. 1: Correlation coefficients between determinants and the synthetic measure of socioeconomic development in the European Union countries

	<i>Correlations (correlation coefficients are relevant for $p < 0.05$)</i>					
	<i>Economy and Finance</i>	<i>Science and Technology</i>	<i>Health</i>	<i>Education</i>	<i>Living Conditions</i>	<i>Synthetic Measure</i>
<i>Economy and Finance</i>	1.00	0.44	0.39	0.42	0.46	0.70
<i>Science and Technology</i>	0.44	1.00	0.17	0.80	0.64	0.88
<i>Health</i>	0.39	0.17	1.00	-0.55	0.53	0.49
<i>Education</i>	0.42	0.80	-0.55	1.00	0.46	0.72
<i>Living Conditions</i>	0.46	0.64	0.53	0.46	1.00	0.83
<i>Synthetic Measure</i>	0.70	0.88	0.49	0.72	0.83	1.00

(Source: author's own study)

TAB. 2: Forward stepwise regression function parameters

	Regression function $R^2=0.99$ $p < 0.0000$ Std. Error: 0.008					
	b*	Std. error	b	Std. error	t(b)	p
<i>Intercept</i>			0.01	0.02	0.57	0.57
<i>Economy and Finance</i>	0.24	0.02	0.13	0.01	10.66	0.00
<i>Science and Technology</i>	0.47	0.04	0.18	0.01	13.12	0.00
<i>Health</i>	0.19	0.02	0.18	0.02	7.72	0.00
<i>Education</i>	0.14	0.03	0.15	0.04	4.12	0.00
<i>Living Conditions</i>	0.26	0.03	0.14	0.02	8.85	0.00

(Source: author's own study)

Table no. 2 presents parameters calculated by the usage of forward stepwise regression function. Estimated parameters show that the highest influence on the synthetic index has 'Science and Technology' determinant, next 'Living Conditions' and then 'Economy and Finance'. All the parameters (except intercept) are statistically significant. The obtained model confirms the fact that the socio-economic development index should be completed by other determinants like 'Science and Technology' and 'Living Conditions'.

Conclusions

In a dynamically changing reality, there is the need for creating indicators of the conditions of social life that will be sensitive to the processes taking place in individual countries. The traditional HDI index does not show this property.

From the point of view of time-consuming calculations, setting a new measure of socio-economic development is not troublesome. The data is available on the Eurostat websites, and the calculation

procedure itself is analogous to data from subsequent years. Of course, to ensure comparability of results between years, it is necessary to adopt, as it is in the case of HDI, fixed reference points in the procedure of normalization of variable values. For example, they may be minimum and maximum values throughout the considered time horizon.

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PARAMETERS INFLUENCING THE CREATION OF A BUSINESS STRATEGY IN STARTUPS

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Abstract: *The current business environment pays the utmost attention to the modern "startup" phenomenon. Startups come with innovative solutions and scalable business models. This type of small, imperfect, starting and incomplete enterprise, which almost does not have any resources, is subject to turbulence and complexity. However, the business environment also offers fertile soil for this kind of business.*

In this business trend, the success of startups depends on their well-functioning business model. However, they should not forget about a suitably chosen business strategy that is still fragmented.

For this reason, the aim of the contribution is to point out and evaluate the parameters of the external and internal business environment with a significant impact on the business strategy of startups. A well-chosen business strategy must be working and needs to be constantly developed. Developing a business strategy leads startups in the future to maintain and seek new competitive advantages.

Keywords: *startup, business strategy, parameters of the business strategy*

JEL classification: *L21, M11, M13*

Grant affiliation: *This paper is the result of research internal project about business models and business strategies of start-ups of the Department of management, Faculty of Business Management, University of Economics in Bratislava.*

Introduction

In order to ensure success in existing business entities in the complexity and turbulence of a dynamic and changing business environment, these entities must be able to clearly define their uniqueness and competitive advantage. It is the first thing to find, constantly develop and work on sustaining it. It forms the core of business strategy. Even known studies point to the fact that sustainability is an important pillar for enterprise growth. (Team of authors, 2015) In today's competition, not only big players, but even small or very small players, may play the most important role. Typical examples are startups.

This is precisely what we are pointing to and we observe currently that small, incomplete, startling and imperfect companies almost without resources can reach in record speed to the elite and build a strong competitive advantage. Their central benefit is adaptability. Even in the era of dynamic shocks such as revolutionary innovation breakthroughs and technological advances in the industry, startups are dominant businesses. The truth is that in such situations, these "garage companies" can strike, thanks to their rapid and simple adaptation to change in contrast to large corporations.

1 Knowledge about startup and business strategy from the theoretical level

The term "startup" is becoming an increasingly common and popular among almost all age categories. It is every young starting company that needs to be constantly developed. The startup scene in Slovakia has been experiencing a significant boom in recent times. It is dynamic, full of young creative people and experienced stone figures who have been in the business world for years.

Some authors argue that "startups are usually small clusters. They are companies offering a product or service that are not yet on the market and have not yet been offered." (Fontinelle, 2015)

When defining a startup, it is "a crucial problem to determine the boundary, a notional threshold when the company ceases to be a startup." (Hoffman, 2013)

Even a "temporary organization, a cluster used to find a repeatable and scalable business model" is a feature for startups. (Bryan, 2015).

It is a "technology-oriented, innovative company with global potential and high possibility of scalability. The company remains a startup until it finds a scalable, repeatable model of how to earn money." (Štefunko, 2013)

However, if we looked at the perception of the startup from a broader picture, we can say that it is any young, emerging company on the road to business success. Well it's not always so.

Another group of other renowned foreign authors is also involved in the issue of startups. (McClure, 2016; Nobel, 2011; Ries, 2015)

There is much more definitions, we choose only a few. From the above selected theoretical knowledge and the facts about the views of the startup definition, we draw the following conclusions. Definitions are not unified and integrated. Through the theoretical knowledge about startup, we can not clearly determine which definition of startup is the most accurate definition. But each one offers a foundation that is "building stone" or "cell" for a small, startling and almost imperfect enterprise.

The truth, however, is that if startups want to be successful in the business environment that is characteristic of them, they must have a good business model and a suitably chosen business strategy. Since the business strategy is more shattered than the business model, it needs to be investigated which parameters can influence this strategy. In literary sources, however, we do not find a specific typology of business startup strategies. However, we can consider which business strategies could be applicable as it is a small and starting business.

2 Aim, research sample and methods of research

The aim of the paper is to point out the entrepreneurial strategy in startups, which we evaluate through the parameters of the internal and external environment through evaluation scales. It also responds to current conditions and future opportunities in a changing business environment.

Selected strategic aspects were investigated on a sample of 72 startups in 2016 and 53 startups in 2017 through a questionnaire. These companies are operating in Slovakia.

The questionnaire was filled out by the respondent during a personal and even multiple visit of the startup; during a structured interview with the startup entrepreneur. The age of a typical startup entrepreneur ranged from 26 to 30 years. Each of them has a university master degree and an experience around 5-year, with gaining experience already during their study. A typical startup in the surveyed sample considered its idea as world-class, earned first revenues and used its start-up capital.

The research sample of the startups obtained by the questionnaire survey was subsequently processed and evaluated in Excel. The following methods of research were used: statistical (descriptive statistics/average), comparative method, benchmarking method, method of analysis and synthesis, method of induction and deduction.

3 Research results (comparison)

For successful running of startups in the current business environment, for these imperfect businesses a business strategy is important. Its essence was closely linked to the resource's structure of the startups. Ultimately, it has been their efficient use in the business environment.

The conducted survey points to the results of a survey of 72 startups from 2016 and 53 startups in 2017 operating in the domestic market. We clearly state that the average startup had a total of 4 members and a mean time of existence of about 1.5 years.

The startup business strategy was rated using a scale of 1 through 5, where 1 was the minimum value and 5 was the maximum value. Also originality, excellence, diversity, complexity and innovation were assessed against competitors or normal business practice.

Under the conditions in which the startup analysis was carried out, most of them lived in the belief that in order to be successful they only need to have a properly formulated vision. Some were abstracted from the vision and regarded it as irrelevant. But they did not realize its importance. The mission is closely related to the vision. These are the documents any startup should possess. They complement each other and build on the predetermined goals a startup want to achieve by performing their activities. When evaluating goals, visions, and missions in exploration, through the originality, ambition, size, and difficulty, the results of the survey show that in the surveyed set of 72 startups in 2016, the strategic attributes reached an average of 3.90 and 53 startups in 2017 reached 3.98, which shows the level of almost European. A scale of 1 to 5 was used where 1 represented the level of local to regional, 2 national, 3 Central European level, 4 European and 5 world level.

After defining the basic vision that follows the mission and is concretized in the startup goals, a step is taken to explore the business environment (external and internal). Performing external and internal analysis at every startup is a basic prerequisite for building a successful and functioning business strategy.

The researched sample of the startups went through their developmental phases from development through growth and maturation, through maturity to their decline or extinction. Sometimes there have been cases when a startup prematurely disappeared, and thus it did not reach the next stages of the life cycle at all. This is evidenced by the fact that the number of startups is decreasing. The number of startups in 2017 dropped by 19 compared to 2016.

Based on the results of the survey, we can positively state that the 72 startups in 2016 overall reached an average of 2.4 and 53 startups in 2017 reached an average of 2.69, meaning that these startups were at the growth stage in both periods and found themselves halfway to maturity.

The average value, moving at the threshold of 3.30 in 2016 and 3.16 in 2017, shows that the startups at both periods were influenced by higher dynamics and complexity from the external business environment. When examining the predictability of future developments, the average value was higher and reached 2.80 in 2016 and 2.79 in 2017. Interestingly, when looking at competition in the industry in both years, through competition intensity, we conclude that about 90% Slovak startups were and are still convinced that they do not have competition in their business.

The action radius, which measured the business space through individual levels from local to regional (1), national (2), central European (3), European (4) and global (5) reached an average of 3.40 in 2016. In 2017, the value of 3.57 was slightly higher. However, we can confirm in both years that a gradual transition from the Central European level to the European level has been recorded. The startups were at its half. Facts were recorded on a value of 3.1 in 2016 and on a value of 3.09 in 2017.

The position in the external environment identified through the business space was also in the surveyed startups at halfway between Central European and European top. Facts recorded a value of 3.1 in 2016 and a value of 3.09 in 2017. Position was ranked by level 1 moving to other positions with better defense, level 2 as weaker position, level 3 as average position, level 4 as a position well defended retaining its current position and level 5 as an ever-stronger position.

We also point to strengths and weaknesses of startups when analyzing the internal environment. The value of 3.90 represented the level of quality, value added, or utility of the product and reached an almost European level, which we evaluate positively. The average value of 3.96 in 2017, which represented the level of quality, added value or product usefulness compared to competitors, was almost European. Even the level of quality, added value, or product value of the territory in 2017 was only slightly lower and reached 3.91. The European level was recorded.

The price of the products offered was 2.70 in 2016, which was close to the top price on the rating scale. Startups did not sell their products at very low or very high prices. In 2017, the value (2.85) slightly increased by 0.15 points. The price level was almost the same in both years.

The spend costs on the product were average, the value of which was 3.20 in 2016. In 2017, the costs were somewhat higher, but the level remained. This is evidenced by the average figure of 3.42 being recorded in that year.

The services, accompanied, supplemented or which replaced the core products and were another source of difference, reached an average value of 3.20 in 2016 in the surveyed sample of startups. They were moving at the Central European level. The average value in 2017 was for those services, whether accompanied or not, or those that replaced the core products and were another source of difference (competitive) of 3.81 and (territorial) 3.68, which recorded almost the European level. By comparing the two periods we found that 2017 brought a positive transition from the lower (Central European) level to the higher (European) level.

Key technology in which the degree of originality and innovation was monitored averaged 3.70 in 2016, which was closer to the European level than to the Central European top. The observed key technology parameter (competing) reached an average of 3.71 and (territorial) 3.81 in 2017, a difference of 0.10 points. Despite this, the level in 2017 remains unchanged (European level) compared to 2016.

Based on the survey results, we believe that in the future, it is not possible to consider such business environment that will be stable. Startups must continue to expect that the environment to which they will be exposed will continue to be difficult, constantly changing and evolving.

A comprehensive overview of the survey results from 2016 and 2017 is documented in Table 1 through the parameters of the business strategy of the average Slovak startup by calculating the average values for the investigated periods according to the assessment scales of the individual parameters.

TAB. 1: Evaluation of Business Strategy in Slovak Startups

Parameters for business startup strategy evaluation	Average value and the parameter level in 2016	Average value and the parameter level in 2017
EXTERNAL ENVIRONMENT		
Goals / vision, mission	3.90 almost European	3.98 European
Life cycle phase of industry	2.40 growth and approach to halfway of maturation	2.69 growth and approach to halfway of maturation
Dynamics and Complexity business environment	3.30 higher	3.16 higher
Predictability of the future development for 3 to 5 years	2.80 almost higher	2.79 almost higher
Intensity of competition respectively. competitive conditions in the industry	2.80 almost higher	2.98 almost higher
POSITION IN THE EXTERNAL ENVIRONMENT		
Action radius respectively business space	3.40 halfway of Central European to European	3.57 halfway the Central European to the European
Segmentation	2.60 several segments	2.94 several segments
Position	3.10 average	3.09 average
INTERNAL ENVIRONMENT		
Quality / added value / product usefulness	3.90 European	3.96 European
Product price	2.70 almost higher	2.85 almost higher
Product Costs	3.20 average	3.42 average
Services that accompany, supplement or replace basic products and are another source of difference	3.20 Central European	3.81 rather European
Key technology (degree of originality and innovation)	3.70 gradual approach to European	3.71 gradual approach to European
Competitive advantage	3.80 rather European	3.71 rather European

4 Discussion

Continuous changes resulting primarily from the outside environment influence the very operation of startups. Based on these findings, business strategy and strategic planning in the long run are not a good alternative for startups, as their existence is relatively short. From the results of the survey we find this period of survival between a quarter and four years.

Business strategies that can respond to external circumstances may change. Key values should not change. For the investigated startups, this would mean that the ways to meet the needs would be diverse, but the content of the startup defined in the vision should not change. The purpose of a mission of a startup is to share and define the purpose and its direction towards the external as well as the internal business environment.

The lessons learned from each part of the external analysis state that its role is to provide a source of information for strategic decision-making, thereby reducing strategic uncertainty. Internal analysis, however, provides a systematic evaluation of key internal factors of a startup.

Since the core of the business strategy has been shaped by competitive advantages, it is necessary to build on the unique characteristics of the startups, which are their "cornerstones". Startups change many times their business strategy as a result of many complexities and turbulences resulting from a changing business environment.

If startups achieve new competitive advantages, which they will be able also to maintain, there are good prospects of their growing profitability in the future. A well-chosen business strategy is for startups a way to the business success.

Conclusion

The strategic aspects through which we examined the business strategy in startups during the two periods are important attributes for determining and selecting a strategy.

By analyzing the internal environment in the startup we have concluded that the individual parameters of the internal environment positively influence the business strategy, support its functioning and subsequently develop it. Internal analysis parameters also help to identify potential deficiencies that compromise the ability to deliver value to customers and thus the long-term performance is reduced. Our research also shows that startups should address not only the needs of the customers themselves, but also all stakeholders.

From research conducted, we can state that parameters responding to changes and stimuli from the outside environment should develop at a faster rate than before. Differences from competition should see big differences directly their complete difference. Proof of this are the levels of each parameter in compared years in the examined startups.

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KNOWLEDGE SHARING ORGANISATION

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Abstract: *Knowledge is a crucial success factor in globalised and digitalised world. Knowledge consists of two dimensions, tacit and explicit. Explicit knowledge can be transformed to data and stored and shared thorough information system. Tacit knowledge develops in human brain as mental models, experiences, and skills. Without tacit knowledge, people cannot do practical activities. Tacit knowledge is difficult to communicate but companies that become aware of its importance search for ways how to enable and improve its sharing among employees. The paper discusses the development of knowledge sharing organization in past 50 years and ideas on latest developments in this field - a community based knowledge sharing organization. Principles of community based knowledge sharing organization are demonstrated on two organizations from different fields; FAVI, a French machinery organization and Buurtzorg, healthcare organisation from Netherlands.*

Keywords: *knowledge, knowledge sharing, tacit knowledge, explicit knowledge, community*

JEL classification: M10

Grant affiliation:

Introduction

Knowledge is a changing system with interactions among experience, skills, facts, relations, values, thinking processes and meanings (Veber et. al, 2000). It is an information plus intuition and experience (Tobin, 1996). As an information with context, it provides basis for actions and decision making (Kanter, 1999). Knowledge allows us to interpret and manage the world around us (Wiig, 1993). Ability of organisations to collect, develop and use knowledge is the prerequisite of their success in highly competitive volatile environment of globalised, digitalised world. In past 70 years, the proportion of knowledge work in organisations increased dramatically. Some authors even write that these days, knowledge work is all work because even manual work requires the worker to have and use a much bigger portion of knowledge than in the past (Alle, 2002).

Due to its tacit dimension, knowledge is of an intangible character. The intangible character of knowledge leads to specifics of knowledge work. These specifics complicate the management in organisations. For example, knowledge work cannot be observed and controlled and it is not linear. Its results may differ from the short and long-term perspective, which causes problems with standards, measurement and evaluation. Knowledge work usually requires employees with a much better education in a certain field. Due to the intangible character of knowledge it also requires a person who can work and make decisions independently (Mládková, 2012) and the manager who can accept it. The growing importance of knowledge work changes power relations in organisations. Managers used to be the people who had more knowledge, more decision-making rights and the

right to control their subordinates. When knowledge work is involved, power shifts from managers to subordinates. They have more knowledge and they often understand what they are doing much more than their managers. Many of them make the final control of their product or service themselves (Mládková, 2012).

Organisations can use full potential of knowledge of their employee only when they find the way how to capture and share it. Recording and sharing of explicit knowledge does not represent a problem. Our sophisticated digitalised information systems and networks provide good environment. But explicit knowledge as such cannot create values. Tacit knowledge is needed to use and transform explicit knowledge to products, services and innovations. Tacit knowledge is difficult or impossible to transform to explicit knowledge (Mládková, 2012). As a “human” dimension of knowledge it can be shared only in human interaction. Researches and experience of many organisations show that people share their tacit knowledge only with people who they trust; e.g. with people who they know and like. Tacit knowledge sharing cannot be ordered and forced.

Since the crisis in the 70th organisations are searching for tools that would help them to share knowledge. The article maps these approaches, discusses latest development in this field and provides examples from practice.

1 Evolution of Knowledge Sharing Organisation

Management as a practice develops through the whole history of humankind. Outstanding findings in the field of human management, strategy management and organisational structures appeared especially in the army, church and state administration fields. These findings were mostly empiric and missed systemic approach. Management as the scientific field started to develop at the end of the 19th Century when companies remarkably grew thanks to the idea to emit shares to collected money necessary for extensive technological development. Organisations became complicated and it was necessary to redefine managerial tools and methods. The leading paradigm of management of 19th and 20th Centuries became Adam Smith’s division of labour.

In pre-division of labour times people mostly worked in smaller usually family type organisations (of course except of armies, state administration and churches typically organised in hierarchies). The qualified craftsmen or peasant was supposed to know the whole process of creation of his product; and people worked in the way we would call process management these days. As the workplaces were relatively small, knowledge was naturally shared in everyday contact among people. At the end of the 18th Century this style of work became the limit of development of the industrial revolution. Emerging manufacturing organisations needed more and more workers. Poor peasants were moving to towns to get employed in manufacturing organisations but the labour supply and labour demand did not met because they were unqualified. And to get qualification required time and money they did not have.

Adam Smith solved this dilemma by idea of division of labour. This idea relates primarily to the specialization of the labour force, essentially the breaking down of large jobs into many tiny components. Under this regime, each worker becomes an expert in one isolated area of production, thus increasing his efficiency. The fact that labourers do not have to switch tasks during the day further saves time and money (Victorianweb, 2018). Even the unqualified worker can learn simple knowledge necessary for sharply defined work. Smith’s idea allowed factories to grow throughout

the nineteenth century and later resulted in an assembly line technology, steep organisational structures with many organisational levels and machine like style of management. In this paradigm of management, knowledge is centralised in hands of managers who serve as a brain of a company and distribute the knowledge to subordinates through the nerve system of communication channels.

The division of labour style of management worked well until the 70th of the 20th Century when big oil crisis and global political, economic and social shocks altered relatively stable economic environment to unstable environment characteristic with quick unpredictable changes. In environment where organisations must be able to respond quickly, knowledge becomes a precious resource. Though the word knowledge was not used at the beginning, authors like Peters and Waterman (1982) and Kanter (1984) highlighted that quick decision-making and problem solving is blocked by bureaucratic and hierarchy based management. Companies that want to be close to the customer must give autonomy to bottom lines and understand the importance of employees for organisation. Later on, at the beginning of the 90's Hammer and Champy came with the idea to reengineer organisations and manage them again on process management principles (Hammer & Champy, 1993). First works on knowledge and knowledge management appeared (Sveiby, 1990; Wiig, 1993). The field of knowledge management was more explored in late 90'th and beginning of the 21st Century.

Although ICT development led to extensive digitalisation that brought unbelievable opportunities to manage explicit knowledge, tacit knowledge resisted attempts to be codified and organisations were naturally searching for managerial tools that would support sharing of tacit knowledge vital for innovativeness. Oticon became famous with their spaghetti organisation (ccs.mit.edu, 2018), Intel with their fluid organisational structures described by Nonaka and Takeuchi (1995) as a knowledge sharing supportive hypertext organisational structure. Organisations like Google, Facebook, Zappos try to eliminate traditional management in the part of the company where major value is produced and support work in self-organising teams that enable and support knowledge sharing.

But there are organisations that proceeded even further, limited division of labour approaches and replaced them with community based management similar to what was typical in pre-Smithsonian times. Wenger (1998) defines community (or community of practice) as a group of people who share an interest in a domain of human endeavour and engage in a process of collective learning that creates bonds between them. People unite in communities naturally. Communities provide us not only with knowledge and friends but also with security and feeling of belongings. At workplace communities build friendly working environment, support intense knowledge sharing, help to motivate employees and as such support flexibility. When applied well, community based management creates knowledge sharing organisation.

2 Community Based Management – Examples from Practice

The principle of community based management that leads to knowledge sharing organisation will be demonstrated on two organizations from different fields; FAVI, a French machinery organization and Buurtzorg, healthcare organisation from Netherlands.

FAVI is an SME based in Hallencourt in the Somme, France. It is a pressure die-casting company specialising in copper alloys that employs approximately 500 people. It works for an automotive sector, supplying one in two cars in Europe with gearbox forks on a sub-contractual basis (Gilbert et.

al, 2013). It was founded 1957 and formally managed in traditional hierarchical and bureaucratic way. When the second generation owner Jean-François Zobrist took the lead over the company (1983) he decided to take radical transformation in accordance with D. McGregor theory Y (McGregor, 1960). Now, the structure of the factory is flat with only two hierarchical levels (the factory director and employees). Employees are organised in twelve mini-factories. Mini-factories have about 35 employees. Majority of mini-factories are dedicated to a specific customer, few are upstream (maintenance), and support (the design office, the laboratory, equipment, R&D, IT). Each mini-factory is an island of production located in a particular area of the factory containing all the equipment and processes dedicated to a particular client (PSA, Renault, Volvo, Audi, etc.). Often, the logo of the client, painted in distinctive colours, is displayed in the mini-factory. Such units contain 20–35 operators, a leader and a salesperson who acts as a project head, and a productivity sponsor. The introduction of the FAVI mini-factory system and the values that it represented was accompanied by a new technical vocabulary. ‘Teams’ became ‘mini-factories’, ‘workers’ became ‘operators’, ‘supervisors’ became ‘leaders’ and the salespeople became the representative of the client.

Mini-factories do not have managers but so called leader. They are not managed in the traditional way. Mini-factories self-organise all their work, e.g. they administer orders, are responsible for communication with the client, coordinate and manage their operation, and sales and they decide on consensus and collective wisdom. Mini-factory members also decide when to meet, so there are no regular meetings where people have to come. Leaders of different mini-factories meet to coordinate the work of mini-factories, if necessary leader of one mini-factory can ask his colleagues for temporary help, etc. Teams create their own budgets. As they feel peer pressure they are very reasonable with money they ask for. The whole company works in trustworthy environment. For example, the store is open and people can freely take all material and tools they need. They must only make the order when the stock is low so that others get what they may need in future (Gilbert et. al, 2013; Laloux, 2014).

FAVI has not developed a traditional HR management strategy. The main recruitment criterion is an ability to meet FAVI’s managerial principles: being at the service of the client, being autonomous and responsible, and giving the best of oneself in order to ensure that the company succeeds. A large number of training courses are offered to FAVI’s employees and in-house training is provided by the most experienced operators. The remuneration system is based on a profit-sharing scheme and employees can potentially receive between 13 and 15 months of salary annually (Gilbert et. al, 2013).

The functionality of the system demonstrates the “Fiat story”. One Monday morning, Zobrist sensed that something was up with the group producing gearbox forks for FIAT, the Italian car manufacturer. The team was used to a steady order pattern: every Sunday night, a fully loaded truck would depart from FAVI in the north of France to FIAT in Italy. That Monday morning, colleagues from the team told him, “Can you believe it? We did two trucks!” Zobrist had no clue what they were talking about. They were quick to share the story: on Friday, while Zobrist was traveling and away from the factory, FIAT inquired whether they could make an exception and send over two trucks on Sunday night. The team came together, and after a bit of thinking and planning, decided to take on the challenge. They enlisted some volunteers from other teams and added three shifts on Saturday and Sunday. Exhausted but proud, they sent two full trucks out to Italy on Sunday night. It didn’t cross their mind

to inform the CEO or to seek permission. No one asked to be paid overtime; the team self-organized so as to recover the extra time they had put in over the coming weeks (Laloux, 2014).

Buurtzorg is a healthcare organisation from Netherlands with the vision to support independence of old, disabled and ill people. It is the largest neighbourhood nursing organization in the Netherlands. It was founded in 2007. Jos de Blok was dissatisfied with organisation of work in traditional health care organisation. The cure, care and prevention were fragmented, nurses had to follow strict standards of care regardless of client conditions and needs, the company was fighting with high costs and wrong incentives. Clients were confronted with many caregivers and the field was facing capacity problems due to demographic developments.

Opposite to this, Buurtzorg model is built on independent teams of maximum 12 nurses. Teams have about 40-50 different types of clients. Teams are autonomous; they are responsible for the complete process of their work, e.g. for clients, nurses, planning, education and finance and all kind of coordination activities. They do the planning of the vacation and holiday scheduling, and the administration. They decide where to rent an office and how to decorate it. They determine how best to integrate with the local community, which doctors and pharmacies to reach out to, and how to best work with local hospitals. They decide when they meet and how they will distribute tasks among themselves. They decide if they need to expand the team or split it in two if there are more patients than they can keep up with, and they monitor their own performance and decide on corrective action if productivity drops. There is no leader within the team; important decisions are made collectively. Care is no longer fragmented. Whenever possible, things are planned so that a patient always sees the same one or two nurses. Nurses take time to sit down, drink a cup of coffee, and get to know the patients and their history and preferences. Over the course of days and weeks, deep trust can take root in the relationship. Care is no longer reduced to a shot or a bandage—patients can be seen and honoured in their wholeness, with attention paid not only to their physical needs, but also their emotional, relational, and spiritual ones.

Teams also have their own education budgets. The complexity is reduced by ICT system that accommodates knowledge base and enables communication between teams and knowledge sharing. In the back office, they have coaches who help nurses with various problems including administration (Laloux, 2014; buurtzorg.com, 2018; kingsfund.org.uk. 2018).

Both organisations, though from different fields, work on similar community principles. Employees share the domain, build strong personal relationships based on trust and share knowledge. They have strong feeling of belonging, are loyal and actively interact and solve problems.

Conclusion

Digitalised and globalised external environment requires organisations quickly adapt to changes and opportunities. To be able to do it they must use their knowledge resources. Organisations learned that even the best knowledge management system does not meet expectations if people do not share their knowledge naturally and on everyday basis. Some organisations pioneers try to develop community based knowledge sharing environment that replaces traditional division of labour. Examples of FAVI and Buurtzorg show that community based management can be successfully used in different business environments. Community based management corresponds with the initiative called Management 2.0. Human friendly organisations that FAVI and Buurtzorg and other companies

try to develop may bring a new paradigm into management. Paradigm that will build on and later replace division of labour.

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THE ETHICAL BACKGROUND OF SUSTAINABLE DECISION-MAKING IN AN UNCERTAIN WORLD

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Abstract: *Implementation of ideas which are based on sustainability is usually realized through political and economic processes. Decision for adopting a particular policy which is connected with public and private investments finds justification in ethical theories and arguments. The aim of this paper is to summarize main theoretical sources for ethical deliberation of sustainability. The paper argues that uncertain characteristics of real world must be taken into account of ethical reasoning. Nevertheless, widening of ethical theories in the way which will include risk is highly problematical. The paper concludes that despite these problems ethical discussion in the context of risk and uncertainty is important because it helps us to reveal ignored consequences.*

Keywords: *ethics, philosophy of economics, risk, sustainable development, uncertainty*

JEL classification: *Q01, D81*

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Introduction

Sustainable development represents the concept of interconnection between the economic growth, the environment and the social dimension. In contrast to the standard economics of growth, sustainable development incorporates natural resources as a form of natural capital (Asefa, 2005, p. 1). Meeting sustainable development goals is connected with the need of large-scale public and private resources (Schmidt-Traub & Sachs, 2015, p. 24). These sustainable goals are created and implemented through political and economic processes. Decision for adopting a particular policy which is related to sustainable development goals is supported by ethical theories and arguments. The first part of this article discusses three main pillars of ethical sustainable reasoning. The second part focuses on ethical problems in the context of decision-making in an uncertain world.

Within this paper the term risk is associated with situations where it is possible to determine numerical representations of probability related to unwanted event which may or may not occur, or determine other characteristics of this event or its causes (for the most frequent definitions of risk see Hansson, 2014; Möller, 2012, p. 58;). Nevertheless, situations where it is possible to determine exact probability are quite rare. In many cases we are not able to determine probabilities or other characteristics, which was the reason for the most famous distinction between risk (with known probabilities) and uncertainty (unknown probabilities) in economics described by Frank Knight (1921, p. 19-20). Moreover, in decision-making it depends on the credibility of probabilities for the decision maker. In case when decision maker is not confident about the probability of available estimation,

we can speak about epistemic (knowledge-based) uncertainty (for clear distinction of these cases see Hansson, 1999, p. 539-540, Müller, 2016, p. 314). To understand problems mentioned in section 2.2 it is necessary to see risk from this epistemological point of view, and also in the context of the problem of risk perception. Psychometric studies come up with findings that risk perception of professionals and lay people differ (Flynn et al., 2006; Hansson, 2012; Sjöberg, 2001; Slovic et al., 1982; Roeser, 2012) which raises a question, how to take this fact into account of public policies.

1 Ethical background of sustainability – Three main pillars for ethical reasoning

1.1 Ecological and environmental ethics

Recently, as a result of the growing awareness that we can cause enormous damage to natural landscape through our activities, the significance of environmental ethics has been emphasised. Environmental ethics deals with issues of responsible behavior in relation to the environment, natural sources, species and organisms, which is usually the concern of moral philosophy (Jeffery, 2005, p. 105).

There are many approaches of environmental ethics which are based on anthropocentric (weak or strong anthropocentrism) or non-anthropocentric (biocentrism, ecocentrism, deep ecology, zoocentrism, theocentrism) views of ethical behavior (Binka, 2008, p. 88). Each of these approaches focuses on different aspects of environment and employs different arguments. It seems that in the context of sustainable development two approaches are important – ecocentric approach, which tries to support the idea of the inherent value of all nature – defended by more radical environmental movements (Paul et al., 2017), and anthropocentric or a weak anthropocentric approach which points out that in fact all environmental approaches are anthropocentric in principle because human experience is the main basis for creating values (Binka, 2008, p. 96).

Sustainable Development Knowledge Platform of United Nations (SDKP, 2017) defines several goals in the area of ecology and the environment which are supported by arguments related to conserving biodiversity of ecosystems. According to SDKP it is necessary to sustainably use of terrestrial ecosystems, sustainably manage forests and water, combat desertification, halt biodiversity loss, etc.

1.2 Social solidarity dimension

The social dimension is an important aspect of sustainability because it is connected with efforts to reduce inequality. SDKP (2017) mentions goals based on arguments related to social solidarity, justice and human rights. Among these goals we can find for example aims to end poverty; end hunger and promote sustainable agriculture; promote well-being for all; achieve gender equality, etc.

The famous philosophical attempt to solve the problem of distributive justice appears in work by John Rawls (1999) who defines two main principles of justice within his concept of justice as fairness. For the condition of an uncertain world has an importance hypothetical state before the social contract – the original position which Rawls calls a veil of ignorance – the situation where “no one knows his place in society, his class position or social status, nor does any one know his fortune in the distribution of natural assets and abilities, his intelligence, strength, and the like” (Rawls, 1999, s. 11). Nevertheless, as we will see in the second section, this attempt to include aspects of uncertainty in ethical reasoning is problematical in practice.

1.3 Economy and business ethics

Economy and its long-term growth represent one of the main pillars of sustainable development. Goals of sustainable development in areas of economy and industry (SDKP, 2017) are related to the promotion of sustainable economic growth and full, productive employment; promotion of inclusive and sustainable industrialization, etc. These goals are inseparably linked to the ethical dimensions of environmental and social character.

Recently, disciplines like business ethics plays still more important role in evaluating decision-making from the ethical point of view. Questions related to responsibility are taken into account and business ethics is not considered to be an oxymoron like in past (Werhane & Freeman, 2003). In the context of the need to face global problems, besides the increasing importance of business ethics, also new concepts as conscious business or conscious leadership emerge (Kubátová, 2017).

Companies which take into account ethical consequences and employ ethical decision-making not only reduce social and environmental harms, but they also minimize the costs related to the necessity to overcome the consequences of unethical behavior.

2 Ethical theories and risk

All economic processes, interpersonal interactions, and historical events are associated with risk, or more often with uncertainty. In these uncertain conditions, it is very problematical to rely on one of the traditional concepts of ethics (Fobel, 2002, p. 30-31). The solution to the real problems of today's world is based on a combination of different ethical approaches (Remišová, 1999, p. 233). This section mentions two problems related to risk. The first one is called the mixture appraisal problem and it is analysed by Hansson (2013, 2014), the second one is based on fair distribution of risk and related fact that risk perception of professionals and lay people differ, which was shown by psychometric studies (Slovic et al., 1982).

2.1 The mixture appraisal problem

Moral philosophy rarely deals with risk issues (Hansson, 2013; MacLean, 2012,). Hansson (2013, p. 2) suggests that this fact can arise from the division of the subject of interest between two disciplines – moral philosophy and decision theory. According to Hansson (2013, 2014), moral philosophy assesses behavior from the moral point of view, nevertheless in well-determined situations. And “decision theory takes assessments of these cases for given, adds the available probabilistic information and derives assessments for rational behaviour in an uncertain and indeterministic world” (Hansson, 2014).

This attitude employs primarily the criteria of rationality, and it does not need to include moral values. Decision theory cannot distinguish moral differences of two different situations. When we throw down a brick from a high building without making sure that nobody stands on the street, points out Hansson, it is morally different situation than in case we make a sure that there is nobody who can be hit. Unfortunately, probabilistic calculus does not express this moral difference. Hansson is convinced that a complete approach to risk ethics must be able to distinguish between intentional and unintentional exposure to risk, as well as between voluntary and involuntary risk-taking. However, recent approaches that treat risks as probabilistic mixtures of outcomes are not able to meet these conditions (Hansson, 2013, pp. 21-43).

In *utilitarian theory* we can recognize two approaches. The first one is an *actualist solution*, which “consists in assigning to a (probabilistic) mixture of potential outcomes a utility that is equal to the utility of the outcome that actually materializes” (Hansson, 2013, p. 24). This actualist approach is in several cases connected with accepting decisions which are in contradiction with our moral intuitions. The second utilitarian approach is based on the *maximization of expected utility* – “utility of a mixture of potential outcomes is defined as the probability-weighted average of the utilities of these outcomes” (Hansson, 2013, p. 26). One problem of this approach is based on the fact that the moral impact of potential output is not always proportional to its probability. Another problem is related to the impersonality of this approach. Moreover, besides other complications, it is very difficult to determine utilities and probabilities required for the analysis (Hansson, 2013, pp. 26, 27). An example from the field of medicine (the authorization of a new drug) is given by Lewens (2007). In the context of sustainability, we can speak also about adopting new technologies, genetically modified food, etc., to meet sustainable goals, but these decisions may be connected with risks.

Another group of theories are *rights-based moral theories* – approaches that use rights as a basic moral category playing a role in making recommendations for dealing with different situations. However, the extension of this theory to indeterminist cases seems to be inapplicable in social practice because an important question arises – how to set a criterion which will determine what degree of probability that unwanted event will occur is acceptable for restricting one's rights (Hansson, 2013, p. 34).

Problematical are also *deontological theories* that are based on obligations. In these approaches it will be again necessary to look for a criterion which determines what policies should be adopted. In a deontological position the obligation not to cause harm to other people is extended to the obligation not to act in a way which increases the risk of such harm (Hansson, 2013).

Problematical is also *contract theory*. According to this approach the acceptability of the risk should be based on the consensus (real or hypothetical) of all people within society. It seems that real consensus is impossible in a complex society. Hypothetical consensus, as Hansson (2013) points out, lacks its usefulness in the case of risk, even in Rawls (1999) concept. Rawls' original position, characterized by hypothetical uncertainty – ignorance of one's own identity, is related to a different situation than we experience in real life. Hansson (2013, p. 40) is convinced that the Rawls' concept supposes that people who try to reach a consensus know the implications of all possible choices of the social system, moreover, this concept do not take into account people's risk aversion. Changes in risk aversion make their comparisons of different economic systems irrelevant. The example in the next section illustrates one problematic aspect of contract theory in detail.

2.2 The problem of redistribution of risk and risk perception

Public acceptance of risk and fair distribution of risks represent problems that are being solved within some modifications of *contract theory*. In the case of community-based and political decision-making, it is practically impossible to obtain the explicit consent of all members of the society. Policy makers therefore seek to express risks through monetary characteristics – they usually employ costs and benefit analysis that relates to the risk scenarios. In the context of community-based decision-making, we tend to speak about implicit, hypothetical consent of members of society to that policy. The whole situation, however, becomes problematic. Particular policies, although they are quantified

as beneficial to society, are not always sensitive to moral demands and to the perceptions of the justice of each individual in the society (MacLean, 2012, p. 797).

MacLean (2012, p. 800) illustrates the issue of a fair distribution of risk by the following example. It is necessary to find a suitable place to store hazardous waste. A disadvantaged locality (for example city or district) can agree with the construction of this repository, because it recognizes the potential benefits such new job opportunities. However, the problem lies in the fact that although this decision may be economically profitable it does not mean that it is ethically sensitive because people in a disadvantaged locality are willing to take a greater risk.

All these problems can be illustrated by case study mentioned by Margareta Buşoi (2014) who analyses ethical dilemma of mining using cyanide based technologies in at Roşia Montana in Romania. Supporters of mining provided arguments that mining is connected with minimal danger to the environment, moreover new jobs will be created and well-being of local people will increase. However, scientists, Romanian Academy and the environmental organisations pointed out that these mining activities may lead to ecological disaster. It seems that this situation demonstrates different risk perception of lay people in the locality with general willingness to accept higher risks and professionals outside this locality. Similar debates about the impacts of mining are opened also in the Czech Republic. The renewal of gold mining in the Zlaté Hory region is an example of such debate. Although we can find arguments for the mining, analysis of long-term impacts shows that there are more environmental and social dangers than benefits (Žurek, 2018).

It seems that public consent is problematical due to different risk perception within society. We currently have several attempts to explain this phenomenon (Flynn et al., 2006; Hansson, 2012; Sjöberg, 2001; Slovic et al., 1982; Roeser, 2012). There is a question of which of these risks (perceived by several groups differently) to accept.

Conclusion

Strategies of sustainability are implicitly or explicitly supported by the ethical arguments from environmental ethics, business ethics or theories of justice. These ethical concepts provide an important theoretical framework, unfortunately we have to face risk and uncertainty in real life situations. Risk and uncertainty are very complicated phenomena connected with the possibility of the occurrence of hardly predictable or unpredictable consequences of events in the future. Although ethical theories do not provide an elegant solution of all problems related to the issue of risk, it is important to draw attention to risk, because insufficient risk management, misapprehension of issues related to the and risk perception lead to ethical consequence. Risk analysis in an ethical context is important in the public policy and also in the private sphere, because it helps to point out the unfair distribution of risks within society and to reveal ignored consequences of different decisions. In practice, all approaches are combined and particular solutions to problems are promoted by political power. A deeper understanding of the risk, especially answering the question how we perceive and process risk and how we make mistakes in our judgements are prerequisites for the development of risk ethics. Empirical research is necessary to answer this question.

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THE IMPACT OF ECB MONETARY POLICY DECISIONS ON EUROPEAN ECONOMY

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Abstract: *The situation on the European financial market in 2017 has prompted an increase in the number of planned political events in several euro area countries. Between 2014 and 2018, the divergent developments in the monetary policies of two key central banks, the ECB and the FED were generally expected. The aim of the article is to assess the impact of the ECB's monetary policy decisions on the performance of the European economy. None of the market indicators in the euro area indicated a possible change in key interest rates developments or in case of non-standard measures in 2017. In the forefront of forecast, the specialists suggesting improvements in inflation in the euro area, resp. the issue of economic growth and the adequacy of the applied rate of accommodative monetary policy. Expectations of the financial markets indicate that the year 2018 will end the EAPP and the discussions will again move to key interest rates as the original standard qualitative tool for monetary policy decisions.*

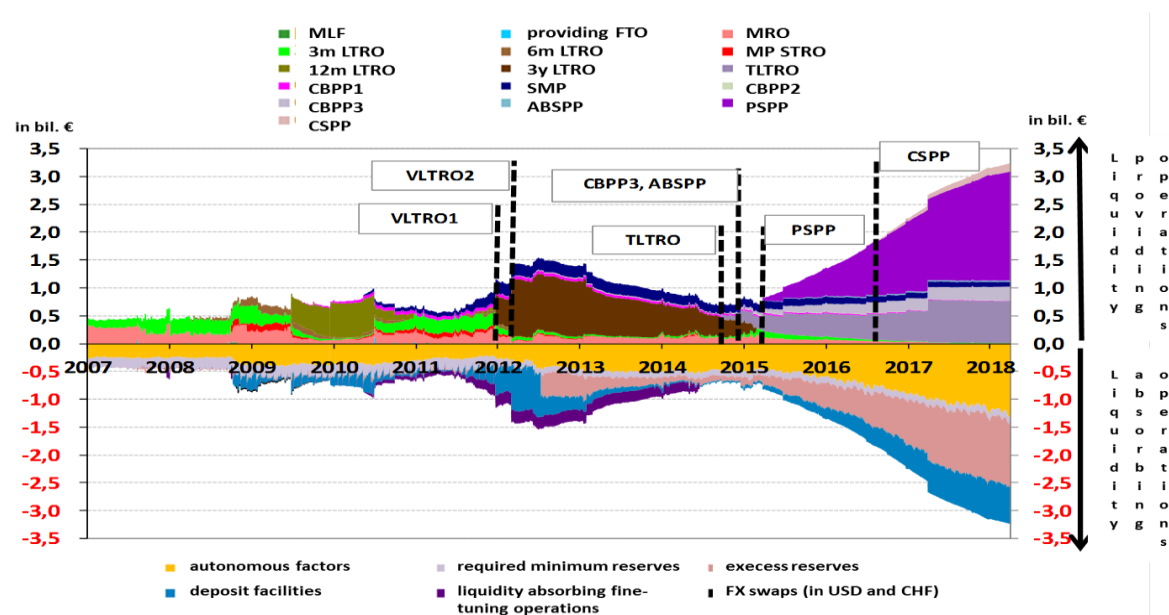
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Introduction

Central banks govern the price of money by official bank rate. By the help of these determinate costs from mortgage for businessman and households as well as return of saved money. When it comes to higher rate of interest the loans for economical subjects are more expensive, so it eliminates the amount of investment in economics and economic growth. As far as the rates of interest are low, they range is near zero, you cannot reduce them below zero. The economic regulation by central bank loses its effectiveness. In this situation the possible solution would be politics of quantitative easing, which tries even more to lower the rate of interest, by creating new electronic money, that are applied to economy. (Ugai, 2007) This kind of money boost credit account of central bank. The money is used for all different types of activities from buying government bonds to small company bonds. The goal is to stimulate commercial banks, providing more loans, business subjects' investment. Business and household promptitude for buying should be now determined by increasing on prices as expected in future. Indeed, this kind of monetary policy brings some risks. (Micossi, 2015) One of the most significant risks is the rise of inflation in the future, depreciation of currency and decrease of trust in economics, which would be contra productive for its growth. These are the most important arguments why central banks cannot apply politics of quantitative easing without suitable impulse.

FIG. 1: Most important monetary policy instruments in recent years

Source: Author, based on data from Bloomberg, National bank of Slovakia and European Central bank.

1 Development of non-standard ECB measures from June 2014 to March 2018

The relevance of applying the quantitative easing by the European Central Bank is also currently the most recent and the most buzzed about economic issues in influential circles, but also among the not so well-founded, respectively the general public. Quantitative easing from the first quarter of 2014 enhances economic growth and the development trend should grow in the next period. Therefore, we can conclude that show the positive effects of quantitative easing on the growth of gross domestic product. The European Central Bank decided to implement quantitative easing, which increases the monetary base, which helps to better multiplication of money. At the same time it reduces the interest rates mentioned lows that started the banking sector to expand credit facilities to clients. (BBC, 2016)

In the Figure 1, there are most important monetary policy instruments used by European central bank from 2007 to 2018. (Clayes & Leandro, 2016) At the beginnig of 2015 the quantitative easing started. The characteristics of the APP purchase program (APP): covered bonds programme (CBPP3) since October 2014, Asset-backed securities programme (ABSPP) since November 2014. Public sector purchase programme (PSPP) since March 2015. Government bonds and agency bonds, bonds issued by interantional organizations and multilateral development banks, bonds issued by regional and local governments in the euro area, Non-bank and corporate sector purchase program (CSPP) since June 2016 and reinvestment of current assets. (Claye, Leandro & Mandra, 2015) In the Figure 1 you can see as well as non-standard monetary policy measures (original) included: fixed-rate full allotment procedure (FRFA) in all refinancing operations for the different maturities, Broadenin of the eligible collateral framework, Targeted long-term refinancing operations (TLTRO) – 6 month and 12-month maturity, Liquidity providing operations in foreign currencies (USD, CHF), Covered Bond Purchase Programme (CBPP1,2), Securities Market Programme (SMP), Outright Monetary

Transactions, Forward guidance – the change in the communication strategy – the signaling of the future monetary policy.

The chronology of the use of various instruments in the monetary policy of the ECB:

June 2014 – The ECB decided to implement the TLTRO (targeted long-term refinancing operations), offering up to 4-years funding by supporting the provision of bank loans to the real economy. Loans for the non-financial sector, excluding loans for households intended for the purchase of real estate.

September 2014 – the ECB introduced 3rd round of CBPP – purchase of a broad portfolio of euro-covered bonds issued by euro-area monetary financial institutions under the new bond purchase program. At the same time, the ECB approved the ABSPP – Asset-backed securities purchase programme which means the purchase of a broad portfolio of simple and transparent asset-backed securities with underlying assets consisting of receivables from the non-financial private sector of the euro area. Purchases under the ABSPP are conducted through 6 national central banks.

January 2015 – the ECB extended its asset purchase program to bonds issued by the central government of euro area countries, agencies and European institutions (PSPP) – Public sector purchase program. The total value of monthly asset purchases is expected to **60 mld. €** and this program had to finish at the end of September 2016. The ECB announced the modification of the interest rates applied to the additional TLTRO, which equaled the Eurosystem's interest rate on the Main refinancing operations (and this removed the spread of 10 bb against the MRO applied during the first two operations).

September 2015 – the ECB increased the emission limit for PSPP from initial limit of 25% to 33%, depending on the application of the CAC – Collective action clause). December 2015 - the ECB extended the asset purchase period by 6 months **to the end of March 2017**. Next step included euroarea marketable debt instruments denominated in euro issued by regional and local governments in the euro area. The ECB decided to reinvest repayments of principal from repayable securities and extended the vesting period refinancing operations by FRFA by December 2017. Finally, the ECB **reduced the interest rate** of O/N sterilization operations by 10 bb to **-0,30%**.

March 2016 – The ECB cut the interest rate on the Main refinancing operations by 5 bp. to **0,0%**, interest rate on overnight refinancing operations by 5 b.p. to **0,25%**, interest rate on one-day sterilization operations by 10 b.p. to **-0,40%**. In the next step, the ECB **increased** monthly purchases of APP by 20 mld. € **to 80 mld. €**. In that time, the ECB increased the issuer and issuer limits for the purchase of securities issued by eligible international and multilateral development banks from 33% to 50%, reduced the share of PSPP purchases of securities issued by eligible international organizations and multilateral development banks from 12% to 10%. ECB extended the list of assets eligible under the APP for investment grade Eurobonds issued by non-bank corporate corporations (CSPP) – Corporate securities purchase program and finally the ECB introduced forth TLTRO II. Operations to support the provision of bank loans in the real economy.

December 2016 – with effect from April 2017, the ECB **cut** monthly purchases of APP by 20 mld. € to **60 mld. €** and extended the APP purchase period by 9 months until the end of December 2017. With effect from January 2017, the ECB extended necessary within the framework of the APP allowed purchases of securities with a yield to maturity below the interest rate on the ECB's day-to-day

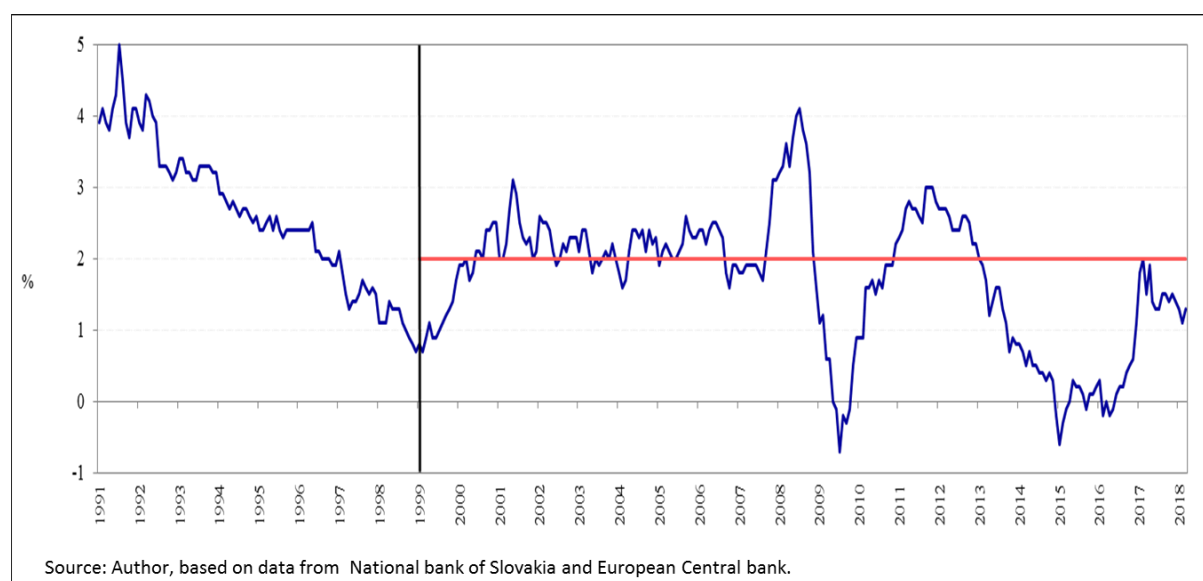
sterilization operations. Extended from January 2017, reduced the maturity range of PSPP purchases of securities with a maturity from two years to one year.

June 2017 – the ECB edited the communication strategy of the **forward guidance**, according to which the ECB expects the key interest rates of the ECB to remain at the current level for a longer period of time notably after the net asset purchase has ended. From forward guidance, the ECB has removed the reference that key ECB interest rates will remain at the current or lower level.

October 2017 – with effect from January 2018, the ECB **cut** its monthly net asset purchase to **30 mld. €**, extended the APP purchase period by 9 months until the end of September 2018. The eurosystem will repay the principal repayments of the purchased securities under the asset purchase program over a longer period, but in any event on the continuation of major refinancing operations and three-month longer term refinancing operations in the form of fixed rate tenders and unlimited volume of funds until it is necessary, but at least until the end of the last reserve maintenance period in 2019. The ECB decided to disclose information relating to the matured securities purchased under the asset purchase program in a monthly periodicity and for the next 12 months, broken down by individual purchase programs.

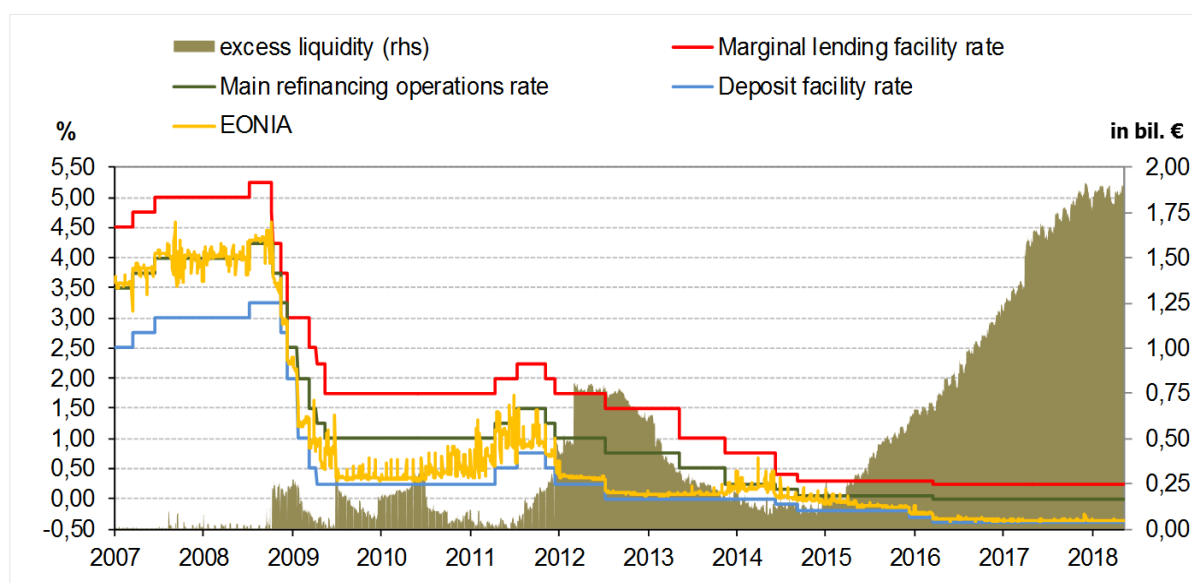
March 2018, the ECB was surprised by the wording of a possible increase in the volume of purchases in the event of a deterioration in the macroeconomic outlook, and the ECB President justified this with the expiry of the need for such a promise. In a further decision, the ECB raised the volume limit for securities lending against cash under Securities Lending from 50 mld. € to 75 mld. €. This decision was substantiated by the increase in the securities portfolio since the introduction of the possibility of using cash as collateral for securities lending in December 2016.

At the end of this part, what is behind of this expansionary monetary policy? Of course, the main objective of European central bank – to maintain price stability which means to keep the rate of inflation in the medium term below but close to 2%. (Clayes & Wolf, 2015) Figure 2 shows us, that the inflation aim is almost done. Governor of ECB argued, that current situation in price stability is not on the expectation level in long-term period in some countries, but for instance in Slovakia is above 2% yet. For financial markets stability in European union is necessary to hold long-term sustainability of price stability and new open questions are: When the ECB will end expansionary monetary policy and what kind of new instruments will use in the future?

FIG. 2: HICP inflation in euro area

2 Monetary policy decisions of the ECB and liquidity surplus on the market

The total liquidity provided within the euro area continued to grow and reached new historical highs exceeding the 3 trillion. €. The most significant year-on-year increase was mainly driven by liquidity inflows from the ongoing APP buy-in program, while standard refinancing operations contributed only marginally, despite the completion of the last tranche of the second TLTRO series. In many jurisdictions, TLTRO II almost completely replaced refinancing from standard monetary policy operations (MROs and 3m LTROs) due to the more favorable terms provided in the targeted refinancing (interest rate on the deposit facility, the same maturity, larger volume of drawdowns and no mandatory early repayment). The first TLTRO series was nearly fully redeemed in 2017, and most in June 2016, with the option of confusion and entry to the first tranche TLTRO II. Increasing liquidity mainly from the purchasing program, and in particular the fact that the liquidity provided significantly exceeded the real liquidity needs of the banking sector, the aggregate liquidity surplus continued to increase to new historical highs to 1.9 billion. €. As you can see in the Figure 3, the end of 2017, the pace of growth was considerably slowed down as a result of the slowdown in the purchasing program and the continuing impact of the rising autonomous factors that reduced the excess liquidity. It can be concluded that the liquidity surplus was stabilized over the reporting period when the overwhelming majority of over 60% was left in the banking system without using the ECB's deposit facility. (Demertzis & Wolf, 2016) For the purpose of making overnight deposits with the national central banks, the relevant entities had rather internal rules as a rational basis in view of the same interest surplus on the current account or on the deposit facility. The internal rules mostly involved the efforts of entities to continue to manage free liquidity even in the current environment of liquidation, with a non-negligible role played by regulatory requirements here.

FIG. 2: ECB interest rates and surplus of liquidity in euro area

Source: Author, based on data from Bloomberg, National bank of Slovakia and European Central bank.

The liquidity situation in banking sector in Slovakia did not change and there was still in surplus of liquidity, albeit at a significantly lower level than the aggregate level of the euro area. Due to the unchanged access of domestic banks to liquidity management, the surplus has continued to accumulate without a stronger use of the deposit facility. (Demertzis & Wolf, 2016)

Conclusion

The financial market situation in the euro area in 2017 boosted to the positive macroeconomic outlook as well as to the continuity of higher rate of accommodative ECB monetary policy. There was no significant impetus for the money market for the monetary authorities and a similar situation was also within the market participants themselves. The continuous surge in liquidity surplus to new historical levels had such a significant impact on the money markets.

The euro area financial market has been affected by an increased number of political incidents. However, the initial concerns about the materialization of political risk have not been confirmed, despite the fact that, in the case of Catalonia, the situation is not clear enough even after the early regional elections. Higher demand for Spanish banks for monetary sources was only temporary, and later interest returned to the original levels.

Divergence in the setting of key world-class political authorities has continued. The ECB used a relaxed monetary policy with only minimal interference, and on the contrary, the FED continued the process of gradual raising of interest rates and emphasized the phase of tightening of monetary policy by starting with limitations of the reinvestments of mature securities purchased under quantitative easing. In 2017, the ECB maintained a higher rate of accommodative monetary policy, adjusting its practices to a lesser extent. To harmonize the communication strategy, forward guidance has emerged from the improving macroeconomic environment and the disappearance of advert scenarios related to deflationary risk. (Demertzis & Wolf, 2016) Some adjustments were also

made in the performance of the APP purchase program when the monthly net purchases declined further. Further interventions in monetary policy setting have been cautiously indicated by ECB Governing Council officials, who are likely to end the buyout program this year and move the debate to key interest rates as the original standard qualitative tool for managing monetary policy.

Looking at the distribution of liquidity surplus between jurisdictions, there were no significant changes when the bulk of the funds remained highly concentrated in a narrower range of countries, which was confirmed by the finding that 5 jurisdictions (DE, FR, NL, FI and LU) with the largest absolute surplus represented up to 80% of the aggregate surplus. Unlike previous years, however, surplus has also begun to grow in jurisdictions such as IT and the EC, which have previously been characterized by more liquidity. It can be concluded that over the period under review the liquidity surplus was stabilized when the overwhelming majority of over 60% of the funds was left in the banking system without the use of the ECB deposit facility.

For 2018, none of the indicators suggests a higher, more regular participation of domestic banks in monetary policy operations. Some impetus may be to change legislation on the issue of covered bonds, with a consequent impact on the use of CBPP3. Neither 2018 will be in the euro zone without political risk. In Italy, parliamentary elections will be held in March 2018, and Catalonia's position may not be definitive either. Greater positive expectations are associated with Greece, as the improving development of the Greek economy, public finances, and the continuation of austerity measures predict ending the use of foreign financial assistance after the end of the third round of the rescue program. However, the government debt problem persists. Outside the eurozone, but with systemic influence, resumed the continuation of the UK negotiation on the conditions for the United Kingdom to join the European Union.

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REDUCING ENERGY INTENSITY IN THE EU STATES

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Abstract: *Energy intensity shows how much energy the economy consumes to create an economic unit of GDP. This indicator is to a large extent influenced by the nature of the economy. If the economy is based on an energy-intensive secondary sector, its energy intensity will be significantly higher than the energy-intensive economy based on the tertiary sector. Any economic activity that brings benefits should be realized regardless of its energy intensity. However, it is very desirable to reduce the energy intensity of all economic activities because this particular path is considered optimal to ensure sustainable development. It is therefore suitable to support the reduction of energy intensity also from public sources. The article will deal with the development of the energy performance of the European Union states and will examine the impacts of the selected projects financed from public sources.*

Keywords: *energy efficiency, energy intensity, energy savings, sustainable development, Europe 2020.*

JEL classification: *O22, Q48*

Grant affiliation:

Introduction

Our planet contains a limited amount of sources. The needs of human society are, however, unlimited. The purpose of economic systems is to manage the use of scarce sources so that they are optimally used to meet some of the needs of society.

In the past, it has been a priority for most economies to ensure economic growth, regardless of the circumstances in which growth has been achieved. This has often led to inefficient use of resources and damage to the environment. In 1987, Sustainable Development was first defined to initiate changes in economic systems to create the conditions for a possible long-term development of human society. Sustainable development is defined, inter alia, by the European Parliament as "improving the standard of living and welfare of people within the limits of ecosystem capacity while preserving natural values and biodiversity for present and future generations".

The European Union has always been one of the economies that have been among the initiators of environmentally-friendly systems. As part of the implementation of the principles of Sustainable Development, several directives have been developed into the EU legislation aimed at reducing the environmental impacts of economic activity.

Implementation of environmental elements is usually very expensive. It must be ensured that organizations that try to reduce their environmental impacts will not be harmed by this effort from an economic point of view. It would be very bad to lose the competitiveness of organizations that

want to operate in line with sustainable development, because then they could be replaced by organizations that only maximize their profits regardless of the impact of their activities. From macroeconomic data, it is clear that EU countries have increased their economic output since 2008, but at the same time have reduced their primary energy consumption, thus demonstrating that economic growth does not necessarily mean an increase in energy consumption.

According to Eurostat (2018b), 33.1% of the final energy consumption in the EU in 2015 was due to transport, households accounted for 25.4% and industry for 25.3%. The remaining sectors have a significantly lower share of energy consumed (services 13.6% and agriculture 2.2%). One of the main tools to reduce consumption is to reduce the energy intensity of the economy.

The aim of this paper is to evaluate the reduction of energy intensity in individual EU countries. The progress towards energy savings targets will be assessed. In addition, a correlation analysis of the impact of public funds on energy savings in the Czech Republic will be made to confirm or reject the correlation between the amount of allocations and the planned energy savings.

1 Methodology

The issue of reducing energy consumption is based at a strategic level in the EU by Directive 2012/27/EU on energy efficiency. The aim of this directive is to increase energy efficiency, which, among other things, should help to reduce greenhouse gas emissions in a cost-effective way and improve the competitiveness of industry in the EU by reducing energy costs. In 2007, the European Council highlighted the need to increase energy efficiency in the Union and achieve a 20% reduction in primary energy consumption compared to the 2020 projection, which is a part of the Europe 2020 Strategy. The reduction should be achieved by joint efforts. In 2016, this target was revised to a 30% reduction by 2030.

According to Ministerstvo průmyslu a obchodu (2017) to enhance energy efficiency in the Czech Republic, the above-mentioned Directive 2012/27 / EU was developed in the National Action Plan for Energy Efficiency of the Czech Republic (NATEE). This document also includes tools to support the energy intensity reduction of industry in the Czech Republic. There are also targets for the Czech economy.

The long-term goals for the Czech economy were determined in particular:

- Acceleration and subsequent stabilization of the annual rate of the energy intensity reduction related to GDP creation in the range of 3.0-3.5%.
- Not to increase the absolute consumption of primary energy sources. Ensuring the economic growth mainly by means of energy efficiency increasement.

No specific targets which would have an impact on energy efficiency have been defined in the National Energy Policy, nor in the National Action Plan for Energy Efficiency, nor in the National Program to Abate the Climate Change Impacts in the Czech Republic.

Article 7 of the Energy Efficiency Directive sets a binding target for all the EU member states, with annual savings of 1.5% of the annual energy sales to end customers. It also states the energy savings that each member state has to create by the end of 2020.

NAPEE describes tools to increase energy efficiency in the Czech Republic. These are mainly regulatory or economic tools and education. The regulatory area currently contains about 34 legal acts. Economic instruments are funded both from national and structural funds.

Energy savings for households are to be ensured, for example, by the Projects Panel, New Green Savings and OP Environment. The service sector and the industry sector can benefit from the OP Entrepreneurship and Innovation, the OP Enterprise and Innovation Competitiveness and the Strategic Framework for Sustainable Development.

The input data for energy efficiency calculations will be drawn from Eurostat (2018a). The evaluation of the reduction of energy intensity will be made by comparing the projected energy intensity for 2016 and the actual energy intensity in 2016.

The data on the amount of public support and energy savings data will be drawn from NATEE (Ministerstvo průmyslu a obchodu 2017). The impact of public funds on reducing energy consumption in the Czech Republic will be based on the correlation analysis calculated by Microsoft Excel using the following formula according to Kožíšek (1996).

$$r_{12} = \frac{n \sum x_{1i} x_{2i} - \sum x_{1i} \sum x_{2i}}{\sqrt{[n \sum x_{1i}^2 - (\sum x_{1i})^2] \cdot [n \sum x_{2i}^2 - (\sum x_{2i})^2]}}$$

Furthermore, a zero hypothesis will be tested for the absence of correlation by t - test statistics.

$$t = \frac{r}{\sqrt{1-r^2}} \sqrt{n-2}$$

Based on the result of the t – test, the decision whether to accept or reject the zero hypothesis will be made then.

$$H_0: \rho = 0$$

$$H_1: \rho \neq 0$$

Critical region is defined by inequality $|t| > t_{1-\alpha/2} (n-2)$

2 Discussion

2.1 Reducing energy intensity

Reducing energy intensity is often presented as one of the main objectives in the field of energetics. It increases the competitiveness of organization / economy by reducing costs while lowering environmental impacts.

The Table TAB. 1 shows the energy intensity of EU countries. The unit used in the TAB. 1 is kilogram of oil equivalent necessary for creating 1000 Euro value (kgoe / 1000 Euro). The first column contains the data on energy intensity in 2007. The second column contains the data on energy intensity in

2017. The third column contains the energy intensity projection for 2017. The last column shows the percentage difference between the projection for 2017 and the real energy intensity in 2017.

TAB. 1: Energy intensity of economy (kgoe/1000 Euro)

	2007	2017	projection 2017	% EI 2017 of EI projection 2017
Austria	114,2	107,1	120,2	89,1014975
Belgium	157,8	141,3	168,9	83,6589698
Bulgaria	542,8	448,5	651,6	68,8305709
Cyprus	147,4	128,7	155,1	82,9787234
Czech Republic	296,7	249,2	339,9	73,31568108
Denmark	81,3	65,1	83,1	78,33935018
Estonia	344,4	358	406,9	87,98230523
Finland	189,7	177,7	195,8	90,75587334
France	133,8	120,5	139,1	86,62832495
Germany	128,5	112,6	126,8	88,80126183
Greece	125,7	132,5	128,8	102,8726708
Hungary	258,9	233,6	296,1	78,89226613
Ireland	88,7	59,4	87,7	67,7309008
Italy	111,5	100,4	121,5	82,63374486
Latvia	218,2	206,7	333,1	62,05343741
Lithuania	294,9	205,4	307,1	66,88375122
Luxembourg	114,1	89,1	128,6	69,28460342
Malta	153,4	90,7	139,9	64,83202287
Netherlands	130,7	117,9	134,7	87,52783964
Poland	297,1	227,3	303,4	74,91760053
Portugal	144,1	133,9	155,6	86,05398458
Romania	318,8	226,7	354,6	63,93119007
Slovakia	277,3	215,1	345,6	62,23958333
Slovenia	195,1	177,6	229,6	77,35191638
Spain	132	113,7	138	82,39130435
Sweden	134,2	111,3	146,1	76,18069815
United Kingdom	117,6	94,3	99,7	94,58375125

(Eurostat 2018a)

2.2 Energy savings

According to European Parliament (2012) Article 7 of the Energy Efficiency Directive, the value of energy savings to be met by the end of 2020 was calculated for each country. Table TAB. 2 shows the energy consumption of European economies in the past years. Values are given in million tons of oil equivalent (mtoe). Besides, the savings values that countries have to achieve are presented here. Also, the energy savings that the countries achieved in 2014 and 2015 are listed. The last column of the table shows the percentage of the savings target achieved in the first two years.

TAB. 2: Gross inland consumption of energy (mtoe) and its savings requirements

	2005	2010	2011	2012	2013	2014	2015	Cumulative savings requirements by 2020	Cumulative savings 2014-2015	Progress towards total cumulative savings requirement by 2020
Czech Republic	45,4	45,4	43,8	43,5	43,5	42,2	42,4	4 882,0	88,0	1,80%
Hungary	27,6	26,6	26,0	24,7	23,9	23,8	25,2	3 680,0	349,0	9,49%
Poland	92,2	100,7	100,8	97,6	98,0	94,3	95,4	14 818,0	1 550,0	10,46%
Slovakia	19,0	17,9	17,4	16,7	17,0	16,2	16,4	2 284,0	257,0	11,25%

(Eurostat 2018b)

The table clearly displays that in the field of reducing energy consumption, the Czech Republic belongs among states that do not invest enough effort in increasing energy savings and achieves the worst results in this indicator. The Czech Republic has taken advantage of the exception and has chosen a slower creation of savings at the start of the process of introducing the austerity measures. However, it is necessary to ensure that the Czech Republic succeeds in meeting the targets in the coming years. If this were not the case, it would become one of the few EU countries that did not meet the binding target and could lose some of its competitiveness because it would have higher energy costs than the surrounding economies. In 2015, the Czech Republic met only 1.8% of its target to be achieved in 2020, while Slovakia reached 11.25%, Poland 10.46% and Hungary 9.49%. It is clear, therefore, that the Czech Republic does not generate energy savings at a comparable pace within the Visegrad Four countries, which could be harmful with regard to potential investors.

Alexandri et al. (2016) suggests that under certain circumstances, it is possible to increase macroeconomic performance while not increasing energy consumption. However, the growth of the Czech economy has been relatively intense over recent years and above the potential product level. Therefore, the energy needs of the economy were growing faster than the pace of energy savings measures. On the other hand, the last winters were warmer than the average, so the energy consumption for heating was below average. There has also been a significant increase in traffic in the Czech Republic, which has also increased energy consumption.

2.3 Energy savings programs funded by public sources in Czech Republic

The EU's energy savings targets are quite ambitious. Each member economy should effectively spend the effort and resources to meet the common goal. The Czech Republic is among the least successful Member States in creating energy savings. Table TAB.3 lists programs that are publicly funded in the Czech Republic and are intended to support the achievement of the energy savings target by 2020.

In addition to the amount of allocations and the planned energy savings, the table also calculates the efficiency of the allocated resources. In the last column of the table, the energy savings (in kJ) created by each 1000 CZK are calculated.

TAB. 3: Allocation of public sources in energy saving programs

	allocation 2014-2020 (bln. CZK)	Planned Energy savings 2014-2020 (TJ)	savings kJ created by 1000 CZK
Regeneration of panel houses Panel	4,5	206,9	45,98
Program New Green for Savings	19,36	10565	545,71
Program JESSICA	0,6	73,9	123,17
Integrated Regional Operational Program IROP	16,9	3100	183,43
OP EI 2014-2020	24,6	4617	1837,68
State programs to support energy savings EFEKT	0,7	428,4	612
OP Prague Pole of Growth	1	10	10
OP Enterprise and Innovation for Competitiveness	20	9619	480,95
Program ENERG	0,13	40	307,69

(Ministerstvo průmyslu a obchodu 2017)

In addition, a correlation analysis of the key energy reduction support tools in the Czech Republic for 2014-2020 will be carried out. This analysis aims to show whether there is a correlation between the invested funds in the Czech Republic and the planned energy savings that these funds have to create.

The correlation coefficient of allocation and the energy savings of public sources in the Czech Republic is 0.82248. The t-test statistic is 4.08989. The critical value for selected variables and periods is 2.36462. According to the t-test value, it is possible to say that we reject the zero hypothesis H_0 ($H_0: \rho = 0$) in this correlation. So, we accept an alternative hypothesis H_1 ($H_1: \rho \neq 0$). From the data above, it is evident that there is a correlation relationship between the allocation of public sources and energy savings.

Conclusion

According to Ministerstvo průmyslu a obchodu (2017) decomposition methodologies of the Report on the assessment of progress in energy efficiency have shown that energy efficiency is a key factor in reducing energy intensity in all sectors. The calculations made in this article have shown that the Czech Republic is quite successful in this criterion because in 2017, the energy intensity of the economy was at 73% of the energy intensity originally forecast for 2017. Slovakia reduced the energy intensity to 62% compared to the forecast, Poland 75% and Hungary 79%.

Nevertheless, the Czech Republic lags far behind in reducing energy consumption. Between 2014 and 2020, the saving of 4882 million tons of oil equivalent (mtoe) has been set as a binding target. For the years 2014 and 2015, however, the savings were only 88 mtoe, which account only for 1.8% of the target. This is the smallest percentage of fulfilling targets across the EU. To a certain extent, this is influenced by the fact that the Czech Republic has opted for a slower introduction of austerity measures. Nevertheless, even considering this fact, it must be stated that the energy savings are

generated very slowly and there exists a real danger of non-fulfilment of the objective, resulting for the Czech Republic from Article 7 of the Energy Efficiency Directive.

To support the energy savings, the Czech Republic currently has 9 main programs financed from public sources. The allocation is between CZK 0.13 and CZK 24.6 billion. The projected energy savings generated by these programs by 2020 range from 10 to 10,565 TJ. The efficiency of spending also varies considerably and ranges between 10 and 1837.68 kJ from each invested CZK 1,000. The correlation analysis was performed which determined the value of the correlation coefficient of 0.82248. A control t-test statistics has been performed confirming that there is a strong correlation relationship between invested sources and planned energy savings.

Therefore, the Czech Republic should consider and, without undue delay, implement further support for energy savings to ensure that the stated objective will be met. Achieving the goal will reduce the energy dependency of the Czech Republic, improve its balance of payments with the rest of the world, reduce environmental impacts and contribute to the sustainable development of the society. It will reduce energy costs and meet the target it has committed itself to. This will maintain its competitiveness and attractiveness for investors.

Alternatively, Czech Republic should consider joining the current 15 countries that have implemented Energy Efficiency Obligations schemes in Europe (EEOS). These countries have achieved very good results in energy savings.

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BIG DATA IN ECONOMICS

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Abstract: *The term of big data was used since 1990s, but it became very popular around 2012. A recent definition of this term says that big data are information assets characterized by high volume, velocity, variety and veracity that need special analytical methods and software technologies to extract value from them. While big data was used at the beginning mostly in information technology field, now it can be found in every area of activity: in governmental decision-making processes, manufacturing, education, healthcare, economics, engineering, natural sciences, sociology. The data revolution that we are facing transformed the way we measure the human behavior and economic activities. Unemployment, consumer price index, population mobility, financial transactions are only few examples of economic phenomena that can be analyzed using big data sources. In this paper we will start with a taxonomy of big data sources and show how these new data sources can be used in empirical analyses and to build economic indicators very fast and with reduced costs.*

Keywords: *big data, alternative data sources, data analytics*

JEL classification: *C55, C51, C52*

Grant affiliation:

Introduction

Technological developments in the IT field have led to what we call today the data revolution. The Internet, social networks, smartphones, wearables, different types of sensors are just few of the sources that produce huge volumes of data every day. Online commerce, social interactions, online marketing campaigns, traffic monitoring systems, satellites are many examples of devices and activities that produce data that can be used to describe human and economic behavior.

Now we have huge volumes of digital data that are generated by various devices or people's actions and which can be used to describe economic activities, the way people interact or to the policy making process. In order to transform the huge amount of data available today into knowledge of people's or company's behavior, we need to develop new data analysis techniques to deal with unstructured data which require particular attention due to the peculiarities of these data sources.

Processing these data sets can provide a series of useful information about economic trends, people's behavior or social phenomena. A recent estimate shows that during the next eight years, there will be more than 40 zettabytes of data (Mearian, 2017). This very large quantity of data led researchers to coin a new term - big data. Actually, the term of big data has been used since 1990s, but it has become very popular around 2012. A recent definition of this term says that big data are characterized by high volume, velocity, variety and veracity that require special analytical methods

and software technologies in order to extract value from them (De Mauro et al., 2016). The fifth V has recently been added - Value, that is extracting an added value from them, which is commonly known as big data analytics. For this, it is necessary to precisely identify the new data sources, the best way to collect and process the data to get an added value from them. Working with these new data sources involves a number of issues that need to be considered, such as their quality, integrating with other available data sources, their heterogeneity, representativeness, the development of special tools for processing such large volumes of data, ensuring their confidentiality and security.

There are many papers showing the benefits of using such data sources for companies as well as for governments or society in general (Varian, 2014) but there are only a few proposals for a general framework of using these new data sources to describe and produce forecasts for social and economic activities (Blazquez and Domenech, 2018).

Initially, the term big data was used only in the context of parallel and distributed computing technologies such as cloud computing or exascale computing. Today, when we talk about big data, we mean all the data generated in huge quantities in varied formats. There are few works that attempt to build a general framework for collecting, processing, and analyzing large volumes of data. As an example, we can mention the work of Pääkkönen and Pakkala (2015) and Assunção et al. (2015) who speak in this sense of data sources, data collection, data loading and preprocessing, data processing, data analysis, dissemination and visualization of the results. Zhang et al. (2017) proposes another big data architecture to optimize production processes based on four layers: starting with the application of product lifecycle services, then moving to the acquisition of the data from several sources, then processing and storing data and finally using data mining algorithms to extract knowledge from data. Thus, he proposes an architecture with 4 layers: data layer, method layer, result layer and application layer.

Wang et al. (2016) developed a big data architecture in the healthcare field based on five layers: data layer (data sources), data aggregation layer (which is responsible for collecting and storing data), analytics layer (deals with data processing), the information exploration layer (producing outputs for decision support) and finally the data governance layer (managing data throughout for their lifecycle to apply all security and privacy rules).

We have found only few papers proposing a big data framework for the economic and social domain (Blazquez and Domenech, 2018), especially since the particularities of this field imply the existence of a well-defined framework in which these new data sources can be used to produce better decisions or better quality of nowcasting or forecasting of the economic activities.

1 New data sources and analytics

In addition to the traditional data sources used in the analysis of the economic activities, such as the official statistics of each country, we are currently witnessing an explosion in the emergence of new data sources. Virtually any human activity is currently leaving digital traces that can be a very useful data source. In the following we present a taxonomy of these data sources (UNECE, 2013):

- *Human generated information* that represent the record of human experiences: this includes information generated by using social networks like Facebook or Twitter, videos, Internet searches etc.;

- *Process-mediated data* which refer to traditional business systems like financial transactions, e-commerce applications, medical records;
- *Machine generated data*: these are data generated by different types of sensors (traffic sensors, webcams) mobile/smart phones, satellite images, intelligent cars, computer systems, etc.

An important role in the process of generating these new data sets resorts to the Internet. Millions of companies or individuals generate an immense amount of data by using the Internet every day. Search engines on Internet provides services to help researchers to describe, monitor and forecast the economic trends. One example in this area is eloquent - Google Trends has been successfully used to nowcast some macroeconomic variables (Varian, 2104). Forecasts in tourism industry or stock market has also been produced using data from Google Trends (Artola et al., 2015, Preis et al., 2013). Social networks can more or less reflect what is happening at some point in society. Services such as Twitter or Facebook have been used successfully to generate forecasts for economic phenomena or for the study of population mobility (Daas et al. 2012). It should be also taken into account the fact that these data sources have a strong bias towards a particular segment of the population.

Companies' websites provide information about their business, future intentions, job vacancies, even online services. For example, the analysis of consumer reviews on [amazon.com](https://www.amazon.com) has been used successfully to produce demand forecasts. However, the use of information on these websites requires an intense effort since they are unstructured, and it is difficult to standardize the way how the data are collected and processed.

Technological development has led to the unprecedented spread of sensors that are producers of useful data for the analysis of economic activities. Retail scanners can be used to record everyday purchases and to predict consumer behavior or produce Consumer Price Indices by official statistics bureaus. Data generated by mobile phones have embedded geospatial information and can be very useful to study mobility patterns of the population. Traffic loops can be very useful to predict transportation activities which in turn can be used as a proxy for the overall economic activity. Data collected from credit card transactions has been successfully used to predict phenomena such as fraud or bankruptcy.

All of these data sources have some common features: their volume is very large, often they are unstructured or semi-structured, and they are generated at a very high speed. For these reasons, new processing and analysis techniques are needed. Nowadays there are several methods based on machine learning techniques that have been used in various other fields, but we are just beginning to use them in the field of economic analysis.

Since most of the above-mentioned data sources produce semi-structured or unstructured data, in order to be processed they must be brought into a structured form. Much of the effort to incorporate these new data sources in economic analyzes was directed to the development of data structuring techniques.

If we consider the data collected from the Internet either by web-scraping techniques or by other techniques, they are in the form of text and, to extract information, they must be processed using special techniques that fall into the field of Natural Language Processing. Some of the techniques

specific to this field used to analyze economic activities are Sentiment Analysis, Latent Semantic Analysis or Term Frequency–Inverse Document Frequency. After data structuring, a data modeling step involving the use of the techniques specific to large data sources is required. In this area, machine learning techniques such as supervised learning or unsupervised learning have been widely used (Hastie et al., 2009, Efron and Hastie, 2016). Supervised learning techniques work with data sets that contain both inputs and outputs of an activity and the main purpose is to find a way to infer outputs starting from inputs. These techniques can be further classified into two broad categories: data classification techniques and regression techniques. On the other hand, unsupervised learning methods deal with the situation where we only have inputs and their main purpose is to find relationships between inputs. These kinds of techniques can be divided into clustering techniques and association techniques.

There is no universal recipe for choosing one or another of these techniques, they are usually chosen according to the problem to be solved. For nowcasting or forecasting problems, practical experience has shown that supervised learning methods have delivered the best results. Among these methods, those that have been successfully applied to economic analyses (Varian, 2014) have been decision trees, support vector machines, artificial neural networks, deep learning methods which have proved to be very successful for very large data sets, bagging, boosting, random forests and also the classical linear or logistic regression as well. As an alternative to frequentist statistics approach, the Bayesian statistics approach has been proposed long time ago for economic problems, but the computational complexity of these methods has prevented economists from using them on a large scale. Only in the recent years, as computer performances have increased, and parallel computing has become widespread, the Bayesian statistics based methods become easy to apply. Sometimes, for some models the number of variables is too high and in this case regularization methods are applied: Least Absolute Shrinkage and Selection Operator or Ridge Regression methods are among the most used techniques in this area (Hastie et al., 2009).

Although a plethora of methods are available to analyze very large datasets, researchers should also consider the robustness of the models used and how accurate the results are. A model is considered robust when it can be generalized to various data sets. Normally, to ensure that the model is robust, the available data set is divided into two subsets: one for training used to compute and adjust the parameters of the model and one for testing which is used to test whether the model achieve a good performance not only for the data used to compute the parameters but for other data sets too. Various techniques exist to fine tune the parameters of the model, such as the cross-validation technique. For the accuracy of the model among the methods used by economists we can mention ROC curves, the Confusion matrices, the Root Mean Square Error (Hastie et al., 2009).

2 Towards a big data methodological framework

To take full advantage of the big data sets available today, some methodological guidelines must be followed. We present in the following some basic elements of a framework that must be implemented in order to obtain good quality results, sustainable on a long-term basis. Firstly, the access to the data sources should be secured for a long time period. It does not make any sense to invest a lot of resources to obtain some economic indicators for three months for example and then realize that accessing the data is no longer possible. Next, all the phases that data must pass from its collection to visualization of the results must be clearly and transparently defined. There are already

some standards proposed in this area, for example the Knowledge Discovery in Databases process (Fayyad et al., 1996), the Cross-Industry Standard Process for Data mining (Chapman et al., 2000) or an adaptation of the Zhang's two phases life cycle model proposed by Salgado et al. (2018).

Analyzing all the proposals regarding the methodological framework that has to be used for big data sources we concluded that at least the following phases should be taken into consideration:

- *data collection*. This means to ensure all necessary conditions for having access to data sources and use a proper method for collecting the raw data depending on how these data are generated.

- *data validation*. This phase supposes a complete data checking procedure to answer to the data quality requirements. Some imputation techniques could be also considered during this phase for missing data.

- *data documentation*. In almost all the cases, big data sources are not meant from the beginning to be used for economic analyses or to measure economic phenomena and they are generated without any metadata. That's why a distinct phase where some documentation is added to the data is certainly needed.

- *data transformation*. This phase ensures the data are in the proper format for the analysis procedures and if not, it makes the required transformations. This phase could also imply a combination of the big data sources with other available data sets in order to increase the potential for extracting useful knowledge from them.

- *data processing/analysis*. In this phase all the techniques mentioned in the preceding section could be used, depending on the specific problem to be solved in order to extract knowledge from the data. Specialized software tools are needed in this stage to process very large data sets. Software technologies such as Hadoop, Spark, TensorFlow, NoSql databases etc. are among the new trends in processing big data sources.

- *visualization*. This is the last phase and it implies using software tools to disseminate the results in a way that is understandable not only for researchers but also for normal users. Results should be shared in the form of tables, static charts, interactive graphics or other visual elements that help the users of these results to understand the economic phenomena behind the data or the trends of these phenomena.

Conclusion

Nowadays we face a data revolution. Data are produced in enormous quantities by all human activities: from online shopping to the usage of social networks to share information with friends, all human activities generate digital data. These new data sources could be an important opportunity to analyze and understand economic and social trends if they are properly used. In this review article we showed which are the main issues to be tackled with when we want to use unconventional data sources to measure the economic or social phenomena. Starting with data collection and going through metadata generation, data transformation, data analysis and dissemination of the results, we discussed which are the main issues to be considered in order to obtain robust results. Besides the aspects discussed in the previous section, one must consider that most of the new data sources presented here belongs to private companies and accessing the data could interfere with the main

business of the data owner. That's why partnerships between the data owners and analysts should be developed in order to have access to the data. The legal and ethical issues should not be neglected too, because most of the data sources provides data at individual level which should be used only under clear and transparent rules.

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MONTE CARLO SIMULATION IN REVENUE MANAGEMENT – SELECTED ISSUES

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Abstract: *The following paper focuses on the issue of Revenue Management in companies, which is mainly used in the service sector. The article focuses on the issue of creating economic models and software that optimizes sales in price management. Only the specifics related to probability simulation using the Monte Carlo method are discussed. The paper also discusses solutions to these problems, although not all of the problems are fully excluded, approaches are provided that at least mitigate their negative impact.*

Keywords: *revenue management, simulation Monte Carlo*

JEL classification: *M21, C63*

Introduction

When creating and compiling models and general approaches for revenue management in the hotel industry, it is good to notice the certain defects related to this issue. Their basic list, including the appropriate comment, represents this contribution. The main problems can be divided into two groups. Firstly, it is a problem of selecting the appropriate probability distribution as the input information for the simulation itself. Secondly, selecting a rule that analyzes the simulation output, respectively the decision-making rule on the compromise (or optimal) option when choosing between several variants - which is a key output of given model for the management.

In general, the simulation of the Monte Carlo type generates a high number of scenarios, which are tens of thousands or even higher. The output is not information about partial individual scenarios, but statistical characteristics of probability distribution. These characteristics are then further processed and just the problems that may arise in generating these outputs are the content of this contribution.

1 Selection of probability distribution

For proper use of the simulation using the Monte Carlo method, it is necessary to properly determine the probability distribution of the random variable. In practical application of given issue, the determination of these divisions is an important step and simultaneously very difficult step. This issue is usually caused by the fact that the processes and procedures in which the simulation of the Monte Carlo method is used, do not show excessive homogeneity, and so the rules for determining probability distribution may not be clearly set.

In setting the appropriate probability distribution, it is possible to use either traditional division, or define own division. In individual cases may be used, for example, defining the division using

quantiles, questionnaires, or simulate approaches by more experts from the hotel industry using the bootstrap method (see Freeman, 2002; Sen and Xu, 2015).

This is also related to the issue of determining too narrow intervals of uncertainty for the estimated risk factors (in this case for future revenue). Actual uncertainty may be even higher, resulting in exposure to a higher risk that was not originally taken into account. This issue is often associated with so-called trap of estimations and prognoses (Fotr et al., 2003). The issue associated with this, is based on the hypothesis that the hotel management estimates the uncertain events wrong, respectively their probability, and they usually overestimate the accuracy of estimations and prognoses – by this they often neglect alternative opportunities, and thus they expose the decision-making process to an unnecessarily high risk. In decision-making processes with serious consequences, they tend to adjust estimations towards the safe side. The prognosis of future events is based on past events with an emphasis on "strong" events. However, their impact may not be so crucial.

Typical recommended variant of solution for given issue is to start determining uncertain variables with extreme values – thus, to determine the top and bottom limit on the basis of the statistical model, and subsequently to determine these values (or even the maximum values increased by a certain percentage and minimally reduced values) as a starting points for another procedure (Kennedy and Avila, 2013). Another important fact may be that all estimations of future values are made by different departments in the hotel, different people with different approach to statistical processing and with different attitude to risk – therefore, it is necessary to unify the procedure and not to adjust the results so that the so-called "Looked better on real sight" – the values must be left as they are based on the model, even though their output might seem extremely high or low.

The excessive optimism is another problem in the determination of future estimations. This is a frequent and undesirable element, which is described not only in investment decision, but also in the evaluation of enterprises (Fotr and Kislinger, 2009). Several studies also deal with the problem of excessive optimism (see Lovallo and Khneman, 2003; Pollio, 1999). To eliminate this approach, it is possible to combine various opinions of experts that could partially eliminate the effect of this defect.

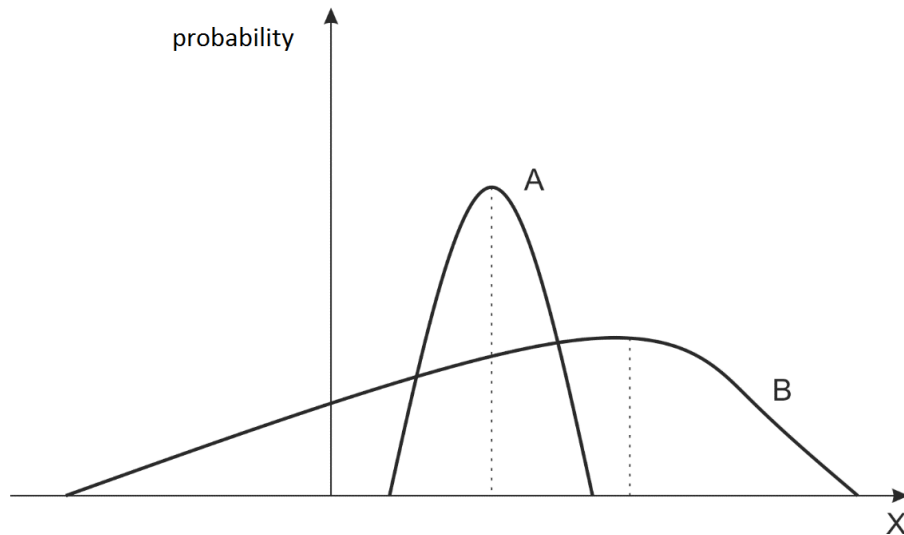
2 Selection of the appropriate rule for output analysis

In addition to the above-mentioned basic elements, it is important to respect the selection of the appropriate decision-making rule, thus the approach by which the outputs are further analyzed. At this point it is important to notice that the contribution assumes decision-making exclusively in the environment of risk that is typical for revenue management in the hotel industry.

In general, it is about the rules of expected benefit and the rules of expected value. For example, *the Bayes' theorem*, which selects the one for selecting the optimal variant that has the highest mean value of the monitored criterion (expected revenue). An important assumption that considerably eliminates the applicability of this rule in practice is that all variants have the same probability distribution. It does not reflect the attitude to a risk of the decision maker. To maximize benefits may be used, for example, *the Bernoulli's utility function*. Furthermore, the contribution describes the rule of mean value and variance. This approach also takes into account the risk, and the optimal variant is that one, which has the highest mean value and simultaneously a lower variance - as a risk indicator.

If this can be clearly determined, then there is no problem to determine the optimal variant. A problem that can logically occur (and of course, it often happens in practice) is that one variant has a higher mean value and second variant has lower mean value but also a lower variance. For an illustration, such situation is presented in Figure 5, where x is a random variable, for example, the expected value of the revenue.

FIG. 1: Rule of mean value and variance



Source: processed by author

In Figure 1 is obvious that variant A, which has a lower mean value, also has a lower variance of its values around this value. On the other hand, Variant B brings a higher mean value, but much higher variance. This is the basic situation that corresponds to a decision-making processes in the hotel management where it is necessary to select the appropriate compromise between the risk and the expected value of the revenue (mean value). In such a situation, it is suitable to use the variation coefficient for decision-making of benefits:

$$\text{var} = \frac{\sqrt{\sum_{i=1}^n (x_i - EX)^2 * p_i}}{EX},$$

where x_i is given random variable with a mean value of EX and p by its principle represents scales, which show the probability of occurrence of these deviations. In fact, it is about the ratio of mean value to the risk of the individual variants among which the decision-maker selects. It is based on the rule of mean value and the variation coefficient. At this point, it is important to mention the problem of exchanging mean and most likely value (see Groenendaal and Zagmutt, 2006).

A significant defect that is typical for revenue management and economic reality is the fact that the rules described above can be applied in situations where the resulting probability distribution is approximately symmetric. However, this assumption is often violated in practice, and therefore it is necessary to replace these approaches with others. These are, for example, relatively frequent used rules in the evaluation of investment variants - rules of stochastic dominance. These can be divided

into three basic rules, theoretically it is possible to derive even stochastic dominance of higher ranks. The advantage of this approach is the fact that it respects the entire probability distribution and simultaneously its application is relatively simple. For an illustration, this contribution will focus only on the first two rules of stochastic dominance. Thanks to the simulation output using the Monte Carlo method, it is possible to determine the distribution function of a proper division which is further processed. The first rule of stochastic dominance is based on the following assumption where must apply

$$\forall x \quad F_1(x) \leq F_2(x).$$

Random variable X_1 dominates the variable X_2 , where $F_i(x)$ is the distribution function of the variables. It clearly results from condition (2) that this is a simple situation when the distribution functions of several possible variants do not intersect, if this happens (and in practice this is quite normal), it is necessary to use the second rule of stochastic dominance, where must apply:

$$\forall x \quad \int_{-\infty}^x F_1(y)dy \leq \int_{-\infty}^x F_2(y)dy.$$

It is about the substance of the assessment of areas, which are defined by the charts of the distribution functions of individual expected variants (future incomes). This approach can be only applied in case of decision-maker with aversion to the risk. The optimal (or compromise) variant has a higher value of area under the distribution curve at the maximization criterion. Even in this approach, it is appropriate to make a combination with risk measurement of individual variants.

Conclusion

When using the simulation of the Monte Carlo method for revenue management in the hotel industry, it is necessary to take into account several elements and facts. On the one hand, it is the fact that outputs are always dependent on inputs, which is usually an expert experience of hotel management. However, this can be influenced by a range of elements whose complete elimination may not be done. It is partially possible to follow the recommendations that are mentioned in this contribution. Furthermore, it is important to take into account not only one output value from the simulation process (for example, expected revenue for the following period, hotel occupancy prognosis, or calculation of optimal price), but to respect the entire output probability distribution. This fact is more significant in situations where the output does not represent symmetrical distribution. Due to the complexity of the entire simulation process and the amount of input parameters, this happens quite often in practice. For these reasons, it seems desirable to use more advanced rules when analyzing outputs, or when deciding on them, such as rules of stochastic dominance.

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THE ACTIVITY OF SPECIAL ECONOMIC ZONES IN THE INVESTING ACTIVITY OF BUSINESSES IN POLAND

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Abstract: *The aim of this article is to present effectiveness of special economic zones (SEZ) in Poland. The authors describe the role of zone managers in the aspect of the technical infrastructure development and expenditure on promoting the zones. Article includes own research of 63 operating enterprises in the Katowice Special Economic Zone in Poland, regarding factors conducive to investing in its area.*

Keywords: *entrepreneurship, investments, special economic zones, technical infrastructure*

JEL classification: *E2, E6*

Grant affiliation:

Introduction

The article is dedicated to the problems of special economic zones (SEZ) in Poland. The genesis of the emergence of privileged zones in the world, their types and territorial range are presented further in the paper. The authors describe the functioning SEZ, discusses aspects of their formation and how they function, and discusses the role of zone managers in the aspect of the technical infrastructure development and expenditure on promoting the zones. The authors present the results of empirical research carried out on a sample of 63 businesses from Special Economic Zone in Katowice, in the part concerning factors favoring placing investments in its area.

The SEZ can be a useful tool as part of an overall economic growth strategy to enhance industry competitiveness and attract foreign direct investment. Through SEZs, governments aim to develop and diversify exports, to create new places to work, and to pilot new policies and approaches. SEZs also allow for more efficient government supervision of enterprises, provision of infrastructure, and environmental aspects (Kabus, 2016, p. 63).

1 The origin of special economic zones in the world

The archetype that started the activity of special economic zones, was the creation of the Export Processing Zones (EPZ) in the Shannon area in central-west Ireland in 1959. M. Guangwen (2003, p. 21) reports that the idea of privileged areas has evolved over many years. Depending on the type of incentives, their name, functions and territorial range are differently specified. The beginnings date from the concept of free trade zones, through mixed industrial and service zones existing from the 1940s, to industrial and scientific parks from the 1970s, until the 1990s, when cross-border zones

were created (Guangwen, 2003, p. 21). Special economic zones are named differently, depending on the area of operation and specialization. According to the International Labor Organization (ILO), the term „economically privileged“ covers various types of areas, depending on their location or the purposes they are supposed to meet. ILO distinguishes: export processing zones, industrial, technological and scientific parks, free port zones, commercial free zones (International Labor Organization, 2012, p.6). There are also: industrial development zones, customs warehouses, free production zones. The international Labor Organization defines that SEZs are industrial areas where special incentives for investors are applied. Their activity is mainly focused on the processing of materials and their subsequent export (International Labor Organization, 2011, p.4). The World Bank classifies economically privileged areas in accordance with Table 1.

TAB. 1: Classification of economically privileged zones

Type of a privileged zone	Characteristic
Free trade zone	So-called free zones offering storage, distribution, transshipment and re-export of goods.
Processing export zones	Industrial areas primarily focused on foreign markets. In their area, production is mainly focused on export and is carried out using imported and exempt raw materials. Entrepreneurs operating on the territory of such zones use cheap labor, tax breaks, good location and advantageous transport and communication connections.
Entrepreneurial zones	The idea of their creation was the desire to revitalize urban or rural areas, as well as tax and financial incentives in the form of subsidies are offered to economic entities.
Free ports	Usually occupy significant areas, which usually include a port and coastal towns. It is allowed to conduct all kinds of business activities in such areas, including retail sales and tourism. Trade exchange is free from any customs duties.
Foreign trade zone	These are areas usually used as a temporary location of imported goods. Storage of products is free of customs duties. In addition, it is also allowed to carry out manufacturing and processing activities in such areas.
Specialized zones	Include the creation of technological, scientific and logistic parks, clusters or petrochemical zones within airports.

Source: World Bank, 2008, p.3.

Special economic areas exist in many countries, both in those highly developed and those with weak economic development. Until 1975, most of the zones were created in developed countries, mainly Western Europe and their number was around 80 in 25 countries. The rapid quantitative development of SEZ in the world took place in the second half of the twentieth century. In 1997, 93 countries already had territories classified as special economic zones in their area (Pastusiak, 2011, p.106). Currently, it is estimated that there are more than 3,000 special economic zones around the world, in more than 130 countries. The most numerous group is in Latin America and the Caribbean, where 48% of the special economic zones exist, and in Asia, where 42% of them operate. The areas in Africa and Central and Eastern Europe are becoming more and more popular, while the least numerous group is in South America (Ernst & Young, 2011, p. 20).

2 Rules of operation of special economic zones in Poland

In the Polish economic space, SEZs have been operating for over twenty years. The detailed manner of functioning as well as the legal principles, objectives, conditions and manner of their establishment on the territory of Poland are regulated by the act passed on the initiative of the Economic Committee of the Council of Ministers from October 20th, 1994 on special economic zones (as amended). According to this law: „a special economic zone is an uninhabited part of the territory of the Republic of Poland, in accordance with the provisions of the Act, on whose territory economic activity may be conducted under the terms of the Act.” (The Act, 20.10.1994). There are 14 special economic zones in Poland, ie: Kamienna Góra, Katowice, Kostrzyn-Słubice, Kraków, Legnica, Łódź, Mielec, Pomerania, Słupsk, Starachowice, Suwałki, Tarnobrzeg, Wałbrzych and Warnia-Mazury. According to the regulations in force, the zones will operate until the end of 2026.

2.1 The impact and role of zone managers on the development of entrepreneurship

It should be noted, that since the creation of special economic zones in Poland, since 1997, their rapid development has taken place. According to article 8 of the SEZ Act (The Act, 20.10.1994), it is the manager's responsibility to conduct activities aimed at the development of economic activity in the zone. The main activities of managers are building infrastructure and promoting zones. Recognizing the importance of this task, the legislator in art. 25 of act 2 of the SEZ Act (The Act, 20.10.1994)0, allowed the exemption from income tax on legal persons of manager's income in the part spent for the development of the zone. The Council of Ministers in the regulations establishing the zones enabled all management companies to take advantage of this privilege. We will now present data on the contribution of zone management companies to their promotion and the amount of expenditures aimed for the construction of infrastructure. Investment companies, followed by municipalities, media managers and the General Directorate for National Roads and Motorways, have the largest share in infrastructure investments.

The analysis of the data allows to conclude, that the total value of expenditures incurred on the construction of infrastructure in the privileged areas incurred from the beginning of the zones until the end of 2016 amounted to over 4 billion PLN. The share of management companies in infrastructure investments accounted for 35.5%. In 2016, companies managing special economic zones allocated 5.67 million PLN on their promotion. On the other hand, 305.4 million PLN was spent on the construction of infrastructure in the zone, including expenditures of management companies representing 38.6% (Ministerstwo Rozwoju, 2017, p.39).

It should be noted, that the largest share in expenditures on infrastructure development has been done by Pomorska Special Economic Zone LLC – 463.1 million PLN (which accounted for 30% of expenditure in all zones), Wałbrzych Special Economic Zone INVEST-PARK LLC – 266.8 million PLS and Agencja Rozwoju Przemysłu joint-stock company Branch in Tarnobrzeg – 193 million PLN. In 2016, 305.4 million PLN was incurred on the infrastructure. These expenditures were lower than in 2015 by 140 million PLN. The largest investments in 2016 were made by the management company of the Wałbrzych Zone – 83.3 million PLN, which is 70.7% of the expenditure incurred for this purpose in all zones (Ministerstwo Rozwoju, 2017, p.39).

Similarly, to the expenditure on construction, expenditure on the zone promotion is another priority task assigned to the zone management companies. In 2016, the largest expenditures for this purpose were allocated by the managers of the following zones: Kostrzyńsko-Słubicka, Katowice, Łódź (1.31

million, 1.27 million and 1 million PLN respectively). In total, in 2016, management companies incurred 5.7 million PLN for the zone promotion. From the beginning of the zone operation, the largest funds for this purpose have been allocated by the management company of the Kostrzyńsko-Słubicka Zone – 13.62 million PLN in total. The company managing the Katowice Zone ranked second with 13.60 million PLN (Ministerstwo Rozwoju, 2017, p.40).

2.2 Results of empirical research

In 2016, the authors conducted research on the role and impact of special economic zones on entrepreneurship of business entities. The survey was conducted on a sample of 63 enterprises operating in the Katowice Special Economic Zone (KSEZ SA). The survey method used was a questionnaire. It was addressed to the owners managing their businesses and to people holding managerial positions or responsible for the company structure for contacts with the authorities of the relevant economic zones. The questionnaire was anonymous and preceded by a cover letter addressed to the surveyed entrepreneurs, which explained the basic issues related to the conducted research. The sampling frame was the company database posted on the website of the Katowice Special Economic Zone. The object of the research was business entities reported as conducting business activity and having the relevant permit, whose headquarters were located in the area located in the KSEZ.

The comprehensive study included a number of factors related to running a business in the SEZ and their impact on entrepreneurship. However, due to the volume of the article and its subject, we will present results related to factors that favored investment in the KSEZ, in particular, investments in infrastructure and its importance in the development of enterprises. The following question was asked: What are the most desirable activities supporting entrepreneurship for your company? Therefore, factors such as development in the region of business support institutions supporting entrepreneurship development, local tax relief, investments in technical infrastructure, promotion of the region, activities for raising foreign capital, investment incentives for entrepreneurs and organizing connections between the sphere of science and the sphere of business practice, as well as simplification of administrative issues related to starting a business and activities for raising foreign capital. Obtained results indicate, that according to investors' declarations, 46% of indications were for a response regarding tax incentives, i.e. investment reliefs, another constituting almost 32% of indications related to the response – relief in local taxes. The next item was answered – organization of connections between the sphere of science and the sphere of economic practice (20.6% of responses), development of business environment institutions in the region (17.5% of responses), investments in technical infrastructure (15.9% of responses). Other factors were below 15% of the incentive and proved to be less effective in attracting investments to the areas of privileged zones. As it can be seen from the results, expenditures on technical infrastructure is not the most favorable factor for investment placement, however, the results may come from the fact that the most dynamically developing Katowice SEZ is located near international routes: east-west (Lviv-Wrocław-Berlin) and north-south (Gdańsk-Cieszyn-Bratislava) and junction of A1 and A4 motorways, as well as close to Katowice Airport in Pyrzowice and Kraków-Balice, inland port in Gliwice, close to well-developed railway network and the International Logistics Center in Sławków via Hrubieszów and Lviv with the Ukrainian and Russian railways, and then with the Far East, therefore investors are already benefiting from a well-functioning infrastructure. From the point of view of entrepreneurship development, it is desirable to have technical infrastructure in the region. Such regions are conducive to better living conditions of the population and running a business activity, than those in

which this infrastructure is lacking or is outdated. Such areas are perceived by potential investors as places more attractive for the location of economic activity (Budaj, 2016, p.67).

Undoubtedly, the expenditures for the construction of technical infrastructure have a large impact on placing investments. However, investments in industrial and scientific research infrastructure (through cooperation between entrepreneurs and universities) and social (in the form of health care institutions, schools, shopping malls, sport facilities) are also important. The implementation of investments in the areas of privileged zones is one of the most important factors of local development and has a significant impact on the region's competitiveness (Kokot-Stępień, Krawczyk, 2016, p. 139-140).

Conclusion

Enterprises operating in areas of preferential zones can use various forms of entrepreneurship support. These include income and expenditure instruments. Undoubtedly, expenditures for the construction of infrastructure and for the promotion of zones belong to expenditure instruments. These are investments made together by the territorial self-government and zone managers, which is expected to have a positive impact on the willingness to run business in the zones, and thus on the growth of invested capital. Infrastructural investments are mainly technical infrastructure: infrastructure availability and investment land price and convenient communication location. In turn, expenditures on the promotion instruments, such as: cooperation of managers with local self-government, information on business partners, the economy of the region, the local environment, business environment entities. The cooperation with other enterprises and institutions such as trade fair organizers, industry professional organizations, research and development, research and development institutions as well as local self-government has a large impact on the entrepreneurship of the region.

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THE SPECTRUM OF MONETARY POLICY OBJECTIVES IN THE CONCEPT OF THE ECONOMIC POLICY OF THE STATE

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Abstract: *The objectives of central bank monetary policy are defined in national legislation somewhat broadly, although the objective of price stability dominates in all. But other goals are more vaguely designed and some of them are even opposite. The objectives of the monetary policy of the Czech National Bank are currently defined relatively widely and in principle contain the whole concept of the economic policy of the state. The main objective of monetary policy is still to maintain price stability, but the secondary objectives set out in Article 2, paragraph (1) of the Czech National Bank Act No. 6/1993 Coll are so broad that they may often conflict with the concept of price stability. This fact is particularly pronounced in the past 5 years, when the Czech National Bank has played a significant role in economic recovery and growth, with zero interest rates and foreign exchange interventions, which, in principle, is not the responsibility of monetary policy. Similarly, unorthodox is current monetary policy of the ECB, which even reaches negative interest rates and quantitative easing. The article analyzes the modern concept of Czech National Bank monetary policy in the post-crisis period, ambivalence of its monetary policy objectives, analyzes the effectiveness of its inflation targeting, including the implementation of its main monetary policy instruments in comparison to another central banks.*

Keywords: *monetary policy, central bank, inflation*

JEL classification: *E52*

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Introduction

As a general rule, central bank monetary policy can be characterized as a system of processes in which the central bank tries to use its instruments to achieve predefined objectives. These final goals have changed somewhat over time, but in the 1980s, price stability in the form of low inflation became the dominant monetary policy objective in most countries. Although price stability has always been one of the central bank's objectives, since the early 1990s, price stability has become the dominant monetary policy objective in the world (Mises, 2009).

For the Czech National Bank (CNB), according to Article 98 of the Constitution of the Czech Republic, the main objective of its activities is to provide care for the Czech stability (Frait, Cihelkova and Varazin, 2008). Since the CNB's legal anchor in the Special Sixth Chapter of the Constitution, outside the classical triad of power, the central bank is in a special position. In close connection with the Constitution, we can even speak that we have the power of legislative, executive, judicial, controlling and monetary-political, respectively banking (Sovinský, 2015).

Article 98 of the Constitution, in the second paragraph of the Constitution, stipulates that the status of the CNB, its scope and other details are laid down by law. This Act is the Act No. 6/1993 Coll., On the Czech National Bank. In § 2, paragraph 1 of this Act, price stability is reiterated as the main objective of the CNB's activity. This objective is also to ensure financial stability and the safe operation of the financial system in the Czech Republic. The role of the bank is primarily preventative and basically lies in the discovery of vulnerabilities in the financial sector and its links to financial markets and economic development in general. The central bank's mission is to contribute to the resilience of the financial system to external shocks, which significantly eliminates the risk of financial instability (Ramaswamy and Turner, 2018). The central bank's role in financial stability is closely related to the conduct of banking supervision and the stability of the banking system as a whole. Surveillance generally concerns not only banking but also non-banking financial institutions such as investment companies and funds, pension funds, insurance companies, capital market entities, etc. (Stiglitz, 2016).

The monetary policy objectives of the European Central Bank (ECB) are specified in Article 127 of the TFEU and are logically very similar to monetary policy objectives in our country. This is not only due to our membership of the European System of Central Banks, but in general due to the tight involvement of the Czech economy in the economies of the euro area member states. Accordingly, Article 127 TFEU (1) also provides for the maintenance of price stability as the primary objective of the ECB's monetary policy. However, the ECB has more goals, but price stability is the most important contribution that monetary policy can make to achieving a favorable economic environment and high employment rates. Here, however, we see a certain dichotomy of monetary policy objectives - if the central bank's monetary policy goal is to reduce inflation, it is necessary to accept the rise in unemployment and vice versa (Friedman, 1994). The ECB has a specific role in the euro area debt crisis (Kročil, 2015, 2016).

Some ambivalence of monetary policy objectives also applies to the Fed (Greenspan, 2008). The objective of its monetary policy is - in this order - maximum employment, stable prices and moderation of long-term interest rates. This in itself requires a balanced approach and a delicate search for compromises in monetary policy management. Low-interest rates essentially support economic growth and employment growth, but at the expense of higher inflation (Montoya, 2017). It is about its own current interpretation of monetary policy and the search for bases, taking into account, for example, financial stability or the values of other real variables (Greenspan, 2008).

1 Objectives of the Paper

The main objective of this article will be to analyze the monetary policy of the CNB in the post-financial crisis on the basis of the mutual ambivalence and contradiction of its objectives. While its monetary policy objective has been seen since 1998 to maintain price stability, the tools used to achieve it have fundamentally changed. Since the beginning of the financial crisis, CNB has been gradually reducing key interest rates to the technical zero in 2012, since the autumn of 2013, the bank has been the main and almost exclusive instrument of foreign exchange intervention policy. After their completion in the spring of 2017, the bank again uses interest rates as its main monetary policy instruments. Together with the analysis of the primary and other monetary policy objectives, the development of the main CNB monetary policy instrument will be analyzed. The result of the

analysis will be a prediction of the possible development of monetary policy in the Czech Republic with regard to developments abroad, especially in the euro area member states.

2 Material and Methods

An adequate methodological basis was chosen for the chosen topic, consisting mainly in the analysis of the current legal regulation of aspects of central bank monetary policy. In the theoretical analysis, individual macroeconomic models of inflation targeting in foreign central banks, including the Czech Republic, will also be used.

3 Results

The current inflation target of the CNB, which is valid since 2010, is 2%, with the real inflation rate ideally ranging from plus minus one percent, preferably close to, but below, the inflation target. In December 2017, the inflation rate reached 2.9%, which is at the very limit of the CNB's inflation target. It is, after a few years, finally to achieve the objective of price stability, even if at the extreme border of the inflation band. Therefore, the Bank has repeatedly announced its intention to raise interest rates in order to achieve and maintain the objective of price stability as required by the law and the Constitution of the Czech Republic.

The achievement of price stability can be understood as the primary objective, the secondary objective is the stability of the real economy, ie the reduction of the cyclical fluctuation of the economy in an effort to promote stable economic growth. Price stability and the stability of the real economy are not, in principle, conflicting objectives. Conversely, low and stable inflation creates the right conditions for a relatively stable development of the real economy. Under certain circumstances, however, a conflict may arise between the two final objectives, and the task of central banks is logically the primary objective of maintaining price stability while minimizing the risks of instability in the real economy.

3.1 The Main Vehicles of Monetary Policy

The basic instrument of most central banks is to set monetary policy interest rates by means of open market operations, which are transactions between the central bank and commercial banks with short-term bonds. However, economists still talk about monetary policy instruments as measures that allow the central bank to influence the level of the currency base (the banking sector's liquidity) and manage money supply. Even in this sense, the key instrument of free market operations is the key. Another key instrument is the management of the exchange rate level through central bank interventions in the foreign exchange market through which the central bank buys or sells foreign exchange reserves in the domestic currency. An important tool for influencing interest rates and the exchange rate is also the central bank's communication, in particular in the form of different announcements.

The central bank's monetary policy is implemented in most countries under a monetary policy regime. It is intended, in addition to primary and secondary endpoints, often also intermediate objectives (measurable control variables) and monetary policy instruments (labor criteria). In fulfilling its basic objective, ie in particular ensuring price stability, the central bank chooses one of several possible monetary policy regimes (Frait, Cihelkova and Varazin, 2008). In the baseline, the modes can be differentiated by access to the exchange rate.

The implementation of monetary policy is complicated by the fact that long-term nominal interest rates (nominal yields on long-term financial assets) that are key to influencing aggregate demand are not usually equated with short-term nominal interest rates (nominal yields on short-term financial assets). Occasionally, they move in the opposite direction (Gali, 2015). The central bank should have considerable control over the economy if, for example, a 1% reduction in its monetary policy rate would result in a fall in both nominal and real rates for five-year bonds or loans by 1%. In reality, however, it may not and usually is not. The reason is that the change in monetary policy can also change the trend of the yield curve and the expected inflation (Frait, Cihelkova and Varazin, 2008).

3.2 Inflation Targeting and Monetary Policy within the Czech Republic

The targeting of inflation as a framework for monetary policy implementation has undergone considerable development since the early 1990s, in which the initial intuitive and sometimes experimental elements were gradually replaced by rigorous methods with a considerable degree of international standardization. In the 1990s, the number of countries operating in the floating exchange rate regime increased significantly. The emergence of inflation targeting was a reflection of the drive to return to price stability after the 70s-80s. The inflation targeting strategy was also a culmination of a longer-term increase in the importance attributed to price stability in monetary policy objectives (Rickards, 2016). Inflation targeting has also had a significant impact on the procedures and commercial policies of financial market participants through its emphasis on flexibility and active communication in interest rate setting.

Central inflation targeting banks set an explicit numerical target for inflation in the form of a point or an interval. For most developed countries, the inflation target is set at around 2% and the corridor is usually about 2%, so a corridor expressed as 1-3% or $2 \pm 1\%$ can be considered as a standard for these countries. ECB defines price stability for the euro area as just below 2% inflation, but this is not an explicit inflation target and therefore cannot be easily compared to inflation targets. A public commitment in the form of an inflation target creates a framework for much more intensive influencing of stakeholder inflation expectations. Next figure shows inflation targeting of Czech National Bank within last 20 years.

FIG. 1: Inflation Targeting of Czech National Bank



Source: (CNB, 2018)

The fact that central banks define their inflation targets in the form of bands (eg 2-4%) or confidence intervals ($2 \pm 1\%$) reflects the fact that achieving targets significantly complicates various inflation shocks (typically violent changes in raw material prices or indirect taxes). As a result, the inflation rate may temporarily deviate from the target value without the central bank's responsibility for it. Therefore, there are "escape" clauses in countries implementing the inflation targeting policy, or exceptions that take account of the impact of unforeseen shocks on inflation. However, taking into account unforeseen shocks in inflation targets through escape clauses must have certain limits. The target inflation rate should only be adjusted by the direct effect of shocks and not by the indirect effect caused by transfer pressure to other prices and wages. In practice, however, it is very difficult to distinguish direct and indirect effects.

Another key element of inflation targeting is the period during which inflation deviations from the target should be eliminated. We could describe this period as the horizon of the monetary policy (feedback horizon, control horizon). This is the horizon in which the deviation of the inflation forecast from the inflation target is compared to compare the short-term interest rate of the central bank. Given that there is a lag between monetary policy decisions and their effects, forward-looking and pre-emptive monetary policy must be pursued. Therefore, today's decision to set monetary policy rates must be derived from their expected future effect. The anticipation of the central bank's response to future economic developments should be based on the perception of acceptable volatility of inflation or exit gaps associated with the return of inflation to the goal corridor following the realization of a certain shock (ie an equilibrium offset event).

The horizon (distance in the future) must be long enough to fully effect the effects of interest rate changes aimed at returning inflation back to the target once the temporary effects have been overcome. Monetary policy horizons are not and should not be fixed. The reason is that the optimal return time for inflation to the target in terms of loss of output depends on the nature of the shock that led to a deviation of inflation from the target. Therefore, monetary policy horizons are broadly the same as the horizons in which the inflation forecast is compared to the inflation target and normally ranges between one and two years. Recently, some central banks have come to a certain prolongation of the horizon up to three years.

The CNB has gradually unambiguously applied a flexible approach to inflation targeting with the existence of secondary goals and a considerable degree of pragmatism. In such a regime, short-term deviations from the target are considered to be more or less the natural reflection of changes in the economy, which the central bank can not "fight" but which must be well explained. Inflation targeting has become primarily a communication strategy, while monetary policy decisions are made similarly to other floating-rate countries with limited discretion. This rating is published publicly every month with a 12-day delay in a shortened record of the currency board meeting, commonly referred to as "minutes". This document details the way the bank council is considered, the perceived risks associated with the forecast, and any additional factors considered. Even with minutes, the CNB is trying to explain to the public that the key is not to hit the inflation target, but to provide the comprehensive and truthful information needed to create the best expectations.

Flexibility and pragmatism also means that the current monetary policy strategy is not based on the concept of a "currency machine", which produces an optimal interest rate (in the case of the CNB the rate for its 14-day repo operations) by a simple mechanical comparison of the inflation forecast and

the target, assessing the current situation and, above all, the outlook for future economic development. The purpose of their activity is to consider the risks and uncertainties associated with future economic developments and the impact of monetary policy measures on the economy and the subsequent adoption of decisions that will lead to the achievement of inflation targets with minimal costs in the form of lost real output. In other words, it is not imperative for inflation to be in the target corridor at all times.

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Conclusion

One of the traditional monetary policy issues is the choice between implementing it on the basis of fixed rules or discretionary decisions. Bankers would have a simple one with an estimate of future interest rate developments if the central bank would have decided purely on the basis of simple rules. In reality, however, it is not. As the Nobel Prize winner in economics says, James Tobin (1998), "mechanical rules that are blind to current economic developments cannot work and cannot be tolerated by central bankers, governments, and voters." Any rule that wants to have a chance of success must be able to respond to existing economic developments. Given the considerable uncertainty, this reaction must be based on the best possible judgment of the monetary policy makers, ie, on the debate. John Taylor (the maker of one of the most popular monetary rules today) says monetary policy cannot be based on one formula (2018). This formula should only be an important part of a set of indicators that are considered when deciding on the level of operational tools. Formula recommendations should be modified for observed and expected exogenous shocks, and the formula itself should be modified if new data suggest this.

Central banks set very short-term interest rates (CNB two-week rate, ECB weekly rate, FED only one-day rate), yet they are able to significantly influence the whole economy. The main features of inflation targeting are its medium-term focus, the use of an inflation forecast and the explicit public announcement of an inflation target or sequence of targets. In its monetary policy decision-making the CNB Bank Board assesses the latest CNB forecast and evaluates the risks of non-fulfilment of this forecast. Based on these considerations the Bank Board then votes on whether and how to change the settings of monetary policy instruments. By changing these instruments the central bank seeks to offset excessive inflationary or disinflationary pressures which are deviating future inflation from the inflation target or from the tolerance band around this target.

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TALENT, TOLERATION AND TECHNOLOGY AS THE SOURCE OF REGIONAL DEVELOPMENT IN LOWER SILESIA PROVINCE IN POLAND

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Abstract: *Regional development is one of the most important tasks carried out by public administration. It can be defined as an economic process aimed at raising the standard of living of the society. However, to achieve this goal, it requires both the activation of the endogenous potential of the region and the creation of conditions enabling the absorption of external resources guaranteeing its sustainable development. Nowadays, the key factors for development is recognized by talent, toleration and technology (model 3T). As R. Florida claims (author of the model), if a given region wants to develop dynamically, then it must take care of all 3T. This is the only way for stimulation the rise of the creative class, which is the driving force of regional development. The main purpose of this article is to show that talent, tolerance and technology (3T) are key elements of the development of the Lower Silesian Province. The research was based on the Spearman rank correlation coefficient.*

Keywords: *talent, toleration, technology, regional development, Lower Silesia Province in Poland*

JEL classification: *O15, R11, R58*

Introduction

Regional development is one of the most important tasks carried out by public administration. It is a process that does not take place spontaneously, but is created by various factors. Among many definitions of regional development, the one by R. Florida (2002) deserves special attention. According to him, "the theory of regional development is based on the assumption that people are the driving force of economic development at the regional level", and thus the development of the region is primarily determined by the level of social and human capital and the quality of social institutions and services. These determinants are recognized by talent, toleration and technology (model 3T).

1 Creative class and "3T" model

According to R. Florida (2002), shaping economic development depends on the activity of the creative class created by people who increase the economic value of a given region due to its above-average creativity. This group includes knowledge workers, professionals and technical employees (including architects), symbol analysts as well as artists, actors and journalists (Klincewicz, 2012, 9-10).

As stated by R. Florida, the creative class consists of two components. The first is the creative core, which includes scientists, writers, stage artists, designers, actors, people of culture and journalists. The task of the creative core is to produce new forms and projects that are widely applicable. The

second element of the creative class are creative professionals working in sectors requiring advanced knowledge, such as legal professions, healthcare, high-tech sector. Their work is based on solving specific problems, using extensive knowledge. Such tasks require higher education, which is equated with a high level of human capital (Florida, 2002).

With the development of the creative class, you can observe significant changes in value, attitude and standard systems. Florida divided these values on the basis of these three main criteria. The first of these is individualism, which is very important for members of the creative class. Creative people do not comply with institutional or organizational directives, their aim is to create an individualistic identity that reflects their creativity. Meritocracy is another value appreciated by the creative class. Members of this group prefer hard work, challenges, as well as stimulation, they eagerly set goals and strive for their implementation. In addition to individualism and meritocracy, diversity and openness should also be mentioned. For members of the creative class, organizations and environments are important, with whom, regardless of sex, age, race or sexual orientation, they can identify themselves. Creative people choose tolerant, diverse and open to new ideas places.

The above considerations are reflected in the "3T" model of economic development. According to the assumptions of the model, "building a knowledge-based economy requires the simultaneous development of three seemingly independent areas: Technology, Talent and Tolerance" (Klincewicz, 2012, 10). Each of these three components is essential for a given region to be able to develop, attract creative people, but does not in itself guarantee economic growth at the regional level. The interdependence of the three "Ts" explains why some regions, despite good technological facilities and high-quality academic centers, do not develop. These places are not open and tolerant enough, which is why they are not able to interest creative individuals.

The "3T" model allows for diversification of individual regions and determination of their development potential, using appropriate indexes for each "T". The Technology Index includes innovative achievements, patent applications, or research achievements of a given region. The Talent Index refers to the size of the creative class, while the Tolerance Index is related to the openness of people to new cultures, customs, national, sexual and religious minorities.

2 Creative class in Lower Silesia - research results

Two indicators were used to assess talent in individual regions. The first was the size of the creative class, the second was the location coefficient of the creative class calculated using the following formula: location coefficient = $(R_i/Z_i):(R_j/Z_j)$ in which R - number of the creative class representatives, Z - number of employees, and i - region, j - country (Klincewicz, 2012, 43).

The table 1 shows the size of the creative class in particular provinces and the location coefficient, which is the basis for determining the position in the ranking.

TAB. 1: The numbers of the creative class and the human capital ratio in polish provinces in 2015

Province	Creative class	Position in the ranki	Location coefficient	Position in the ranking	Number of graduates	Population	Human Capital Index (in%)	Position in the ranki
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		ng						ng
Lower Silesia	327988	1	1,114	2	36400	2 904 207	1,253	3
Kuyavia-	191574	2	0,964	9	19600	2 086 210	0,940	9
Lublin	194063	3	0,845	14	23500	2 139 726	1,098	6
Lubusz	90979	4	0,968	8	4700	1 018 075	0,462	16
Łódzkie	257855	5	0,959	10	25800	2 493 603	1,035	7
Lesser Poland	327170	6	0,934	11	51300	3 372 618	1,521	1
Massovia	815924	7	1,206	1	77100	5 349 114	1,441	2
Opole	88688	8	0,981	7	8900	996 011	0,894	11
Subcarpathia	182759	9	0,803	16	17800	2 127 657	0,837	13
Podlachia	104301	10	0,899	12	12000	1 188 800	1,009	8
Pomerania	242597	11	1,082	4	25700	2 307 710	1,114	5
Silesia	475009	12	1,011	6	39200	4 570 849	0,858	12
Świętokrzyskie	107475	13	0,822	15	11700	1 257 179	0,931	10
Warmia-	125727	13	1,033	5	11000	1 439 675	0,764	15
Greater Poland	355099	15	0,872	13	40600	3 475 323	1,168	4
West Pomerania	160210	16	1,085	3	13600	1 710 482	0,795	14

Source: own elaboration based on: Regional Statistics in Poland. (2015). stat.gov.pl/en/regional-statistics, gejowo.pl, Urząd Patentowy Rzeczypospolitej. (2016). Warszawa, 15, Human Capital in Poland in 2015, stat.gov.pl/en/topics/other-studies/other-aggregated-studies/human-capital-in-poland-in-2015,5,4.html.

In 2015, a total of 327,988 representatives of the creative class lived in Lower Silesia. At the same time, the value of the creative class location coefficient was at the level of 1.114, which placed the region on the second position in the country after the Mazovian Province.

The Human Capital Index was chosen as important indicator in "3T", measured the percentage of people with a bachelor's or higher degree in a particular region. Due to the lack of statistical data, the indicator in this study was the percentage of university graduates in the entire regional population. The above-mentioned data show that the Human Capital Index in Lower Silesia amounted to 1.253%, which placed the region on the third position in the country.

Summing up, it can be stated that in terms of talent, the Lower Silesia Province is one of the strongest in Poland, which creates realistic basis for its dynamic development.

Three indicators were adopted for determining the level of tolerance differentiation in provinces, namely: the Gay Number Index, the Melting Pot Index and the Composite Diversity Index.

The first of them according to R. Florida determines the percentage of homosexuals in a given region in relation to the percentage of the entire regional population. Due to the lack of relevant data, in this study the Gay Number Index was determined on the basis of the number of all personal ads of the gejowo.pl website, with reference to provinces, in relation to the number of people living in a given province (Kliniewicz, 2012, 44).

TAB. 2: Indicators of Tolerance and Technology in polish provinces.

Provinces	Gay numbers Index (in%)	Position in the ranking	Melting Pot Index	Position in the ranking	Diversity Index (in %)	Position in the ranking	Innovation Index	Position in the ranking
Lower Silesia	0,061	3	0,043	4	0,104	3	17,7	4
Kuyavia-Pomerania	0,026	11	0,020	14	0,046	14	9,3	12
Lublin	0,015	16	0,014	16	0,029	16	12,1	8
Lubusz	0,027	9	0,042	5	0,069	7	8,3	14
Łódzkie	0,035	7	0,025	12	0,060	10	11,5	10
Lesser Poland	0,072	2	0,040	6	0,108	2	18,7	2
Massovia	0,155	1	0,045	3	0,180	1	21,1	1
Opole	0,018	14	0,025	12	0,077	5	8,9	13
Subcarpathia	0,021	12	0,059	1	0,055	13	10,2	11
Podlachia	0,020	13	0,034	9	0,046	14	7,3	16
Pomerania	0,053	4	0,026	11	0,099	4	13,7	6
Silesia	0,041	6	0,046	2	0,076	6	17,9	3
Świętokrzyskie	0,029	8	0,035	8	0,057	11	7,8	15
Warmia-Masuria	0,027	9	0,028	10	0,067	8	11,6	9
Greater	0,046	5	0,040	6	0,062	9	15,7	5
West Pomerania	0,016	15	0,016	15	0,056	12	13,7	6

Source: own elaboration based on: Regional Statistics in Poland (2015). stat.gov.pl/en/regional-statistics, Urząd Patentowy Rzeczypospolitej. (2016). Warszawa. 15.

In R. Florida's opinion, there is a positive correlation between the Gay Number Index, tolerance and the possibilities of regional development as a result of the creative class surge. Analyzing the above table, it can be concluded that in the Lower Silesian Province the value of the Gay Number Index in 2016 was among the highest in Poland and amounted to 0.061%. Higher value of this indicator was noted only in the Mazovian and Lesser Poland Provinces.

The second indicator, determining the level of openness of the region to diversity, is the Melting Pot Index, calculated as a percentage of immigrants in a given province in relation to the entire regional population. In this case, the Lower Silesian Province also ranks among the national leaders (fourth position).

As a result, the Diversity Indicator, which is a combination of the Gay Number, Melting Pot and Bohemia Indexes (the latter was omitted due to the lack of data) amounted to 0.104% in Lower Silesia, which ranked the Lower Silesia Province third in the country (Florida, 2002).

In addition to the previously discussed talent and tolerance, the "third T" should also be mentioned, that is, technology. To assess its level, R. Florida used the High-Tech Index and the Innovation Index in his research.

In this study, due to the availability of data for the Technology assessment, the Innovation Index was used, calculated as the number of patent applications and utility models applied by domestic entities per 100,000 residents.

On the basis of the conducted research it can be stated that in terms of innovativeness, the Lower Silesia Province takes the fourth place in the country. The value of the analyzed ratio in 2015 was 17.7. This result is a derivative of the strength of Lower Silesian universities and enterprises.

At this point, the question arises whether there is a relationship between tolerance and technology and the number of the creative class? To answer this question it was required to use the Spearman's rank correlation coefficient¹. In the case of Tolerance, the Diversity Index and the Location Coefficient in provinces were used in the study.

TAB.3: Tolerance, Technology and the creative class in Polish provinces

Province	Diversity Index (in %)	Rank	The coefficient of the location of the creative class	Rank	D	D ²	Innovative Index	Rank	The coefficient of the location of the creative class	Rank	D	D ²
Lower Silesia	0,104	3	1,114	2	1	1	17,7	4	1,114	2	2	4
Kuyavia-Pomerania	0,046	14	0,964	9	5	25	9,3	12	0,964	9	3	9
Lublin	0,029	16	0,845	14	2	4	12,1	8	0,845	14	-6	36
Lubusz	0,069	7	0,968	8	-1	1	8,3	14	0,968	8	6	36
Łódzkie	0,060	10	0,959	10	0	0	11,5	10	0,959	10	0	0
Lesser Poland	0,108	2	0,934	11	-9	81	18,7	2	0,934	11	-9	81
Massovia	0,180	1	1,206	1	0	0	21,1	1	1,206	1	0	0
Opole	0,077	5	0,981	7	-2	4	8,9	13	0,981	7	6	36
Subcarpathia	0,055	13	0,803	16	-3	9	10,2	11	0,803	16	-5	25
Podlachia	0,046	14	0,899	12	2	4	7,3	16	0,899	12	4	16

¹ $r_s = 1 - \frac{6\sum D^2}{N(N^2 - 1)}$ in which: N – number of observation of one feature, D – difference between the ranks that

are assigned to the observation of the first and second feature. To determine the correlation force, the following ranges are conventionally assumed: 0 - 0.2 - very poor correlation, 0.2 - 0.4 - poor correlation, 0.4 - 0.6 - moderate correlation, 0.6 - 0.8 - strong interdependence, 0.8 - 1 - very strong interdependence.

Pomerania	0,099	4	1,082	4	0	0	13,7	6	1,082	4	2	4
Silesia	0,076	6	1,011	6	0	0	17,9	3	1,011	6	-3	9
Świętokrzyskie	0,057	11	0,822	15	-4	16	7,8	15	0,822	15	0	0
Warmia-Masuria	0,067	8	1,033	5	3	9	11,6	9	1,033	5	4	16
Greater Poland	0,062	9	0,872	13	-4	16	15,7	5	0,872	13	-8	64
West Pomerania	0,056	12	1,085	3	9	81	13,7	6	1,085	3	3	9

Source: own collaboration based on: Regional Statistics in Poland. (2015), stat.gov.pl/en/regional-statistics, Raport Roczny. Urząd Patentowy Rzeczypospolitej, Warszawa 2016, 15.

The Spearman's rank correlation coefficient for tolerance and the creative class in Polish provinces was 0.63. On the basis of the above result, it can be concluded that there is a strong dependence between tolerance and the creative class. This means that the higher the level of tolerance in a given region, the higher the number of creative class in this area.

In the case of Technology, the correlation coefficient was 0.49. It results from the fact that there is moderate dependence between technology and the creative class.

Conclusions

The analysis of empirical data allows us to draw the conclusions: that the Lower Silesian Province in comparison to other regions presents a high level of talent, tolerance and technology. It stems from the fact that the location coefficient of the creative class reached the value of 1.114 (only the Mazovian Province achieved a higher score), therefore it can be concluded that the Lower Silesian Province is attractive to representatives of the creative class. Furthermore, in the case of the Composite Diversity Index, Lower Silesia ranked third, which may indicate a high degree of tolerance in the province. Similarly, in the case of Innovation Index, where the Lower Silesia Province amounted to 17.7 (fourth position in the country), which results, inter alia, from the established position of Lower Silesian universities and increasing involvement in private sector research. The research have also shown that there is a strong relationship between tolerance and the creative class and a moderate correlation between technology and the creative class.

Summing up, it can be concluded that the Lower Silesian Province has a great chance for development based on human potential built by both current residents and the newly settled population tempted by attractive conditions for living and self-fulfillment.

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EXPLORING THE ADOPTION OF CLOUD-BASED ERP-SYSTEMS IN THE NORDIC COUNTRIES

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Abstract: *Many companies that have already digitalized their processes through enterprise systems are contemplating a migration to using cloud-based systems. Migration to cloud-based enterprise systems has not taken off very fast and the reasons for this are still not fully understood. This research explores, and tries to shed further light onto, how and what organizational issues affect the adoption of ERP-systems in general and the migration to cloud-based enterprise systems, by presenting results from a set of expert interviews. The exploratory findings obtained are relevant to businesses considering migration to cloud-based enterprise systems, and especially to the vendors of the said systems. The results also increase the understanding of the reasons for the slower than expected migration to cloud-based enterprise systems.*

Keywords: *cloud-based ERP systems, adoption, migration, digitalization*

JEL classification: *D2, L86*

Grant affiliation: *Finnish Strategic Research Council grant no. 313396.*

Introduction

Cloud computing as a concept has gained a lot of attention in the recent years, and many organizations are seeking ways to transform their enterprise resource planning (ERP) systems towards cloud based solutions. ERP-systems are today a critical part of the business processes of companies, and most often require significant and long-term investments (Davenport, 1998). The ERP-system adoption phase is critical, when the financial and resource commitments related to these investments are considered, and it is essential to understand the adoption phase both by theoretically and practically - see discussion, e.g., in (Karahanna, Straub, & Chervany, 1999). There is an increasing trend of migrating ERP-systems and databases to the cloud, but cloud-based organization-wide solutions have not yet been widely adopted in business and the industry. The empirical research on cloud-migration of ERP-systems is still scarce, although the very concept of ERP-systems is likely to transform together with the rapid diffusion of cloud-based architectures and there is conceptual literature available, see, e.g., (Johansson & Ruivo, 2013; Ram, Corkindale, & Wu, 2013; Seethamraju, 2014).

The existing body of literature on ERP-systems is for the majority concentrated on the on-premise solutions, which companies usually operate, maintain, and customize internally (Peng & Gala, 2014). Cloud based systems, on the other hand, typically involve a “software as a service” (SaaS) contract between the customer, and a cloud service.

Key difference between these two ERP-architectures include the following: i) SaaS ERP solutions are accessed via the Internet; ii) the applications used and the data are managed and controlled by the service provider; iii) the cost of use is typically determined based on the usage and paid as a subscription, which creates a possibility to reduce the upfront capital investment (Marston, Li, Bandyopadhyaya, Zhang, & Ghalsasi, 2011). For a detailed comparison of the differences between on-premise and cloud-based solutions, we suggest the reader to see the work by Abd Elmonem and others (Abd Elmonem, Nasr, & Geith, 2016). At this time, in 2018, companies do not yet seem to be ready to give up their on-premise solutions, while they are demanding more scalable and flexible digital solutions for their businesses, enabled by the cloud computing technology. The types of drivers and barriers identifiable for the adoption of cloud-based ERP services include technical, organizational, and environmental factors – this is in vein with the technology-organization-environment (TOE) framework by Tornatzky and Fleischer (Tornatzky & Fleischer, 1990). In this research we concentrate on the organizational context of adoption and explore the qualitative factors related to the (so far slow) adoption of cloud-based ERP-systems in the Nordic Countries. Standardizing business processes across an organization is one of the key reasons for adopting ERP-systems.

Our aim, in this context, is to explore how the, in the literature identified, key factors affect the adoption of cloud ERP-systems in the Nordic Countries on an organizational level. The results presented are based on a small sample of six semi-structured interviews with ERP-professionals (experts) working for an ERP service-provider, collected in 2016-2017. The results are cannot be generalized, but they reveal the sentiments of individuals working everyday on ERP-systems projects, on what drives and hinders cloud-based ERP-systems adoption.

The following section continues with a short literature review of the organizational drivers and barriers for ERP-system and cloud-based ERP-system adoption. Then results from the conducted interviews are presented, and finally the paper is closed with a discussion and some preliminary conclusions drawn based on the exploratory results.

1 Literature review results shortly

A literature review was conducted on qualitative and quantitative research on ERP-systems and SaaS based ERP-systems adoption in organizations – the main goal of the review is to understand which factors drive and act as barriers to ERP-systems adoption. The searched databases included the on-line services of Ebsco, Emerald, Scopus, Springer and Wiley available through the Library at Lappeenranta University of Technology, and included articles published in English. Books were excluded from the search. After testing the suitability of search words the search strings used in the review were: “SaaS ERP adoption”, “cloud ERP adoption”, “ERP system adoption”, and “adoption AND ERP systems”. No time restrictions were placed on when the articles were published. From the initially found 157 articles a set of 22 highly relevant articles were found, based on the requirement that the articles were focused on ERP systems adoption process with an an organization-level point of view - of the chosen articles 19 specifically discussed ERP system adoption from the organizational point of view. For the purposes of this paper we stick to shortly presenting the main organizational drivers and barriers that affect ERP-system adoption found in the reviewed literature. Identified important drivers for adoption, bundled under understandable umbrella terms, for the purposes of this research are: observed “business requirements for the system”, the required and apparent

“changes in the job roles of IT”, “company size”, the required and apparent “organizational changes and change management”, and the ability of the system to offer “real time visibility” of the situation at hand. On the other hand, identified barriers for adoption also include the “company size”, the “changes in job roles of IT”, and “organizational changes and change management” - this means that when these three issues are going “for” and towards an ERP system adoption, they act as a driver, but while there is organizational friction within these areas they act as barriers to adoption. Other important identified barriers were identified in the literature to be the “business requirements for the system” and the needed “investment of time and money”.

TAB. 1: Organizational drivers and barriers for ERP-systems and cloud-based ERP-systems adoption (Source numbering corresponds to [#] indications in the list of references)

Organizational drivers for adoption	Traditional ERP systems	Cloud-based ERP-systems	Source
Business requirements for system	x		2,3,4,6,7,10,12,17
Changes in job roles of IT		x	9,12
Company size	x	x	2,4,6,7,15,18
Organizational changes and change management	x	x	1,5,6,8,9
Real time visibility	x	x	3,10,13
Organizational barriers for adoption	Traditional ERP systems	Cloud-based ERP-systems	Source
Company size	x	x	2,4,6,7,15,18
Changes in job roles of IT		x	9,11
Organizational changes and change management	x	x	1,2,5,6,7,9,12,13,16
Business requirements for system	x	x	1,2,4,6,7,14,16,19
Investment of time and money	x		1,2,13,14

A summary of the, in the literature, identified drivers and barriers to ERP-systems adoption is visible in Table 1.

2 Exploratory interviews

Building on the background of the literature review on the factors that affect the adoption of ERP-systems, a semi-structured questionnaire was formulated to study the adoption of cloud-based ERP-systems. The questionnaire consisted of four parts, starting with general background questions, general questions about the SaaS service model, then turning into the factors affecting the adoption, and finally the customers’ adoption process and the ERP markets in the Nordic Countries. The experts were also given a chance to comment and discuss freely on the topical area. The questionnaire used is available from the authors at request. Six interviews were conducted with experts that had between 7 and 15 years of experience in ERP sales, ERP consultation, or ERP project management - the experts are all representatives of one vendor that delivers one of the most diffused ERP-systems available.

2.1 Summary and short interpretation of interview results

Generally speaking, most of the same drivers and barriers are "active" for the traditional on-site ERP-systems and for cloud-based ERP-systems, but there are some notable exceptions. A summary of the interview results, based on the identified adoption-driving and as-barrier-acting issues, is visible in Table 2. Below, we shortly interpret the results of the interviews, based on the identified drivers and barriers to ERP-system adoption.

Only one expert out of six found that business requirements for a system is a driver for cloud-based ERP-systems, this is against the background that typically most of the companies contemplating a cloud-migration (in the Nordic Countries) already have an ERP system in place and the necessary business requirements have already been fulfilled, and therefore from the requirements of the business point of view the cloud-based ERP is not value adding to a company. For first-time ERP acquirers, we posit, a situation where a business requires a system is a driver for adoption. The experts found that business requirements for cloud-based ERP systems may also act as a barrier to adoption, because cloud-based systems are less malleable, or "customizable" than on-site company-managed systems. If a lot of cost, time, and effort has been spent in customizing a system the sunk cost creates a barrier for adoption, this a similar effect to what is presented in (Collan & Tétard, 2011).

All experts agreed that changes in job roles of IT drive both, the traditional and the cloud-based ERP systems' adoption. This typically means that the role of company IT personnel changes, and most likely gains in importance, when an ERP system is adopted, and the role further changes, when an ERP system migrates to the cloud. We believe that the migration of technical responsibility from the company IT to the service-provider IT is an important driver in cloud-based ERP-systems adoption. While, from a general management point of view a change in the role of IT may be desirable, the IT personnel may not feel in the same way, and the change may also cause resistance, and become a barrier for adoption - in fact, all the experts saw that changes in job roles for IT act also as a barrier.

TAB. 2: Experts' view on the relevance of organizational drivers and barriers for ERP-systems and cloud-based ERP-systems adoption (Experts are distinguished as C#)

Organizational drivers for adoption	Traditional ERP-systems	Expert	Cloud-based ERP-systems	Expert
Business requirements for system	x	C1, C2, C3, C4, C5, C6	x	C5
Changes in job roles of IT	x	C1, C2, C3, C4, C5, C6	x	C1, C2, C3, C4, C5, C6
Company size	x	C1, C2, C3, C4, C5, C6	x	C1, C2, C3, C4, C5, C6
Organizational changes and change management			x	C4, C5, C6
Real time visibility			x	C4, C5, C6
Barriers for adoption	Traditional ERP-systems	Expert	Cloud-based ERP-systems	Expert
Company size	x	C1, C2, C3, C4, C5, C6	x	C1, C2, C3, C4, C5, C6
Changes in job roles of IT	x	C1, C2, C3, C4, C5, C6	x	C1, C2, C3, C4, C5, C6
Organizational changes and change management	x	C4, C5, C6	x	C4, C5, C6
Business requirements for the system			x	C1, C2, C3, C4, C5, C6
Investment of time and money	x	C1, C3, C4, C5	x	C2

Company size is an important driver and a barrier for adoption of both types of ERP-systems according to the experts. This is understandable - only certain size of company can reap the full benefits of a fully-fledged ERP-system and as the investments in ERP-system installations are typically quite large, it may be a bad investment for small companies to engage in these projects. While this is true, for large companies ERP-systems can clearly create benefits and enable, when successful, better management control of the business - thus company size is both a driver and a barrier for ERP-system adoption.

Organizational change and change management was seen by the experts not to be an issue wrt. the adoption of traditional ERP systems, while three experts saw it as a driver of cloud-based ERP-systems. We believe that this must be put in the Nordic context, where supposedly a large majority of larger companies have already adopted information systems and ERP systems to support their business - the management of organizational change, in this context the change towards digitalization of business processes, no longer drives towards on-site systems, but the digitalization drive is more towards more developed architectures that is, towards cloud-based systems.

One identified driver of cloud-based ERP-systems is real time visibility of data and reports - this was identified to be a driver by three experts. No expert thought that real time visibility is a driver of on-site systems. We feel that this is because, typically, not many on-site systems are able to produce real time visibility of data, but visibility is updated on regular intervals and the visibility is of the situation after the latest update. As cloud-based systems offer the possibility for real-time processing of data they also offer, more realistically, a chance to get real time visibility of the business. This, we believe, is something that is of interest to organizations.

The required investments of time and money were seen as a barrier to the adoption of traditional ERP-systems by four experts - this is, we believe, highly connected to the issue of company size. A relatively high investment costs may deter companies from investing. On the other hand, only one expert viewed investments as a barrier to the adoption of cloud-based ERP-systems. This, we believe, is due to the fact that as discussed in the introduction, the cost structure of cloud-ERP investments can be different from the traditional ERP-systems investments. The ability to provide the ERP as a service and to pay for the investment on basis of subscription, allows companies to keep the capital invested lower.

Discussion and conclusions

The identified drivers and barriers to adopting traditional and cloud-based ERP-systems seem to be similar to a large extent - this is natural, because the main functionalities of these systems is the same, or very similar. The experts interviewed seem to mostly agree with the findings reported in the literature, but there are also some interesting differences.

Interestingly the interviewed Nordic experts did not identify organizational changes and change management as a driver of the adoption of traditional ERP-systems, while the literature does so. This may be, because part of the surveyed literature was "old" and Nordic countries have been early adopters of ERP-systems. We interpret this to mean that if there is an organizational change situation in a Nordic company, which puts pressure on ERP-system investments to be made, the focus will be on adopting a cloud-base ERP-system rather, than a traditional on-site ERP-system. This is an issue that is connected to the pre-existing level of digitalization in organizations.

Business requirements for systems do not drive migration to the cloud-based ERP-systems, while they have been identified as drivers of traditional ERP-system adoption.

Investments in time and money are not seen to be a barrier to cloud-based ERP-systems by the literature, nor by the interviewed experts, while they are a barrier to the (more investment intensive) traditional ERP-systems. This may indicate that organizations that already have invested in on-site ERP-systems have a sunk cost induced "lock-in" with the existing system, which causes migration into cloud-based systems to linger, while new ERP-systems adopters may actually feel that the cost-structure offered by cloud-based ERP-systems are an advantage, and certainly not a barrier to adoption.

The experts seem to feel that the changes in the job roles of IT personnel play a more important role as a driver and as a barrier to ERP-systems adoption in general and of cloud-based ERP-systems specifically, than what the reviewed literature suggests.

We emphasize that any and all conclusions made here are based on the small sample of interviews and may not be generalized. Nevertheless, we feel that the results of this low-n sample of interviews, gives some new understanding of what drives and acts as a barrier to the migration of companies towards cloud-based ERP-systems today. Further research avenues include collecting and analyzing data from ERP user organizations on their views on what drives and/or acts as a barrier to the adoption of cloud-based ERP-systems.

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ACCOUNTING POLICY OF LONG-TERM MATERIAL AND NON-MATERIAL ASSETS OF LISTED COMPANIES IN CROATIA AND POLAND

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Abstract: *The International Accounting Standards determine the accounting policies of companies listed on the stock exchange either in Croatia, or in Poland. The main objective of this paper is to determine which accounting policy of long-term material and non-material assets are selected by the listed companies in the stock exchange either in Croatia or in Poland. The study of accounting policy for long-term material and non-material assets is made up of 107 listed companies in Zagreb Stock Exchange and 107 listed companies on Warsaw Stock Exchange. Through the analysis, it has been determined that there is a difference in the choice of accounting policy of valuation of assets after recognition. In Croatia the most companies use the cost model, and in Poland the most companies use the revaluation model. Also, it has been determined that does not exist a difference for depreciation or amortisation methods. In Croatia and in Poland material and non-material assets are subject to depreciation or amortization by the straight-line method.*

Keywords: *accounting policy, depreciation methods, long-term material and non-material assets, valuation of assets*

JEL classification: M41

Grant affiliation:

Introduction

Long-term material and non-material assets are a significant part of the total assets of the companies around the world and for this reason proper accounting policy influences the true and fair view of a company's financial statement

The main objective of this paper is to determine which accounting policy of long-term material and non-material assets of measurement after initial recognition and which depreciation or amortisation method are selected by the listed companies in the stock exchange either in Croatia or in Poland.

1 Theoretical background

The European Union has adopted an International Accounting Standards regulation requiring European companies listed in the EU securities market to prepare their consolidated financial statements in accordance with the IFRS.

Companies in Croatia and Poland run their bookkeeping according to the Accounting Act and domestic accounting standards or International Accounting Standards (IAS/IFRS).

According to the Accounting Act (2016) in Croatia, large companies and those who prepare for listing need to prepare their financial statement (individual and consolidated) according to the IFRS. Small and medium-sized companies whose parent uses the IFRS can also use the IFRS. The rest of the companies, micro, small and medium-sized companies use Croatian Accounting Standards.

In Poland, the IFRS are required for consolidated financial statements of banks, permitted in consolidated financial statements of companies that have applied for stock exchange listing or whose parent uses the IFRS. The IFRS are permitted in the separate financial statements of companies that have applied for stock exchange listing or whose parent uses the IFRS but are prohibited in the separate financial statements of other companies. Companies that don't have to apply the IFRS in drawing up their financial statements can voluntarily apply the Polish National Accounting Standards (PNAS). If a specific accounting matter is not regulated in the Polish Accounting Act (1994) or in the PNAS, companies have an option to use guidance from the IFRS.

In both countries, listed companies use the IFRS for consolidated or individual financial statements. Long-term material assets are defined by the IAS 16, and long-term non-material assets are defined by the IAS 38.

Non-material asset (IAS 38, Item 8) is an identifiable non-monetary asset without physical substance. Non-material assets comprise the following types of assets; development outlays, patents, licences, concessions, trademarks, software, fishing licences, franchises and other rights, goodwill, advance payments for intangible assets and other intangible assets. Brands, mastheads, publishing titles, customer lists and similar items that are internally generated cannot be recognised as assets (IAS 38.63).

Long-term material assets comprise the following types of assets: land, construction facilities, plants and equipment, tools, machinery inventory, furniture, means of transport and all other excluded long-term assets except the long-term assets intended for sale, biological assets and the rights for exploration of mineral resources, such as oil, natural gas, etc.

Long-term non-material and material assets are initially measured at cost. If a payment for an item of property, plant, and equipment is deferred, interest at a market rate must be recognised or imputed (IAS 16.23). A company can choose the method of measurement of non-material or material assets, subsequent to initial recognition either as a cost model or revaluation model. The asset is carried at cost less accumulated depreciation and impairment. The asset is carried at a revalued amount, being its fair value at the date of revaluation less subsequent depreciation and impairment, provided that fair value can be measured reliably (IAS 16.31). Revaluations of assets should be carried out regularly.

Long-term non-material and material assets can also be classified based on the time of useful life as definite life assets and finite life assets. Assets with finite useful life are depreciated in accordance with the accounting policy. The depreciable amount (cost less residual value) should be allocated on a systematic basis over the asset's useful life (IAS 16.50). Depreciation is calculated using the straight-line method, declining-balance method or the units of production method based on expected use or output. Depreciation charges to profit or loss, unless it is included in the carrying amount of another asset. Assets with indefinite useful life are not depreciated, they are assessed for impairment according to the IAS 36. The residual value and the useful life of an asset need to be reviewed at least in the end of each financial year.

Long-term material assets are derecognised upon disposal or when no future economic benefits are expected from their use or disposal. The gain or loss on disposal is the difference between the proceeds and the carrying amount and should be recognised in profit and loss (IAS 16.67-71).

2 Research background

Many authors, Barbieri (2004), Svoboda (2007), Remlein (2007, 2008) Roška, Milun & Gozze Gučetić (2014), Róžańska (2014) have elaborated the accounting policies for long-term tangible and intangible assets in their countries.

The research (Jerman, Kavčić & Kavčić, 2010) of the significance of intangible assets in post-transition countries and countries with market economies was conducted by comparing intangible assets on the example of Croatian, Slovenian, Czech, German and American companies from 2004 to 2008.

The research (Roška, 2012) of accounting policies of long-term material assets conducted on 140 companies in Croatia showed that 82.86% use the cost method of measurement after initial recognition and 98.57 % of them use the straight-line method of depreciation. The next research (Roška, et. al., 2014) of trend of tangible and intangible assets of 138 companies at the Zagreb Stock Exchange from 2009 to 2012 showed that there are no regular changes during the crisis.

In Poland, the research (Róžańska, 2014) of accounting policy of long-term material assets conducted on Polish companies from hotel and restaurant sector listed on the Warsaw Stock Exchange showed that all of them use the cost method and the straight-line method of depreciation.

3 The goal, basis and hypothesis of the research

The main objective of this paper is to determine which accounting policies of long-term material and non-material assets for method of measurement after recognition and depreciation or amortisation method are selected by the listed companies in the stock exchange either in Croatia or in Poland.

Working hypothesis:

In Croatia and Poland there are differences in the model of measurement after initial recognition but not in the depreciation or amortisation model.

To test the working hypothesis, the following statistical hypotheses were used:

H1: The companies in Croatia and Poland do not choose the same method for measurement after recognition

H2: The straight-line method is the most popular depreciation method in Croatia and Poland.

H3: There are statistically significant correlations between some of the basic characteristics of companies and accounting policies of measurement after recognition

H4: There are no statistically significant correlations between basic characteristics of companies and depreciation method.

For the statistical analysis, this paper uses Descriptive Analysis, the analysis from chi-square tests and correlation coefficients to examine interdependencies.

4 Research result

The research is based on 107 financial statements listed companies in Zagreb Stock Exchange and 107 financial statement listed companies in Warsaw Stock Exchange for 2016 and 2015.

57.01% of consolidated financial statements in Croatia and 66.36% consolidated financial statement in Poland were studied. In Croatia 66.36 % of companies finished the business year with a profit, in Poland 86.92% of companies finished the business year with profit. In Croatia 70.09% of companies got unmodified audit opinion and in Poland 97.20% of companies got unmodified audit opinion.

In Croatia, 29.91% of companies on stock market are from tourism, 24.30% from production sector other than foods and 19.63% from food production sector. In Poland, 44.86% of companies are from production sector other than foods, 14.02% are from real estate, construction and services sector.

Based on the results showed in Table 1, there is a significant association between countries and the method of measurement after recognition ($\chi^2 = 125.421$, $p < .001$). Companies in Croatia use the cost model in 76.64% of cases for measurement after recognition, but in Poland only in 1.87% of cases. The revaluation model is used only in 23.36% of cases in Croatia, mostly for non-material assets, land and sometimes for real estate. In Poland, the revaluation model is used by 98.13% of companies. Chart 1 shows that the main accounting policies for measurement after recognition of material and non-material assets are cost method in Croatia and revaluation method in Poland.

The first hypothesis is confirmed.

TAB. 1: Chi-square Test between Countries and the Accounting Policy of Measurement after Recognition

			MEASURMENT AFTER RECOGNITION		Total
			COST M.	REVALUATION M.	
COUNTRY	HR	Count	82	25	107
		% within COUNTRY	76.64%	23.36%	100.00%
	PL	Count	2	105	107
		% within COUNTRY	1.87%	98.13%	100.00%
Total	Count		84	130	214
	% of Total		39.25%	60.75%	100.00%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	125.421 ^a	1	0.000

a. 0 cells (0,0%) have expected count less than 5. The minimum expected count is 42,00.

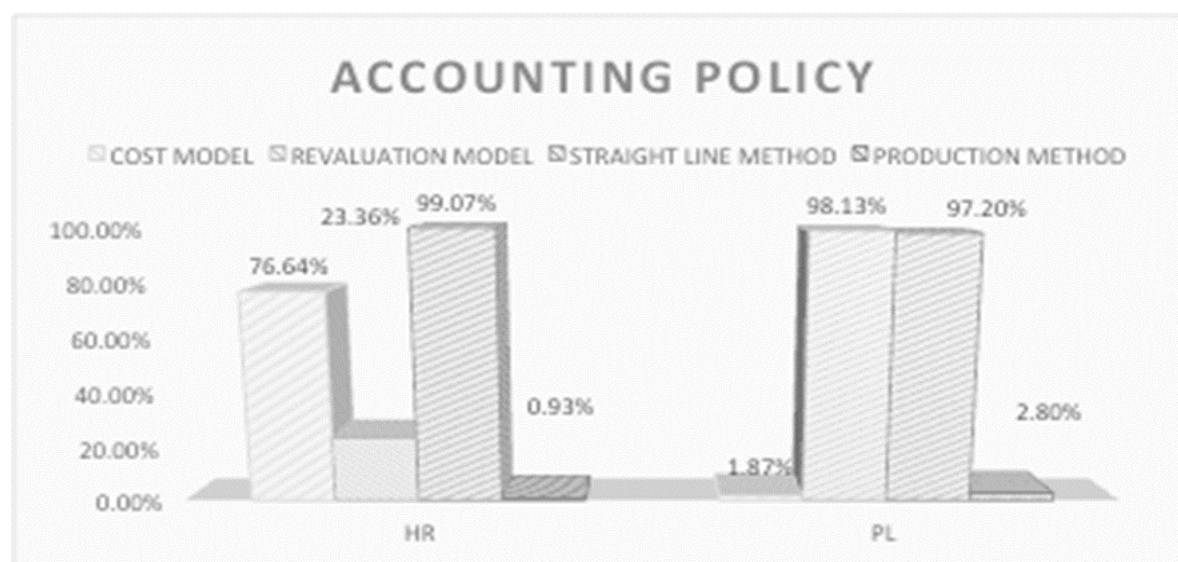
Source: by the authors on the basis of the analyzed companies

Companies could choose a method of depreciation of material assets and amortization for non-material assets, which suits best the exploitation of goods within their useful life. It could be a straight-line method, declining-balance method or the units of production method based on expected use or output. For the depreciation method, a straight-line method is the most popular method in both countries. In Croatia 99.07% of companies use this method, and in Poland 97.20% of companies (chart 1). Only 0.93% of companies in Croatia and 2.80% of companies in Poland use units

of production method based on expected use or output. Nobody chooses declining-balance method. It is confirmed by the fact that no significant association between the countries and depreciation method was found ($\chi^2 = 1.019$, $p < .313$).

The second hypothesis is confirmed.

FIG. 1: Accounting Policy of Material and Non-Material Assets



Source: by the authors on the basis of the analyzed companies

Correlation results presented in Table 2 are between the basic characteristics of the companies and accounting policies of measurement after recognition and depreciation method. Only the correlation between a few characteristics of the companies and accounting policies of measurement after recognition turned out to be statistically significant.

We found positive statistically significant ($p < .01$) correlations between:

- Country (Croatia or Poland) and policies of measurement after recognition $r = .766$

We found negative statistically significant correlations between:

- Audit opinion (unmodified or qualified opinion) and policies of measurement after recognition $r = -.214$ ($p < .01$)
- Type of financial statement (consolidated or individual) and policies of measurement after recognition $r = -.154$ ($p < .05$)

The third hypothesis is confirmed, because statistically significant correlations between some of the basic characteristics of companies (country, audit opinion or type of financial statement) and accounting policies of measurement after recognition were found.

Table 2 does not show any statistically significant correlation between a few characteristics of companies and accounting policies of depreciation or amortisation method. The fourth hypothesis is confirmed.

After the research was conducted, all four statistical hypotheses were confirmed, this means the main hypothesis was confirmed. In Croatia and Poland there are differences in the model of measurement after initial recognition, but not in the depreciation or amortisation model.

TAB. 2: Correlation between the basic characteristics of companies and accounting policies of material and non-material assets

		COUN TRY	TYPE OF BUS.	TYPE OF FS	PROFI T /LOSS	AUDIT OPINI ON	MEAS. AFTER RECOGNI TION	DEPRECIATI ON METHOD
COUNTRY	Pearson Correlation	1	0.069	-0.096	-.243**	-.366**	.766**	0.069
	Sig. (2- tailed)		0.313	0.161	0.000	0.000	0.000	0.315
TYPE OF BUSINESS	Pearson Correlation	0.069	1	-0.097	-.156*	-0.063	0.075	-0.026
	Sig. (2- tailed)	0.313		0.156	0.022	0.358	0.274	0.706
TYPE OF FS	Pearson Correlation	-0.096	-0.097	1	0.087	0.119	-.154*	0.033
	Sig. (2- tailed)	0.161	0.156		0.204	0.082	0.024	0.629
PROFIT/LO SS	Pearson Correlation	-.243**	-.156*	0.087	1	.263**	-0.054	-0.076
	Sig. (2- tailed)	0.000	0.022	0.204		0.000	0.435	0.267
AUDIT OPINION	Pearson Correlation	-.366**	-0.063	0.119	.263**	1	-.214**	-0.061
	Sig. (2- tailed)	0.000	0.358	0.082	0.000		0.002	0.374
MEASURM ENT AFTER RECOGNI TION	Pearson Correlation	.76**	0.075	-.154*	-0.054	-.214**	1	0.111
	Sig. (2- tailed)	0.000	0.274	0.024	0.435	0.002		0.106
DEPRECIA TION METHOD	Pearson Correlation	0.069	-0.026	0.033	-0.076	-0.061	0.111	1
	Sig. (2- tailed)	0.315	0.706	0.629	0.267	0.374	0.106	

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Conclusion

Long-term material and non-material assets are a very important part of a balance sheet, especially for activities such as production, trade or tourism. All listed companies in the European Countries use the International Accounting Standard (IAS/IFRS), but those standards give a choice among few possibilities in some areas.

In the area of long-term material and non-material assets there are two important fields, accounting policy of measurement after the initial recognition and the method of depreciation or amortisation. In the field of measurement after the initial recognition, companies can choose between the cost method or revaluation method. The research showed that there are differences between the countries in selection of accounting policy of measurement after initial recognition. In Croatia most companies use the cost model due to instability of price, and in Poland most companies use the revaluation model.

All long-term material and non-material assets with finite useful life are subject to depreciation or amortization. In Croatia and in Poland long-term material and non-material assets are subject to depreciation or amortization method by the straight-line method in the most cases.

This research has confirmed that stability of economy and price are very important for the selection of accounting policy of material and non-material assets.

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CHALLENGES OF IMPLEMENTING INTERNAL CONTROL SYSTEMS IN POLISH ENTERPRISES

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Abstract: *The main objective of this article is to identify the critical success factors for implementing internal control systems in Polish enterprises. The paper identifies the term internal control systems, characteristics of them as well as various perspectives of their development. Today's organizations are operating and competing in an information age. Information has become a key resource of most organizations, economies, and societies. More and more organizations believe that quality information and internal control systems are responsible for their success.*

Keywords: *system implementation, controlling*

JEL classification: *G 30, M 21*

Grant affiliation:

Introduction

The list of performance indicators grouped into perspectives is the most often used concept in conjunction with the Balanced Scorecard.

Other concepts are :

- Periodical meetings regarding the evaluation of strategy implementation;
- The Strategy Map (the map including objectives linked to cause-effect relations type);
- Mission and Vision;
- The Organizational Destination;
- Software system for generating the BSC reports (Excel or special application Business Intelligence type);
- List of strategical initiatives.

1 The obstacles encountered when using internal control systems

The most frequent obstacle encountered when using Balanced Scorecard is represented by the organization's members lack of knowledge in this domain. This shows also a lack of organizational culture oriented to performance and adjustment to changes, fact that explains the difficulty of utilization and dissemination of Balanced Scorecard inside the companies that applies it.

Other obstacles encountered when using the Balanced Scorecard:

- Articulation, understanding and realizing of benefits;
- The needs of time allocated using is too high;
- The big volume of needed resources (peoples, financial investment, etc);
- Integration using other instruments/ systems;
- Tehnological support / tehnological integration.

The main steps in BSC implementation were:

1. Enterprise's assessment.

2. Development of enterprise's strategy.

3. Setting up a BSC mainframe to co-ordinate company's efforts in achieving the objectives of adopted strategy. Apart from the basic indicators already used by companies (such as productivity, turnover, ratios for liquidity, profitability, activity, leverage), the tools used in the preliminary assessment were:

- Person-to-person interviews;
- The Financial Times Value Added Index (comprehensive indicator that enables benchmarking);
- The Baldrige self-assessment check list;
- The UNIDO triple-bottom-line questionnaire;
- The SWOT matrix.

The conclusions of the preliminary assessment were as following:

- In the first instance, person-to-person live interviews proved a total failure. The only result was a collection of slogans with no relevance for the case. The situation completely changed when managers were asked to give their answers and comments to the questionnaire or fill in the SWOT table in written form, in sealed, unmarked envelopes. Honest remarks and new ideas were literally pouring in. This was a pertinent signal for what executives should do to improve the situation.

- Top managers have little ideas, general accepted, about what their enterprise is, should be and what to do about it. The ideas remain limited to the social contract between the enterprise and its employees, with no reference about customers, market, stockholders.

- The participants believe there is a strategy of the enterprise but defers a more detailed answer to the executives, as they know nothing about it. Asked directly, top executives could not define a strategy that goes beyond their concern for raw materials needed in the next days or getting back money from their customers as soon as possible.

- Many answers of: "It is beyond my competence" in opposition with the core idea that a modern company strategy is shared by every employee.

- The main concern is the unstable and uncertain enterprise future.

- There are no ideas about what should be done to overcome present difficulties. No suggestions. Though difficult - even impossible to quantify, it is believed that the information gathering in these confidential interviews was the most important for the future stages of the BSC implementation.

Management control is a significant component of economic and social reality through which managers have the possibility of dynamic information. Real preventive findings raise the value and quality of decisions and ensures the smooth functioning of enterprises. Management control, as part of the economic information system, is a key factor in the operation, development and enterprise development, if it's well organized at all levels and organizational structures that exist within it.

Management control, conducted in the conditions of market economy, for small and medium enterprises appears as a regulatory tool, the mechanism contributing to the integration of the company in the market economy through a complex and ongoing managerial activity.

Management control is presented as:

- knowledge as a process of economic and financial situation of the company;
- as a practice, because it is an activity carried out by competent persons who uses specific techniques and methods and an organized system of information;
- as a means of study and action for internal users;
- as a factor for both security and enterprise management authority and society

2 Management control for small and medium enterprises

The evolution of the economic environment from the European Union is marked by profound economic transformations. The diversification of production, refining demand, increasing customer demands to offer of companies have contributions, on the background of globalization of national economies, to the increased polarization phenomenon of decision's centers. Without remains immune to these phenomena, the Romanian economy is subject to important structural transformations, and economic operators are in an accelerated process of organizational and management changes in order to redefine the position and role they have in the market. The integration into the European economic space entails sustained efforts of local businesses to adopt and implement measures of economic policy, including policy for quality products and services used on the market of the European market. Although this phenomenon is manifested intensively at all levels of the economy, there are still many companies carrying on a predominantly stereotypical without possession of an appropriate business strategy, enabling them to obtain a high profit, that can reinvest in further diversification of production and a strengthening competitive position on market. The survival and development of small firms under conditions of tough competition, on the EU market is only possible when enough efforts have being done, including in financial field, for some products that have to meet increasing customers needs, particularly in quality sector.

Thus, the quality turned into a very important resource for companies. The companies do not produce any longer and anyway, but only those goods and services that meet higher level of requirements. A consequence of increasing interest for quality problem is the development and application of quality management system, which became part of the general management of the company. Implementation of quality management at companies level has been achieved in the context of increased expectations of products and services valued by the European Union market, where the certification in terms of quality has become the prerequisite to act in this market. So, the certification of quality works as a restriction at the entry on this market. Taking in account the

experience of developed economies like the U.S. and Japan, many companies, even if they have programs for well-designed quality control, use of certifications in ISO quality system to increase the credibility they enjoy international markets.

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The European Commission define SME as: „the category of micro, small and medium-sized enterprises (SMEs) ... made up of enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding 50 million euro, and/or an annual balance sheet total not exceeding 43 million euro” (EC, 2005). SMEs representing more than 98% of all enterprises, out of which over 92% are microenterprises' with fewer than ten employees and accounted over 67% of total employment and over 58% of gross value added of the European union economy.

The Structural Funds allocated by the European Commission for the member countries should help to reduce disparities in the development of regions, and to promote economic and social cohesion within the European Union.

European Union established the general framework for managing the Community funds and each member state choose its own system. In Romania, the payment and management authorities are

situated within the structure of some distinct institutions, but the Finance Ministry is the payment authority for every programme.

The efficiency of the small and medium enterprises is subject to substantiation, development and implementation of some coherent and realistic strategies that take into account both their internal potential and complex developments recorded within the business environment. The researches conducted by The National Council of Small and Medium Sized Private Enterprises in Romania (CNIPMMR) reveals that 45.24% of all investigated companies there have achieved annual plans and policies, 11.94% of the small and medium enterprises there are developing strategies on time horizons ranging between 3 and 5 years, and 44.55% of enterprises there are not planning activities. Also, according to a study conducted at European Union level, only 16.66% of small and medium enterprises develop and apply strategies.

European Commission (EC) is sustaining the small businesses through its regional policy: helping them realize their growth potential, their importance in regional and global economy and creating a friendly business environment. More than 20 million companies in European Union are SMEs and they play an important role in the dynamics of the national and regional economy. The EC had designed special rules for these companies, facilitate their access to funding, help SMEs to get most out of the EU's Single Market, create an entrepreneurial environment, and adapt public policy tools to SMEs' needs.

Performance measurement system is a due for every company, but not many SMEs have one because of different obstacles, such as limited material, financial and human resources. There is a challenge for every entrepreneur in the decision regarding what to measure. Analyzing the answer of the respondents of the Romanian SMEs from V West Region that accessed EU funds we found out that development of production capacity, turnover and acquiring new equipments are the most used indicators for measuring the company performance. The answers of the managers are connected with the goals of their implemented projects. Most of them had accessed the community funds for developing their production capacity and buying new equipments, creation of new working place being a secondary indicator.

In recent years, the model known as Balanced Scorecard (BSC) contributed to help organizations to establish actions aligned to a value creating strategy (Moore, 2003). In addition, BSC contributes to meet the shareholder, employee and customer expectations, as well as to the improvement of service, internal processes, learning and innovation. Norton and Kaplan (2001), based on a study including almost 300 executives, stated that the capability to strategy execution is, probably, more important than strategy quality.

Among the management authorities for the structural funds for SMEs are: Industry Ministry, Regional Development and Public Administration Ministry.

SMEs play in the national and regional environment a key role, the structural funds finance the increase of competitiveness and productivity of Romanian companies', in compliance with the principle of sustainable development, and reducing the disparities compared to the average productivity of EU. The size of every company contribution to the development of the region is influenced by its past, present and future performance. The structural funds could be accessed only by those companies that reach the performance criteria. And companies' performance indicators

should have higher levels after the absorption of the unreimbursement funds. Performing like this every company will contribute to the development of the regional economical environment and to diminish the disparities between the Community regions.

A challenge in performance measurement is the decision regarding what to measure. The performance measurement should focus on most important areas of activities, of a project or an enterprise. Across the European Union SMEs play an important role and if we are watching them at a macro level, their performance is measured with three main indicators: the number of enterprises, their output via their gross value added (GVA) and the number of employees on their payroll.

Structural funds available for Romania that are oriented to small and medium sized enterprises. In this regards we performed a quantitative research grounded on questionnaire-based inquiry. The questionnaires were disseminated to enterprises located in the West Region of Romania that apply for and access European funds. Twenty-two out of 40 questionnaires distributed were returned. Compared with Management Authority, projects beneficiaries have different interest, when accessing EU funds through projects. For projects beneficiaries performance indicators should quantify: the new products or services introduced on markets, the number of new jobs created, the production surfaces constructed, rehabilitated or improved and equipped.

Performance measurement system is a due for every company, but not many SMEs have one because of different obstacles, such as limited material, financial and human resources. There is a challenge for every entrepreneur in the decision regarding what to measure. Analyzing the answer of the respondents of the Romanian SMEs from V West Region that accessed EU funds we found out that development of production capacity, turnover and acquiring new equipments are the most used indicators for measuring the company performance. The answers of the managers are connected with the goals of their implemented projects. Most of them had accessed the community funds for developing their production capacity and buying new equipments, creation of new working place being a secondary indicator, only (Adina-Simona, 2013).

Conclusion

Perhaps the most important feature of the BSC stands in developing "strategy" or "cause-and-effect" maps, simple and obvious for every stakeholder. Strategic objectives are organized along the four perspectives and three strategic themes. The objectives in the figure can be inter-connected with arrows, showing the place and relevance of each objective on the way to fulfill the destination statement. These strategy maps are powerful communication tools that convey the strategic ideas to all employees, involving them in to the process, requesting their contribution and motivating them by showing what exactly happens if they do/don't their job efficiently. The managers must fill in every cell in the table with realistic objectives, relevant for their enterprise since void cells will subsequently tell everyone the value managers attach to sustainability. The next step consists in adopting a measurement system. Progress in each objective should be assessed by a straightforward system of key performance indicators (KPI) and specific targets needs to be set for each KPI. A KPI system should include: - lagging KPI – evaluated at the end of a time-period (profit, productivity, etc.); - leading KPI – challenging targets as "zero wastes", "BAT applied", etc. Both tangible (profit, ROI, etc) and intangible (creativity, good-citizenship, "green" brands) KPI must be considered. The objectives and corresponding KPI should be kept to a minimum, subjected to permanent analysis by the strategic management in order to check if they are the right ones. For each objective an action

plan will be developed, allocating resources, setting deadlines and nominating responsible persons. Monthly strategy meetings (15-20 min) will ensure that the feedback is working and that all the action plans go smoothly, fining tuning the strategy, if need be. Strategic objectives are subsequently used by lower level managers to develop their own BSC, in a cascading procedure that can go down to each strategic business unit, subsidiary, branch, department, workshop, task group in the enterprise. Specific objectives, KPI and action plans take into consideration much more detailed aspects than the enterprise-level BSC. Top management involvement is essential for success but they have to listen openly and honestly to their employees and push them to generate ideas for change. This was really hard to achieve, since CEO's are not familiar to a round-table reunion gathering their subordinates that dare to speak about enterprise's future and fate. Our experience was that turning it in a kind of "what-if game" proved successful. Subordinates spoke out knowing that their oppinions could be only taken as a brainstorming exercise. As top managers should dedicate their energy on real strategic matters, concern about day-byday work is relegated to lower management – this is a subject that Romanian top managers are only starting to understand (Bețianu & Briciu, 2011).

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TIMETABLE FOR SUSTAINABLE CONTROLLING IMPLEMENTATION

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Abstract: *The main objective of this article is to identify the criteria for sustainable controlling implementation. On the basis of direct surveys and literature, the role its implementations and its schedule are assessed. Another aspect of the sustainable implementation is a uniform intensity of the works within the time. There is a good practice to avoid the implementation of the excessive number of tasks and their disappearance. High intensity of works in the first period of implementation is quite often in the practice. This can be caused by the concentration of operations at the beginning of the project. This commitment to the project may go away and at the end which can result in delays in implementing the next stages. The intensity of works can be resumed again in the last quarter of the year. In this case it may happen due to a desire to complete the project within the previous deadline. Those mentioned problems are usually caused by bad planning and compliance with the work schedule. Planning the work schedule one should take into consideration factors of seasonality functioning of a specific company and holiday leaves. During these periods there can be expected a decrease in the intensity of activities.*

Keywords: *budgeting , system implementation, financial controlling*

JEL classification: *G 30, M 21*

Grant affiliation:

Introduction

The process of controlling implementation should be analyzed multidimensionally. Following issues should be taken into consideration:

- 1) realized tasks,
- 2) people responsible for specific tasks,
- 3) work schedule and its intensity during different periods,
- 4) essential time and financial resources devoted to particular tasks.

1 Essential tasks

Regarding essential tasks which must be carried out there is no unique standard that should be applied in each case. The scope of activities depends on the needs and the capabilities of this particular company. Some companies share the implementation process into two or more phases. In the first one there should be introduced only priority tools. Others can be implemented in subsequent phases. For these phases there are no detailed plan as they regard to the future and they

will be realized later on. Limited personal and financial resources might be the reason for such a concept.

1.1 Good practices

Within good practices one should implement following actions:

- 1) development of business model of the enterprise,
- 2) identification of cost centers and profits centers,
- 3) establish rules for calculating costs of auxiliary operations
- 4) establish rules for calculating basic operating costs,
- 5) modifying of plan of the accounts and accounting policies,
- 6) the development of a detailed structure of the budget for the identified centers of costs and profits,
- 7) preparation of budget procedures in the field of planning, execution, reporting and correction of the budget,
- 8) developing a system of budget flexibility - tolerance to deviations,
- 9) the implementation of the substantive concept of controlling system in computer systems,
- 10) introduction tasks of controlling into the responsibilities of staff requirements ,
- 11) formalize the tasks of controlling department,
- 12) advanced trainings of the staff in controlling department,
- 13) trainings of center managers responsible for adopting business solutions.

Presented tasks suggested for implementation consists of different areas such as:

- 1) management accounting,
- 2) financial accounting,
- 3) organization and management,
- 4) computerization,
- 5) education.

1.2 People responsible for sustainable implementation

It is therefore extremely important to determine which people will perform particular tasks. It can be carried out by employees from many different companies. Such a situation will occur when the process of implementation will be supported by external services. There are usually hired controlling and information systems consultants. They often represent two distinct businesses: consulting and

information technology. Summing up the process of implementation of the controlling system can be performed by the following employees:

- 1) companies in which controlling system is implemented,
- 2) consulting company specializing in the field of controlling implementation,
- 3) IT company providing dedicated system for controlling.

One should consider whether it is better to carry out the implementation without external support. The advantage of this concept is the realization of the work by the employees of one company. It is moreover easier to supervise the performance of specific tasks by specific people and the project costs are lower. A significant drawback of this method are however limited competence of employees in the best standards of controlling and information systems. Implementation of specific tasks of the identified areas should be therefore performed only by internal controllers. Many tasks will be realized at the same time by several entities. The aim is to conduct consultation within adopted solutions. Implementation should be implemented by people from following departments and companies:

- 1) employees from different departments of the company implementing this controlling system:
 - a. controlling,
 - b. accounting,
 - c. business divisions,
 - d. the board of directors,
- 2) external consultants:
 - a. employees from the consulting firm,
 - b. IT system consultants.

1.3 Proposed schedule for financial controlling implementation

The process of financial controlling implementation should never be completed. This system should be developed constantly. This is due to the fact that this system covers a wide range of areas and its implementation requires various and complicated tasks. There is observed a dynamic development of the used tools. It is therefore not possible to implement it completely in a specific time. The first phase of its implementation is particularly important because it is a basis for its further development. The solutions adopted in this phase should take into account future requirements of the system. Controlling introduces significant changes in the enterprise and that is why its implementation must be conducted within an appropriate period of time. Accounting systems and planning ones are fields where important changes are going to be observed. Due to the principle of comparability which is significant in financial accounting its implementation must be completed before the new financial year starts. It also refers to the planning system. The budget should be determined according to new rules before the period of its duration in accordance with the requirements of the principle of precedence of budgeting. Summing up the above statements there

can be stated the assumption that the implementation of the first phase of the management system would take about a year. During this time the activities are carried out with a varying intensity and they are performed by different entities. Some of the works can be done even earlier than during the year of its implementation. There should be conducted trainings referring to advanced tools in controlling department. This knowledge would be especially useful during the adaptation proposed by the external consultants which take into account the specifics of the company. Some tasks such as testing of the system and elimination of detected defects during its functioning would also be conducted after its implementation (Chalastra 2004).

TAB. 1: Suggested timetable for financial controlling implementation

Synthetic categories of implementation tasks	Year -1	Year of implementation				Year + 1
	IV quarter	I quarter	II quarter	III quarter	IV quarter	I quarter
Developing the substantive concept of controlling system						
The implementation of the concept into the specific functioning of the unit						
Information concept preparation						
Implementation of the system						
Education						
Testing the system in practice						

Suggested work intensity	High		Low	
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Source: own work.

The costs of implementing the controlling system can be divided into two basic categories. This division is based on the type of resources that perform specific tasks. According to this criteria there may occur following categories of costs related to the usage of the resources:

- 1) own,
- 2) foreign.

Work of company's own employees is included in the first group such as for example financial controllers and managers of responsibility centers. The work is determined by settling down the time and hourly wage for people involved in the implementation. The rates should be negotiated individually due their differentiation. The hourly rate shall include all the ingredients to maintain a particular position such as labor and social insurance costs. This category includes also additional costs of training, jobs maintenance, etc. The determining of these costs requires the use of management accounting tools. Although these costs directly do not generate financial expenses in

determining the full costs of implementation they should be taken into account. It is a good practice to determine the rules of activity based costing (ABC).

The second category are foreign resources costs such as: consulting services, trainings, business travels, purchase of hardware and software. Data related to those costs are available in financial accounting system.

Conclusion

Another aspect of the sustainable implementation is a uniform intensity of the works within the time. There is a good practice to avoid the implementation of the excessive number of tasks and their disappearance. High intensity of works in the first period of implementation is quite often in the practice. This can be caused by the concentration of operations at the beginning of the project. This commitment to the project may go away and at the end which can result in delays in implementing the next stages. The intensity of works can be resumed again in the last quarter of the year. In this case it may happen due to a desire to complete the project within the previous deadline. Those mentioned problems are usually caused by bad planning and compliance with the work schedule. Planning the work schedule one should take into consideration factors of seasonality functioning of a specific company and holiday leaves. During these periods there can be expected a decrease in the intensity of activities. That is why all the conceptual works should be completed before the summer break. After the holidays one should pursue the activities of a proposed implementation tools in the enterprise.

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DEVELOPMENT OF BALANCED SCORECARD PERSPECTIVES FOR THE POLISH CITY OF OLSZTYN

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Abstract: *Balanced Scorecard is a strategic performance measurement model which was introduced by Robert Kaplan and David Norton. Its main aim is to translate organization's mission and vision into operational activities. The paper tackles the significance of Balanced Scorecard as a tool of strategy management. It can help provide information on chosen strategy and determine key measures in terms of different perspectives. The article presents various benefits from Balanced Scorecard implementations in cities worldwide. The further goal of this article is to present Author's own concept of the inhabitants perspective for the Balanced Scorecard implementation project in Olsztyn and the financial perspective for the Balanced Scorecard implementation project in Olsztyn.*

Keywords: *balanced scorecard, city management, strategy*

JEL classification: *H70*

Grant affiliation:

Introduction

The balanced scorecard (BSC) is a strategic planning and management system that organizations use to:

- 1) align the day-to-day work with the strategy (Kaplan and Norton, 1996),
- 2) prioritize projects, products, and services (Kaplan and Norton 2000),
- 3) measure and monitor progress towards strategic targets (Rivenbark and Peterson, 2008).

The Balanced Scorecard (BSC), as demonstrated by the experience in BSC implementation in selected American cities of Charlotte and Hillsborough, brings benefits, which can include: providing organizations' managers with information on management methods and tools or solving problems related to strategy execution (FY2017, Strategic Operating Plan and FY 2017-FY2021 Community Investment Plan). The main benefit resulting from the BSC implementation in a Spanish City Hall was assistance in integrating the objectives of all its departments as well as enabling linkage of the objectives expressed in the BSC with an employee grading and motivation system (Kasperskaya, 2008). The BSC implementation by a Polish city of Tarnow has brought many advantages, the main of which is improvement of the degree of knowledge and comprehension of the strategic objectives among the City Hall's managerial staff, which has translated into an improvement of the team cooperation during the implementation of the projects realized in the City Hall. Analysis of the

obtained benefits concludes that in order to increase management efficiency, a BSC should be implemented in Olsztyn.

1 Methodology

In this article the following methods were used:

1. Direct interviews:
 - a) at the Tarnow City Hall, with the Director of the City Development Center, person involved in Balanced Scorecard implementation. Their knowledge about Balanced Scorecard implementation is both theoretical and practical,
 - b) at the Olsztyn City Hall, with the Coordinator of the Audit Team and the Director of the Control Department, people responsible for implementation of selected new public management tools such as Balanced Scorecard in Olsztyn.
2. Analysis of the background documents at the Olsztyn City Hall such as the existing development strategies, the local development plans.
3. Observation and analysis of the BSC development and implementation processes in the city of Tarnow was used to develop a pattern for implementing the BSC and its stages in Olsztyn.
4. Case-study analysis of the Balanced Scorecard implementation processes in American Charlotte Town Hall and Hillsborough Town Hall, and Spanish Town Hall.

2 Development of two Balanced Scorecard perspectives and their measures

2.1 The inhabitants perspective

Awareness of the Olsztyn Inhabitants' needs is most important, since it is a valuable source of information on the functioning of the city. The Inhabitants perspective (the customer perspective) was a priority in the BSC building process, because it determines the satisfaction level of the residents and is decisive in acquisition of new ones. As part of the activities undertaken by the Olsztyn City Hall from June 1 to August 31 of 2017, each resident could participate in a study on the satisfaction of the Olsztyn City Hall petitioners, by completing a questionnaire on the City Hall website.

TAB. 1: The strategic and operational objectives for the Inhabitants perspective for the Balanced Scorecard implementation project in Olsztyn

Strategic objective	Operational objective
Increase in the level of social capital	Improvement of the city's image
	Building the city's identity and its position in the region
	Building the city's identity and its position in the region
Increase of the investment capital	High quality of entrepreneurship education
	Improvement of education

Source: Strategia Rozwoju Miasta-Olsztyn 2020 (The Development Strategy for the Olsztyn City 2020)

It has been proposed to use 9 measures in the Inhabitants perspective. The indicator of the residents' satisfaction with the services provided and its target value have been created following the example of the American city of Hillsborough. The measure of "the number of justified complaints filled by the Olsztyn City Hall petitioners" has been modelled on a Spanish City Hall. The target values of such measures as "the number of justified complaints filled by the Olsztyn City Hall petitioners" and "the average time between the date of filling a complaint and its consideration" also have been estimated based on the Spanish City Hall model (Yetano, 2005). The target value of the measure "unemployment rate in Olsztyn" has been estimated based on a macroeconomic indicator that is the unemployment rate. The target values of the measures: "birth rate per 1000 inhabitants", "the number of new job positions", "the number of job positions in specific professions according to urban business classification" have been estimated in relation to the existing tendency in Olsztyn's development. The "Inhabitants" perspective is presented in table 2.

TAB. 1: The Inhabitants perspective for the Balanced Scorecard implementation project in Olsztyn

	Activity	Measure	Measure ment unit	Measurement mode	Measureme nt frequency	Source of data	Target value
1	Increasing the effectiveness of the City Hall's activity	Indicator of the residents' satisfaction with the administrative services	median of the residents' opinions	phone questionnaire	every 6 months	Customer Service Office	increase by 3%
2	Increasing the effectiveness of the City Hall's activity	The number of justified complaints filled by City Hall petitioners	number of complaints	number of complaints in year X / number of all cases in period X	every 6 months	Customer Service Office	decrease by 3%
3	Increasing the effectiveness of the City Hall's activity	Average duration of case processing	days	duration from registration of a case to its consideration	every 6 months	Customer Service Office	decrease by 2 days
4	Increasing the effectiveness of the City Hall's activity	Average duration from the time of filing a complaint to its consideration	days	duration from registration of a complaint to its consideration	every 6 months	Customer Service Office	decrease by 5 days
5	Decreasing unemployment	The unemployment rate in Olsztyn	%	number of the unemployed in year X / number of the employed in year X * 100%	annually	Department of Health and Social Policy	decrease by 0.2 %

6	Supporting pro-family initiatives, including the large family program	Birth rate per 1000 inhabitants	Number of persons	the difference between the number of live births and the number of deaths in year X	annually	Department of Health and Social Policy	increase by 14%
7	Developing cultural functions and obtaining prestigious music and art festivals	Number of the persons participating in cultural and art events per 1000 inhabitants	Number of persons	number of the persons participating in events in year X	annually	Office of Culture and Office of Promotion	increase by 20 persons
8	Supporting entrepreneurship development, science, foreign language educational programs	Number of created new job positions	Number of new job positions	number of created job positions in year X	annually	Central Statistical Office in Olsztyn	increase by 5%
9	Supporting education in the field of fitting the programs in vocational schools to the needs of the labor market	Number of job positions in specific professions according to urban business classification	Number of job positions	number of job positions in specific professions in year X	annually	Central Statistical Office in Olsztyn	increase by 5%

Source: own elaboration

2.2 The financial perspective

The financial perspective's objective was to link the financial targets with the Olsztyn strategy. It should result in an improvement of the city's financial results and in strengthening its financial potential, in order to realize the investments favouring creation of new enterprises and the possibilities for implementation of ambitious tasks requiring large financial inputs in the field of environmental protection. The measures "budget expenditures and revenues per 1 inhabitant in PLN", "volume of implemented investments in relation to the capital held" have been created based on the example of Hillsborough (Town of Hillsborough FY2017, Balanced Scorecard Report).

TAB. 3: The strategic and operational objectives for the financial perspective for the Balanced Scorecard implementation project in Olsztyn

Strategic objective	Operational objective
Increase in the flow of investment	Effective economic promotion

capital	Increase in the budget revenues of the Olsztyn City Hall
Ensuring financial liquidity	Maintaining budgetary discipline
	Increase in the budget revenues of Olsztyn
	Increase of non-tax revenues in the budget of Olsztyn
Development of metropolitan functions	Increase in the number of subsidies from the EU budget
	Development of the regional communication center
Ensuring financial liquidity	Improvement of functioning efficiency of municipal companies

Source: Strategia Rozwoju Miasta-Olsztyn 2020 (The Development Strategy for the Olsztyn City 2020)

With regard to the experience of the American city of Charlotte, an objective of “development of transportation infrastructure investments” has been formed and the measure “volume of investments for public transportation improvement in relation to the amount of tax on transportation means” along with its target value have been constructed. The indicator “share of real estate tax in total city income” has been modelled on the American city of Charlotte. Its target value has been estimated in reference to the data from the Tax and Fees Department at the Olsztyn City Hall. Operational objectives, modelled on those of the Tarnow City Hall, have been proposed: improvement of the functioning efficiency of municipal companies and growth of non-tax revenues for the Olsztyn City Hall. The measures “non-tax budget revenues per 1 inhabitant” has been prepared based on the experience of the city of Tarnow. In the financial perspective, both the American as well as the Canadian cities applied the debt indicator, hence, in the Author’s opinion, the need to include this indicator in the financial perspective of Olsztyn. Its target value has been prepared based on the data from the Budget Department of the Olsztyn City Hall. The “Inhabitants” perspective is presented in table 4.

TAB. 4: The financial perspective for the Balanced Scorecard implementation project in Olsztyn

	Activity	Measure	Measurement unit	Measurement mode	Measurement frequency	Source of data	Target value
1	Facilitation of conditions for investments and promotion of investments in the city	The volume of implemented investments in relation to the capital held	PLN	actual investments in year X/ the capital held or planned investments in year X	annually	Finance Department	increase by 10%
2	Facilitation of conditions for business development	The share of real estate tax revenues	%	real estate tax revenues in year X/ total city revenues in year X*100%	annually	Tax and Fees Department	increase by 6%

3	Control of budget expenses	Individual indicator of the city's debt	PLN	$\text{Ins} + \text{Int} / R < 1/3 *$	annually	Budget Department	decrease by 1.5%
4	Control of budget expenses	Budget expenditures per 1 inhabitant	PLN	budget expenditures in year X/ the number of residents in year X	annually	Budget Department	decrease by 1%
5	Facilitation of conditions for creation of new enterprises	Budget revenues per 1 inhabitant	PLN	budget expenditures in year X/ the number of residents in year X	annually	Budget Department	increase by 2%
6	Seeking new possibilities of acquiring them	Non-tax budget revenues per 1 inhabitant	PLN	non-tax budget revenues in year X/ the number of residents in year X	annually	Budget Department	increase by 3%
7	Exploring the possibility of obtaining funds from the EU budget	The funds obtained from the EU for international cooperation and contacts per 1 inhabitant	PLN	the funds obtained from the EU in year X/ the number of residents in year X	annually	Budget Department	Increase by 10%
8	Development of infrastructure investments	The volume of investments for improvement of public transportation in relation to the amount of the tax on transportation means	PLN	investments for improvement of public transportation in year X/ the amount of the tax on transportation means in year X	annually	Budget Department	Increase by 4%
9	Facilitation of conditions for development of municipal companies	The indicator of profitability on the sale of communal companies	PLN	$\text{ROS} = \text{net profit} / \text{return on sales} \times 100\%$	annually	Budget Department	Increase by 2%

Source: own elaboration.* The individual indicator of the city's debt has been developed based on the formula included in the Act on public finances, article 243 of the Act on public finances from 2009 (Journal of Laws No. 157, Item 1240).

Conclusion

The above-presented tables contain a proposed authorial concept describing the link between the strategic objectives and the operational ones, along with the accompanying activities in two perspectives: inhabitants and financial. Each measure has a measurement unit and is measured with various frequency in a different manner. Additionally, the sources of data and the target values have been provided.

In further research author of this paper will focus on preparation measures of „the Olsztyn’s Development and implementation of innovative solutions perspective“ and on „employee development perspective.“

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INTRODUCTION OF NEW PRODUCT ON MARKET

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Abstract: *This article deals with introduction of the new product on the Czech market. The selected commodity are electric bicycles which are being offered on the market since 2014. In the time series 2014-2017 there was observed a quantity of the sold units and their price. There were performed the source data regression and correlation analyses. The data were further confronted with basic economic indicators in the Czech Republic, namely with a gross monthly wage and an average retirement pension. To analyse the enter data there were used regression and correlation analyses. Correlation coefficients exceeded 0.9 in all cases. Linear regression models were used to determine the lifecycle phases of the monitored product, including the development prediction for the following period. From the calculated linear functions it is possible to assume the trend retention for this year, based on estimated increase of both average wage and pension, as presented in the literary sources.*

Keywords: *wage, price, product, regression, correlation*

JEL classification: *C1, D3, M2*

Grant affiliation:

Introduction

One of the present fundamental problems are innovations and introduction of new products on the market. Surprisingly, the innovation process pertains also to such a conventional product like a bicycle. Actually, it has not changed its conception since introduction of a rear-wheel chain transmission in 1879. The changes, though very significant, approved themselves only in the applied materials and technological solutions of particular parts. The true breakthrough came with a change of propulsion from only human power to electric energy. Hosea W. Libbey who is considered to be a constructor of the first e-bike, designed a bicycle propelled by a 'double electric motor' in 1897. Today used rear-wheel drive was patented by Mathew J. Steffens in 1898. There is also a home trace of an e-bike development. The Czech constructor Ing. H. Fügner dealt with so called "electrocycle" shortly before the World War II. However, the mass expansion of e-bikes came in the early new millennium, as the new technologies were required, especially high-density batteries. From 1993 to 2014 the production of electric bicycles increased by 35 %. Popularity (demand) and sales (offer) have been continually increasing for the last ten years. It is given by many aspects. The main reasons are implementation of modern powerful batteries and microprocessor-controlled technologies. Other aspects supporting the increasing popularity of electric bicycles are their attractiveness and price availability, exacting environmental regulations, increasing prices of classical motor fuel, worsening traffic situation in cities (metropolises), lifestyle and attitude changes of the young generation towards mobility, and progressive senior health care. The e-bike boom came in 2010,

whereas further demand increase is still expected. Roughly one in twenty bicycles has an electric motor. Trend of popularity of e-bikes is evident in Germany, where they are supposed to have made 15 % of the German bicycle market in this year.

Out of these reasons an electric bicycle is a very interesting product, standing just at the start of its lifecycle. This article deals with the sales analysis of electric bicycles from Crussis company, which is currently one of the biggest e-bike dealers on the Czech market. Its sales volume notches roughly one fifth of the total offer on the market. It allows to rate the obtained data as representative, and to generalise the results also for further similar companies operating on the Czech market.

Behaviour of the new introduced product (electric bicycle) on the Czech market was studied in terms of a price and a number of the units sold, together with other basic economic indicators such as an average gross wage and an average retirement pension in 2014 – 2017. Economy of the Czech Republic shows a stable growth of VAT and other basic macroeconomic indicators since 2013, and according to many prognoses (e.g. analytic company Deloitte (2018)), the growth rate will stay above EU and Euro-zone average for this year as well.

This is why we can presume that the new product sales on the Czech market will behave according to the standard economic-statistical rules, as presented for instance by Skupinová (2012), and to the marketing rules according to Kotler and Armstrong (2014). Owing to the strong economy there is very positive prognosis for the gross monthly wage growth – up to 8.6 % increase (Díro, & Kubelková, 2017). Also retirement pensions will get perceivably better. Average pension has been gradually increasing (Česká správa sociálního zabezpečení, 2018); later last year an average retirement pension was CZK 11,850 according to the Czech Social Security Administration. After the increase in June an average retirement pension increased to current ca. CZK 12,300 (Mar Ve, 2018), along with presumption of further growth in the nearest future, in dependence on the political cycle in the Czech Republic.

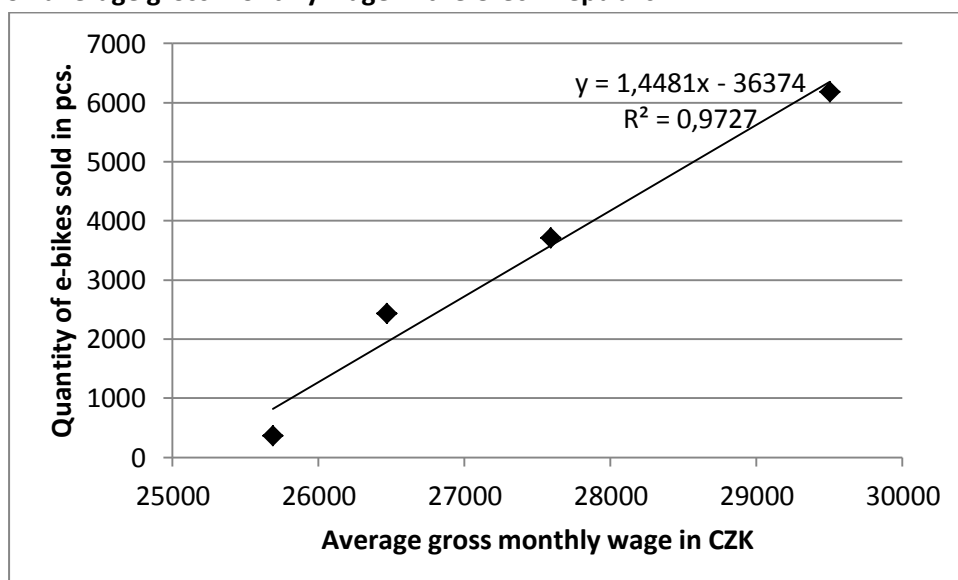
1 Methods

The basic data on average gross monthly wage and average retirement pension in 2014 – 2017 was obtained from the database of the Czech Statistical Bureau (www.czso.cz, 2017, 2018). As a model new product introduced on the Czech market there was selected an electric bicycle which has been offered since 2014 by Crussis; the company supplied its internal data on price and quantity of e-bikes sold in 2014 – 2017. In order to be allowed to analyse them there was issued the Data Processing Agreement. The management claims the company has 18 % of e-bike sales on the Czech market. The source data were processed by linear regressive and correlation analysis (Hendl, 2015), correlation coefficient was rated by the scale of Hinds (2016). The time series analysis was performed using common time series methods, as presented e.g. by Arlt and Arltová (2009). This article also deals with possibility to implement a multi-dimensional regression and correlation (Meloun, & Militký, 2012).

2 Results

The product sales development analysis was based on regressive and correlation analysis of dependence of a quantity of e-bikes sold in 2014 – 2017 on an average gross monthly wage in the Czech Republic. The output is displayed in the Picture 1. It is evident there exists a close directly proportional dependence between variables. Average course of this dependence is copying the regression line $y = -36374 + 1,448x$. Determination coefficient $R^2 = 0,972$ bears evidence of a high quality of the regression model, as 97.2 % of the changes of variable 'quantity of bicycles' have been explained by variable 'average wage'. Correlation coefficient 0.986 is very high, almost approaching a perfect dependence. Out of the regression model it is possible to figure out an estimation of average quantity of bicycles for this year. Considering 8.6 % increase up to CZK 32,000 the average would be 9962 bicycles. This estimation applies only in situation of maintenance of the present linear trend.

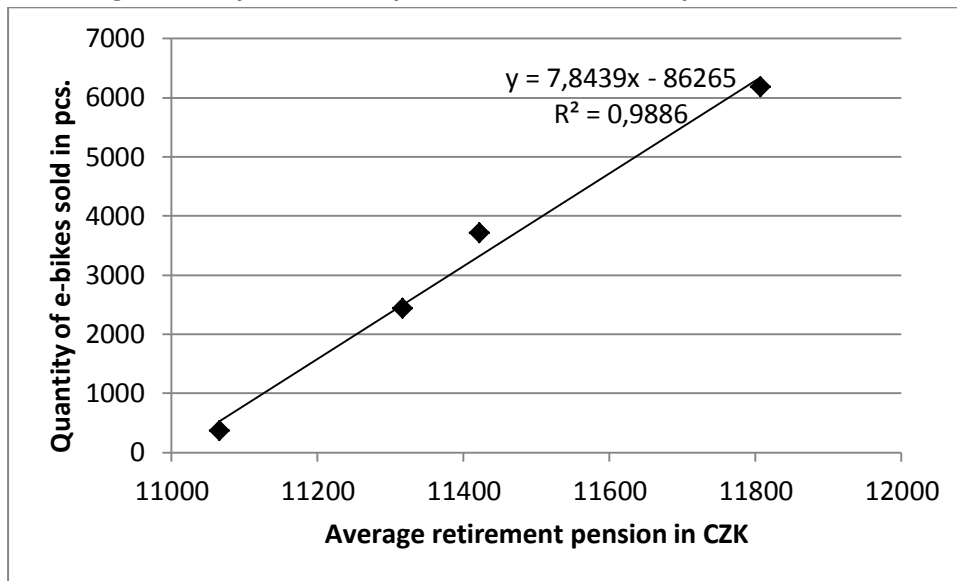
FIG. 1: Regression and correlation analysis of dependence of quantity of e-bikes sold in 2014 – 2017 on average gross monthly wage in the Czech Republic.



Source: Self-processed

Further presumption was that a demand for electric bicycles is largely created also by pensioners. There were applied regression and correlation analyses of dependence of a quantity of e-bikes sold in 2014 – 2017 on an average monthly retirement pension in the Czech Republic (picture 2). Results of the analyses show there also exist close directly proportional dependence, course of which is copied by the figured regression line $y = -86265 + 7,844x$. Determination coefficient $R^2 = 0,988$ shows evidence of a high quality of the regression model, where 98.8 % of the changes of variable 'quantity of bicycles' have been explained by variable 'average wage'. Correlation coefficient 0.994 is also very high, almost approaching a perfect dependence. Out of the regression model it is possible to estimate an average quantity of bicycles for this year at 10,217 e-bikes, considering an estimated pension for this year at CZK 12,300. This estimation applies only in situation of maintenance of the present linear trend.

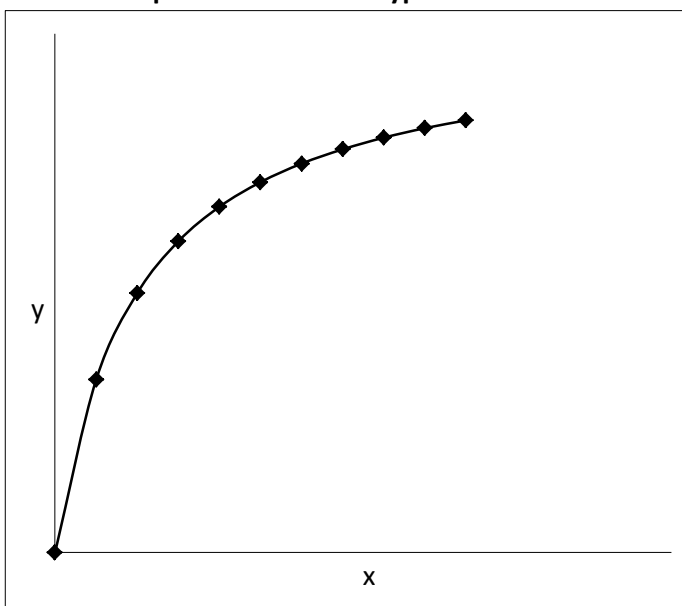
FIG. 2: Regression and correlation analysis of dependence of quantity of e-bikes sold in 2014 – 2017 on average monthly retirement pension in the Czech Republic.



Source: Self-processed

In the near future this trend will be changed in both cases by the trend typical for introduction of new product on market, which is mostly being displayed by Törnquist curve of the I type (Ramík, 2007), course of which is shown in the picture 3. This function informs about the fact the quantity of the bikes sold will be gradually stagnating and the product sales will not show further significant increase. It is sure that Crussis will react on this situation for example by innovation or substitution of the product by another, technologically more developed or more attractive product.

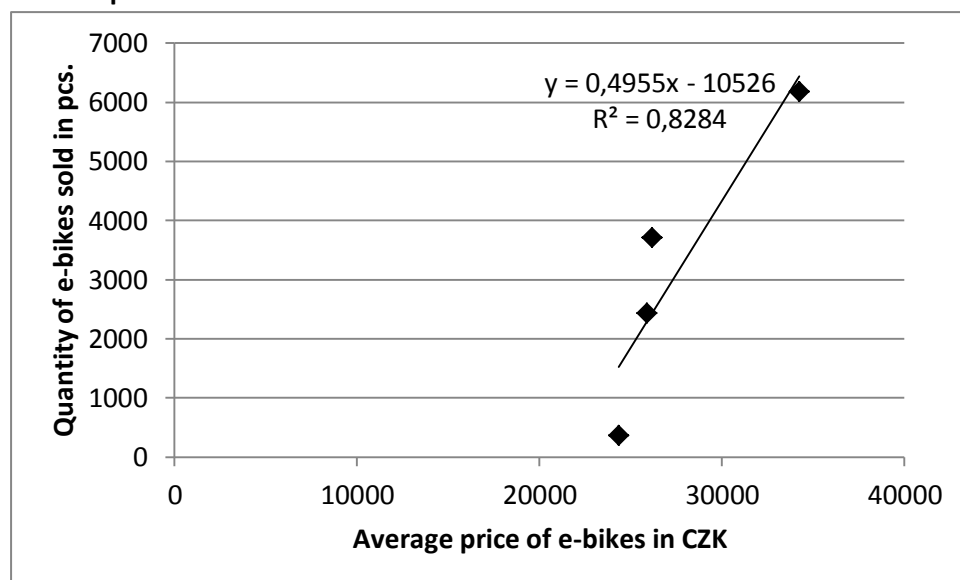
FIG. 3: Törnquist curve of the I type



Source: Skupinová (2012)

Out of the analysis of variables 'price' and 'quantity of e-bikes sold in 2014 – 2017' there also results a strong linear dependence of the quantity of the sold e-bikes on their prices. Correlation coefficient value is 0.910 (picture 4).

FIG. 4: Regression and correlation analysis of dependence of quantity of e-bikes sold in 2014 – 2017 on their prices



Source: Self-processed

There is a presumption that price of electric bicycles will be growing, as resulted from the strong linear dependence, however, regarding the USD rate decreasing since 01/01/2017 down to current CZK 21,153 (30/04/2018 rate; Česká národní banka, 2018), it will actually stagnate, or they will even get slightly cheaper. In addition, this linear trend will be replaced by the trend typical for now product introduction, which will lead to the price growth suspension again.

Should we think over a multiple regression of dependence of quantity of e-bikes on interaction of price and wage (resp. pension), such high pair correlation coefficients in a simple linear regression and correlation bears evidence of sustaining original two-dimensional model, which is also confirmed by high harmful multicollinearity between both independent variables ($r = 0.943$). Still the multiple correlation coefficient was calculated and it was almost equal to 1. However, this model cannot be applied owing to its high pair correlation coefficient and harmful collinearity. Both independent variables has individual impact on quantity of the e-bikes sold, confirmed by a strong direct linear dependence.

Conclusion

This article focuses on the analysis of an introduction of the new product – electric bicycle – on the Czech market. It was found out there exists a strong linear dependence of a quantity of the e-bikes sold on both an average gross monthly wage and an average monthly retirement pension in the Czech Republic. It is sure that a purchase power of the both assessed groups of citizens (productive people and seniors) is interested in the product in question, and they are willing to pay the requested price for it. It was verified that quantity of e-bikes strongly and directly depends on their price. Therefore, it is sure that the linear trends found in 2014 – 2017 are going to change into a model typical for a new product introduction, for example into a trend copied by the Törnquist curve of the

I type. Such a breakthrough will come at latest in 2019, as resulted from the source data. The price analysis is also influenced by the USD rate which positively increases a value of the e-bikes sold. If the trend does not change, in average 10,090 customers drawing wage or pension (regardless of their age) will have bought an electric bicycle in this year.

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PUTEANI CAMERAL ACCOUNTING

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Abstract: *With respect to the development of accounting techniques in the Czech lands in the past the paper concentrates on cameral accounting, which practically made a bridge in accounting practice between an unique administrative bookkeeping, that was used in the Czech lands during the Middle Ages and Early Modern Period instead of single accounting, and double-entry accounting, which came to these region no early then at the end of the 19th century. Cameral accounting widespread in the Central Europe probably under the influence of Habsburg monarchy and existed in lot of mutations; especially in the Czech lands became the most popular one of them called after the name of their inventors 'Puteani cameral accounting'. Based on the original resources from the period of the 18th and the beginning of the 19th century, the manuals written by the members of Puteani family and contemporary accounting records, the aim of the paper is to explain the nature of Puteani cameral accounting and describe development of this accounting technique.*

Keywords: *history; accounting; bookkeeping; Czech lands; Puteani*

JEL classification: *M41; N90; K19*

Grant affiliation: *IGA_FF_2018_002_The interpenetration of Eastern and Western thinking in the global economy and management*

Introduction

Cameral accounting belongs to the most common accounting techniques in the Czech lands in past, besides administrative, single and double-entry accounting. (Slavíčková, 2017) It was widespread in the Czech lands probably under the influence of Habsburg Empire and occurred in practice in many version. One of them invented by Puteanis', members of Czech minor noble family, became popular no later than in the first half of the 19th century. While cameral accounting technique was originally was designed for the budgetary management, Puteani cameral accounting was used mainly for the management of aristocratic properties. With respect these statements the aim of the paper is to explain the nature of Puteani cameral accounting, which theoretically and practically made a bridge between administrative bookkeeping and single-entry and double-entry accounting in the Czech region, in broad sense between the Middle Ages and modern history of accounting.

1 Previous research and sources

Previous research on this subject is not numerous. Despite the fact that history of accounting is one of the original parts of the economic history and the first studies were published already in the 19th and in the first half of the 20th, none of them are directly concern on the situation in the Czech lands in detail. Cameral accounting is usually mentioned only marginally (Štursa, Fiala), the only book

called *Kamerální účetnictví* written by Hugo Raulich and published in 1935 need to be revised as well as chapter on the same topic in *Slovník obchodně-technický, účetní a daňový* (1931).

In general, the most popular in the field of history of accounting in present is the chapter written by Josef Blecha and published in textbook of Jindřich Šebánek *Dějiny české diplomatiky* (1987) which contains a classification of historical accounting techniques including the description of cameral accounting. Blecha's text is based on his previous articles published in the 1950s and 60s and what is more, regarding the crucial era of the Middle Ages and Early Modern period, it only takes over the results from foreign countries (and literature) and did not take into account any real practice in the Czech lands (cf. Mikušek, 1986). As a result of that, the most valuable studies about cameral accounting practice in the Czech lands are two articles written by Eduard Mikušek (1981, 1986). Both of them are based on resources of the Lobkowicz Family and in spite of Mikušek's very detailed description and essential findings, which would deserve comparison with other noble estates, there have not been any followers yet.

With respect to this absence of literature, the crucial resources for the study of Puteani cameral accounting are the original manuals created by members of Puteani family. The first one was written by Josef František Puteani (1749-1836) that owned estates with the center in Soutice near Vlašim (in Central Bohemia). He was a very proficient and innovation-friendly landlord who in many ways perfected the accounting system of estates and trained a number of skillful accounting officials. (Fiala, 1935) The same tradition was continued by his son, Karel Ferdinand Puteani (1782-1847), who authored some economic handbooks including textbook called *Einleitung und kurze Belehrung zur Führung der Wirtschafs – Rechnungs – Hauptbücher*, printed at first in Prague in 1808, with several reprints following. His brother, Baron Jan Puteani, was devoted to the same thing; similarly, he also authored several handbooks for landlords plus inter alia accounting textbooks named *Grundsätze des allgemeinen Rechnungswesens*, released in Vienna in 1818.

2 Cameral accounting

All these books clearly describe the Puteani cameral style of accounting that was based on the accounting method used in the same time in the centre of Habsburg monarchy. We can presume involve of the central state government, which this accounting technique started to be used following a regulation of Maria Theresa from 24 December 1768. (Janout, 1995) The origin of cameral accounting, however, is usually believed to come from the court of Maximilian I (1439-1519). Its name is derived from the Latin noun "camera", referring to a room or basement where valuables were kept. In general, the term "cameral accounting" is associated with the management of public funds; nevertheless, some variants of the accounting style known as cameral accounting were also used in the private sector.

The key moment for the development of the cameral accounting technique in the Danube monarchy was the decision of Maria Theresa in 1760 on the foundation of the Court Accounting Chamber as the supreme state body for control and issues of state accounting organization and introduction. (Janout, 1995) One of the many tasks assigned to this office was also the disposal of backlogs in the state accounting system and improvement of the accounting method. The main role in this reform was played by the president of the Court Accounting Chamber, Alois Friedrich Julius, Lord of Zinzendorf and Pottendorf. Under his management, accounting was, in principle, introduced according to the method described by Matthieu de La Porte in his book *La Science des Negociants et*

teneurs de livres, which was used as a handbook for the training of future accountants in public administration. However, this system, as the practice quickly demonstrated, did not fully meet the needs of the financial administration and, moreover, was very difficult to use. (Puchinger, Slavíčková, 2014) For this reason, Zinzendorf authorized the chief accountant of the Court Accounting Chamber, Johann Mathias Puechberg, to manage the overhaul of the accounting system. Johann Mathias Puechberg advocated the view that the original cameral system could be overhauled in such a way that it met all the requirements imposed on it by the state financial apparatus. The accounting technique proposed by him, combining cameral accounting with accounting elements of mercantilism, he checked in practice in the manor of Count Zinzendorf in Enzersdorf. After it proved successful there, he compiled the method in the form of a handbook *called Einleitung zu einem verbesserten Cameral-Rechnungs-Fusse auf die Verwaltung einer Herrschaft angewandt*, printed by the Court Accounting Chamber in 1762. (Johns, 1951)

Putting this accounting technique into practice, however, was not easy, as was detailed by Josef Kubeša based on the representation of Josef Calasanz Lichtnegel. (Janout, 1995) After all comments had been collected and properly discussed, a meeting was convened for 31 May 1764. It was chaired by the state minister, Count Haugwitz, and held in the presence of state minister Blümegen, president of the general treasury administrator, Count Hatzfeld, state counsels Stuppan and König, court counsels of the Court Accounting Chamber and heads of several accounting offices. Count Zinzendorf reported the resolution of this advisory group to the empress. He referred to the lack of reasons behind the objections and intrigues brought against this new method. He also mentioned the multi-million losses caused by the then unreliable and insufficient accounting checks and records. Nevertheless, a final decision did not come about until four years later. It was not until 24 December 1768 that Maria Theresa recognized the advantages of the new accounting system for public administration and decided to put it into practice. (Puchinger, Slavíčková, 2014) Owners of some manors appreciated the quality of Puechberg's accounting technique before the central administration. Such owners spontaneously started to use it for the administration of their estates – for example Adam of Auersperg in his farms in Bohemia.

3 Comparison

Based on the original resources we can say that the main features of Puechberg's cameral accounting system, known also as Journalrechnung (compared to the older Konferenzrechnung), was the introduction of mandatory book keeping to provide detectability and time records of payments (revenues and expenditures), which became the basis for further accounting in the general ledger. Puechberg also requested that accounting be always arranged in such a way that the book and the general ledger were kept by two different workers for the purpose of their mutual control. (Baumgartner, 2006) The structure of the general ledger was changed so that it was possible to provide separate accounting monitoring of an item and payment for every section. This measure enabled the easy and actual automatic determination of the accounting records as a whole and, in individual items, three key indicators of every expenditure management, i.e. item, payments and payment arrears. Each item had to be settled by payment, failing which, payment arrears arose. The monitoring of payment arrears allowed the periodization of accounting transactions and acted as a kind of accruing. (Baumgartner, 2006)

The essence of cameral accounting in general includes understanding changes in equity as revenues and expenditures. (Hügli, 1887) In practice, however, this accounting technique had a number of different variants.

Looking back to the first statement Puteani accounting was one of the versions of Journalrechnung. The basic principle of Puteani cameral accounting was the use of prescribed forms and centralization of accounting works in the central accounting office where general ledgers were prepared based on regularly sent journals and attachments. (Puteani, 1818) Moreover, it introduced a fixed system of sections in the general ledger and journal, including, besides the column for actual payments (revenues and expenditures), boxes for their names. The revenue and expenditure part of the general ledger was divided into sixteen mutually corresponding sections: 1. Cash balance and receivables; debts in expenditures, 2. Amounts in the virtue of the land lord; overhead in expenditures, 3. Levies (tolls, rents from mills and inns, but also revenues and expenditures of breweries and distilleries), 4. Field economy, 5. Horticulture, 6. Viticulture, 7. Hop growing, 8. Livestock, 9. Fishing, 10. Bee keeping, 11. Hunting, 12. Forestry, 13. Building, 14. Mining, 15. Potash production, 16. Speculative sector (material in stock accounting). (Puetani, 1807)

Conclusion

As far as we know, Puteani cameral accounting was probably used by companies and other business units in Czech lands for the same purposes and at the same time as single-entry and double-entry accounting abroad. However, the period when cameral accounting - in this concrete situation the Puteani version of cameral accounting - began to be most common in business does not date very far back in history, e.g. the large Lobkowitz domain of Roudnice replaced administrative accounting by cameral accounting in the thirties of 19th century. (Mikušek, 1986) We can suppose the others follow. Thanks of that the cameral accounting probably in its Puteani version was together with single-entry accounting the most common accounting technique in Czech lands before the beginning of the 20th century.

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SUSTAINABLE DEVELOPMENT INDICATORS OF THE VISEGRAD GROUP COUNTRIES FROM THE PERSPECTIVE OF PUBLIC FINANCES

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Abstract: *Sustainable development is based on three pillars: social pillar, economic pillar and environmental pillar. EUROSTAT defined seventeen groups of sustainable development indicators. Each group of indicators consists of several sub-indicators that are focused on a particular area of sustainable development. This article will focus on sustainable development indicators of the Visegrad Group countries (the Czech Republic, Slovakia, Poland and Hungary). The aim of the article is to analyse and compare sustainable development indicators of the Visegrad Group countries in 2016 and recommend areas of support using public finances for improvement sustainable development indicators.*

Keywords: *sustainable development, Visegrad group, sustainable development indicator, public finances, sustainability*

JEL classification: *Q01, Q56, P43*

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Introduction

The concept of the sustainable development has gained worldwide attention in recent years, which has strengthened its implementation. An interest in the sustainable development has many stakeholders, for example companies, suppliers, customers, shareholders, local community, government, employees etc. This article deals with indicators of sustainable development defined by EUROSTAT and their values in the Visegrad group countries in 2016. The aim of the article is to analyse and compare sustainable development indicators of the Visegrad Group countries in 2016 and to recommend areas of support using public finances for improvement sustainable development indicators. The first chapter of this article is focused on the theoretical background of sustainable development and in the second chapter the methods and data used will be presented. The results will be published in the third chapter.

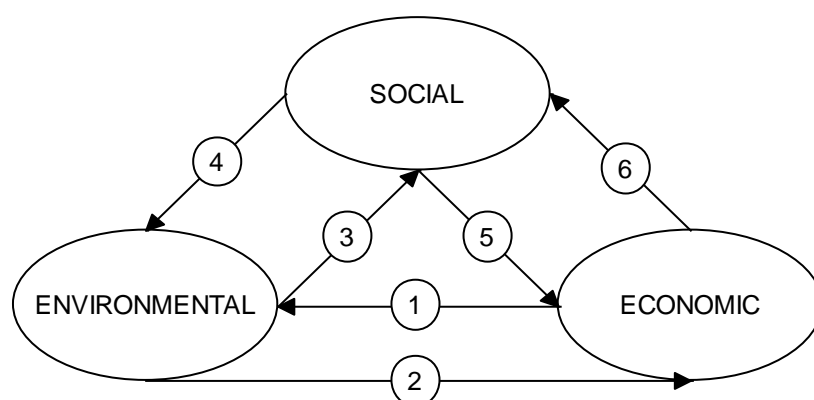
1 Theoretical background of sustainable development

Olawumi & Chan (2018) stressed the importance of Brundtland Report for the World Commission on Environment and Development in 1992 where the term of “sustainable development” was introduced. Lai (2005) emphasized the importance of global consensus on sustainable development in 1992 in the Rio Declaration of the UN Earth Summit in Rio de Janeiro too. Axelsson et al. (2011) connected the term “sustainable development” with “sustainability”, because these two concepts

have gained reception at national and global levels due to challenges and risks faced in areas such as rural development, environmental conservation, energy, climate change, human well-being etc. Sartori, Latronico & Campos (2014) described sustainability as a process and mechanism to achieve the intended sustainable development. Norton (2005) considered that the two terms of sustainability and sustainable development are often used interchangeably, but on the other side, Axelsson et al. (2011) argued that the two concepts are quite different, because sustainability is a policy vision of the society with primary purpose of preventing the depletion of natural resources. Sustainable development is one of the main objectives of the global development strategy through 2030, adopted by the United Nations General Assembly in September 2015 (Bobylev & Solovyeva, 2017). The sustainable development concept is closely related to the concept of corporate social responsibility (Abreu, Alves & Moreira, 2017). Standard ISO 26000 defines social responsibility as the responsibility for decisions' impacts and activities' impacts on society and on the environment; this responsibility is closely linked to transparent and ethical behaviour, according to the International Organization for Standardization (2010).

The concept of sustainable development encompasses three dimensions of welfare – economic, environmental and social – and involves complex synergies and trade-offs among them, stated Stevens (2005). Key dimensions of sustainable development are presented in (PICT. 1).

FIG. 1: Key dimensions of sustainable development



Source: Stevens (2005)

Stevens (2005) differentiated six effects in relation to sustainable development areas. Each of these effects is represented by a number in PICT. 1, there are: 1. Effects of economic activity on the environment (e.g., resource use, pollutant discharges, waste); 2. Environmental services to the economy (e.g., natural resources, sink functions, contributions to economic efficiency and employment); 3. Environmental services to society (e.g., access to resources and amenities, contributions to health, living and working conditions); 4. Effects of social variables on the environment (e.g., demographic changes, consumption patterns, environmental education and information, institutional and legal frameworks); 5. Effects of social variables on the economy (e.g., labour force, population and household structure, education and training; consumption levels, institutional and legal frameworks); 6. Effects of economic activity on society (e.g., income levels, equity, employment), according to Stevens (2005).

2 Methods and data

This chapter is divided into two subchapters. In subchapter 2.1 there is presented the method of linear partial utility functions that will be used for analyse and compare sustainable development indicators of the Visegrad Group countries in 2016. In subchapter 2.2 there are defined sustainable development indicators by EUROSTAT including subdivisions into sub-indicators.

2.1 The method of linear partial utility functions

This method is simple method of multi-criterial evaluation of variants for determination utility of variants. This method can use the following criteria as input data: quantitative criteria with increasing and decreasing preferences, qualitative criteria with a preferential relation on a set of variants and qualitative criteria with an expertly rated score from a given scoring scale. Ratings for a given set of variants are standardized so that the worst value of the criteria for a given variation file corresponds to 0 and the best one is 1. For quantitative criteria, it is assumed that the corresponding partial utility functions have a linear shape. These functions are determined by assigning the worst value of the criterion (on the given variation file) x_j^0 to the partial utility 0, the best value x_j^1 being assigned to the partial utility 1 and the connectors of these points are then displayed by linear partial utility functions. The partial evaluation function for the variant $x = (x_1, x_2, \dots, x_m)$ is defined by the equation 1. (Fotr & Dědina, 1993; Hušek & Maňas, 1989)

In this case, we will assume that all criteria will have the same weight (the same importance).

$$u_j(x_j) = \frac{x_j - x_j^0}{x_j^1 - x_j^0} \quad (1)$$

Evaluations of individual variants $u(V_i)$ are obtained according to the authors by summing the evaluation of individual criteria x_j (equation 2).

$$u(V_i) = \sum x_j \quad (2)$$

In the last step the evaluations of individual variants $u(V_i)$ are arranged according to non-growing values (equation 3).

$$u(V_1) \geq u(V_2) \geq u(V_3) \geq \dots \geq u(V_i) \quad (3)$$

2.2 Sustainable development indicators by EUROSTAT

EUROSTAT (2018) defined seventeen groups of sustainable development indicators, there are: 1 – No poverty; 2 – Zero hunger; 3 – Good health and well-being; 4 – Quality education; 5 – Gender equality; 6 – Clean water and sanitation; 7 – Affordable and clean energy; 8 – Decent work and economic growth; 9 – Industry, innovation and infrastructure; 10 – Reduced inequalities; 11 – Sustainable cities and communities; 12 – Responsible consumption and production; 13 – Climate action; 14 – Life below water; 15 – Life on land; 16 – Peace, justice and strong institutions and 17 – Partnership for the goals. Each group of indicators consists of several sub-indicators that are focused on a particular area of sustainable development (TAB. 1). EUROSTAT (2018) defined Sustainable indicator set. It is a structured system along the 17 global sustainable development goals. Each goal is limited to six indicators and multipurpose indicators used to complement monitoring of each goal. Only sub indicators that were reported by all countries of the Visegrad Group (the Czech Republic, Slovakia, Poland and Hungary) in 2016 were used for analysis and comparison.

TAB. 1: Sustainable development indicators by groups and sub indicators

Group 1 (6): People at risk of poverty or social exclusion; People at risk of income poverty after social transfers; Severely materially deprived people; People living in households with very low work intensity; In work at-risk-of-poverty rate; Population living in a dwelling with a leaking roof, damp walls, floors or foundation or rot in window frames or floor
Group 2 (6): Obesity rate; Agricultural factor income per annual work unit (AWU); Government support to agricultural research and development; Area under organic farming; Gross nutrient balance on agricultural land; Ammonia emissions from agriculture
Group 3 (6): Life expectancy at birth; Share of people with good or very good perceived health; Smoking prevalence; Death rate due to chronic diseases; Death rate due to tuberculosis, HIV and hepatitis; Self-reported unmet need for medical care
Group 4 (6): Early leavers from education and training; Tertiary educational attainment Participation in early childhood education; Underachievement in reading, maths and science; Employment rate of recent graduates; Adult participation in learning
Group 5 (6): Physical and sexual violence to women experienced within 12 months prior to the interview; Gender pay gap in unadjusted form; Gender employment gap; Inactive population due to caring responsibilities; Seats held by women in national parliaments and governments; Positions held by women in senior management
Group 6 (6): Population having neither a bath, nor a shower, nor indoor flushing toilet in their household; Population connected to at least secondary wastewater treatment; Biochemical oxygen demand in rivers; Nitrate in groundwater; Phosphate in rivers; Water exploitation index
Group 7 (6): Primary & final energy consumption; Final energy consumption in households per capita; Energy productivity; Share of renewable energy in gross final energy consumption; Energy dependence; Population unable to keep home adequately warm
Group 8 (6): Real GDP per capita; Investment by institutional sectors; Young people neither in employment nor in education and training; Employment rate; Long-term unemployment rate; People killed in accidents at work
Group 9 (6): Gross domestic expenditure on R&D; Employment in high- and medium-high technology manufacturing sectors and knowledge-intensive service sectors; R&D personnel; Patent applications to the European Patent Office (EPO); Share of collective transport modes in total passenger land transport; Share of rail and inland waterways activity in total freight transport
Group 10 (6): Purchasing power adjusted GDP per capita; Adjusted gross disposable income of households per capita; Relative median at-risk-of-poverty gap; Inequality of income distribution; Income share of the bottom 40% of the population; Asylum applications
Group 11 (6): Overcrowding rate; Population living in households considering that they suffer from noise; Difficulty in accessing public transport; People killed in road accidents; Exposure to air pollution by particulate matter; Recycling rate of municipal waste
Group 12 (6): Consumption of toxic chemicals; Resource productivity and domestic material consumption; Average CO ₂ emissions per km from new passenger cars; Circular material use rate; Generation of waste excluding major mineral wastes; Recycling rate of waste excluding major mineral wastes
Group 13 (6): Greenhouse gas emissions; Greenhouse gas emissions intensity of energy consumption; Mean near surface temperature deviation; Climate-related economic losses; Contribution to the international 100bn USD commitment on climate related expending; Population covered by the Covenant of Mayors for Climate and Energy signatories
Group 14 (5): Surface of marine sites designated under the EU Habitats Directive; Estimated trends in fish stock biomass; Assessed fish stocks exceeding fishing mortality at maximum sustainable yield (Fmsy); Bathing sites with excellent water quality; Mean ocean acidity
Group 15 (6): Share of forest area; Surface of terrestrial sites designated under the EU Habitats Directive; Artificial land cover per capita; Estimated soil erosion by water; Common bird index; Grassland butterfly index
Group 16 (6): Death rate due to homicide; Population reporting occurrence of crime, violence or vandalism in their area; General government total expenditure on law courts; Perceived independence of the justice system; Corruption Perceptions Index; Population with confidence in EU institutions
Group 17 (5): Official development assistance as share of gross national income; EU financing to developing countries; EU imports from developing countries; General government gross debt; Shares of environmental and labour taxes in total tax revenues

Source: EUROSTAT (2018)

3 Results

In TAB. 2 there are values of sub indicators defined by EUROSTAT indicator set and meet the condition that were reported by all countries of the Visegrad Group (the Czech Republic, Slovakia, Poland and Hungary) in 2016. Each sub indicator is identified I_{ij} , where I is a shortcut for “sub indicator” and i indicates a group of indicators (1-17) and j identifies a number of sub indicators in the specific group of indicators.

Values x_j^1 represent the best value of each sub indicator which being assigned to the partial utility 1 and x_j^0 represent the worst value of the criterion on the given variation file which being assigned to the partial utility 0. Some sub indicators are expressed in absolute terms, others in percent or other units. In TAB. 2 there are 56 sub indicators from the EUROSTAT indicator data set.

TAB. 2: Sustainable sub indicators by Visegrad Group countries in 2016

I_{ij}	CZE	SLO	POL	HUN	x_j^1	x_j^0	I_{ij}	CZE	SLO	POL	HUN	x_j^1	x_j^0
I_{11}	13,3	18,1	21,9	26,3	13,3	26,3	I_{75}	32,8	59	30,3	55,6	30,3	59
I_{12}	9,7	12,7	17,3	14,5	9,7	17,3	I_{76}	3,8	5,1	7,1	9,2	3,8	9,2
I_{13}	4,8	8,2	6,7	16,2	4,8	16,2	I_{81}	16500	14600	11200	11300	16500	11200
I_{14}	6,7	6,5	6,4	8,2	6,4	8,2	I_{82}	11,1	15,9	13,8	14,1	11,1	15,9
I_{15}	8,2	6,2	11,6	26,7	6,2	26,7	I_{83}	76,7	69,8	69,3	71,5	76,7	69,3
I_{21}	155	173	125	163	173	125	I_{84}	1,7	5,8	2,2	2,4	1,7	5,8
I_{22}	3,9	1,8	0,8	3,3	3,9	0,8	I_{91}	1,68	0,79	0,97	1,21	1,68	0,79
I_{23}	14	9,75	3,72	3,48	14	3,48	I_{92}	44,4	44,4	36,6	45,6	45,6	36,6
I_{24}	63	19	40	27	19	63	I_{93}	26,5	38,2	24,8	33,8	38,2	24,8
I_{25}	19,3	15,3	18	12,9	12,9	19,3	I_{101}	25600	22400	19900	19700	25600	19700
I_{31}	79,1	77,3	78	76,2	79,1	76,2	I_{102}	19,5	26,1	24,4	18,8	18,8	26,1
I_{32}	60,4	66,5	58,5	59,6	66,5	58,5	I_{103}	24,7	24,5	21,3	22,5	24,7	21,3
I_{33}	0,7	2,3	6,6	1,3	0,7	6,6	I_{104}	114	18	258	2 875	2875	18
I_{41}	6,6	7,4	5,2	12,4	5,2	12,4	I_{111}	17,9	37,9	40,7	40,4	17,9	40,7
I_{42}	32,8	31,5	44,6	33	44,6	31,5	I_{112}	14,5	12,1	13	12,2	12,1	14,5
I_{43}	90,7	76,5	93,1	95,7	95,7	76,5	I_{113}	33,6	23	44	34,7	44	23
I_{44}	86,7	79,6	80,2	85	86,7	79,6	I_{121}	1,059	1,091	0,642	0,942	0,642	1,091
I_{45}	8,8	2,9	3,7	6,3	8,8	2,9	I_{122}	121,2	124,8	125,8	125,9	121,2	125,9
I_{51}	22,5	19,6	7,4	14	7,4	22,5	I_{151}	11,14	14,44	61,16	19,94	61,16	11,14
I_{52}	16	14,2	14,2	14	14	16	I_{161}	11,7	6,9	5,6	9,7	5,6	11,7
I_{53}	24,1	24,1	27,3	20,9	20,9	27,3	I_{162}	549	212	2181	473	212	2181
I_{54}	20,3	20,5	25,5	10,1	25,5	10,1	I_{163}	47	21	45	49	49	21
I_{55}	10,1	12,5	18,8	12,3	18,8	10,1	I_{164}	55	51	62	48	48	62
I_{61}	0,2	0,8	2,3	3,8	0,2	3,8	I_{165}	31	46	51	50	51	31
I_{71}	39,9	15,5	94,3	23,9	15,5	94,3	I_{171}	0,14	0,12	0,15	0,17	0,17	0,12
I_{72}	655	374	520	627	374	655	I_{172}	201,6	95,9	598	180,2	598	95,9
I_{73}	4,2	4,8	4,3	4,3	4,8	4,2	I_{173}	15288	5 976	26526	10845	2652	5976
I_{74}	14,9	12	11,3	14,2	14,9	11,3	I_{174}	36,8	51,8	54,2	76	36,8	76

Source: EUROSTAT (2018)

In TAB. 3 the method of linear partial utility functions in accordance with equation 1 is applied. The best values x_j^1 have been assigned the partial utility 1 and the worst values x_j^0 have been assigned the partial utility 0.

It was respected by all sub indicators if they were maximization sub indicators or minimization sub indicators.

TAB. 3: Application of the method of linear partial utility functions

I_{ij}	CZE	SLO	POL	HUN	I_{ij}	CZE	SLO	POL	HUN
I_{11}	1,00000	0,63077	0,33846	0,00000	I_{75}	0,91289	0,00000	1,00000	0,11847
I_{12}	1,00000	0,60526	0,00000	0,36842	I_{76}	1,00000	0,75926	0,38889	0,00000
I_{13}	1,00000	0,70175	0,83333	0,00000	I_{81}	1,00000	0,64151	0,00000	0,01887
I_{14}	0,83333	0,94444	1,00000	0,00000	I_{82}	1,00000	0,00000	0,43750	0,37500
I_{15}	0,90244	1,00000	0,73659	0,00000	I_{83}	1,00000	0,06757	0,00000	0,29730
I_{21}	0,62292	1,00000	0,00000	0,79375	I_{84}	1,00000	0,00000	0,87805	0,82927
I_{22}	1,00000	0,32258	0,00000	0,80645	I_{91}	1,00000	0,00000	0,20225	0,47191
I_{23}	1,00000	0,59601	0,02281	0,00000	I_{92}	0,86667	0,86667	0,00000	1,00000
I_{24}	0,00000	1,00000	0,52273	0,81818	I_{93}	0,12687	1,00000	0,00000	0,67164
I_{25}	0,00000	0,62500	0,20313	1,00000	I_{101}	1,00000	0,45763	0,03390	0,00000
I_{31}	1,00000	0,37931	0,62069	0,00000	I_{102}	0,90411	0,00000	0,23288	1,00000
I_{32}	0,23750	1,00000	0,00000	0,13750	I_{103}	1,00000	0,94118	0,00000	0,35294
I_{33}	1,00000	0,72881	0,00000	0,89831	I_{104}	0,03360	0,00000	0,08400	1,00000
I_{41}	0,80556	0,69444	1,00000	0,00000	I_{111}	1,00000	0,12281	0,00000	0,01316
I_{42}	0,09924	0,00000	1,00000	0,11450	I_{112}	0,00000	1,00000	0,62500	0,95833
I_{43}	0,73958	0,00000	0,86458	1,00000	I_{113}	0,50476	0,00000	1,00000	0,55714
I_{44}	1,00000	0,00000	0,08451	0,76056	I_{121}	0,06960	0,00000	1,00000	0,33214
I_{45}	1,00000	0,00000	0,13559	0,57627	I_{122}	1,00000	0,23404	0,02128	0,00000
I_{51}	0,00000	0,19205	1,00000	0,56291	I_{151}	0,00000	0,06586	1,00000	0,17596
I_{52}	0,00000	0,90000	0,90000	1,00000	I_{161}	0,00000	0,78689	1,00000	0,32787
I_{53}	0,50000	0,50000	0,00000	1,00000	I_{162}	0,82885	1,00000	0,00000	0,86745
I_{54}	0,66234	0,67532	1,00000	0,00000	I_{163}	0,92857	0,00000	0,85714	1,00000
I_{55}	0,00000	0,27586	1,00000	0,25287	I_{164}	0,50000	0,78571	0,00000	1,00000
I_{61}	1,00000	0,83333	0,41667	0,00000	I_{165}	0,00000	0,75000	1,00000	0,95000
I_{71}	0,69036	1,00000	0,00000	0,89340	I_{171}	0,40000	0,00000	0,60000	1,00000
I_{72}	0,00000	1,00000	0,48043	0,09964	I_{172}	0,21052	0,00000	1,00000	0,16789
I_{73}	0,00000	1,00000	0,16667	0,16667	I_{173}	0,45314	0,00000	1,00000	0,23693
I_{74}	1,00000	0,19444	0,00000	0,80556	I_{174}	1,00000	0,61735	0,55612	0,00000
Σ	34,83282	26,89587	25,24319	25,77728	#	1.	2.	4.	3.

Source: authors

In the last row of the TAB. 3 there are evaluations of individual variants $u(V_i)$ in accordance with equation 2 and the sequence “#” of Visegrad Group countries from the perspective of EUROSTAT sustainable development indicator data set in accordance with equation 3.

The Czech Republic achieved the best overall evaluation for the year 2016 from the Visegrad Group countries and analyzed sub indicators $u(V_1) = 34,83282$. Other states of the Visegrad Group countries have reached similar values and their ranking is as follows: Slovakia $u(V_2) = 26,89587$; Hungary $u(V_4) = 25,77728$ and Poland $u(V_3) = 25,24319$.

Conclusion

The Czech Republic achieved the best ranking of the analyzed indicators from Visegrad Group countries in 2016. The order of other states is as follows with minimal differences: Slovakia, Hungary and Poland. In the Czech Republic, the following areas should be supported by public finances: area of Gender equality, area of Life on land and area of Peace, justice and strong institutions. This could be a part of further research to identify specific relevant areas that should be supported in the future by public finances. Slovakia should focus on supporting the public finances of these areas: area of Quality education, area of Decent work and economic growth, area of Sustainable cities and communities and area of Responsible consumption and production. Hungary should focus on support for the areas with public finances: area of No poverty, area of Good health and well-being, area of Clean water and sanitation, area of Affordable and clean energy and area of Responsible consumption and production. Poland should strongly focus on supporting the public finances to these areas: area of Zero hunger, area of Good health and well-being, area of Affordable and clean energy, area of Industry, innovation and infrastructure and area of Reduced inequalities.

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INTERNAL AND EXTERNAL FACILITATING FACTORS FOR ESTABLISHMENT OF BENCHMARKING PARTNERSHIP BY THE CLUSTER ENTERPRISES IN THE CONTEXT OF THE EMPIRICAL RESEARCH – THE CASE OF POLAND

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Abstract: *The literature review leads to the conclusion that the phenomenon of benchmarking partnership of cluster enterprises has not been the subject of in-depth scientific research so far. The purpose of the paper is to identify and indicate the degree of impact of the key factors facilitating the establishment of this form of partnership. The thesis of the paper is the claim that proper identification of the catalogue of the main factors for the establishment of benchmarking partnerships in the cluster is an essential part of the management process of this form of partnership. The following research problem has been formulated: which group of facilitating factors (internal or external) has a greater positive impact on the establishment of benchmarking partnerships in the cluster? In the empirical part, the following quantitative research methods have been applied: direct research conducted among selected polish clusters enterprises with the use of questionnaire techniques and statistical methods. The theoretical part has been based on a research procedure that included indirect research focused on analysing literature sources and deductive reasoning.*

Keywords: *benchmarking partnership, best practices, cluster, facilitating factors*

JEL classification: L24, M15, M21

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Introduction

Benchmarking is a powerful tool for improvement in various fields of business activity. It refers to gathering information by the companies what others are doing, usually to evaluate whether they are operating efficiently or identify areas for improvement (Sharma, Iqbal & Victoriano, 2013, p. 352). B. Andersen (1995, p. 214) introduces relationship benchmarking as one of the type of external benchmarking, where previous cross-organisational relations are favourable for exchange of information between potential benchmarking partners.

Clusters can be characterized as “relatively dense networks of enterprises and organisations, the value chains of which are connected but not necessarily through what we usually understand by economic transactions” (Van Dijk & Sverisson, 2003, p. 185). All economic actors who directly contribute to the dominant production process of a region are partners in this network (Cooke, 2003, p. 3). Clusters are made up not only of physical flows of inputs and outputs, but also include the intense exchange of business information, know-how, and technological expertise, both in traded and un-traded forms (Sölvell, 2008, p. 12). Thus, cluster participants may establish long-term

partnership cooperation in fulfilment of common projects and cluster initiatives resulting in the improvement of market performance and competitiveness of involved partners.

As a result, the existing cooperation of enterprises in various areas within the cluster may limit or eliminate potential barriers in the process of active benchmarking due to the fact that:

- 1) benchmarking partners know each other, which reduces the time required to gain overall information concerning the partner,
- 2) each benchmarking partner recognises the added value of benchmarking, in form of gaining benefits from processes and operations improved by the other benchmark partner,
- 3) growing trust and involvement of all parties of the cross-organisational relations increases the possibility of improvement of relation competences,
- 4) cooperating parties of the relationship strive for tightening the relations in order to gain benefits resulting from the effect of synergy and limiting the number of conflict-triggering situations.

The review of the literature leads to a conclusion that the benchmarking partnership phenomenon has not been the subject of any previous in-depth scientific analyses. For the purposes of this paper, the term "benchmarking partnerships" shall mean "mutual beneficial exchange of best business practice information which should lead to improved performance for all the organisations involved" (Bendell, Boulter & Gatford, 1997, pp. 124–125).

It must be emphasised that benchmarking partnership of cluster enterprises is an important and interesting field of scientific research, in particular in the context of the paradigms of relation and cooperation of enterprises in network organisations. None of the researchers has performed theoretical analyses in terms of the possibility of benchmarking adjustment to the needs of cluster members in the aspect of development of the inter-organisational partnership relations paradigm. The knowledge in this scope is very little. The concept of intra-cluster benchmarking was first used and explained by the Author of this paper (see Szydełko, 2015, pp. 456, 458, 461–464) and this issue has been developed by her in the Ph.D Thesis.

According to the Author, the essence of benchmarking partnership of enterprises within a cluster is a mutually beneficial exchange of information between enterprises participating in a cluster, concerning their performance and best practices in various fields of activity, according to partnership rules, that leads to improvement of performance of the parties involved in the benchmarking process (micro level) and improvement of the cluster competitive advantage (meso level).

1 Objective and methodology

In this paper, the Author intends to present the results of the empirical research focused on the recognition of the impact of internal and external facilitating factors for establishment of benchmarking partnership by the Polish cluster enterprises. The purpose of the paper is to identify and indicate the degree of impact of the key factors facilitating the establishment of this form of partnership. The thesis of the paper is the claim that proper identification of the catalogue of the main factors for the establishment of benchmarking partnerships in the cluster is an essential part of the management process of this form of partnership. The research problem has been formulated in

the form of the following research question: which group of facilitating factors (internal or external) has a greater positive impact on the establishment of benchmarking partnerships in the cluster?

The theoretical part has been based on a research procedure that included indirect research focused on analysing literature sources and deductive reasoning. In the empirical part, the following quantitative research methods have been applied: direct research conducted among selected Polish cluster enterprises with the use of survey techniques and statistical methods. Since the literature lacks information concerning the procedure of analysis of this form of partnership and due to unavailability of any standardised and verified research tools that could be used in an attempt to explain the specified research issue, an own analysis procedure has been developed and special research tools have been determined. The survey questionnaire with a covering letter has been sent to 434 enterprises participating in 10 selected clusters having registered offices in the Subcarpathian Voivodeship in Poland. The clusters have been selected for the purposes of the direct research based on the following 6 criteria:

- 1) the cluster has at least one valid document confirming its existence,
- 2) the cluster has a defined and clear economic profile,
- 3) the cluster is characterised by varied structure of entities (at least 10 cluster members were required),
- 4) the cluster has an active coordinator, who provides services for the benefit of the members,
- 5) cluster members actively and regularly contact each other,
- 6) coordinator agrees to help in the dissemination of the research tool among the cluster members.

The data gathering stage was conducted from 2 November until 30 December 2016. Finally, 41 enterprises submitted filled survey questionnaires, which gives the response rate of 9.45 percent.

2 Research results and discussion

Considering the significance of factors and their impact on the shape of intra-cluster benchmarking, internal (corporate) factors and external factors within the cluster and the benchmarking group are crucial. In case of external factors originating in the macro-environment, the impact on that form of cooperation of enterprises within the cluster is much weaker and less evident. That is why these factors were not included in further analysis.

As part of the conducted survey, the participants were asked to evaluate the strength of the positive effect of selected variables (29 favourable factors) on establishing benchmarking partnership within a cluster. In the survey questionnaire, the respondents used a 5-grade Likert scale, where 1 indicated very low positive impact, 2 – small positive impact, 3 – medium positive impact, 4 – high positive impact and 5 – very high positive impact.

For the purposes of an in-depth analysis focused on comparison of the degree of impact of a group of 9 internal and 20 external factors on establishment of benchmarking partnership within a cluster, basic descriptive statistics have been determined. Table 1 presents a summary of classic measures, including arithmetic mean and standard deviation, calculated for all internal facilitating factors (FI)

and external facilitating factors (FE) identified with the use of the research tool. In further considerations, the arithmetic mean of score will be referred to as the impact indicators of individual factors (IF). The summary is a ranking of 29 factors arranged in the order of decreasing arithmetic mean of score given by individual cluster enterprises. The factors have been arranged from the highest to the lowest score in terms of their positive impact on benchmarking partnership.

TAB. 1: The ranking of factors favourable for establishing benchmarking partnership by cluster members participating in the research.

Internal and external facilitating factors for establishment of benchmarking partnership by the Polish cluster enterprises	Arithmetic mean (indicator of impact of the factor – IF)	Standard deviation
FI-4. Positive attitude of the management towards the idea of learning from peers within the cluster	4.54	0.64
FE-15. High level of mutual trust in a cluster	4.46	0.71
FI-1. Wide knowledge of the leadership on benchmarking partnership	4.22	0.85
FI-5. Positive attitude of team members towards the idea of learning from peers within the cluster	4.17	0.74
FE-11. Social proximity of enterprises within the cluster	4.17	0.77
FE-16. Implementation of joint projects and undertakings within the cluster	4.17	0.83
FI-9. Relational competence of the enterprise	4.15	0.73
FI-2. Wide knowledge of team members on benchmarking partnership	3.93	0.72
FE-27. Focus of potential partners on reciprocity	3.90	0.54
FE-21. Effective communication system supporting the exchange of information	3.88	0.64
FI-7. Experience in knowledge, information and internal communication management	3.85	0.88
FE-14. Cognitive proximity of cluster members	3.85	0.76
FI-3. Previous experience in effective implementation of benchmarking	3.66	0.91
FE-20. Mutual understanding of benchmarking motives	3.63	0.86
FE-19. Convergence of benchmarking goals set by the enterprises	3.54	0.90
FE-28. Perceiving benchmarking partnership as low-risk cooperation	3.49	0.84
FI-6. Risk management capability in building cluster relations	3.39	0.97
FI-8. Capability to cover the expenses related with benchmarking within the cluster	3.39	0.92
FE-25. Equal rights and benefits for benchmarking partners	3.39	1.20
FE-12. Organisational closeness of enterprises within the cluster	3.37	0.83
FE-23. Symmetry of involvement of enterprises in fulfilment of benchmarking goals	3.37	0.83
FE-29. Adaptation capability of cluster benchmarking companies	3.29	0.78

FE-24. Symmetry of involvement of resources for benchmarking purposes	3.20	0.98
FE-22. Possibility of using the IT tool in benchmarking	3.17	1.05
FE-18. Medium or high level of cluster maturity	3.10	0.94
FE-10. Geographic proximity of enterprises within the cluster	2.88	1.10
FE-26. Balance between short-term and long-term benchmarking goals	2.78	0.79
FE-17. Critical mass of the cluster	2.71	0.81
FE-13. Institutional closeness of enterprises within the cluster	2.56	0.95

Clarifications: FI - internal facilitating factor, FE - external facilitating factor.

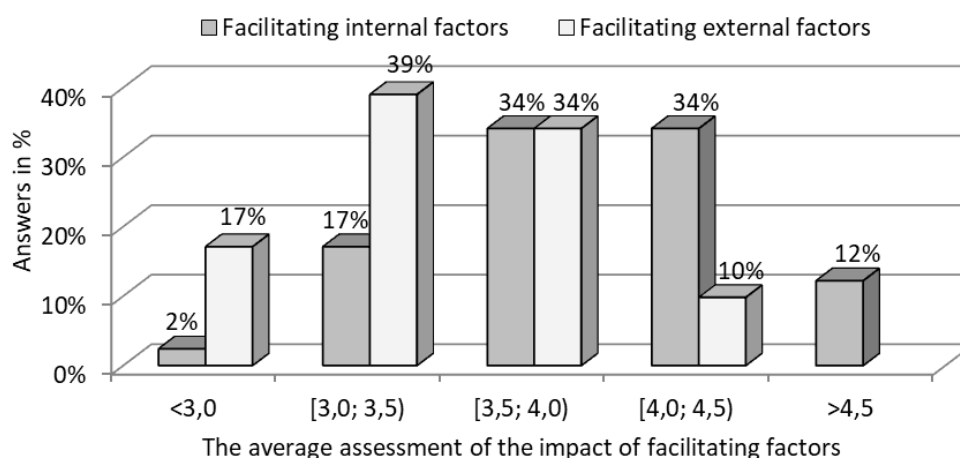
Source: Author's own work based on the research results.

The analysis of values of impact indicators (IF) of individual facilitating factors allows to distinguish a group of 7 factors (FI-4, FE-15, FI-1, FI-5, FE-11, FE-16, FI-9) that in the respondents' opinion had the greatest effect on establishing benchmarking partnership within a cluster ($IF \geq 4.0$). It must be pointed out that the highest ranks belonged to: positive attitude of the management towards the idea of learning from peers within the cluster ($IF=4.54$), high level of mutual trust in a cluster ($IF=4.46$) and wide knowledge of the leadership on benchmarking partnership ($IF=4.22$).

The ranking of facilitating factors for establishing benchmarking partnership within a cluster prepared in the decreasing order of impact factor values allows to give an explanation to the research question specified above. The graphical presentation of the group of internal factors included in Table 1 helps to explain the significance of internal and external factors for the intra-cluster benchmarking process. Corporate factors have the highest ranks. This may lead to a conclusion that internal factors are characterised by higher positive impact on the process of establishing benchmarking partnership within a cluster.

The key role of internal factors is confirmed in the graphical presentation of the results (average score) in the form of a histogram. Figure 1 presents the percentage of average score of the impact of internal and external facilitating factors in 0.5 point intervals.

FIG 1: Percentage of average score of the impact of internal and external facilitating factors.
Source: Author's own work based on the research results.



While analysing the relations of individual ranges of average scores with the percentage of respondents, it can be concluded that average scores of internal factors mostly fall in the interval of [3.5; 4.5), while in case of external factors, within the interval of [3.0; 4.0).

Conclusions

The purpose of the paper was to identify and indicate the degree of impact of the key factors facilitating the establishment of benchmarking partnership by the Polish cluster enterprises in the context of the empirical research. The indicated cognitive gap in the knowledge on the intra-cluster benchmarking based on partnership required a significant conceptual work and statistical data analysis. This paper shall contribute to filling this gap.

The key facilitating factors for a benchmarking partnership according to a Polish cluster enterprises surveyed are: positive attitude of management to the idea of learning from others in the cluster, high level of mutual trust, wide leadership knowledge of the benchmarking partnership, positive attitude of team members to the idea of learning from others, social proximity of enterprises, implementation of joint projects and undertakings in the cluster and high level of relational competence of the company.

Internal facilitating factors have a greater positive impact on the establishment of benchmarking partnerships in the cluster than external facilitating factors.

To conclude, it should be noted that this concept is undoubtedly a response to the needs of today's enterprises forming clusters, that search for solutions allowing to increase efficiency and effectiveness of performed processes, to improve the competitive advantage of their individual companies and the whole cluster. Thus the idea of intra-cluster benchmarking partnership is a new way of thinking about the creation of competitiveness of enterprises within a cluster.

The effect of the research efforts are the implications both for the management theory and the management practice in cluster enterprises. This paper presents a valid, important and interesting

scientific issue concerning the benchmarking partnership of cluster enterprises. The author believes that the results of this research may become a new point of view in the continuing discussion of the management theoreticians specialised in inter-organisational relations management, benchmarking, clusters and knowledge management. These issues are also important in the practical perspective, since the number of cluster enterprises that shape their strategic growth path by building and developing relations with other entities, is increasing. Appropriate building and development of benchmarking partnership within a cluster requires relevant methodological guidelines, including the knowledge of the internal and external facilitating factors for establishment of this form of partnership. The considerations presented herein have confirmed the correctness of the thesis, that proper identification of the catalogue of the main factors for the establishment of benchmarking partnerships in the cluster is an essential part of the management process of this form of partnership.

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THREE-DIMENSIONAL HISTOGRAM VISUALIZATION OF THE PERFORMANCE OF LINGUISTIC APPROXIMATION OF ASYMMETRICAL TRIANGULAR FUZZY NUMBERS

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Abstract: *The linguistic approximation transforms outputs of mathematical models (real numbers, intervals, fuzzy numbers,...) into natural language. This is especially useful in situations, when the users lack proper mathematical background (managers, laymen) or need to make decisions quickly. However, the performance of linguistic approximation depends heavily on the chosen distance of fuzzy numbers. Verification of the appropriateness of the chosen distance measure is thus crucial. Yet methods for the analysis of linguistic approximation methods for asymmetrical fuzzy numbers are scarce at best. In the paper a new visualization method for the analysis is proposed and demonstrated on a chosen distance of fuzzy numbers. The proposed method uses three-dimensional histograms to provide understandable overview of the properties of the selected linguistic approximation method and visualizes the outcomes of the approximation.*

Keywords: *linguistic approximation, fuzzy numbers, asymmetry, distance, histogram*

JEL classification: *C44*

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Introduction

The issue of linguistic approximation (LA) has recently received some well-deserved attention in various papers (Yager, 2004; Talášek & Stoklasa, 2016). Linguistic approximation can be seen as the basis for the ability of transforming mathematical outputs (particularly fuzzy ones) into the expressions in common language. As such it opens the doors for the communication of model users with the model in a language they understand well. Replacing the formal description of the outputs of mathematical models with a natural one provides many benefits (understandability, usability by laymen, etc.), but there are also several shortcomings of this transition to “natural language” description – the most important of which might be the distortion of information originally present. Unfortunately, even the methods recently proposed for the analysis of the appropriateness of LA in various contexts and using various distance/similarity measures may provide outputs that are difficult to interpret by inexperienced users. This is true particularly when LA of asymmetrical fuzzy numbers is considered. In this case the visualization of the results of the analysis can be tricky, since the areas of objects approximated by different linguistic terms may be overlapping (Talášek & Stoklasa, 2016). In this paper we suggest a 3-D histogram representation of the outputs of LA performance analysis for asymmetrical fuzzy numbers. Our goal is to facilitate easy analysis of the

appropriateness of LA and to make the results of LA-analytical methods easily interpretable for less-experienced users.

1 Preliminaries

Fuzzy sets were first introduced by Zadeh (1965). This section presents the basic notations of the theory of fuzzy sets. Let U be a nonempty set (the universe of discourse). A *fuzzy set* A on U is defined by the mapping $A : U \rightarrow [0,1]$. For each $x \in U$ the value $A(x)$ is called a *membership degree* of the element x in the fuzzy set A and $A(\cdot)$ is called a *membership function* of the fuzzy set A . $\text{Ker}(A) = \{x \in U | A(x) = 1\}$ denotes a *kernel* of A , $A_\alpha = \{x \in U | A(x) \geq \alpha\}$ denotes an α -*cut* of A for any $\alpha \in [0,1]$, $\text{Supp}(A) = \{x \in U | A(x) > 0\}$ denotes a *support* of A .

A fuzzy number is a fuzzy set A on the set of real numbers which satisfies the following conditions: (1) $\text{Ker}(A) \neq \emptyset$ (A is *normal*); (2) A_α are closed intervals for all $\alpha \in (0, 1]$ (this implies A is *unimodal*); (3) $\text{Supp}(A)$ is bounded. A family of all fuzzy numbers on U is denoted by $\mathcal{F}_N(U)$. A fuzzy number A is said to be defined on $[a, b]$, if $\text{Supp}(A)$ is a subset of an interval $[a, b]$. The real numbers $a_1 \leq a_2 \leq a_3 \leq a_4$ are called *significant values* of the fuzzy number A if $[a_1, a_4] = \text{Cl}(\text{Supp}(A))$ and $[a_2, a_3] = \text{Ker}(A)$, where $\text{Cl}(\text{Supp}(A))$ denotes a closure of $\text{Supp}(A)$.

The *cardinality* of a fuzzy number A on $[a, b]$ is a real number $\text{Card}(A)$ defined as $\text{Card}(A) = \int_a^b A(x) dx$ and can be considered as a measure of uncertainty of the fuzzy number A . The *centre of gravity* of a fuzzy number A on $[a, b]$ for which $a_1 \neq a_4$ is defined by the formula $\text{COG}(A) = \int_a^b x A(x) dx / \text{Card}(A)$. For a fuzzy singleton (A for which $a_1 = a_4$) we can define $\text{COG}(A) = a_1$.

The fuzzy number A is called *linear* if its membership function is linear on $[a_1, a_2]$ and $[a_3, a_4]$; for such fuzzy numbers we will use a simplified notation $A \sim (a_1, a_2, a_3, a_4)$. A linear fuzzy number A is said to be *triangular* if $a_2 = a_3$. We will denote triangular fuzzy numbers by an ordered triplet $A \sim (a_1, a_2, a_4)$. A triangular fuzzy number $A \sim (a_1, a_2, a_4)$ is called *symmetrical* if $a_2 - a_1 = a_4 - a_2$. Otherwise it is called *asymmetrical*. More details on fuzzy numbers and computations with them can be found for example in Dubois and Prade (1980) or Klir and Yuan (1995).

A *fuzzy scale* on $[a, b]$ is defined as a set of fuzzy numbers T_1, T_2, \dots, T_s on $[a, b]$, that form a Ruspini fuzzy partition (Ruspini, 1969) of the interval $[a, b]$, i.e. for all $x \in [a, b]$ it holds that $\sum_{i=1}^s T_i(x) = 1$ and the T 's are indexed according to their ordering. A *linguistic variable* (Zadeh, 1975) is defined as a quintuple $(\mathcal{V}, \mathcal{T}(\mathcal{V}), X, G, M)$, where \mathcal{V} is the name of the variable, $\mathcal{T}(\mathcal{V})$ is the set of its linguistic values (terms), X is the universe on which the meanings of the linguistic values are defined, G is a syntactic rule for generating the values of \mathcal{V} and M is a semantic rule which to every linguistic value $\mathcal{A} \in \mathcal{T}(\mathcal{V})$ assigns its meaning $A = M(\mathcal{A})$ which is usually a fuzzy number on X . A linguistic variable is called a *linguistic scale*, if the meanings of its linguistic values form a fuzzy scale.

Linguistic scales are frequently chosen as the linguistic variables for LA. LA in general means assigning a linguistic value of a given linguistic scale to a given fuzzy object. This is frequently done based on the distance or similarity of fuzzy sets – the linguistic value (either of the linguistic scale in its original or extended form, or of a subset of its linguistic terms selected in accordance with some criteria) with the meaning closest or most similar to the approximated fuzzy object is assigned as the linguistic approximation.

2 Linguistic approximation of triangular fuzzy numbers

The linguistic approximation of fuzzy outputs of mathematical model consists of two steps. In the first step the set of $n \geq 2$ appropriate linguistic terms $\mathcal{T}_1, \dots, \mathcal{T}_n$ (and their meaning represented by fuzzy numbers) that suitably represent the possible outputs of mathematical model must be specified by the user of the model (therefore it is ensured that the user will understand to final result of linguistic approximation). Usually a fuzzy scale is assumed as the underlying structure. In the second step the linguistic term \mathcal{T}^* (from the set $\mathcal{T}_1, \dots, \mathcal{T}_n$) which represents the output of the model best is chosen. The process of choosing the term \mathcal{T}^* is studied in the further text.

One of the frequently used methods of linguistic approximation is the so called “*best-fit*” approach (Talášek and Stoklasa, 2017). In this approach, each linguistic term $\mathcal{T}_i, i = 1, \dots, n$ is represented by a fuzzy number T_i and the distance between this fuzzy number and the output of the model *Out* is computed. The fuzzy number T^* that is the closest to the *Out* is found and the respective linguistic term \mathcal{T}^* is selected as the result of LA. Instead of the distance it is also possible to use a similarity measure – in that case the fuzzy number that is the most similar to *Out* is found). The problem is that there exist various distance measures of fuzzy numbers with various properties and the choice of the distance affects the result of linguistic approximation. Therefore, it is critical for the purposes of linguistic approximation to know the properties of considered distance measures (and their performance in LA) before one of them is selected.

Talášek et al. (2017) propose a framework for the visualization of the performance of linguistic approximation (with chosen distance/similarity measure) of symmetrical triangular fuzzy numbers. In this framework, each symmetrical triangular fuzzy number is unambiguously represented by a point in the two-dimensional space by its centre of gravity (on the x-axis) and length of the support (on the y-axis). The colour of the point represents the resulting linguistic approximation (linguistic term).

Identical framework is used by Talášek and Stoklasa (2016) for the visualization of the performance of linguistic approximation of asymmetrical triangular fuzzy numbers. The problem is that the representation is not unambiguous (i.e. fuzzy numbers $A \sim (1,1,4)$ and $B \sim (0,3,3)$ have same centre of gravity and length of support and therefore are represented by the same point in the two-dimensional space). The authors suggested to split the results into several subfigures (splitting is based on the resulted linguistic terms) to ensure that there is no information distortion.

In the next chapter we propose a different approach to the visualization of the performance of LA on asymmetrical fuzzy numbers on a specific example of the Bhattacharyya distance and triangular fuzzy numbers. The added value of the proposed approach lies in its ability to estimate relative frequencies of assigning specific linguistic terms to fuzzy objects belonging to the given 3-D histogram bin (based on its COG and length of support). These estimates can be obtained using any reasonable method for the random generation of asymmetrical fuzzy numbers (as long as the method ensures that any asymmetrical triangular fuzzy number may be generated; given the specified precision of computations). The precision of the estimation is dependent on the number of generated fuzzy numbers. Generalization to different distance and similarity measures and to different types of fuzzy numbers is straightforward.

3 The proposed 3-D histogram visualization method presented on an artificial example

The presented method will be demonstrated on the distance of fuzzy numbers called *modified Bhattacharyya distance* (Aherne, Thacker & Rockett, 1998):

$$d(A, B) = \sqrt{1 - \int_U \sqrt{A^*(x) \cdot B^*(x)} dx}$$

where $A^*(x) = A(x)/\text{Card}(A)$ and $B^*(x) = B(x)/\text{Card}(B)$. In other words, given a linguistic variable the most appropriate LA will be selected as the linguistic value of the variable, for which the Bhattacharyya distance of its fuzzy-number meaning to the approximated fuzzy set (fuzzy numbers) is the lowest.

For the purpose of the explanation of the proposed visualization technique a set $O = \{O_1, \dots, O_{100000}\}$ of 100 000 triangular asymmetrical fuzzy numbers on $[0,1]$ representing the outputs of a mathematical model was randomly generated. The generation of each fuzzy number was done in two steps – first, three real numbers from $[0,1]$ interval were randomly generated. Subsequently, those numbers were ordered in ascending order and this triplet is used as a base for significant values of triangular fuzzy number. This approach to the generation does not guarantee a uniform coverage of the universe of all possible triangular asymmetrical fuzzy numbers (fuzzy numbers with COG close to 0.5 and with larger supports are more frequent – see FIG. 1). This is, however, not a problem in the analysis and graphical representation.

Two characteristics were chosen to represent the generated fuzzy numbers in a 2-dimensional space: COG and the length of support. The first being a representation of location (even though less-informative in the case of asymmetrical fuzzy numbers) and the second being a measure of uncertainty. The universe of COGs of the generated fuzzy numbers (i.e. $[0,1]$) and the universe of the possible lengths of the supports of these fuzzy numbers (i.e. $[0,1]$) were both uniformly divided into 25 parts. This results in a 25 times 25 bin 3-D histogram presented in FIG. 1.

FIG. 1: Three-dimensional histograms of the characteristics of the 100 000 randomly generated fuzzy numbers used for the analysis. 25 times 25 bin representation (left), 10 times 10 bin representation (right).

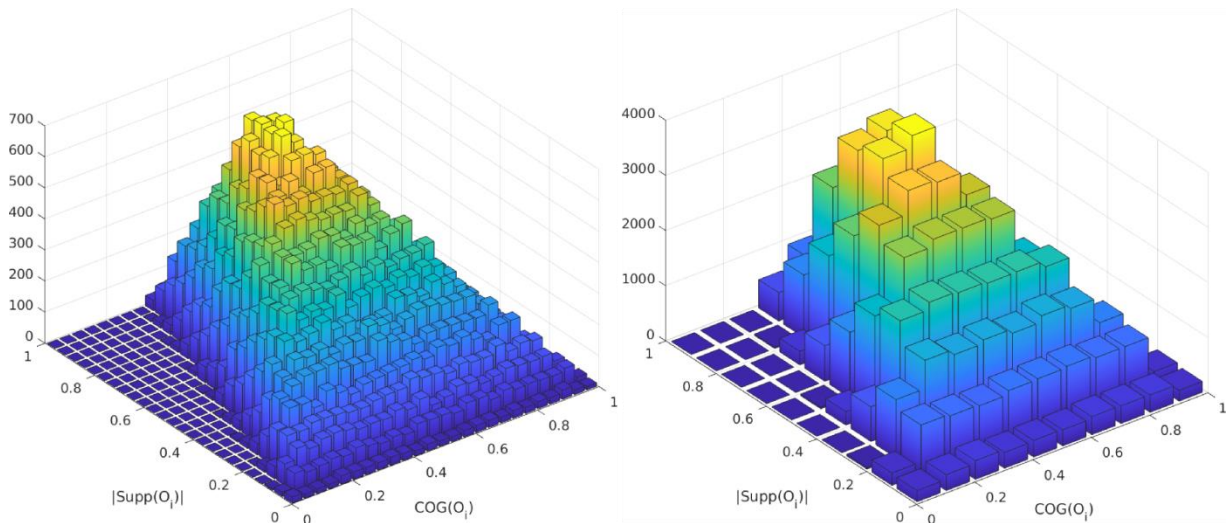
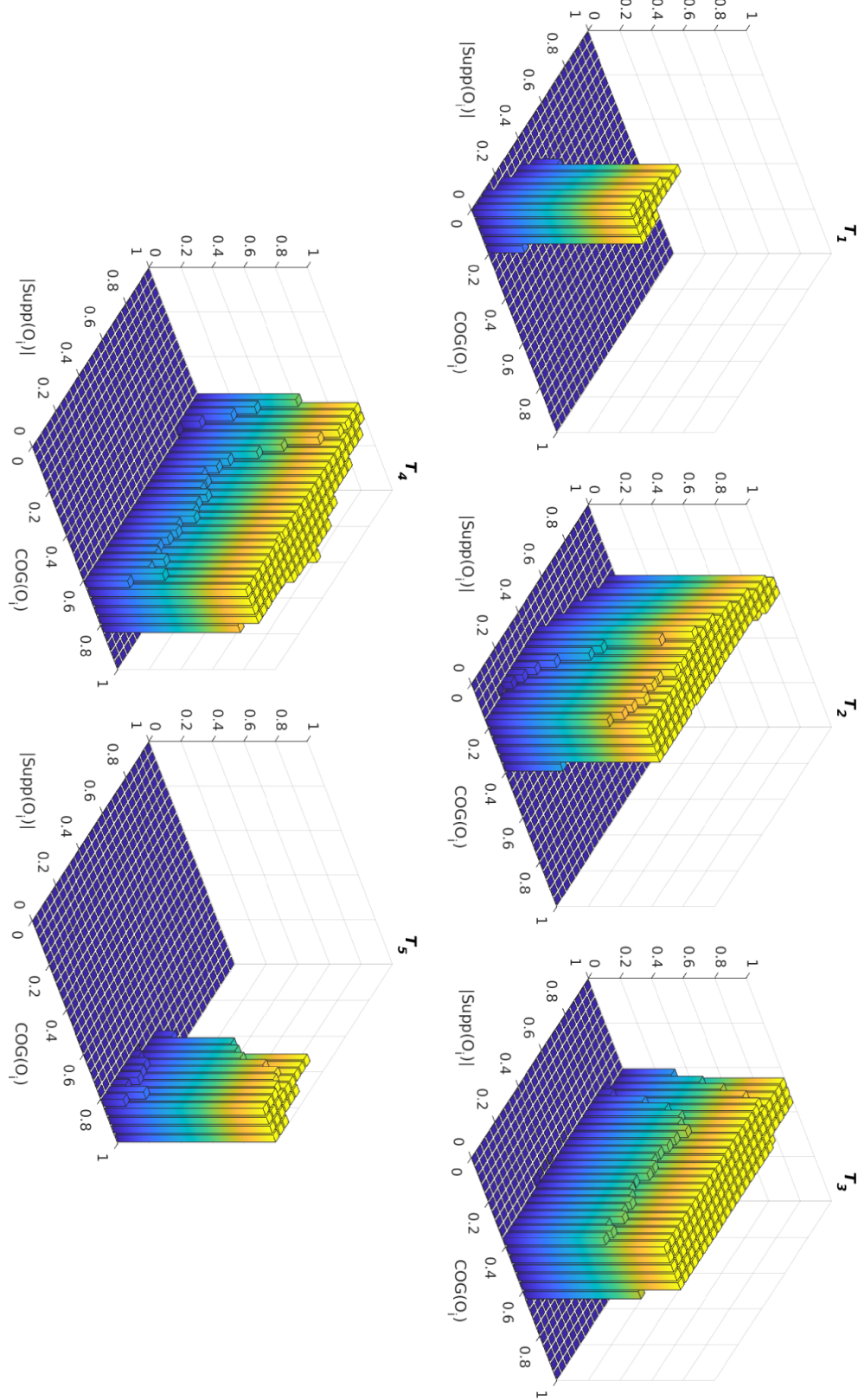


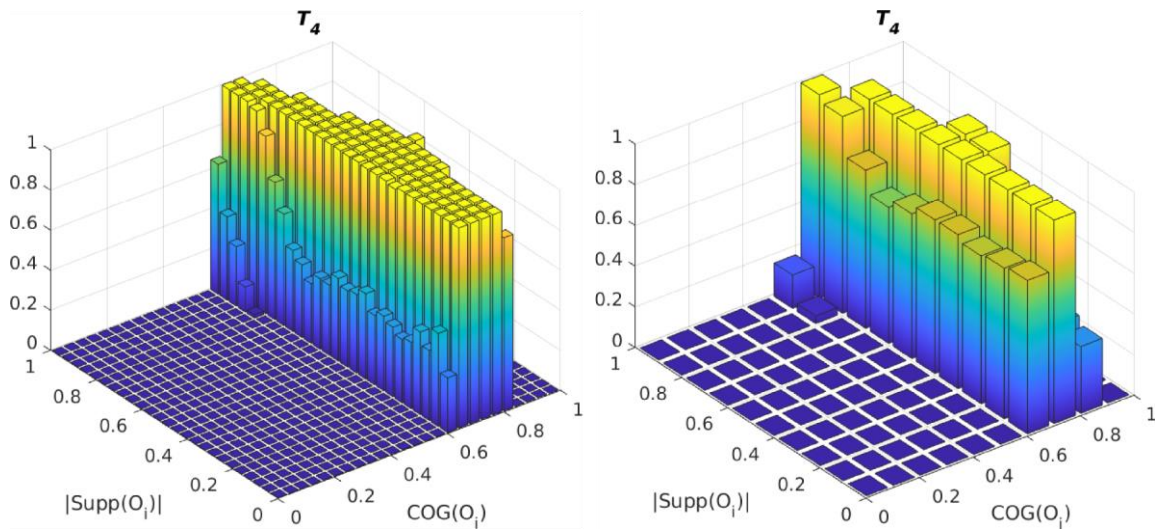
FIG. 2: Three-dimensional histogram representations of the results of the linguistic approximation of asymmetrical triangular fuzzy numbers. The bins are characterized by the COD of the fuzzy numbers and by the length of their supports. Each 3-D histogram summarizes the frequencies of suggesting the given linguistic term as the appropriate LA for the fuzzy numbers with characteristics belonging to the given bin.



Five linguistic terms $\mathcal{T}_1, \dots, \mathcal{T}_5$ that form a linguistic scale were chosen with the respective meanings $T_1 \sim (0, 0, 0.25), T_2 \sim (0, 0.25, 0.5), T_3 \sim (0.25, 0.5, 0.75), T_4 \sim (0.5, 0.75, 1), T_5 \sim (0.75, 1, 1)$.

The results of the numerical example can be found in FIG. 2. Note, that FIG. 2 splits the graphical summary into five subfigures analogously to Talášek and Stoklasa (2016). Each subfigure of FIG. 2 represents the relative frequency of assigning the given linguistic term as LA for fuzzy numbers belonging to the respective bin. Although the use of histograms introduces a slight loss of information w.r.t. the approach proposed by Talášek and Stoklasa (2016), the limited amount of bins facilitates the comparison of the subfigures. It is now easy to see whether two corresponding bins in different subplots have nonzero height – in such case fuzzy numbers with similar (possibly even identical) characteristics can be assigned different linguistic approximations. Even though we have lost some information constructing the 3-D histograms (see FIG. 2), we can still obtain the same conclusions concerning the performance of Bhattacharyya distance as did Talášek and Stoklasa (2016). Note that even for a 10 times 10 bin 3-D histogram we can still clearly see that e.g. the result of the LA is less dependent on COG of the approximated fuzzy number when its length of support is high (see FIG. 3). In other words the reduction of information does not prevent us from identifying the important characteristics that were identified in the full information case (Talášek & Stoklasa, 2016). Moreover we can now obtain an estimate of the relative frequency of assigning specific linguistic terms for each bin. Note that such a piece of information cannot be obtained unless the bins are introduced.

FIG. 3: Three-dimensional histogram summarizes the frequencies of linguistic term \mathcal{T}_4 as the appropriate LA for the fuzzy numbers with characteristics belonging to the given bin. 25 times 25 bin representation (left), 10 times 10 bin representation (right). The dependence on the length of support is apparent for COG close to 0.5 in both subfigures.



Conclusion

The paper deals with the issue of the assessment of performance of linguistic approximation of asymmetrical fuzzy numbers. It proposes a 3-D histogram representation of the results of linguistic approximation. This representation allows for the estimation of relative frequencies of use of specific linguistic terms as linguistic approximation of fuzzy numbers with similar characteristics (COG and

length of support define each bin). Even though the construction of histograms slightly distorts the information, important patterns are still recognisable. The proposed method relies on simulation to obtain the estimates and as such can be easily implemented with various distance/similarity measures and types of asymmetrical fuzzy numbers.

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ANALYSIS OF THE ADOPTED SIMPLIFICATIONS IN THE NON-COMPLIANCE WITH THE PRUDENCE PRINCIPLE IN THE ACCOUNTING OF MICRO ENTITIES IN THE LIGHT OF LEGAL REGULATIONS AND CONDUCTED SURVEYS

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Abstract: *The prudence principle, resulting from the Accounting Act, is one of the key accounting principles used for the correct valuation of assets and liabilities. In particular, for this purpose various elements of the financial result should be taken into account regardless of its amount, e.g. provisions for any known risk, or depreciation write-offs on fixed assets. Under the Accounting Act, however, micro entities may opt out of its application, regulating this issue individually in the adopted accounting policy. The goal of the paper is to analyze whether micro-entities benefit from this simplification and to what extent as well as to check whether they use some of its instruments in practice, despite the provision about the application of this simplification in accounting policy. The tools adopted to attain the research goal were the following: the analysis of legal acts and of the literature, as well as a questionnaire survey.*

Keywords: *micro entities, prudence principle, accounting principles, simplified financial statement, assets and liabilities valuation*

JEL classification: M41, M48

Grant affiliation:

Introduction

Every entity in Poland, keeping accounting records and preparing financial statements in accordance with the Accounting Act, applies the accounting principles stipulated therein, adopted and described in the document “accounting policy” (there is no valid general pattern of this document; each unit creates this document individually for its needs under the Accounting Act). One of the most important accounting principles necessary for the correct valuation of assets and liabilities is the prudence principle (Accounting Act, 2018).

The prudence principle is specified in Article 7 of the Accounting Act, according to which individual components of assets and liabilities are valued using the prices (costs) actually incurred for their purchase (manufacturing), in a manner consistent with the prudence principle. For this purpose, in the financial result, regardless of its amount, some elements should be taken into account, such as the reduction of value in use or commercial value of assets, including those in the form of amortization or depreciation write-offs or provisions for any known risk to the entity, impending losses and the outcome of other events.

Among the entities applying the provisions of the Accounting Act, the Act distinguishes some micro-entities that may give up the prudence principle in the valuation of individual assets and liabilities. These micro entities include, among others: trade unions, employers' organizations, chambers of commerce and others, unless they conduct economic activity. The adoption of such a simplification is optional, so the decision in this case should always be taken by the head of the entity and described in the documentation of the adopted accounting standards.

Simplifications in the accounting of micro entities are the subject of many studies, both in Poland (Strojek-Filus, Adamek-Hyska, Tkocz-Wolny & Wszelaki, 2017) and in other countries, e.g. Croatia (Sacer & Decman, Sever, 2015), Romania (Neag & Masca, 2012), the Czech Republic (Busova, Drinovska, Glaserova & Otavova, 2016) or Australia (Dyt & Halabi, 2007).

The goal of the paper is to analyze whether micro-entities benefit from this simplification and to what extent as well as to check whether they use some of its instruments in practice, despite the provision about the application of this simplification in accounting policy. The tools adopted to attain the research goal were the following: the analysis of legal acts and of the literature, as well as a questionnaire survey.

1 The concept and meaning of the prudence principle in accounting and the possibility of its non-application by micro-entities

The task of accounting is to present a true and fair view of the economic reality and achievements of the entity. In order for the information coming from the accounting system to be true (clear) and reliable, certain principles or rules of keeping books and preparing financial statements must be respected. The principles of the entity's accounting policies include, among others: accrual basis, going concern, matching of revenues and costs, continuity, prudence, prohibition of offsetting, materiality, superiority of content over form. All business entities in Poland applying the provisions of the Accounting Act are required to adopt accounting principles (Accounting Act, 2018; Gos & Hońko, 2015).

One of the key principles used for the correct valuation of assets and liabilities is the prudence principle (the conservatism principle). Expressions of prudence on the valuation of assets and liabilities and determination of the financial result on the entity's activities have been accompanying accounting since the fifteenth century, and the pioneer of this principle was Jaques Savary, who in 1675 issued a commentary to the commercial law "Le parfait negotiant" (Gos & Hońko, 2015).

Prudence can be interpreted as a reaction of persons preparing financial statements to the risk and uncertainty associated with business operations. Therefore, prudence manifests itself in the faster recognition of "bad news" in the financial statements, which is to prevent the disclosure and sharing of unrealized profits. Hence prudence refers to the time of recognition and method of valuation of balance sheet items and the moment of recognition of items in the income statement (Gos & Hońko, 2015; Hońko, 2008). The prudence principle is specified in Article 7 of the Accounting Act, according to which individual components of assets and liabilities are valued using real prices (costs) incurred for their purchase (manufacturing), taking into account the prudence principle. For this purpose, the financial result, regardless of its amount, should include in particular:

1) decreases in the useful or commercial value of assets, including those in the form of depreciation or amortization write-offs;

- 2) only absolutely certain other operating income and extraordinary gains;
- 3) all other operating costs and extraordinary losses incurred;
- 4) provisions for any risk known, impending losses and the outcome of other events.

These events should also be accounted for when they are disclosed between the balance sheet date and the date on which the accounting books are actually closed.

The reference to the prudence principle can also be found in the following provisions of the Accounting Act: in Article 8, paragraph 1; in Article 28, paragraph 1, point 7; in Article 37, paragraph 4; in Article 39, paragraph 3; in Article 41, paragraph 1 (Accounting Act, 2018).

The main obligation resulting from the application of the prudence principle is the revaluation of assets to their recoverable value if it is lower than the value at which a given asset is shown in the accounting books as at the balance sheet date (Accounting Act, 2018).

The prudence principle also arouses controversy, as its application sometimes leads to a conflict with the accrual accounting and matching principles, expressed in the fact that the Accounting Act requires to account for the following in the financial result of the current year, regardless of its size:

- a) only absolutely certain other operating revenues (e.g. from the sale of fixed assets),
 - b) all other operating costs incurred in a given year (e.g. results of revaluation of assets),
- which excludes the possibility of creating accruals from the above entries (Gos & Hońko, 2015; Hońko, 2008).

The application of the prudence principle by entity is reflected in its financial statements, as presented in Table 1.

TAB. 1: Reflecting the application of the prudence principle in the entity's financial statements (Gos, Hońko & Szczypa, 2014)

Balance Sheet	Income Statement	Notes
a ban on recognizing resources that will not provide economic benefits or cannot be reliably measured, the obligation to update the valuation of assets (operational and financial) for impairment and the prohibition of self-updating in plus of fixed and intangible assets), creating provisions against liabilities	asymmetric recognition of costs and revenues consisting in recognizing only other operating revenues and extraordinary profits as income, while including all other items of this type as other operating and extraordinary losses charging the financial result with the costs of unused production capacity, applying adjustments to the value of assets in minus to the financial result, at the same time increasing the revaluation capital from the revaluation in plus.	explanations regarding the valuation of assets, such as: a detailed description of changes in the value of groups of property, plant and equipment, intangible assets and long-term investments, the amount of revaluation write-offs and explanation of the reasons for their creation, list of asset-backed liabilities of the entity, description of the reasons for the creation and reversal of provisions, disclosure of contingent liabilities, including promissory notes and warranties granted by the entity, including bills of exchange.

In general, every enterprise in Poland, keeping accounting records and preparing financial statements in accordance with the Accounting Act, applies accounting principles adopted and described in the document “accounting policy” (Strojek-Filus, Adamek-Hyska, Tkocz-Wolny & Wszelaki, 2017). However, the amendment to the Accounting Act in 2014 introduced the status of a micro-entity – according to this provision, a micro-enterprise based on Article 7, paragraph 2a of the Act may not comply with the prudence principle in the valuation of individual assets and liabilities. The amendments to the Accounting Act in Poland in 2014 were dictated by the regulations of the Directive of the European Parliament and of the Council 2013/34/UE of 26 June 2013 (Directive 2013/34 /EU).

These micro-entities include entities listed in Article 3 paragraph 1a point. 2, or (Accounting Act, 2018): trade unions, employers’ organizations, chambers of commerce, representations of foreign entrepreneurs in the understanding of the provisions of the Act of 6 March 2018 on the rules of participation of foreign entrepreneurs and other foreign entities in the course of trade in the Republic of Poland, socio-professional farmers’ organizations (e.g. agricultural groups, farmers’ associations, rural housewives’ groups), professional self-government organizations (e.g. medical professions, legal professionals and others), crafts self-government organizations (e.g. guilds, chambers of commerce) and the Polish Bureau of Motor Insurers, unless they conduct economic activity.

The Accounting Act indicates that the prerequisite for the adoption of the micro-entity status and thus the possibility of applying simplifications (also in the area of non-compliance with the prudence principle and preparation of a simplified financial report according to Annex No. 4 to the Accounting Act) is the decision of the authority approving the financial report. In the absence of such a decision, the entity prepares the report according to Annex No. 1 and cannot benefit from simplifications (Kuzior, 2016; Tkocz-Wolny, 2015; Wszelaki, 2016).

According to the Accounting Act, resignation from the application of the prudence principle is a right, not an obligation of these entities, therefore it is optional, which means that the decision in this case should always be taken by the head of the entity and described in the documentation of the adopted accounting standards – “Accounting policy”(Chluska, 2016; Szewieczek & Tkocz-Wolny, 2017).

2 The degree of knowledge and implementation of simplifications involving the non-application of the prudence principle in the accounting of micro-entities – empirical research

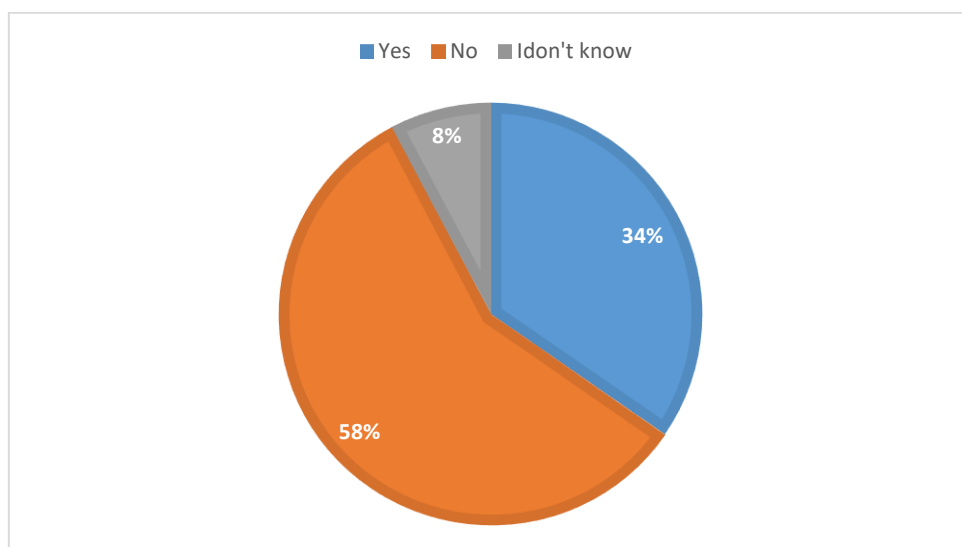
The questionnaire surveys were aimed at determining whether micro-entities conducting non-business activities use simplification based on non-compliance with the prudence principle. Moreover, the studies were to check whether despite the provision about the use of this simplification in accounting policy, the examined entities adopt some of its instruments in practice. The research was conducted among a group of respondents consisting of representatives (managers and accountants) of micro-entities not conducting business activity and accounting offices keeping accounting books of such entities. Twenty-six answers were used. The relatively low response rate achieved in this quantitative study should, however, be considered satisfactory, given that subjects of the study are very reluctant to participate in any research for many reasons, in particular: security, confidentiality of information or due to the high degree of autonomy. In view of the above, considering the objective circumstances of the study, the effective research sample $n = 26$ is, in our

opinion, acceptable and on its basis one can infer the phenomena of the whole group of entities. The survey consists of a questionnaire, seven single-choice questions (yes, no, I do not know), two multiple-choice questions (including the instruments of the prudence principle) and two additional descriptive questions.

The majority of the respondents were people with higher education degree (58%) and the occupational record ranging from 10 to 20 years of service (46%). Most of them (61%) were persons dealing with the entity's accounting (a chief accountant/accountant). There were 31% of representatives of service providers who keep accounting books. The majority of the respondents (31%) were the representatives of social and professional organizations of farmers' organizations and crafts economic self-government organizations (27%).

Analyzing the state of introducing the simplification of non-compliance with the prudence principle by micro-entities not conducting economic activity, it can be shown that only 34% (Figure1) of the respondents confirmed this fact. The majority of the respondents, 58% (Figure 1), do not adopt the prudence principle simplification, while the remaining 8% do not even know if such a simplification is applicable. This lack of knowledge probably results from ignorance of the provisions of the Accounting Act, because the same proportion of people (8%) answered that they do not know them.

FIG.1: The degree to which the prudence principle simplification has been implemented

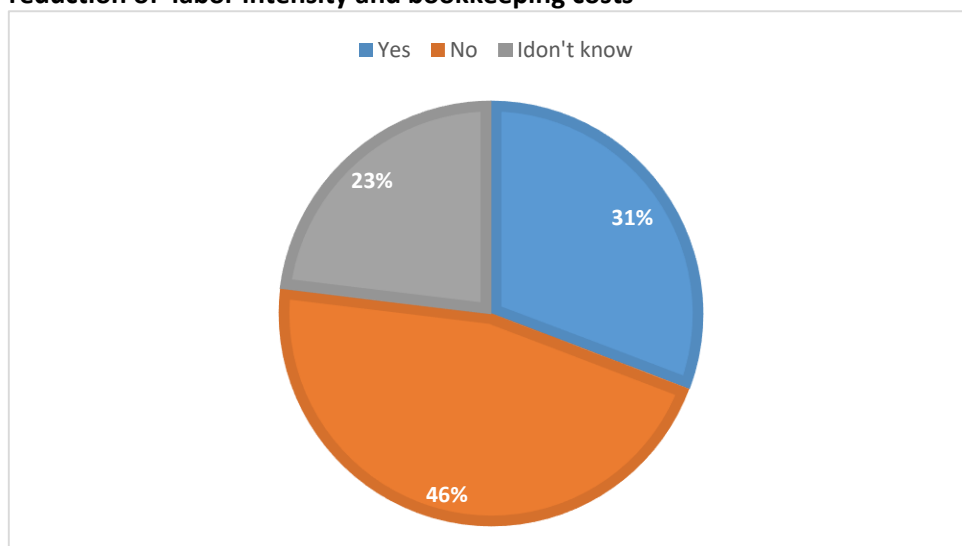


The respondents who adopted the prudence principle simplification have chosen the revaluation write-offs for assets and reserves from among its instruments as those not adopted by them. It is worth noting that the entities not complying with the prudence principle nonetheless use its selected instruments. These include amortization or depreciation write-offs, other operating expenses incurred and only absolutely certain other operating income.

Among entities adopting the prudence principle simplifications, there were entities (22%) that did not include such information in their accounting policy. On the other hand, among respondents who do not use the discussed simplifications (41%) such information was not provided.

One of the reasons for introducing simplifications in the accounting of micro-entities not conducting economic activity was to reduce the labor intensity and costs of keeping accounting books. Only 31% of respondents agree with this statement (Figure 2). Most of them, as much as 46% believe that the application of simplifications in the scope of the prudence principle did not contribute to reducing the labor intensity and costs of the entity. 23% of respondents did not take a stand on the issue.

FIG. 2: Impact of the prudence principle simplification in the accounting of micro-entities on the reduction of labor intensity and bookkeeping costs



Summing up the carried out research, it can be concluded that the use of the prudence principle simplifications of micro-entities not conducting business activity does not bring them benefits. Such a statement was expressed by 50% of respondents. 27% of respondents expressed negative opinion, and the remaining 23% did not express their opinion on the issue.

Conclusions

In general, all entities keeping accounting records and preparing financial statements in accordance with the Accounting Act are required to apply the prudence principle. The derogation from this principle applies only to certain micro-entities. The research shows that the level of implementation of simplifications in this respect is small. Only every third surveyed entity applies a simplification that does not comply with the prudence principle. This may be due to the lack of tangible benefits consisting in reducing the labor intensity and costs of the entity. Almost half of the respondents do not see the connection between the applied simplifications and the benefits for the entity. This position may result from the size of the surveyed entities, which due to their size rarely adopt such instruments of the prudence principle as write-offs of assets or reserves. However, it should be remembered that the option provided in the regulations is a right and not an obligation of the entities under examination. Both write-offs from assets and reserves on the part of liabilities give the opportunity to reliably present the financial situation of the entity. Perhaps the factor limiting the degree of implementation of the simplifications in question is the insufficient level of knowledge of the accounting law, which may be the result of frequent changes in it and the detail of applicable provisions. At the same time, it is worth noting that the entities that do not apply the discussed simplifications, record their choice in accounting policy and nonetheless adopt its selected

instruments. These include amortization and depreciation write-offs, other operating costs incurred and only absolutely certain other operating income.

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FUEL PRICE CHANGES IN SLOVAKIA – MATHEMATICAL MODEL

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Abstract: *Ten percent of family expenses are spent on petrol or diesel and they take a considerable part of the family budget. The usage and pricing of petrol results from factors such as crude oil prices, processing and distribution costs, local demand, the strength of local currencies, local taxation, and the availability of local sources of petrol. Since fuels are traded worldwide, the trade prices are similar. The price paid by consumers largely reflects national pricing policy. Petrol prices are reported weekly. The aim of our article is to create a mathematical model of fuel prices changes in Slovakia through the years 2015 -2018 and to forecast the most likely trends on a weekly basis.*

Keywords: *petrol prices, forecasting, Markov chain*

JEL classification: *Q56, Q51*

Grant affiliation: *This contribution was undertaken as parts of the research project 1/KKMaHI/2018, F-PEDAS, Žilinská univerzita v Žiline.*

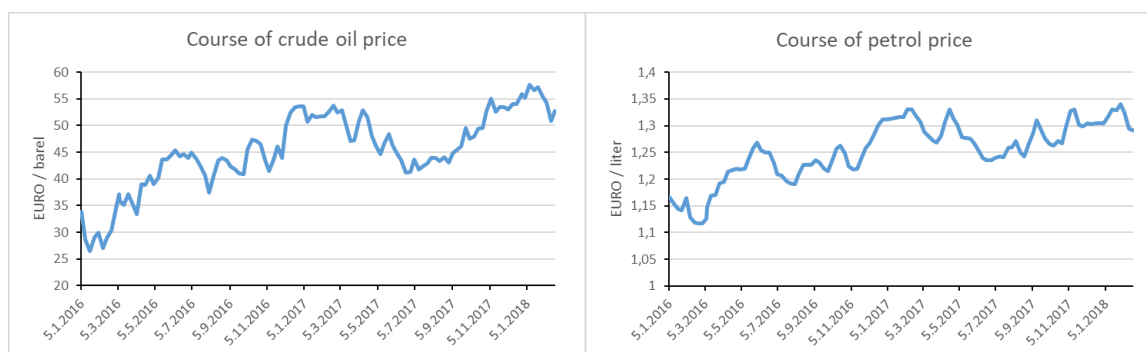
Introduction

Drivers of motor vehicles around the world monitor changes of price of fuel consumed by their cars or trucks. However, this problem does not concern only drivers. Nowadays, the transport of products for longer or shorter distances is an ordinary matter and therefore transport costs, which also include the price of fuel, significantly affect prices of most common goods. The demand for fuel is inflexible due to the fact that consumption does not change significantly even after a considerable increase in fuel prices, as people still need to travel for work or school and goods have to be delivered in any case. Ultimate consumers perceive lowering prices positively and increasing prices negatively. Often consumers feel that sellers do not take into account the cost change in final prices. R. Bacon in (Bacon, 1991) described the asymmetrical pattern of adjustment as “rockets and feathers”. It means that companies used their market power to set prices unjustifiably high relative to costs. In particular, it was observed that when companies faced with cost increases they rapidly adjusted prices upwards (as rocket), but when faced with cost decreases they adjusted prices downwards more slowly (as feathers), thus permitting a temporary level of high profits. In a long run, however, the price is declining and stabilizing at a level where sellers are profitable. The price of fuel in each country is generally affected by three things. Firstly, the global price of crude oil, the strength of that country's currency, and the taxes added by the local government. Fuel tax amounts can vary greatly in Europe, with each country setting their own levels.

1 Development of crude oil and petrol prices

The price of fuel in Slovakia is determined in two phases, namely in wholesale and retail phases. It is obvious that the retail price is affected, in particular, the wholesale price. The wholesale price is again influenced by the price of crude oil. Crude oil prices are the main driver of retail fuel prices in the long run (months and years). In the short run, exchange rates, tax policy, regulations, supply disruptions, and seasonal factors also play a role but these influences are minor compared to crude oil. Note that every 10 percent change in oil prices leads to about 3 percent change in fuel prices in Europe and about 7 percent change in the U.S. (Gasoline and diesel price, 2018). In principle, the higher the fuel taxes, the smaller the change in fuel prices for a given change in oil prices. In Slovakia taxes take about 53 % of the petrol price (the excise duty on fuel, e.g. 0.551 € per liter of petrol, the value added tax - 20 %, other fees, e.g. the charge for the administration of state material reserves, etc.). The retail price also includes the profit margin of end sellers, it is difficult to identify it, about 0.10 € per liter of petrol (Meheš & Stašková, 2017). Specifically, petrol and diesel prices on pumps in Slovakia are based on one to two-weeks average fuel prices on the Rotterdam market and they essentially copy the development of Brent crude oil prices. Fig. 1 shows the evolution of crude oil price and retail 95-octane petrol price in Slovakia over the last two years.

FIG. 1: Crude oil and retail petrol prices in Slovakia



Source: own elaboration based on (Ropa Brent, 2018) and (STATdat., 2018)

In the first step, we verified whether the change of the price of crude oil immediately affects the price of petrol, or there is a time shift in response. The value of correlation coefficient of crude oil price and retail 95-octane petrol price in Slovakia in the same week is 0.930888; it means the strong linear bond. If one takes into account one week shift of retail petrol price compared to crude oil price, the correlation coefficient is smaller 0.927976, and with two weeks shift is only 0.894439, so the time shift is not significant. One of possibilities to predict a future value of petrol price at a given week is the linear regression function $y = 0,0014x + 1,3793$, where y is the petrol price depending on time x , based on data 1.1.2015 - 25.2.2018. Coefficient of determination is $R^2 = 0,5979$. The main trend is increasing but there are periods of short decreasing. The aim of our paper is to forecast the situation in short time period (weeks), so the regression function does not seem to be the most appropriate.

2 Mathematical model of fuel price changes – Markov chain

Creation of a stochastic model to represent the price changing at various time periods has long been a nature of interest in market, business processes, and others. One of the approaches is to simulate changes as a random walk (Vojteková & Blažeková, 2016a) and (Vojteková & Blažeková, 2016b). Many scholars showed that modeling a market as a random walk was applicable and that a market may be viewed as having the Markov property. e.g. (Kendall & Hill, 1953). The purpose of our article is to model the fuel price changes in Slovakia over the period 2015 – 2018 via Markov chain.

Formally, let define a discrete time set $T = \{t_0, t_1, \dots, t_n, \dots\}, n \in N$ and a finite state space $S = \{s_0, s_1, \dots, s_m\}, m \in N$. Markov chain is a stochastic process $\{X(t_n)\}_{n \in N}$ with the property that for any $t_j \in T$ such, that $t_1 < t_2 < \dots < t_n$ is $s_{(t_j)} \in S$:

$$P[X(t_{n+1}) = s_{(t_{n+1})} \mid X(t_0) = s_{(t_0)}, X(t_1) = s_{(t_1)}, \dots, X(t_{n-1}) = s_{(t_{n-1})}, X(t_n) = s_{(t_n)}] = P[X(t_{n+1}) = s_{(t_{n+1})} \mid X(t_n) = s_{(t_n)}]. \quad (1)$$

This property of Markov chain means the probability that the chain moves from state $s_{(t_n)}$ to state $s_{(t_{n+1})}$ depends only on the state $s_{(t_n)}$ that it occupied before the step (Taha, 1995).

Let $p_{ij}(t_n, t_{n+1})$ denote the transition probability of going from the state s_i at time t_n to the state s_j at time t_{n+1} then

$$P[X(t_{n+1}) = s_j \mid X(t_n) = s_i] = p_{ij}(t_n, t_{n+1}). \quad (2)$$

The state vector $\vec{p}(t_n) = (p_{s_0}(t_n), p_{s_1}(t_n), \dots, p_{s_m}(t_n))$ describes the probability distribution of the states of the process at time t_n . The Markov property implies that the probability distribution at time t_{n+1} can be obtained from that at time t_n by

$$\vec{p}(t_{n+1}) = \vec{p}(t_n) \cdot P(t_n, t_{n+1}), \quad (3)$$

where $P(t_n, t_{n+1})$ is the matrix of elements $p_{ij}(t_n, t_{n+1})$.

The Markov chain is homogenous (in time) when $p_{ij}(t_n, t_{n+1}) = p_{ij}, \forall n \in N$, so the transition probability does not depend on time. Let the $(m + 1 \times m + 1)$ matrix of elements p_{ij} (transition matrix) is denoted P , then

$$\vec{p}(t_n) = \vec{p}(t_0) \cdot P^n, \quad (4)$$

i.e., the initial state vector $\vec{p}(t_0)$ and the transition matrix P determine the state vector $\vec{p}(t_n)$ at time t_n so the future state vector $\vec{p}(t_n)$ can be evaluated if the initial state vector and the transition matrix are known.

A chain is to have a stationary (or steady state) distribution, if there exists a state vector $\vec{\pi} = (\pi_j)_{s_j \in S}$ such that

$$\vec{\pi} = \vec{\pi} \cdot P \quad \text{and} \quad \sum_{s_j \in S} \pi_j = 1. \quad (5)$$

3 Fuel price changes

We used weekly 95-octane petrol prices in EUR per liter in the period 1.1.2015 - 25.2.2018 from (STATdat., 2018). Our purpose was to forecast the most likely change in price in the next week. The price c_n varied from 1.117 EUR to 1.396 EUR (165 data) and formed a sawtooth graph. Absolute price changes were not significant because they were similar, so we studied relative weekly changes in percentage z_n

$$z_n = \left(\frac{c_n}{c_{n-1}} - 1 \right) \cdot 100\%. \quad (6)$$

The changes varied in the interval $\langle -4.2857\%; 2.5641\% \rangle$. There are several possibilities to define the number of states and their scale. We divided the interval into four states $S = \{A, B, C, D\}$, based on the average value $\bar{z} = 0$ and the standard deviation $\sigma = 1.2\%$.

- state A $z_n < -1.2\%$ - great decrease;
- state B $-1.2\% \leq z_n < 0\%$ - small decrease;
- state C $0\% \leq z_n < 1.2\%$ - small increase;
- state D $1.2\% \leq z_n$ - great increase.

TAB. 1: Absolute numbers of transitions between states

starting /ending state	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	sum
<i>A</i>	7	14	0	1	22
<i>B</i>	8	33	15	8	64
<i>C</i>	4	15	17	9	45
<i>D</i>	3	2	13	14	32

Source: authors

We calculated transition probabilities p_{ij} between states. The maximum likelihood method has been applied to estimate the transition probability matrix under the certain assumptions (Bhat, 1971). Therefore, the transition probability p_{ij} can be obtained by the relative frequencies observed in the sample, i.e. $\hat{p}_{ij} = n_{ij}/n_i$, where n_{ij} denotes the number of transitions from state s_i to state s_j and $n_i = \sum_j n_{ij}$.

Consequently, the transition matrix P (Markov matrix) was estimated:

$$P = \begin{pmatrix} 0.318 & 0.636 & 0 & 0.046 \\ 0.125 & 0.516 & 0.234 & 0.125 \\ 0.089 & 0.333 & 0.378 & 0.200 \\ 0.094 & 0.063 & 0.406 & 0.438 \end{pmatrix}.$$

By using (4):

$$(1,0,0,0) \cdot P = (0.318, 0.636, 0, 0.046);$$

if the price decreased considerably in the previous week (the chain is in state A), we can expect the small decrease of price (state B with probability of 0.636) the most likely, or it can keep on great decrease (state A with probability of 0.318) in the following week.

$$(0,1,0,0) \cdot P = (0.125, 0.516, 0.234, 0.125);$$

if the state of price change was B (the small decrease) in the previous week, it may continue the small decrease (state B with probability of 0.516) the most probably or we expect the small increase (state C with probability of 0.234), the remaining states are equally likely 0.125 in the following week.

$$(0,0,1,0) \cdot P = (0.089, 0.333, 0.378, 0.200);$$

if the price change was the small growth (state C) in the previous week, we can expect that the next change will be the small growth too (state C with probability of 0.378) or the small decrease (state B with probability of 0.333) in the following week.

$$(0,0,0,1) \cdot P = (0.094, 0.063, 0.406, 0.438);$$

after the great growth (state D) in preceding week, the great growth is expected to continue (state D with probability of 0.438) or the small growth (state C with probability of 0.406) is predicted in the next week.

The steady state vector for relative price changes $\vec{\pi} = (0.135; 0.393; 0.276; 0.196)$ was calculated according (5). It means the majority of relative changes is of the small decrease (state B with probability of 0.393) or the small increase (state C with probability of 0.276). The great changes are less frequent (states A and D).

For the precise week the real value, the predicted value by linear regression (price) and the relative change of price z_n (based on the relative change in the previous week) are in Tab. 2.

TAB. 2: Real prices, estimated prices and states of relative change

week	real price	linear regression	z_n	state
23.4. – 29.4.2018	1.354	1.5487	2.49	D
30.4. – 6.5.2018	1.367	1.5501	0.96	C
7.5. – 13.5.2018	1.369	1.5515	0.15	C
14.5. – 20.5.2018	1.393	1.5529	1.75	D
21.5. – 27.5.2018	1.417	1.5543	1.72	D

Source: authors

It is seen there are the differences between the real prices and the predicted ones by linear regression. By Markov chain access, for example, if in the week 23.4. – 29.4.2018 the state of price was D, according to above mentioned, the state C or D are the most likely in the week 30.4. – 6.5.2018, and this is in accordance with the real situation. If in the week 30.4. – 6.5.2018 the state of price was C, the state C or B are the most likely.

Conclusion

The retail petrol price and its evolution is of a great interest. Transport costs including the price of fuel considerably affect prices of most common goods, so it is interesting to us to predict the fuel price in the next week. In our article we showed the close interrelatedness between crude oil prices

and retail 95-octane petrol prices in Slovakia taking into account the period 1.1.2015 - 25.2.2018 (correlation coefficient was 0.930888) and the time shift is not of great importance. We calculated linear regression function for petrol price $y = 0,0014x + 1,3793$, where y is the petrol price depending on time x , based on data 1.1.2015 - 25.2.2018. Coefficient of determination is $R^2 = 0,5979$. This way is suitable for outlook in long run period, since the main trend is increasing, but there are periods of short decreasing. The principal aim of our paper was to forecast the situation in short time period (following week), so we used Markov chain access. We defined four states: A - great decrease, B - small decrease, C - small increase, D - great increase on the average value and standard deviation of relative weekly changes of petrol price. We created Markov transition matrix and showed the most likely relative change in the following week on the known relative change of previous week. If we knew the relative change of price in any week, we can predict the most likely situation in the next week, so we can decide if it is better to replenish petrol in a car this week or following one. One can use multiple Markov matrix to forecast probability of changes in two, three, ... weeks. We calculated the steady state vector for relative price changes and it is seen that the majority of relative changes is of the small decrease of $(-1,2\%; 0\%)$ or the small increase of $(0\%; 1,2\%)$. We estimated and compared petrol prices in the weeks which were not taken into account in Markov matrix calculation and regression function formation. By using of regression function we can predict the specific future value, unlike that Markov chain access permits to estimate changes probabilities.

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EYETRACKING TECHNIQUES IN THE DIAGNOSIS OF QUALITY OF ON-LINE SERVICES FOR ELDERLY

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Abstract: *In this paper Author describes problem of on-line services quality examination. As a modern, effective analysing technique, Eyetracking is presented. This is followed by a presentation of selected research conducted in field of on-line services for elderly. This field is especially important due to specific needs of elderly users of on-line services and to progressive ageing process of societies.*

Keywords: *eyetracking, on-line services, elderly*

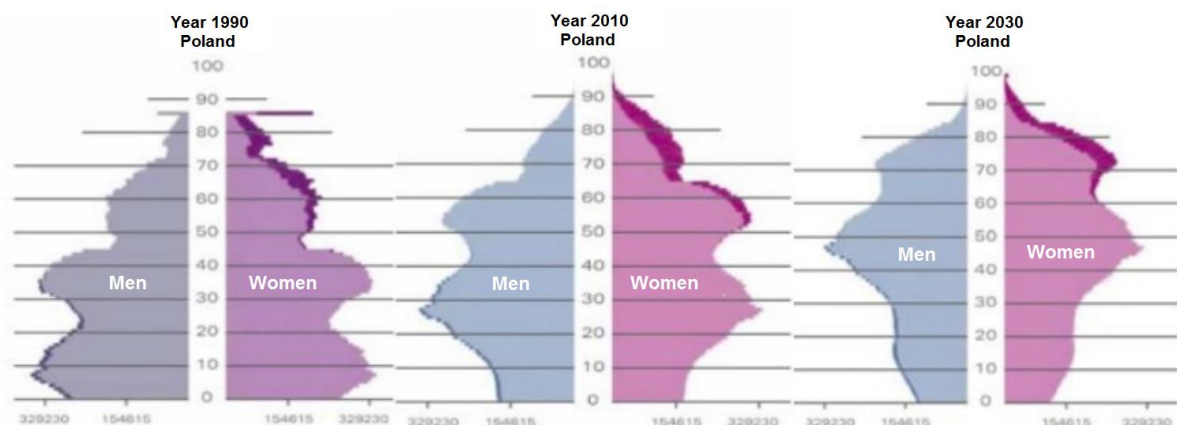
JEL classification: *L860, M150*

Grant affiliation:

Introduction

Demographic changes are seen as an important factor changing the current economic reality on the scale of economies, as well as technological changes. They result, especially in highly developed countries, from the decrease of children deaths number and at the same time, life expectancy increase, which results among others from advances in healthcare. These trends in the case of Poland can be illustrated as on Fig. 1

FIG. 1: Demographic trends in Poland

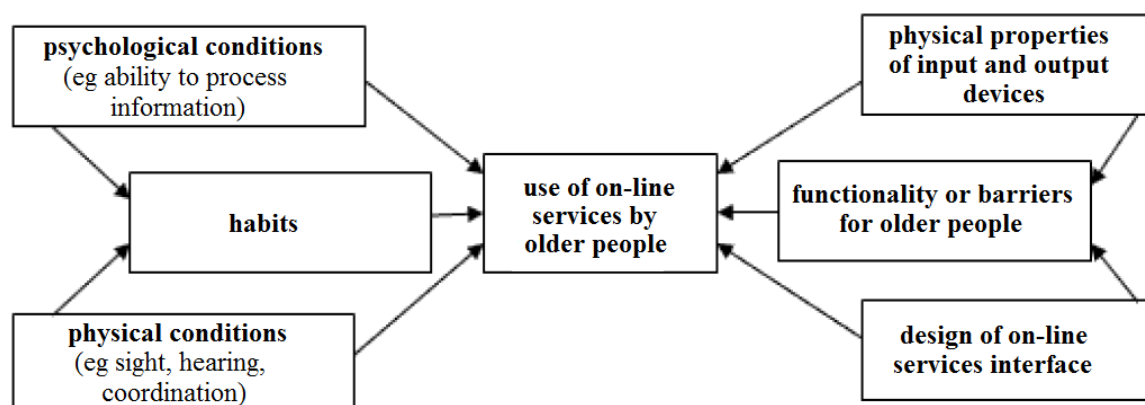


Usually this is being treated as a threat to economies. However, the increase in the average age of the population does not have to be read negatively. People under the age of 18, after all, have to be maintained and do not work on a permanent basis, while older people already have considerable capital of knowledge and experience. Thus, it can be seen that this demographic process will also cause a larger amount of experienced workforce (if only elderly will be able to stay on the market). This may enable use of the potential, knowledge and experience of older people, extension of working time during lifetime and shortening the retirement period. However, the acquisition of such development model, in which opportunities will be created to use the experience and knowledge of seniors may be not easy. This is especially important in context of continuous massive digitalization of markets and services. Special attention should be drawn to the development of information technology tools so that on the one hand, make them friendly to mature people, and on the other, introduce work models that would allow to use the strengths of older people, who already earned many years of employee experience. This creates a serious challenge, as use of IT systems and on-line services in modern enterprises is becoming more and more extensive and difficulties resulting from both psychological and physical limitations affecting older people turn use of on-line services more difficult for older people than for the young ones.

1 On-line services perception by older users

In general, one can say that the young generation, more than the older, draws attention to the possibility of using the Internet and computers in everyday life as a tool to have a good time and giving to use in social life. This is in stark contrast to the perception of the Internet by working people and change again with the entry into the period of the third age, which is characterized by a greater amount of time available. (Wachowicz, 2016). In order to effectively and effectively use the services on-line by older people it is necessary to identify correct factors causing difficulties in on-line services use by older people. Problems, which in extreme cases may lead to the so called digital exclusion and therefore inability, may be effectively presented on the market. (Redlarski, et al, 2011). Factors influencing on experiencing contact and use of on-line services by older people may be presented as on Fig. 2.

FIG. 2: A model of factors influencing use of on-line services by older people



As research show, one of problems perceived as difficulty in use of on-line services by older users is their too big complexity. Normally as Internet services grow older, they offer more and more functions and options, which are perceived as a positive feature. However, as one can derive from research, this becomes a source of problems for older Internet users. In this case services addressed to older users should remain simple and clear, offering basic, most valuable functions. Possible method that may allow address services to both younger and older users, might be introducing two different interfaces – a simple one, which offers only the basic functionality, which would be senior-friendly, and a second interface – an advanced one, which offers full functionality. What was of a great interest in research, in general elderly users haven't claimed that they have problems in mouse, computer and Internet usage. Such results are in contradiction with traditional, wide-spread project guides, which point that due to degraded manual and visual abilities elderly do have problems with precise use of mouse. (Wachowicz, et al, 2012). Such problems may lead to stress and digital exclusion. The findings showed that main factors of online services under investigation leading to less effective use were untypical elements, unexpected search criteria changes, and most important, over specification of search criteria, resulting in missing many possible offers. (Kossecki, et al, 2012). One of the methods for overcoming such problem may be positive stimulation. The findings show that activities encouraging seniors to use the Internet include searching for information and staying in touch with relatives and friends. Factors discouraging them include obtaining wrong results, necessity of registration, difficult vocabulary, moving elements on pages, spam and rude and aggressive comments. (Redlarski, et al, 2012) However, finding a real source of both positive and negative stimuli require research. Useful method in on-line services evaluation is Eyetracking. Together with its basic research techniques, it is further described in the following chapter.

2 Eyetracking and its techniques

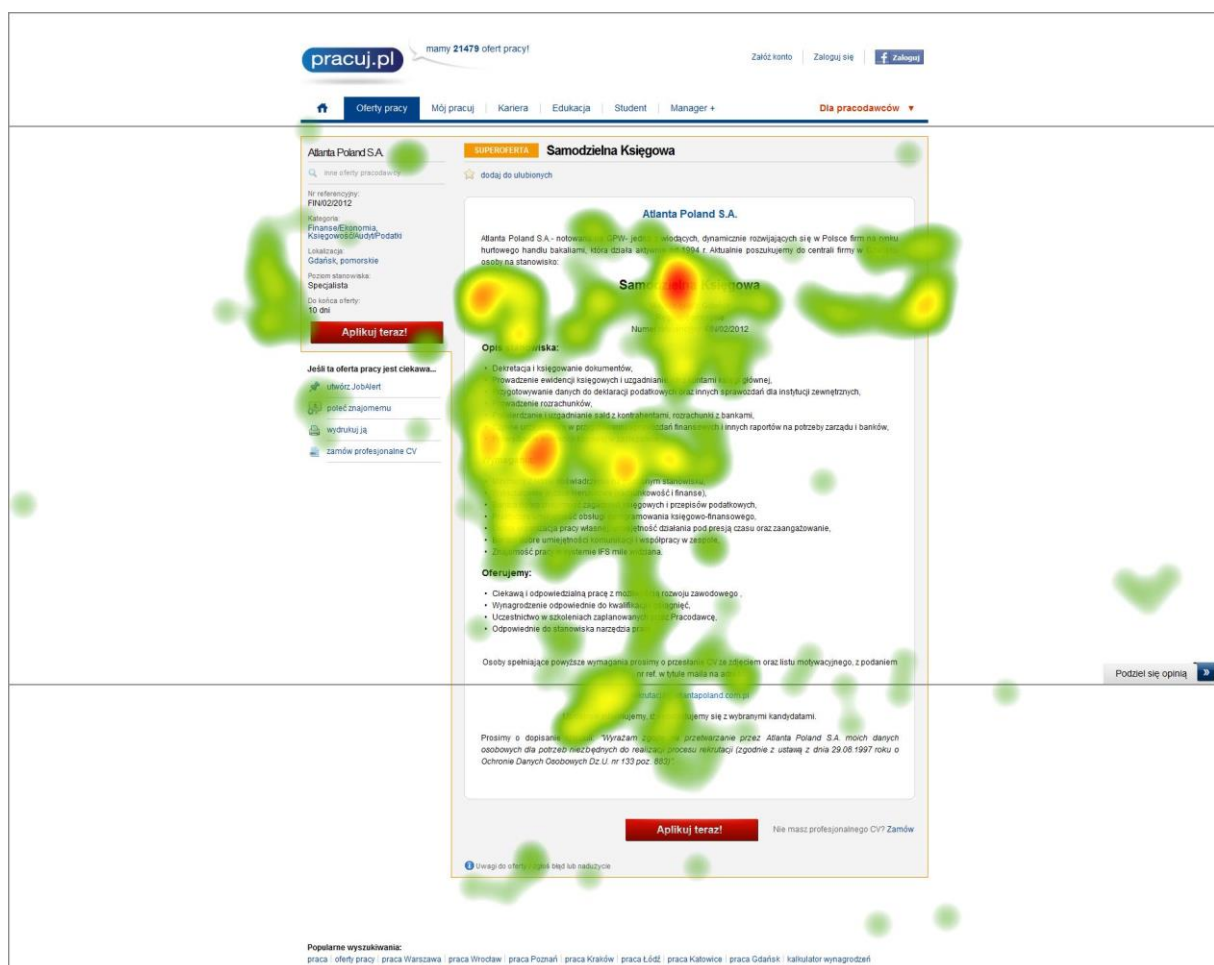
Eyetracking is a technique of tracking eye movements, usually with the help of infrared radiation, which allows determine what is currently being watched by the respondent. Very often it is used to track what is viewed on websites as the monitor screens have a fixed position in space, and therefore are relatively easy to process data collected during the eye movement study. Because the data is created by eyetrackers very quickly (the observed point is usually determined 25-500 times per second) and the result data simply determine the location in the space of the place the subject looks at, so they are absolutely incomprehensible to humans. Therefore, it became necessary to create methods for imaging the collected results so that they were legible and possible to be interpreted by a human being. (Manhartsberger, Zellhofer, 2005). Additionally, these methods are often accompanied by Think Aloud method, in which beside of eye movements, researchers note all statements and thoughts said by participants. They may collect also notes on respondents' behavior, which may be additional source of valuable information (Świerczyńska-Kaczor, Wachowicz, 2012). Currently, the most common and used techniques for imaging the results of eyetrackers are: Hetamaps, Gaze-plot charts, Clusters, Area of Interest Analysis. They have been characterized further.

2.1 Heatmaps

Heat maps (heatmaps) were created as the application of the imaging technique known from cartography - where the height is imaged using colors. Originally, the red color on the maps was determined high altitudes, yellow - medium and green smallest. This scale has been adopted - and in the heatmap technique, the points of his focus are applied to the image viewed by the respondent. It

is assumed that in the image viewed the areas in which the view was the most concentrated are illustrated in red, those which on average attract attention are shown in yellow, those that have only a minimal focus - they are illustrated in green. Areas that were not directly watched are left with the original filling. The respondents' attention may be calculated differently in this technique - the measures used are most often used (Bojko, 2009; Špakov, Miniotas, 2007) They may illustrate the number of times that a given area has attracted the subjects' eyesight, the time that the area was directly watched. In addition, the shape of the heatmap is influenced by the factors that shape the way of calculating the area of attention - the most important of which is the radius around the central point, which is affected by vision Sample heatmap is presented on Fig. 3 (Świerczyńska-Kaczor, Wachowicz, 2012).

FIG. 3: Sample Heatmap

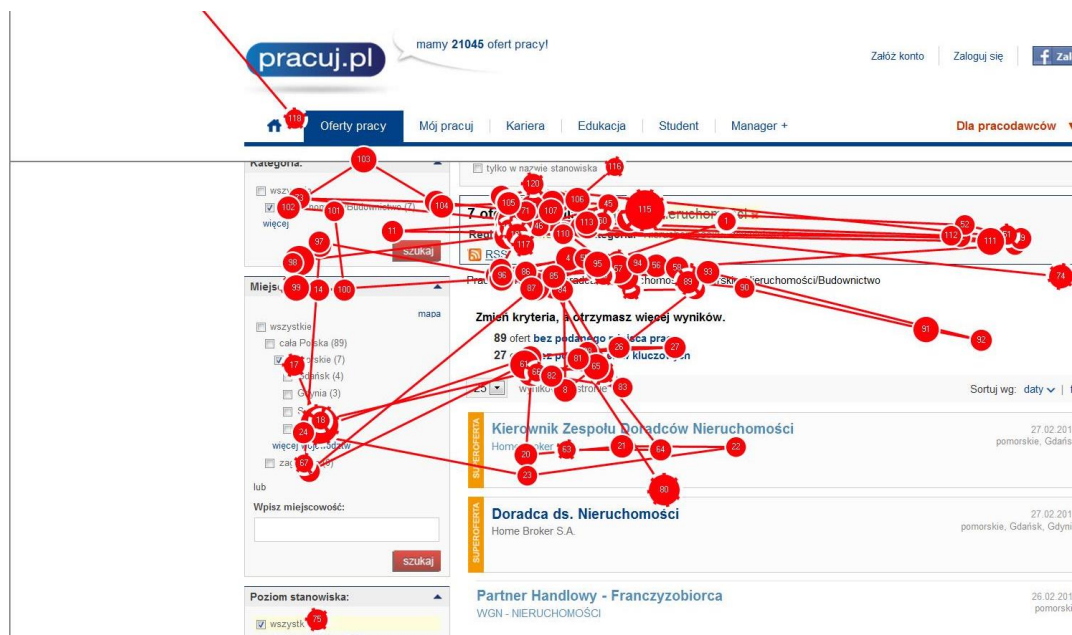


2.2 Gaze plots

Gaze plots allow you to track the movement of the focus point for a given person. They are an illustration of observation that people do not look continuously. The movements of the eyeballs are of rapid nature - they move quickly from point to point, in which points the conscious reception of the image takes place. These points are called saccades, and paths are between them - transits. The

gaze-plot charts illustrate both saccades and transitions. (Salvucci, Goldberg, 2000) The first ones are depicted as circles whose radius is directly proportional to the time of focusing attention (thus allowing differentiating the significance of observed points). The second one illustrates the path of eyeballs movement between the saccades. (Räihä, et al., 2005), Shrestha, Kelsi Lenz (2007) In addition, numbers are placed on the saccades indicating the order in which the given point was observed. An exemplary gaze-plot chart is illustrated on Fig. 4 (Świerczyńska-Kaczor, Wachowicz, 2012)

FIG. 4: Sample Gazeplot



2.3 Clusters

This technique allows you to automatically identify areas that naturally attract the attention of respondents. Their creation usually uses image processing algorithms and artificial intelligence. They are determined by locating these areas of the image presented to the respondents who had the highest number of saccades recorded. In some algorithms, the length of time for which respondents looked at identified points is also taken into account. (Santella, DeCarlo, 2004) When discussing this method, it should be noted that due to the automatic identification of areas of interest, this method can produce difficult to interpret results, and sometimes requiring manual correction, as automatic algorithms can combine several areas that are logically separate but close enough to each other that they cannot be automatically distinguished. Therefore, this method requires additional interpretation by the researcher.

2.4 Areas of Interest

Areas of Interest (AOI) are used in a similar way as Clusters, but the interpreted areas do not result from the study but are predetermined by researchers and should normally correspond to the logical components of the image being shown or the site being displayed. (Räihä, et al, 2005) It is a technique very often used to test the usability of websites, where in a natural way on the screen

displayed, we can distinguish areas that do not present content, such as: navigation (menu, buttons), areas related to identification (logos, headers) In addition, these areas, which are related to content, can also be divided thematically or functionally into smaller blocks. (Mealha, et al, 2012)

Conclusion

Use of IT systems and on-line services in modern enterprises is becoming more and more extensive. On the other hand, difficulties resulting from both psychological and physical limitations affecting older people turn use of on-line services more difficult for older people. This paper includes discussion on most important factors. A model of influence on on-line services by different factors has been presented. A modern, very effective technique in this field, eyetracking, together with its most commonly used methods, were presented. They enable research in field of online services and their older-users friendly design, which becomes a crucial point in area of modern on-line services quality.

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SHOULD THE GOVERNMENT PAY MORE TO PUBLIC SECTOR EMPLOYEES? IMPACT OF SUBJECTIVE, STEREOTYPICAL WAGE PERCEPTION AND CORE SELF-EVALUATIONS ON JOB SATISFACTION AND WELLBEING IN PUBLIC AND PRIVATE SECTOR WORKERS

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Abstract: *There are many stereotypes about work in public sector. It is supposedly more stable, less hectic but in the same time offers smaller wages in comparison to a work in private sector. But does it provide more satisfaction to employees? The current study compares work satisfaction (Warr, Cook, & Wall, 1979) and subjective Well-being (Diener, Emmons, Larsen, & Griffin, 1985) as dependent on subjective and objective wage evaluations (Brown, Gardner, Oswald, & Qian, 2008; Walczak, 2017) and Core Self-Evaluations (Judge, Locke, & Durham, 1997; Walczak & Derbis, 2015). On a sample of N=625 employees (of which 18%; n=118 were employed in public sector) an impact of subjective (rather than objective) wages on work satisfaction is shown. This effect spills over on the life satisfaction of private sector's employees, but doesn't impact the life satisfaction of public sector's workers. The results are discussed in the perspective of public spending on government worker's wages.*

Keywords: *subjective wage evaluation, public sector work stereotypes, employee satisfaction; core self-evaluations*

JEL classification: *J31 Wage Level and Structure; Wage Differentials; M52 Personnel Economics: Compensation and Compensation Methods and Their Effects; Y80 Psychology – Personality & Individual differences*

Grant affiliation: *The study was not supported by external funding.*

Introduction

Depending on the country You live in, there may be various stereotypes about people working in public sector. In central europe, there is a certain feeling of security conected with the work in a goverment-paid position. As there is almost no market pressure on goverment organisations (excluding the goverment-owned marked oriented enterprises), nor any competetive forces in play in those jobs, there appears to be no need to select only the best employees for a given position in a public organisation. This in turn may ease the pressure on workers to maximize their effort, but also may put a negative pressure on their wages. When there is no need to select only the best employees, there may also be no need to pay them a highly competetive wage. The current study examines this assumption, by compering the relation of wages and internal power's (core self-evaluation; Judge et al., 1997) impact on work satisfaction, of employees employed in public sector with those employed in private enterpreises.

1.1 Subjective wage perception

One of the key aspects necessary to evaluate the relation between wages and work satisfaction, is the consideration of the subjective wage perception. Clark (2011) states that people evaluate their wages in two aspects. First - retrospectively with their own previous wage (which is affected by a phenomenon called *the hedonic treadmill* - returning to a base happiness level, after a given time interval after a positive event - such as a pay raise or gaining a well paid job; see Diener, Lucas, & Scollon, 2006). Second – people compare their wages with other people in a similar social situation - that is a reference group. As the comparison of current and past wages is in many ways problematic to research, the current study will focus on wage comparisons made with the social surrounding of workers.

1.2 Core Self Evaluation

Many studies show that the wages are not the only contributor to worker's happiness (see for example Walczak, 2016; 2017). An interesting candidate to include in a work happiness study is a higher order personality variable called the core self-evaluations (Judge et al. 1998). According to Judge et al. (1998) core self-evaluations integrate the basic personality variables (self-esteem, positive affectivity, internal locus of control and generalised self-efficacy), allowing for recognition of people best fitting to the working world. Many studies confirm the predictive power of these Core Self-Evaluations (see Walczak & Derbis, 2015 for a review), showing its prominent impact of this internal power on job satisfaction.

1.3 The situation of public sector workers in Poland

Employees of public sector in Poland may have some reasons to feel badly. For a couple of years, the growth of Polish GDP was positive (ranging, according to the Polish statistical office GUS, in the years 2015-2017 from the low of +2,4% in Q3.2016 to a high of +5,4% in Q3 2017; Cerling, 2018). This GDP growth coincided with a dynamic growth of the average wages (which grew in total by almost 10% from 2015 to 2017; Żelazny, 2018). Yet in the same time the so called *base rate*, which is used to calculate many wages in public sector, grew only by approx. 7% (Kwoty..., 2018). Additionally, for many public servants the wages were frozen (for example teachers, justice employees) resulting in many grudges and discontent. So in the case of lowering unemployment (official statistics show that the unemployment rate in Poland went in 2018 to the lowest level since transformation to market economy), a valid question to be posted is who is staying in the governmental positions. A possible solution may lie in the presented personal variable CSE – if a person does not have enough internal power to switch job, she or he may stay in a lower paying governmental job, but in the same time will probably be not so happy with it.

1.4 Study assumptions

Considering the abovementioned considerations, the following hypothesis will be evaluated within the present study.

H1. Public sector employees will have (objectively) lower wages as compared with private sector employees

H2. Due to stereotypically lower wages, public sector employees will be less happy, in comparison with private sector employees:

H2a: In regard to their wages.

H2b: In regard to their job.

H3. Personal power (core self-evaluations) will have a buffering role on the relation between wages (subjective and objective) and work satisfaction.

H3a. Regardless of the sector of employment, people with higher core self-evaluations will have higher work satisfaction

H3b. Regardless of the sector of employment, people with lower core self-evaluations will be happy with their work, only when they have (subjectively) higher wages.

2 Method

To compare the differential impact of subjective wages and core self evaluations, on work and life happiness, among public sector and private sector employees, an online questionnaire was created to gather the data.

2.1 Study Participants

An total of $n=625$ research participants took part in the on-line anonymous study. All were invited to take part by students, who got additional course credits for conducting recruitment. The participants were working in a wide range of different organisations in Poland. From the total sample, $n_p=118$ could be identified as public sector employees. They were mostly employed in education ($n=55$) and healthcare ($n=35$), with a minority working in different, unspecified areas of public sector ($n=28$). From the private sector participants, the biggest group were services ($n=111$) and trade ($n=107$) employees. The age of respondents ranged from 20 to 62 years ($M = 29.9$, $Sd = 9.5$), with the public sector employees being slightly older ($M_p=32.7$; $Sd = 10.3$) versus their private sector colleagues ($M=29.2$; $Sd = 9.2$), which was statistically significant ($p<0,01$). Participants had on average $M = 7.9$ years ($Sd = 9.7$) of tenure, of which $M = 4.1$; $Sd = 6.3$ years in the current organization. Again, the older public sector employees subsample had more years of work experience, both in total ($M_p=10,0$; $Sd=11,4$; $p<0,05$ versus private sector), as in current organisation ($M_p=6.4$; $Sd=9.2$; $p<0,01$ versus private sector).

2.2 Tools

Objective wages were evaluated directly in a non-obligatory open question about monthly average wage before taxation (brutto salary). Subjective wage level was evaluated by two single item question, asking the respondent to compare his current earnings to other people, doing similar work (1) and to compare his/her wage to his friends & colleagues (2). The responses ranged from 1 - "I earn significantly less than ..." to 10 - "I earn significantly more than ...". Other tools in the study included the measure of Core Self-Evaluations (CSE; Judge, Erez, Bono, & Thoresen, 2003), in the Polish adaptation by Walczak & Derbis (2017), the satisfaction with life scale (SWLS; Diener et al., 1985) to measure general life satisfaction, and the 16-Item Warr, Cook and Wall's scale to measure job satisfaction (Warr et al., 1979).

2.3 Procedure

Participants received a link to the survey, by the means of an e-mail or social networking portal. After following the link they were directed to a web-page (on Google Docs platform), where they could respond to the survey questions. Afterwards all the data was imported into statistical software, and analysed.

3 Results

3.1 Comparison between wage levels and wage satisfaction

To verify the hypothesis about the differences between public and private sector workers, the mean declared (objective) wages (H1), the mean (subjective) evaluations of wages (H2) and the satisfaction with work (Warr, Cook, and Wall's scale) between both groups were compared. As the number of people in both groups was uneven, and the distribution of all the variables proved to be different than normal, a non-parametric Mann-Whitney's U test was used to compare means.

TAB. 1: Differences in objective and subjective wage evaluations, wage and job satisfaction between private and public sector employees.

	Public sector (n=118)		Private sector (n=507)		U Mann-Whitney Test of difference	
	Mean	Sd	Mean	Sd	Z	P
Average brutto wage (in PLN)	2865.60	1622.35	3346.93	2563.90	0.6282	0.5299
Wage compared with people doing same job (1-10 scale)	4.53	1.80	5.05	1.81	2.5286	0.0115
Wage compared with friends (1-10 scale)	4.31	1.74	5.47	2.09	5.6866	0.0000
Satisfaction with wage (1-5 scale)	3.64	1.69	4.30	1.64	3.6826	0.0002
Satisfaction with Job	72.61	21.67	75.03	19.42	1.0236	0.3060

The objective wages of public sector employees appears to be slightly lower, but the difference is not statistically significant. This means that H1 cannot be confirmed. On the other hand, public sector employees evaluate their wages less positively compared to private sector employees, both in relation to others doing the same job, and in relation with their friends. They are also in general less satisfied with their wages. This is in line with both H2a, proving that the public sector's lower wages are rather a consequence of a psychological stereotype. Yet there is no difference in job satisfaction between public and private sector employees, which is a ground to reject the H2b hypothesis.

3.2 Verification of the buffering role of Core Self Evaluations on the relation between wage evaluation and wage satisfaction

To check the role of core self-evaluations in the relation between wage evaluation and work satisfaction, in the first step a Pearson's correlation analysis was conducted.

TAB. 2: Pearson's correlation coefficient between Core Self-Evaluations (CSE) and Work Satisfaction (Warr, Cook & Wall's job satisfaction scale).

Group	Correlation coefficient	
	R	P
All	.5084	<0.0001
Public sector	.5833	<0.0001
Private sector	.4856	<0.0001

The results shown in the table prove the first part of hypothesis 3 (3a), showing that a higher level of core self-evaluations goes in line with higher levels of work satisfaction.

To verify the second part of hypothesis 3 (3b), I first splitted the people in two groups – those with low core self evaluaions (below the mean), and those with high CSE (above the mean). Next, I checked the differences of correlation strenghts between wage evaluations and work satisfactions in those groups.

TAB. 3: Differences between correlation coefficients relating wage and it's subjective evaluation in comparison with people on similar positions, among workers form private and public organisations, having high or low Core Self-Evaluations.

Sector	Core Self-Evaluation	Pearson's correlation		Significance of difference (p) of correlation's strengths between groups
		R	p	
private	Low_CSE	.2371	0.005	0.3502
	High_CSE	.2142	0.000	
public	Low_CSE	.4363	0.010	0.0314
	High_CSE	.2308	0.035	

The results shown above confirm a significant difference only between correlations of public sector employees varying in CSE levels. The difference is not significant for private sector employees. It means that only for people in public sector, the relation between brutto wage and it's evaluation in comparison with others on similar position, is higher for people with low Core Self Evaluations than with high CSE. This shows that hypothesis 3b is only true for public sector employees.

4 Discussion

The results of the study show that the public sector employees do not have significantly lower objective wages, as compaed with the private sector employees. Yet a closer comparison of declared wages revealed that a small group of private sector employees indicated wages below the official minimum, which may be related with part time character of their job. After remowing those people and reanalyzing the data, the private sector emolees wages proved to be statistically higher (Mann-Whitney's U-Test; $Z=2.60$; $p=0,0093$; $M_{private}=4037,28$ PLN; $M_{public}=4018,34$ PLN). Those differences appear to be not so big in absolute terms, however. A more important result is the difference between subjective wages, as public sector empolyees percieve their enumeration on average as lower than others in similar jobs, and as lower than the wages of their friends (less than 5 on 1-10 scale). In the same time, the private sector's employees do cross the treshold, percieving their wages as slightly higher than those of others, or as those of their friends. These results prove the existance of a *low wage* stereotype of public sector employees. What is surprising, there are no differences in job satisfaction between public and private sector employees, which may indicate that the *low wage* stereotype does not have a crucial impact on general evaluation of public sector jobs.

Another important aspect of the study is the confirmation of the relation between internal power (core self-evaluations) and work satisfaction. Both in private and public sector, the higher the core self-evaluations, the higher the work satisfaction. An important result is also the only partial

buffering of core-self evaluations for the wage-work satisfaction. This relation appears to function only for the public sector employees. The discovered pattern of results shows that the correlation wage-work satisfaction is only stronger for the public sector employees with low core self-evaluations. This may be evaluated, although with great precaution, as a signal for the importance of high wages for public sector employees with low personal power.

Conclusion

The paper shows a small objective and bigger subjective difference in wage perception between public and private sector employees. Because the public sector employees do not evaluate their jobs in general as worse compared with their private sector colleagues, and that wages play a more significant role in happiness only for public sector employees with lower core self-evaluations (who are probably also less likely to switch jobs), the study does not give a ground to recommend an increase of wages for public sector employees.

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CORRUPTION IN GOVERNMENTAL ORGANIZATION

PETR WAWROSZ

Abstract: *Why does corruption persist in governmental organization? While corruption is a problem of private sector as well as governmental sector, economics very often pays attention only corruption in governmental organization. Moreover, economic literature sometimes defines corruption as a problem of the state. In this paper, we argue that the reason for persistence of corruption in governmental organization is the lack of competition. To reduce corruption means to increase competition. People engaged in corruption therefore use all ways how competition reduce. One of them is to prevent the spread of generalized trust and to promote relations based on particular trust. If a society wants to keep market competition alive a thus to reduce corruption, it should therefore support enhancing of generalized trust and reduction of particular trust.*

Keywords: *corruption, market process, bonding capital, generalized trust, particular trust*

JEL classification: *D73, D72, H83*

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Introduction

Corruption has been with humankind since the beginning of its existence (see e.g. Dion 2010, 2013). The main reason is that corruption as well as other undesirable forms of behavior is advantageous for their participants (e.g. Becker 1968). However corrupt practices harm a third party not participating in the corruption action must be emphasized. Due to corrupt behavior, this party has less benefit or income, cannot realize some opportunities, and has higher costs of action and so on. In the past, some authors (e.g. Sisk 1982) have perceived at least some forms of corruption as a victimless crime. From our point of view, corruption always has its victims. A person who does not participate in corruption is generally worse off. They can be robbed (such as the owner of a company whose employee is involved in a corrupt act and prefers a corruption supplier whose offer is more expensive than non-corrupt one), they cannot realize income (such as a company that does not get a public or private contract because another company obtains the contract thanks to a bribe) or as a citizen living in a corrupt environment, they have to pay more for goods whose supply is limited by the environment, and these goods are of lesser quality.

In the economic literature corruption is represented for instance by buy offs in public tenders, embezzlement of government funds, patronage, electoral fraud, nepotism, clientelism, or tax evasion. We will use in our text the example of bribery that is the most frequent. It is useful to define corruption as bribery, which is a voluntary exchange between economic agents, where a bribe is the price paid by an agent buying a particular service provided by another particular agent, because this specific definition of corrupt behavior allows us to synthesize several theoretical approaches.

The aim of the article is: 1. to explain why corruption prevails in governmental organization, 2. To give idea how market process and competition can reduce corruption, 3. To warn that that particular trust and bonding social capital help to reduce competition. The article is organized as follows. The first section brings general definition of corruption, which is explanatory for every institutional setting. Our definition is the most general definition of corruption as we know. Similar definition presented Colombatto (2003) but he did not develop theoretical model that would explain persistence of corruption in governmental organization. To overcome this shortage, we develop in the second section evolutionary argument based on Banfield (1975), Kirzner (1973), and Pelikán (2003). We argue that corruption, in essence, is the calculation problem. Since governmental organization is the only owner of the means of production, it cannot calculate profit and losses, thus efficient production of goods and services cannot be established. In the third section, we argue that societies based on particular trust and bonding social capital with close contact between members of some group are more prone to corruption and we explain why.

1 Definition of corruption

Corruption is a term which denotes a specific contract between at least two people – a bribe-giver and a bribe-taker. Through such a contract a bribe-giver makes a commitment to give to bribe-taker some reward and bribe-takers makes a commitment to give to bribe-givers particular advantage (such an advantage can be of a tangible or non-tangible nature). Within such a context corruption is a result of human action (Rose-Ackerman 1999, Otáhal 2007, Lambsdorff 2007).

The parties of corruption make a corrupt deal because corruption brings them some benefits. From the point of human action, the aim of which is to increase some benefits, corruption explained on example of bribery does not constitute a problem - it is a mutually advantageous exchange (Kohn 2004). People condemn corruption out of a different reason: there is a third party (neither a bribe-taker, nor a bribe-giver), to whom corruption gives some harm, the corruption is not in the interest of this third party (Colombatto 2003, Otáhal 2007).

For example, company A did not obtain some order from company C because it was given to company B (bribe-giver). If there was no corruption, the order from company C would be given to company A. In this case, due to the corruption, the income and benefits of company A were reduced. Let us assume that the offer of company A is more socially advantageous than the offer of company B. Thus, there are also people negatively affected by corruption. In the case of a public tender (governmental organization), where a public official was bribed, almost all citizens are harmed because if there was no corruption, the difference in the price (or quality) which is offered by company B (a bribe-giver) and which is offered by company A could be used for the benefit of citizens who are not a part of corrupt exchange. If a manager of a private company is bribed (so the tender is not of a public nature), then at least all owners of the company are in harm - corruption reduces their income.

Our understanding of corruption as voluntary exchange is consistent with the frequently mentioned definition of corruption (Nye 1967, p. 416): *„behaviour that deviates from the formal duties of a public role (elective or appointive) because of private-regarding (personal, close family, private clique) wealth or status gains“*. An updated version with the same elements is the definition by M. Khan (Khan 1996, p. 12), who says corruption is *“behaviour that deviates from the formal rules of conduct governing the actions of someone in a position of public authority because of private-regarding*

motives such as wealth, power, or status”. However, in contrast to both definitions, we argue that corruption does not occur only in the public sector (governmental organization). We think that corruption may occur anywhere, where a bribe-giver and a bribe-taker breach duties set by some norms (from the economic point of view - by institutions), regardless of whether it is a legal norm (an formal institution) or a non-legal norm (informal institution). In accordance with the most papers we reduced corruption on bribery (i.e. Shleifer and Vishney 1993, 1994). However, it is necessary emphasize that bribery is not only one of form corruption (i.e. Warren 2004). For instance international organization dealing with this issue Transparency International defines corruption as abuse of power in order to receive undeserved personal gain. From that point of view the main characteristic of corruption is that somebody acts dishonestly in the performance of his/her duties arising from his/her position. The essence of this dishonesty is usually that a person misuses his/her status (delegation) and does not act impartially. Corruption behavior can thus be defined as a deviation from the compliance of the legal standards or of the standard behavior of the majority. In other words, corruption is a betrayal of commitment to the community and its moral principles. If somebody acts impartially, the beneficiary has a position of the member of corruption contract even if he/she does not know to be supported. The support damages other persons (the third party).

2 Competition as the monitoring system reducing corruption

Mises (1949) shows that no incentives exist in a system of public ownership to optimize the expenditures spent on production of public services as well as incentives motivating public officials to optimize the costs spent on the monitoring of the agents. Since the state is the only owner of the means of production, it cannot calculate profit and losses. Because of the absence of private ownership, there is no exchange and consequently no monetary price. That is why the state cannot assess the monetary value of its production and agent’s decisions. Mises (1949) further compares different economic organizations framed by different underlying property-rights systems. While the enterprise where monetary calculation creates monetary incentives is called market organization, the public enterprise where is monetary calculation impossible because of the lack of exchange based on the private property is called bureaucratic organization. Public choice literature further stresses problems connected with incentives in governmental organizations (Buchanan and Tullock 1965), which lead to problems with political and bureaucratic rent-seeking (Tullock 1967, Krueger 1974, Niskanen 1971). It is emphasized that rent-seeking within governmental organization significantly reduces economic growth, (Murphy, Shleifer and Vishny 1993).

Banfield (1975) compares business and governmental organizations and stresses that without the profit-and-loss mechanism people cannot easily sanction and reward agent’s decisions and consequently create the system of incentives, which would motivate agents to pursue value-maximizing allocation of resources without corruption. Kirzner (1973) argues that the absence of monetary calculation in bureaucratic organization restrains competitive entrepreneurial activities because it lacks the essential incentive in the form of the pure entrepreneurial profit. Therefore, even if the state tries to eliminate corruption by means of raising the monitoring costs it cannot guarantee the value maximizing allocation of resources because it lacks monetary calculation based on market prices, which hold, as Hayek (1945) argues, irreplaceable informational function. Generally, if organizations do not face to competitive entrepreneurial process they can be inefficient and corrupt. Pelikán (2003, p. 34-37) follows and argues that the lack of feedback to governmental organizations in comparison with market organizations operating within competitive entrepreneurial

process lead to lower ability of governments to discover technological innovations as well as lower ability of governments to organize themselves efficiently in comparison with large private firms sometimes larger than national economies. This lack of feedback provided by entrepreneurial competitive process lead to persistent of inefficiency of governmental organizations and to corruption.

Following the above logic, Becker and Stigler suggest a solution, which would establish efficient monitoring systems within organizations: *“A highly promising method of compensating enforcers (agents) is suggested by the market in private transaction...”* (Becker and Stigler 1974, p. 13). In other words, the recommendation means: if the bribe is just a market price for the demanded profitable service, it is reasonable to think about letting agents sell these demanded services and compensate them by “bribes” (market prices) instead of salaries. More precisely, in the case of the state being the principal (superior organization), Becker and Stigler ask: if we are aware of the difficulties of the state’s monitoring system why we do not think about losing the contract with the state and as the result, we allow the agents to take “bribes” (market prices) for their demanded services? This proposal, however, does not mean selling monopoly privileges as Tullock (1996) explains. The proposal is based on entrepreneurial competitive process where private agents (entrepreneurs) provide creation and enforcement of law (maintain legal system

Nevertheless, a question may be raised whether there is any third party, who monitors or creates incentives forcing the enforcers (from our terminology entrepreneurs who maintain legal system) to do their job as their clients, alternatively society, expect. The answer is again entrepreneurial competitive process, which means, as Kirzner (1973) explains, free entry to the market in order to seek entrepreneurial profit. This, however, does not necessarily mean that simple deregulation that does not solve the corruption problem because no regulation could also encourage entrepreneurs to rent-seek (Djankov et al. 2002). The argument thus suggests that the enforcement of property rights done through an entrepreneurial competitive process is more efficient and more restricts corruption than enforcement of property rights through state monopoly

3 Corruption and bonding social capital

Enforcement of private property rights through competitive process has serious implication in perspective of theory of corruption. Corrupt contract differs from legal contracts: it is hidden in secrecy. This implies transaction costs associated with corrupt contract are substantially higher than in other contracts (Shleifer and Vishny 1993, Rose-Ackerman 1999). Searches for partners as well as negotiations and enforcement of contracts have to be carried out away from the eyes of public. Further, corrupt contract has an aftermath. Its parties end up being mutually dependent on one another, because they hold secret information about the other party. Corrupt deals put the partners of such deals at the mercy of one another. Even long after the corrupt service is rendered, the partners remain in building relationship of mutual dependence, which can also serve as a basis for extortion. Denunciation can be used as a threat when one of the parties has more to lose from a potential exposure of involvement in corrupt activities.

There exists a variety of mechanisms to lower high transaction costs that naturally comes from a corruption contract. To the most common belongs making a corrupt deal with someone we already have some legal relationships. Partners in legal relationships can use their already existing ties as an enforcement mechanism for the corrupt side contract. Opportunistic behavior within corrupt

agreement can now be deterred by threatening cancellation of the legal market relationships. However, this threat may not be effective, given strong competition in the legal markets: other competitors can be sought and cancellation of market exchange would not necessarily invoke huge and irrecoverable losses. But when competition is limited and legal relationship is based on trust between partners, threats to end longstanding exchange impose serious damage on both sides.

Previous legal contract makes corruption also more predictable - the size of the payment could be known in advance and both part of contract deliver as promised. Tonoyan (2004) using data from the 1995-1996 World Values Survey observes that individual perception of high level of corruption is positively correlated to the importance of friends. She argues that high-trust societies are often associated with lower levels of corruption. But this holds true only for generalized trust that is trust in all people and organization (such parliament, government bodies and agencies). The opposite is true for particular trust that is trust in specific person (e.g. friend). In this case, networks are preferred to markets. Such situation facilitates creation and keeping of corrupt contract (Rose-Ackerman 1999, Lambsdorff 2007).

Particular trust represents bonding social capital with close contact between members of some group. As is written in (Field 2008), if the bonding social capital prevails in the society, it can reduce ability of society to common action. Bonding social capital further prevents to encounter people from different social, cultural and race group. As the consequence, bonding ties can lead to selective approach, where some people are preferred and others are prevented from societal inclusion. Public sphere even can abandon the principle of equality and fairness. One possibility is that bonding social capital may form a stable system of negative externalities. The hypothesis has been explored by Warren (2004) who describes the Antioquia region in Columbia characterized by strong system of social networks, based on the family but open to outsiders, combined with strong values and high level of trust. It was a region what appears to be a high level of productive social capital. But in the region the Medellin drug cartel was born benefiting from trust relationships among shipping partner to bring cocaine into export markets of the world. Of course, transaction between people bound by close tie need not end in crime. Warren suggests that one way of judging such transaction is to ask whether the interest being pursued and the actions that follow can be justified publicly. If the answer is yes, then the actions are unobjectionable and we are simply observing one of the many ways that people get things in a pluralist society. However, if the answer is no, then it is likely that the actions go beyond simply exchanging favors, to embrace some form of behavior that may have generally damaging consequences for the wider community.

Competition offers persons other contacts than with their friends and relatives and gives them more opportunities to use their skills. It also forces people to find new products and way how to produce them cheaper and so it improves societal efficiency. On the contrary cartel-like behavior leads to lower productivity. As note Ingram and Roberts (2000) businesspeople who socialize with others are able to turn their competitive rivalry into basis for cooperation in order to avoid bidding wars and keep up prices. However, this then reduces the impact of competition on business behavior and produces stagnation and inefficiency. If a society wants to keep market competition alive a thus to reduce corruption, it should therefore support enhancing of generalized trust and reduction of particular trust.

Conclusion

The article questions persistence of corruption in governmental organization. It explains why enforcement of property rights through entrepreneurial competitive process improves efficiency of organization and restricts corruption. It is shown that in a system of sole public ownership some incentives supporting corruption behavior do not exist. Especially there are no incentives to optimize the expenditures spent on production of public services as well as incentives motivating public officials to optimize the costs spent on the monitoring of the agents.

The other reason supporting enforcement of private property rights through competitive process is that corrupt contract differs from legal contracts. Corrupt contracts are held in secrecy. That means higher transaction costs and higher risk. Both can be reduced if corruption contract is made among people who already have a legal contract or who know each other. Previous legal contract makes corruption also more predictable. If person thinking about a corrupt contract faces more intensive competition they have more opportunity to make legal deals and not rely on corruption. More intensive competition also means greater threats and losses if corrupt contract is revealed. One way how to reduce market competition is through establishing only particular trust. The relations in a society where a particular trust prevails are based on kinships, close relationships and other factors contribute to corruption. A society that wants to reduce corruption should therefore support all means how to increase generalized trust.

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AN ANALYSIS OF PHENOMENON OF AD-BLOCKING IN THE LIGHT OF EMPIRICAL RESEARCH ON HEAVY INTERNET USERS IN POLAND

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Abstract: *The article presents the results of research on the phenomenon of ad-blocking conducted on a cohort of more than 500 respondents – students of the Opole University of Technology and the University of Economics in Katowice – belonging to the heavy Internet users group. The aim of the research, which was carried out by means of surveys conducted using the Google Forms service, was to understand the scale of the phenomenon in question among the surveyed population, the motivations of respondents in the context of their use of ad-blocking solutions, as well as the conditions which would lead them to be ready to stop their use of such solutions. The latter two issues were analysed in depth in the context of the directions of actions to be taken by the advertising industry to mitigate the phenomenon of ad-blocking.*

Keywords: *blocking digital ads, on-line advertising, digital ad ecosystem*

JEL classification: *M1, M10, M15*

Grant affiliation:

Introduction

Starting in 2010, the phenomenon of blocking various kinds of advertisements by users became more and more visible in the digital advertising ecosystem, and from 2013 onwards a sharp increase in its intensity could be observed. Initially, this was mainly the case for personal computers and other similar devices, and from 2015 onwards, it became clear that this trend is also taking hold on mobile devices. Regarding the latter, its growth is even more rapid and its scale quickly exceeded that observed in the case of desktop computers (PageFair, 2016; PageFair, 2017).

At the same time, it should be noted that ad-blocking is becoming another factor disrupting the stable functioning of digital advertising ecosystem and decreasing its effectiveness (Fou, 2017; Fou, 2017a). This is a very unfavourable phenomenon due to the fact that the digital advertising market is developing very dynamically and a growing percentage of companies' advertising expenditure is spent on advertising campaigns in digital media. In 2017, expenditure on advertising in digital media amounted to USD 228.44 billion and accounted for 39.1% of total expenditure on advertising; moreover, it is expected to increase to 49.6% by 2021. At the same time, expenditure on mobile advertising is also growing in a very dynamic way. In 2017 it amounted to USD 142.78 billion and its increase in comparison to 2016 amounted to 33.6% (eMarketer, 2017).

One of the consequences of these phenomena is a rapid increase in the number of digital advertisements received by users. It is estimated that an average Internet user receives 11,250 ads

per month. In these conditions, their defence against the number of advertisements they receive is more and more widespread use of ad-blocking solutions on their personal computers and mobile devices (Elliott, 2017).

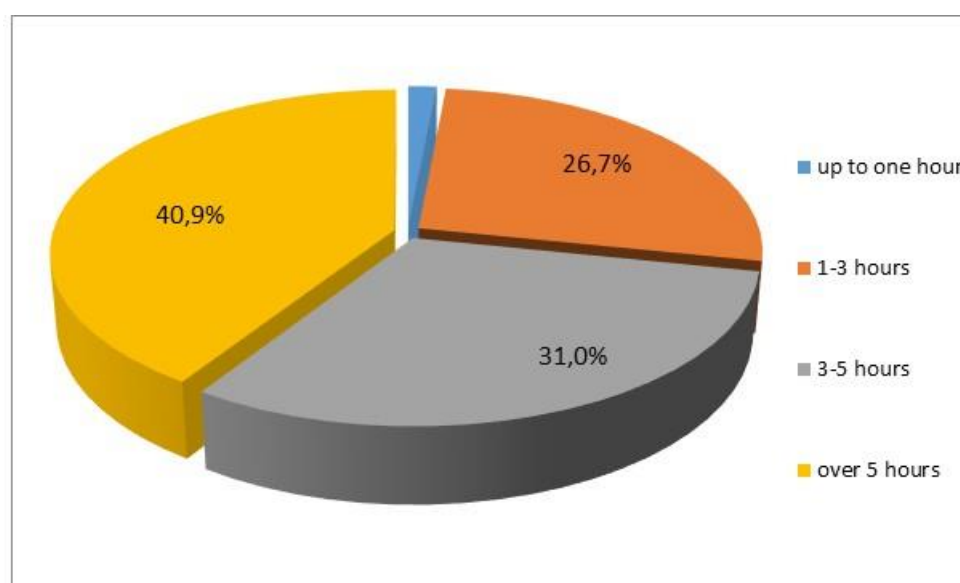
In this context, the aim of this article is to understand the scale of the phenomenon of ad-blocking in the population of heavy Internet users, their motivation in the use of ad-blocking solutions and actions that could lead to the mitigation of the scale of this phenomenon.

1 Characteristics and results of own research conducted

The research was carried out on three cohorts. The first cohort encompassed 178 students of the Faculty of Economics and Management of the Technical University of Opole and the research was conducted in the period of 01.02.2017 – 19.05.2017. Research on the second cohort, which encompassed 242 students of the Faculty of Economics of the University of Economics in Katowice was conducted between 04.11.2017 – 18.02.2018. The last, smallest cohort of the survey included another group of 113 students of the Faculty of Economics and Management of the Opole University of Technology and the research was conducted in the period of 09.01.2018 – 19.04.2018. In total, 517 respondents took part in the research carried out in the form of a survey conducted using Google Forms service.

Such a choice of respondents resulted from two issues. Firstly, according to the OnAudience.com report published in 2017, Polish Internet users are the leading nation when it comes to blocking digital advertising (OnAudience.com, 2017). Secondly, it has been assumed that students belong to the heavy Internet users group, who use the Internet more often than an average user, using various devices, and that such most active Internet users use various types of ad-blocking solutions on a regular basis (OnAudience.com, 2017a). Therefore, such a cohort seemed to be the most interesting from the point of view of achieving the research objectives.

FIG. 1: Intensity of using the Internet (source: own research)

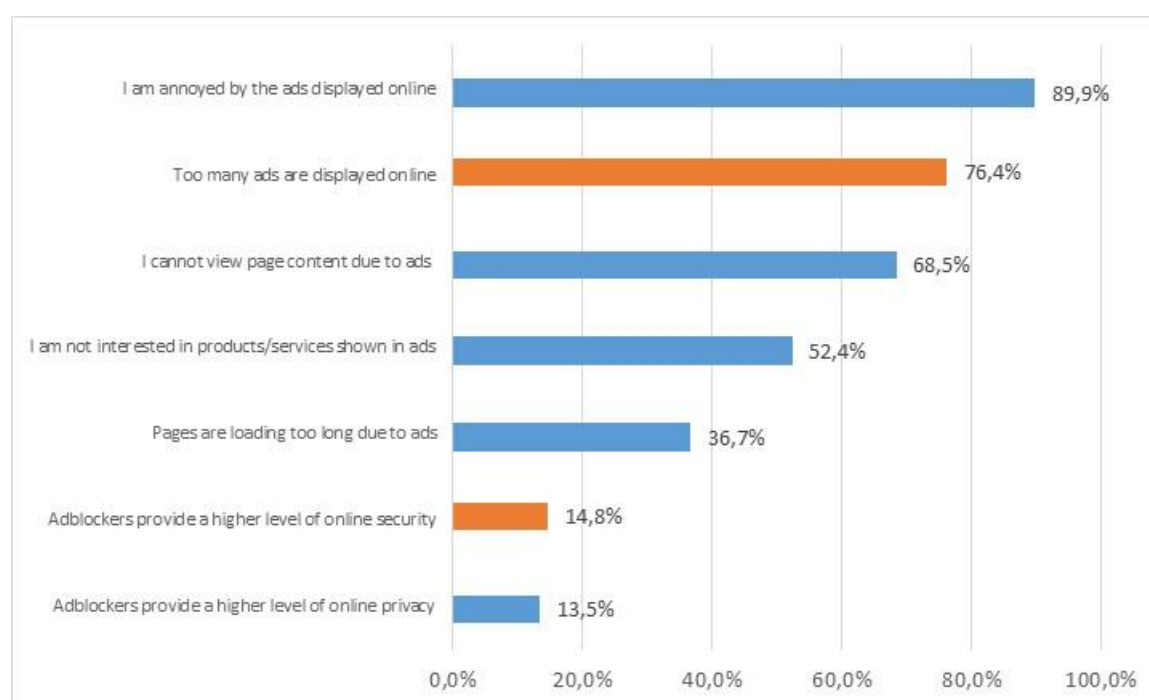


As far as Internet access is concerned, two types of devices dominate among the respondents. These are laptops (90.5%) and smartphones (87%). Desktop computers (33.5%) and tablets (22.6%) are far behind. The assumption that the study group uses the Internet very intensively was confirmed. Almost 40.9% of them stay on-line for more than five hours a day, and 31% of them stay on-line for 3 to 5 hours a day. Only 1.5% of respondents declared using the Internet up to one hour a day (FIG. 1). At the same time, as many as 66.8% of the respondents admitted that they are always-on.

As far as the use of blocking solutions is concerned, 61.1% of the respondents admitted to using them, which is significantly higher than the average for Polish Internet users (40% according to the 2017 OnAudience.com report). Laptops are the main type of devices where the respondents have installed ad-blocking software (87.5%). Desktops are the second most popular choice for installing such software, with 32.7% of users declaring that they set up such solutions. Despite the widespread use of smartphones as a tool for accessing the Internet, respondents rarely installed ad-blocking software on them (16.2%). This trend is even more visible in the case of tablets (6.1%).

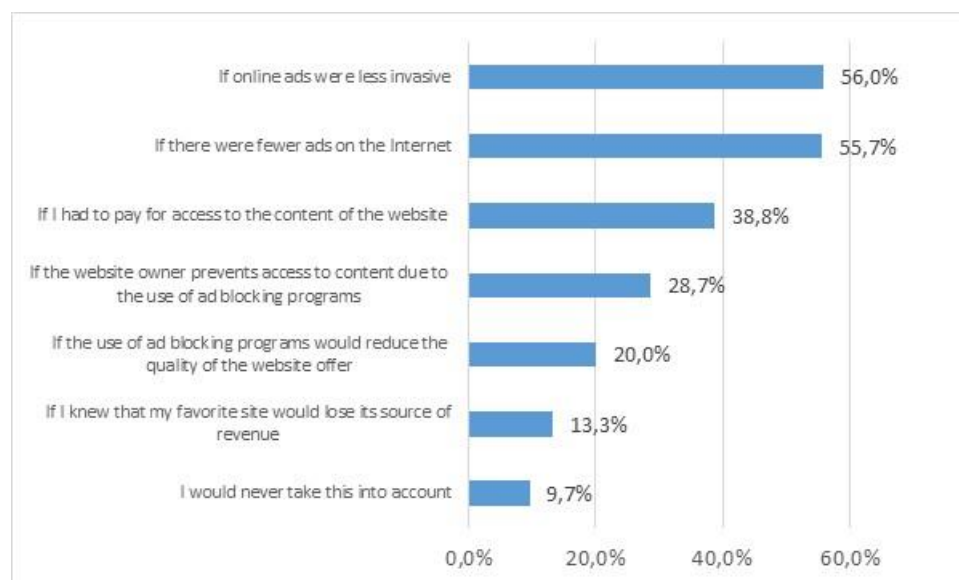
A very important issue from the point of view of the research conducted was to learn the motivation behind the installation of ad-blocking solutions by the respondents. Almost 90% of the respondents said they were annoyed by the advertisements they encountered on the Internet. Another very important reason stated by the users was their inability to view website content due to advertisements (68.5%). On the other hand, for over 50% of respondents blocking advertisements on their devices, the reason for using ad-blocking solutions was the lack of interest in the products or services advertised. The second and third cohorts taking part in the research could choose from two additional reasons, which were added to the list of reasons for blocking ads in the survey. 76.4% of respondents chose the option “too many advertisements are displayed” (FIG. 2). For respondents, advertisements are the most annoying during browsing the content on websites (67.5%), using social media (60%) and e-mail (48.1%), as well as shopping in on-line stores (45.4%).

FIG. 2: User motivations in the context of using of ad-block type solutions (source: own research)



Regarding the question of whether the respondents would be ready to uninstall their ad-blocking solutions and what could potentially lead them to do so, two of the reasons were determined to be crucial in the light of the research results. These are: lower number of advertisements on the Internet (55.7%) and lower level of their invasiveness (56%) (FIG. 3).

FIG. 3: Situations where it would be possible to uninstall ad-block type solutions (source: own research)



The last issue raised in the survey was the respondents' behaviour in a situation where disabling ad-blocking solutions is the condition for accessing the content. In such a situation, the majority of respondents (67.1%) admitted to disabling their ad-blocking software in such situations, while a third of them (32.9%) decided to look for other websites offering similar services or content.

2 Discussion of the research results obtained and the resulting conclusions

The research results indicate three fundamental issues pertaining to digital advertising and the functioning of the whole digital advertising ecosystem in the context of the rise of the phenomenon of ad-blocking. Firstly, the respondents' responses clearly indicate that they believe that the amount of advertising they see on-line is far too high and that reducing it would be a key motivating factor for them to uninstall their ad-blocking software. Unfortunately, it is difficult to expect such a trend in the context of the aforementioned continuous increase in the level of spending on digital advertising. This is all the less likely as the advertising model is the dominant solution when it comes to Internet users' access to digital content, on-line services or social platforms, particularly given the fact that digital advertising is a much more important source of revenue than access fees (Ministerstwo Administracji i Cyfryzacji, 2012; Ryan et al., 2017). In the context of the results of the research conducted, it should be noted at the same time that despite the almost identical level of use of laptops and smartphones for accessing the Internet, respondents relatively rarely use ad-block solutions in the case of the latter. This may indicate that the number of ads they encounter on mobile devices is not very tiresome for them at the moment. However, this situation may change quickly with the aforementioned dynamic growth in spending on mobile advertising.

The second important aspect, which was identified in the course of the research, pertaining to the rise of the phenomenon of ad-blocking, is the issue of invasiveness of ads, as well as advertisements making it more difficult for the users to access their content of interest. This issue was recognised by some of the major players in digital advertising industry in the past and they have already taken some initiatives in this context – the Coalition for Better Ads initiative, which aims to develop advertising standards for personal computers, as well as mobile devices, that are acceptable to users can be cited as an example of such activities. As a preliminary result of the Coalition's research into such standards, known as Better Ads Standards, conducted on a group of 25,000 Internet users in the U.S. and Europe, the Coalition has issued an appeal to the advertising industry to stop using intrusive advertising formats, which are the direct cause of installing ad-block-type software (Coalition for Better Ads, 2018; IAB Polska 2018). A key issue in this context is whether and to what extent will advertising companies abide by such appeals and use only non-aggressive advertising formats recommended by the Coalition. In the context of the results of the research presented, this issue seems to be of key importance when it comes to the success of the initiative and the mitigation of scale of the phenomenon of ad-blocking.

The third very important aspect resulting from the research conducted in the context of the rise of the phenomenon of ad-blocking, is the lack of respondents' interest in the products or services advertised. It shows that the respondents would be less likely to block advertisements encountered on-line, if they were more relevant to their interests. Contrary to what one might expect, this issue is not as easy to solve as it might initially seem to be, and the problem does not lie in technical issues regarding its implementation. On the one hand, as the relevant research shows, appropriate digital targeting significantly improves the users' reaction to advertising. However, in order for this process to be effective, it is necessary to obtain relevant data enabling this type of personalisation. Since Internet users like to share their personal data or leave a lot of information about their on-line behaviours, for example in so-called web cookies, marketers have access to extensive sources of information about them and can easily personalise the message. However, in the context of this type of activity, an important challenge arises in relation to the growing awareness of on-line surveillance among consumers. Therefore, the effects of personalisation may vary depending on the methodology of collecting consumer data. As in the real world, consumers are much more likely to accept the use of data they have provided themselves (this is referred to as *first-person sharing*), while they are much more likely to react negatively to sharing information and data concerning them without their knowledge (*third-party sharing*). Therefore, when consumers realise that personal data and information about them are shared and disseminated in a way deemed unacceptable by them, their interest in purchasing products or services is significantly reduced. Experiments have shown that such unacceptable activities include obtaining information outside the website displaying an ad or deducing information about someone through the use of analytics (Barasz et al., 2018).

Conclusion

For several years now, the phenomenon of ad-blocking has been a pressing issue that is constantly on the rise, as it enters and spreads into the field of mobile devices, which is closely linked to the growing amount of digital advertising faced by Internet users, as well as the invasive nature of the ads displayed. The spread of this phenomenon strongly disrupts the functioning of one of the most important on-line revenue models in the context of the consumer market, namely the advertising model, which may also bear consequences for the stable development of e-commerce.

The research conducted confirmed the extensive scale of the phenomenon of ad-blocking and its above-average intensity in the heavy Internet users group. At the same time, the results clearly indicate the directions of actions and initiatives that the advertising industry must take in order to curb the scale of this phenomenon that its representatives believe to be negative for the industry, including two particular actions, which seem to be crucial in this context. Firstly, the advertising companies need to reduce the use of aggressive and annoying forms of advertising as much as possible. As it was mentioned, some initiatives regarding this issue have already been launched, but their success will depend on whether or not the marketers will generally adhere to the guidelines published. Secondly, it is extremely important that advertising messages are tailored as precisely as possible to the interests of the persons to whom they are addressed. However, a major challenge in this context is the question of the data used for this purpose. This applies in particular to the way of obtaining said data, as the growing awareness of Internet users makes them more and more vigilant and particularly sensitive to that issue.

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NON-FINANCIAL REPORTING OF THE FINANCIAL SECTOR IN EUROPE IN LIGHT OF NEW EU REGULATIONS AND SELECTED INTERNATIONAL TRENDS

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Abstract: *From the financial year, 2017, the EU requires almost 6,000 large public-interest companies to disclose non-financial information on environmental, social, employee-related matters, respect for human rights, anti-corruption, and bribery issues. One of the biggest groups covered by this new regulation is that of financial sector companies. The aim of this article is to present the Directive 2014/95/EU requirements and selected international trends that pile more and more pressure on the financial sector, in terms of the transparency of non-financial data. The good practices of financial sector companies will be presented to illustrate the way the sector has managed the new regulations and responds to the identified trends and pressures.*

Keywords: *financial sector, non-financial reporting, Directive 2014/95/EU, integrated reporting, the Sustainable Development Goals*

JEL classification: M14, M42

Grant affiliation:

Introduction

Contemporary business organisations invest enormous resources to collect and report non-financial information. As the business environment is changing at an ever-increasing rate, the information that companies need to collect and report is also changing dynamically, in form, scope, and quality. However, as the 2018 Value of Value survey reveals, only 18% of C-suite executives declare that publicly disclosed information reflects upon the business impacts, including environmental and social (International Integrated Reporting Council, 2018).

Before the 2008 crisis, the financial sector was not very open to or advanced in NFI reporting. The damage caused by the crisis to the sector's reputation and public trust opened up the financial services executives to opportunities that NFI reporting creates. Currently, the financial sector is often viewed as a leader in the SR field, which is confirmed in the KPMG (2017) survey of global trends in CR reporting, revealing that amongst the 100 companies it surveyed, 17% were classified as financial services sector companies, using the International Classification Benchmark System. However, there is still a commonly held public perception that reporting by the financial sector is inadequate (United Nations Environment Programme, 2017). Consequently, there are a number of national and

international regulations and stakeholders' pressures, to raise the quality of NFI reporting in the financial sector. The aim of this paper is to present the ways in which the sector manages such pressures. The nature of the study is descriptive and based solely on information from secondary data sources.

1 NFI reporting and its key trends

The practice of reporting on non-financial information (also known as Sustainability reporting, CSR reporting, or Environmental, Social and Governance reporting (ESG) is not new, and is already being applied by companies in high rates, globally (Burritt & Schaltegger, 2010).

According to Wim Bartels, KPMG's Global Head of Sustainability Reporting & Assurance, the trend of disclosing non-financial information by companies is driven by two factors: firstly, NFI is increasingly perceived by shareholders as relevant for their understanding of a company's risks and opportunities, and secondly, stock exchanges and governments are issuing requirements for companies to report NFI in their annual reports (KPMG, 2015, p.).

The NFI reporting is also supported by a number of organisations, such as AccountAbility, the Global Reporting Initiative (GRI), the United Nations and Sustainability Accounting Standards Board (SASB), the International Organisation for Standardisation (ISO 26000, International Standard for Social Responsibility), the Organisation for Economic Co-operation and Development (OECD Guidelines for Multinational Enterprises), and many others. Among the abovementioned list, the GRI Guidelines are currently the most recognised and used by many organisations around the world. According to the GRI, 74% of the world's largest 250 companies report use the GRI's Standards (GRI, 2018, para. 3).

In Europe, the key driving forces of the businesses' growing engagement in the NFI disclosure are: the EU's Directive on the disclosure of non-financial and diversity information (Directive 2014/95/EU), the growing interest in integrated reporting, as promoted by the International Integrated Reporting Council (IIRC), and the promotion of Reporting on Sustainability Development Goals (SDG) that define the world's most pressing problems, that businesses, directly, or indirectly cause, and in solving how they should engage.

1.1 EU Directive on the disclosure of non-financial and diversity information

The introduction of the EU's Directive on the disclosure of non-financial and diversity information (Directive 2014/95/EU applicable from the 1st of January 2017) is considered as the changing point in NFI disclosure in the European Union. The 28 EU Member States have had to transpose the Directive into their own national legislations, and as a result, about 6,000 large public-interest companies are now expected to comply with the new disclosure requirements of the locally transposed laws from 2018, meaning they will add a non-financial declaration to their annual management report, or publish a separate report.

According to the Directive, the required non-financial information (NFI) is "information to the extent necessary for an understanding of the undertaking's development, performance, position, and impact of its activity, relating to, as a minimum, environmental, social, and employee matters, respect for human rights, anti-corruption and bribery matters, including: (a) a brief description of the undertaking's business model; (b) a description of the policies pursued by the undertaking in relation to those matters, including due diligence processes implemented; (c) the outcome of those policies;

(d) the principal risks related to those matters, linked to the undertaking's operations including, where relevant and proportionate, its business relationships, products, or services, which are likely to cause adverse impacts in those areas, and how the undertaking manages those risks; and (e) non-financial key performance indicators relevant to the particular business” (pp.4-5).

The Directive is a big step towards eliminating the main barriers of using non-financial information in investment decision-making, which are defined as the lack of appropriate quantitative environmental, social, and governance information (55%), lack of comparability over time (50%), and questionable data quality (45%) (CFA Institute, 2017). Due to the above limitations, investors consider the use of non-financial information as time consuming and costly. Having said that, it must be highlighted that the Directive allows Member States to impose state specific requirements on companies regarding the reporting framework, disclosure format, and reporting of content, which makes comparing NFI within and across sectors, still challenging.

1.2 Integrated reporting

Integrated reporting (IR) is considered as one of the key trends in non-financial information reporting. The key promoter of integrating financial and non-financial information is the International Integrated Reporting Council (IIRC), which was founded in 2010 (Sofian & Dumitru, 2017). The aim of IR is to promote “a more cohesive and efficient approach to corporate reporting that draws on different reporting strands, and communicates the full range of factors that materially affect the ability of an organisation to create value over time”, to enhance “accountability and stewardship for the broad base of capitals (financial, manufactured, intellectual, human, social and relationship, as well as natural), and promote understanding of their interdependencies” (IIRC, 2013, p. 2).

The International Integrated Reporting Framework (IIRF) was released in April 2013. The IIRF provides fundamental concepts (value creation for the organisation and for others, the capital, the value creation process), guiding principles (strategic focus and future orientation, connectivity of information, stakeholder relationships, materiality, conciseness, reliability and completeness, along with consistency and comparability) and content elements (organisational overview and external environment, governance, business model, risks and opportunities, strategy and resource allocation, performance, outlook, the basis of preparation and presentation, and general reporting guidance). IR encourages decision-makers to approach the impact of such components on the company in a strategic way (Eccles et al., 2015).

According to the report, ‘Tomorrow’s Investment Rules 2.0’ prepared by EY, 70% of global and 80% of European investors consider integrated reports to be essential or important in making investment decisions. It is worth mentioning that in 2015, the percentage of investors who considered integrated reports to be a key source for making investment decisions increased by 10%, as compared to 2014 (E & Y, 2015).

1.3 Reporting on Sustainability Development Goals

Together with the growing pressure on businesses to report on NFI, comes the expectation that they will engage in reaching the Sustainable Development Goals (SDGs), and will provide information on the results of that engagement.

The SDGs are the globally agreed targets, addressing the world's most pressing social, environmental, and economic problems, set by the United Nations in 2015. There are 17 goals,

namely: 1: No Poverty; 2: Zero Hunger; 3: Good Health and Well-Being for people; 4: Quality Education; 5: Gender Equality; 6: Clean Water and Sanitation; 7: Affordable and Clean Energy; 8: Decent Work and Economic Growth; 9: Industry, Innovation, and Infrastructure; 10: Reduced Inequalities; 11: Sustainable Cities and Communities; 12: Responsible Consumption and Production; 13: Climate Action; 14: Life Below Water; 15: Life on Land; 16: Peace, Justice, and Strong Institutions; and finally, 17: Partnerships for the Goals. If properly approached, integrating them into the sustainability strategy and reporting on them may allow companies to be transparent about their operations, enable investors to make informed decisions, and provide governments with an understanding of how business is contributing to the goals in their country (PWC, 2018). According to KPMG (2018), four in ten of the world's largest companies already reference the UN Sustainable Development Goals (SDGs), however, three quarters (75 %) of companies that report on the SDGs, whilst discussing the impact their business has on the goals, their reporting is largely unbalanced, with most companies discussing their positive impacts, but not the negative ones.

2 NFI reporting in the financial sector

Europe's financial sector currently makes a significant direct economic contribution to the European economy, providing €731 billion, or 5.9%, of the EU's total GVA (Gross Value Added), employment for 6.4 million people across Europe, and contributing almost €209 billion in taxes across the largest European economies, supporting Europe's public finances (City of London Corporation, 2015). That classifies the sector as being of the highest importance, and thus, causes enormous pressure to be more sustainable and transparent in reporting on non-financial information.

At the same time, the financial sector is considered as one of the riskiest sectors for investment, because it is easily influenced by the economic cycle. What is more, the financial service companies are involved in business with many other sectors, which exposes them to risks and opportunities associated with those sectors. What makes the situation even more complicated, is the fact that the financial services are diverse and complex, encompassing several industries or sub-sectors, such as:

- banking: retail savings, commercial investments, development finance (national and multinational), central banks,
- investments: institutional investments, long-term collective (e.g. pension funds), retail investments, stock or securities exchanges, asset management,
- insurance: long and short-term.

In response to the above challenges, the GRI Organisation has developed the Financial Services Sector Supplement, designed to be applied to organisations offering financial services (GRI, 2011). The Supplement provides guidance for reporting on the sector's specific issues, relating to: product portfolio, audit to assess the implementation of environmental and social policies, active ownership, community investment strategies and programmes, performance related to inputs (e.g. materials, energy, water) and outputs (e.g. emissions), policies and practices on accessibility to financial services, and finally, the design and sale of financial products.

2.1 Financial sector and EU regulations

In the case of the NFI Directive, most of the companies obliged to disclose non-financial information are the financial sector ones, as public-interest entities, which means entities which are: trading transferable securities on the regulated market of any Member State, or a credit institution, or an insurance undertaking, or designated by Member States as public interest entities. However, it is too

early to assess how the financial sector companies are managing the NFI disclosure, according to the Directive.

It should be highlighted that the NFI Directive is not the only initiative aimed at the financial sector's NFI disclosure. In 2016, the European Commission established the EU's High-level Group on Sustainable Finance (HLEG). The group was given a mandate to prepare a comprehensive outline of the reforms, along the entire investment chain. Its aim was to promote sustainable investments, so that capital reaches sustainable projects, and to ensure that the financial system itself addresses risk and builds resilience. There are several other similar practice principles and initiatives, which align with the Financial Services, for example: Principles of Responsible Investment (PRI); Equator Principles; Green Bond Principles; UNEP Finance Initiative & the Principles for Sustainable Insurance; Sustainable Stock Exchange Initiative; and many others. All of them result in growing expectations towards the financial sector, to disclose non-financial information in a wider scope, higher quality, and a more standardised and transparent form.

2.2 Integrated reporting in the financial sector

An analytical review of the Global Reporting Initiative, states that even before the issuance of the IIRF, the financial sector self-declared more integrated reports than any other industry (GRI, 2013). Financial services were experimenting with IR years before the launch of IIRF. The European financial sector is leading in this trend, as among 24 reports for 2016 (published in 2017), and available on the IR webpage, 14 were published by European financial services organisations. Among those we can find: ABN AMRO, AXA, AEGON, GENERALI, ING, UniCredit, and many others.

2.3 Reporting of SDG by the financial sector

As the Council of Foreign Relations estimates, the Sustainable Development Goals (SDGs), will cost between \$90 trillion and \$120 trillion by 2030. (Hoek, 2018, p.188). On the other hand, in 2017, the Business and Sustainable Development Commission's (BSDC) Better Business Better World report pointed to USD 12 trillion of economic opportunities, which could be opened up, annually, if the ambitions of the SDGs are realised by 2030 (BSDC, 2017). There is a significant role that the financial services industry has to play in this initiative.

To support business in reaching the SDGs, many organisations developed supporting tools (for example, the SDG Compass produced by the Global Reporting Initiative, the United Nations Global Compact and the World Business Council for Sustainable Development). The financial sector also has a similar tool - the SDG Industry Matrix (developed by the United Nations Global Compact and KPMG), which supports financial services organisations in defining strategic priorities, setting goals, assessing impacts and reporting. The Matrix has divided the SDG goals into 4 categories:

1. Access - to secure payment and remittance facilities, savings, credit and insurance, and increasing financial inclusion for:
 - individuals (SDGs 1, 2, 3, 4, 10) – for example, Rabobank generates, enhances, and distributes its extensive knowledge of the many links in the food chain, through its Food & Agribusiness Research and Advisory department. It has developed 10 big ideas, which could boost global food availability and access over the next decade.
 - small and medium-sized enterprises (SDGs 5, 8) - for example, Citi Microfinance, in partnership with the Overseas Private Investment Corporation (OPIC), has provided more than US\$365 million to fund 40 microfinance institutions, in 22 countries, since 2006. This investment has resulted in

loans to more than 975,000 small business and individual borrowers, with every nine out of 10 of them for women.

- governments (SDG 13) – for example, AXA has committed to divest “from companies most exposed to coal-related activities”, totalling €500 million. AXA has also committed to triple its green investment to over €3 billion by 2020.

2. Investment:

- financing and insuring renewable energy (SDGs 7, 13) – for example, KLP, Norway’s largest mutual life insurer, has an impact investment strategy, through which, it has set up an investment company, together with Nordfund, the Norwegian development finance institution, which is investing in new capacity for renewable energy production in developing countries.
- financing other infrastructure projects (SDGs 6, 9) – for example, Zurich Insurance Group has started a collaboration with the Global Resilience Partnership, to create a three-phased grant competition called the “Water Window”, which will work as an incubator to help develop water related innovations in the Sahel, the Horn of Africa, and Asia.

3. Leveraging risk expertise to directly influence customer behaviour and to create more resilient nations through:

- developing innovative pricing models, which incentivise more sustainable living and production (SDG 12) - for example, HSBC UK has started generating its own renewable, zero-carbon electricity, through an innovative agreement with two UK wind farms, which will reduce its carbon footprint from electricity by 40%.
- sharing non -proprietary risk data, risk analysis, and risk management expertise to inform public policy and practice (SDG 11) – for example, Finance Norway, an industry association representing over 200 financial companies, undertook a study to assess the impact of using disaster loss insurance data from Norwegian insurance companies, to strengthen municipalities’ capacities to prevent future climate-related natural hazards and urban flooding.

4. Cross-Cutting - positively influencing environmental, social and governance (ESG) practices of corporate clients and investee companies (SDGs 13, 14, 15, 16) - for example, Credit Suisse published a study in 2014, co-authored with the World Wildlife Fund, and a management consultant, who analysed innovative private sector financing structures in conservation, and identified the barriers and enablers to scaling up such approaches. Based on that, it launched its first conservation investment product, the Nature Conservation Notes, which invests in sustainable agroforestry and ecosystem conservation, as well as in a portfolio of sustainable bonds (United Nations & KPMG, 2015).

To meet the above presented expectations, and follow all trends, the sector itself, also set a number of collaborations aimed at advancing sustainable development (SDGs 17). Examples of the largest global multi-stakeholder collaborations for financial services, include: Banking Environment initiatives; The investment Leaders Group; the Portfolio Decarbonisation Coalition; Global Partnership for Financial Inclusion; Climatewise; The 1-in-100 Initiative; the Climate Bonds Initiative; the Insurance Development Forum; the Access to Insurance Initiative; and many others.

Conclusions

The 2008 financial crisis was a turning point for the financial sector’s non-financial information disclosure practices. To win back trust from the public and key stakeholders, the financial organisations started intensive work on transparent NFI reporting, and became one of the leaders in this field. With time, the sector’s executives have understood that they not only contribute to the popularisation of non- financial reporting, but also benefit a lot. The sector is a key global investor,

and as a consequence of the dynamic changes in the business value creation process, investment decision-making is to a great extent based on non-financial information. As a result, we can observe strong engagement of the financial sector (on the sectoral and individual level) in NFI reporting initiatives, such as integrated reporting, reporting on SDGs, and others not covered in this paper.

The aim of this paper was met. It defines the key driving forces of the businesses' growing engagement in the NFI disclosure and the way the financial sector responds to them. Although the study is descriptive and based solely on information from secondary data sources, it contributes to the discussion on NFI reporting of the financial sector by drawing the big picture of the current business context. It defines the key trends in the NFI reporting and the financial sector practices and consequently builds the solid foundation for the further empirical research in this field.

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MANAGERIAL TECHNIQUES AND TACTICS TODAY, 10 YEARS SINCE THE BEGINNING OF THE GLOBAL FINANCIAL CRISIS. USING PSYCHOLOGY AND PSYCHOLOGICAL METHODS IN CURRENT MANAGERIAL PRACTICE

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Abstract: *As we know, the future development of European economies and the concept of their long-term sustainability and competitiveness are very problematic. Managers today must be able to solve a lot of new situations that they did not solve before.*

Management is simply directing. Management as a process of directing people should lead to effective fulfilment of goals. Management is the interdisciplinary field of knowledge, as well. It means that we can see a big influence of the other discipline, especially economy and psychology.

This article is about using psychology and psychological methods in current managerial practice. Probably it is not a secret, that success depends on persuading people to change the way they think and work. Psychology seems to be a useful tool for it.

Keywords: *management, managers, directing, psychology, managerial practice*

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Introduction

Manager's task is to constantly manage his subordinates to do their work or achieve certain goals. To succeed in doing so they must be motivated, they must see his vision and make them to identify with it. After that, he must control if and how is the goal being reached.

1 Managerial techniques and tactics

Management primarily explores the socio-economic relations of people, developing in the management process. In the management process, a complex network of interpersonal relationships is formed. Any organization acts not only as a production and economic unit, but also as an environment in which workers are formed. Therefore, a special place in management is given to socio-psychological management methods that allow to influence the spiritual interests of people, regulate interpersonal relations, and also directly influence the formation and development of the work collective (www.tetmyprep.com).

Manager's task is to constantly manage his subordinates to do their work or achieve certain goals. To succeed in doing so they must be motivated, they must see his vision and make them to identify with it. After that, he must control if and how is the goal being reached.

Motivation integrates psychological and physical activities of a human into factors that push or pull him to behave in a particular manner. Every individual's behaviour is influenced by his volitions, needs and interests. Needs are primary - physiological and secondary.

Motivation can be also negative. Negative motivation is being caused by the following factors: wrong combination of motivational tools, bad management, disillusionment, improper interference in organization, secrecy, unclear orders, disparity in words and acts by a manager.

Leading people means setting a vision for the future and acquiring people to achieve it. Leading is in difference to classic management more about soft manipulative techniques. It requires a person to lead that is able to pull others for his visions. To make others follow the leader he must be able to satisfy their own goals thereby must have certain level of knowledge and personal characteristics.

To be a successful leader means trusting your subordinates and delegates. Good leader isn't afraid of risk and has respect of others. In a crisis can behave authoritatively, see problems in their complexity. Has got vision.

Main tool of a leader is his **vision** about future. Vision should be real, attractive, easy to understand, general and brief otherwise people will not accept it. Others must be well informed about vision. Many leaders use coaching to lead subordinates, which is a nice managerial style based on seizing other people in such a way they are motivated to act independently.

2 Psychological tools

To motivate others needs more and more use psychological tools that can help you to achieve your goals. What is really important is to stand for a good example as a specialist. As a specialist you clearly show you know "something" about your work.

Stand for a good example as a personality is important as well. Try to improve constantly your character, your personality.

- **Try to be part of the team.**
 - Show you live for your project and team.
 - Stand up for your people. Their work results from your work.
- **Be reliable, goal seeking, systematic, consistent.**
 - Do not promise anything you cannot fulfil.
 - Write down your promises not to forget them.
 - Do things same way you want others to do them.
 - Work more diligently than anybody else.
- **Try to be goal seeker.**
 - Show you know what you do.
 - Teach your people to present and defend their opinions. Stand firmly behind your own ones.
 - Do not ever pretend you are unmistakable.
- **Try to be representative.**
 - Take care about your image as well as image of the company.
 - Keep yourself in good physical and mental shape.
 - Care about good work morale.

- Separate work problems from the personal ones.
 - Get rid of bad habits.
- **Try to be "seen".**
 - Show you are highly motivated for your work.
 - Keep on mind three attributes of leadership are enthusiasm, engagement and tenacity

Become and be natural authority. If a natural authority is missing in a senior, his motivational endeavour within the team is not taken seriously. From well thought appreciation nobody takes anything, threats are taken easy, pronouncements are funny for others, etc. It takes time and you must work hard on yourself.

3 Team work

To be a good manager is quite complicated task. In these days you need to use psychology and psychological methods more effectively and in a different way. It is not same to motivate older subordinates and generation Y or Z. Generation Y needs a different approach in many situations.

To simplify the team work process we can decompose this task into subparts that manager pursues during his work with his team. There are many possibilities to develop specific manager's abilities. What is important for his successful development is to know how to integrate all the individual and specific abilities within one personality. For example if you gain experience in the area of evaluation and motivation, think how to connect with other abilities and skills from different areas of your work.

There is many ways of managing people. Every manager has his own individual style. Successful managers can adapt their style to specific situation, importance of a decision, stances of their subordinates. Style of manager's work comes from his personality so that the style and personality should be in compliance. For successful teamwork it is really important to use psychological methods to motivate others.

We have to work with people we have. This is really big truth since in life, sometimes it is not about having exactly those people you wish to have (you ideally need). People are different, needs of the really top-quality ones can be extreme. The task of a manager is to know his people, to use their skills to achieve the team's goal and help them improve in skills they need for their role on the team.

Treat everybody from the team as an individual.

Do not dissociate from any individual. Try to spend some time with everyone from your team.

Seek for different options on how to motivate and encourage your people. Make sure you know what motivates concrete individual.

"Treat everybody the same way in that you will treat everybody else differently".

Treat everybody as a team-member.

Support team spirit.

Whenever you talk with your people use "we" instead of "I" (if possible). Talk "with" them, not "towards" them.

Make sure your people know that when team achieves the goal you will be able to satisfy individual needs.

Make sure you know everybody's role and that he or she knows its importance for the team.

Use strong individuals for the good of whole team, not only for his or her good.

Try to use whole potential of every individual for the team.

Support your people to make them motivate themselves for them and for their team.

Try to shape a task to fit the people.

Order tasks in a form that fits the specific individual.

Conditions of task-fulfilment shape for the individual's character.

Order task differently to junior and differently to the senior.

Before ordering a task think thoroughly whom you want to order. Ask questions like: What experience has the one that he is able to fulfil the task? Did he do similar task in the past? What motivates him? What are his personal interests and goals? What new could he learn during fulfilment of the task? How often do I order this individual to do something?

Emphasize what will bring him fulfilment of the task.

Order boring tasks together with interesting ones. Make sure you know the difference between them!

Fundamental effectivity relies on order: first fulfil boring task, and then the interesting one.

Stress diversity of work which might "the same".

Try to approach every "same" work in a "different" way.

Always know about tasks you assigned. The good way is: Meet minimally once a week with all your subordinates. It is a matter of tasks whether together or individually. Oversee state of tasks you assigned. Deadline has no meaning if people do not see it in front of them all the time and you are not enforcing it.

Duly assume every task.

- assume the task = personally at best, check the result together, let the subordinate to comment on the result.
- check it = is it what you wanted?
- give feedback = confirm "finished" or make him redo it

Give space to self-activity.

It means: Delegate all tasks you do not have to do yourself. The higher level of skills, the more freedom certain worker should have. Delegation not only motivates people but also increases their performance. Do not do again once delegated task, only check the fulfilment.

Returned result of once delegated task that is of poor quality never finish yourself (whenever possible).

Pay increased attention to workers with little experience (usually new ones).

Show them your style of work as soon as possible

Lead them to be in time less independent on you

Help them to understand their workplace responsibilities

When they improve, give them more space, teach them own self-reliance and self-activity.

Need of growth and self-actualization lies above all our needs on the highest level. Its satisfaction is for people very motivating. One of the certified ways how to help people in their growth is to give them some task for a short time to prove their skills.

Support career growth.

Support even the smallest development. Let everybody know that gained skills are his personal capital that helps him as well as you.

Support self-interest and individual studying. Encourage your people to use diversity in personal education. Although a training seminar takes your workers away for some time, it is in its result very benefiting - new knowledge multiplies possibilities and work diversity, training can be on its own quite interesting, etc....

Support knowledge of foreign languages.

Many people are discouraged from trying to learn new knowledge or skills because of time issues. They already feel that their lives are too busy and they don't see how it is possible to fit more commitments into their already jammed schedules. Other people take an overly laid-back approach to new knowledge acquisition. They sign themselves up for classes and programs and then don't take those classes and programs seriously. They show up late for class, or study in a haphazard manner. They may procrastinate with regard to assignments. At the end of the semester (when the course is over) they wonder why their grades are so low (Dombeck,2018).

Both types of people described above might benefit from improving their time management and organization skills.

4 Evaluation of subordinates

Criticize wisely and to the purpose. Even bad news or bad experience can become a useful tool to motivate your people if you handle them reasonably and with sense. If you use them in the form of rebuke and clear criticism they become severely demotivating.

Do not reproach faults! Set them right!

Faults result from self-activity you give to your people. It is a natural constituent of learning process.

Create space for mistakes and faults. A man learns from faults. A fault is normal! For you as well as for your subordinates.

If they make the same mistake twice, blame yourself in the first place.

Nonetheless, even tolerance to faults has its limits: if same faults keep repeating, heartless measures must be taken uncompromisingly.

Human failures approach calmly.

First consider how the situation affected you, then decide when and how you will have a word with the troublemaker.

Individual failures solve primarily within four eyes. If appropriate, teach others from the faults too.

Bad behaviour of an employee approach with self-confidence.

Your criticism shouldn't be personal. Criticize acts, not people.

Formulate your statements in peace. "What happened made me angry".

"Little bit louder voice is also sort of a calm." You can show your emotions, but care about what you say.

If you really have to give hell to your people, it has to have purpose, power and effect. Do NOT be aggressive!

It is important people left you at ease while they learned something.

Search for the real causes of failure.

Find out precise reasons why the failure happened to know what to avoid next time.

Make sure failure didn't originate with you in the first place: e.g. badly given orders.

Discuss together causes of the failure.

Make sure people precisely know where and how did they made the failure.

5 Appreciation

Carry out appreciation. Appreciation is one of the most significant motivator. Through appreciation we say we like how they are working and indicate "just keep the pace".

Appreciate when the appreciation is really deserved.

- Do not appreciate whenever you have the opportunity! If words of praise and appreciation are used too often, they become ineffective same way as money. If you flood your people with appraisal, you cease to act trustworthy.
- Do not overstate appreciation! Save some appraisal, but be generous with thanks.
- Always ask yourself what behaviour you will strengthen when not doing anything?

6 Using psychological testing in management

Psychological testing and interviewing by a clinical psychologist helps businesses hire the right people (Bargreen, 2015). Dr. Bargreen's method to candidate assessment identifies whether the person is a good fit for your company and determines if the candidate has sufficient ability to elevate your organization. Psychological evaluations can be used in employee screening, succession planning, managerial selection, pre-employment decisions, and employee counselling situations. Financially, psychological testing can aid your company from hiring the incorrect person, which may save the organization thousands of dollars. Psychological assessment can protect your organization by eliminating candidates that are not a good fit for your organization. Dr. Bargreen wrote his doctoral dissertation on the number one personality assessment tool, the MMPI-2 and can improve your business by helping you hire the right person for the job.

Czech new version on the MMPI-2 (Minnesota Multiphasic Personality Inventory®-2 Test) is available in the Czech Republic by Hogrefe-Testcentrum, s.r.o. in Prague. This is very popular test, these new version is used for more than 5 years here (www.testcentrum.com).

Conclusion

Managing and leading subordinates is complicated process, especially in these days, when needs and expectation older generation and younger people (generation Y or Z) are totally different. Could be hard and difficult, but we can learn some techniques and strategies to be successful. Never forget that the best way how to do does not exist. It depends on the situation, on your individuality and other reasons. But we can in every situation try to do the best we can, try to learn about motivation, coordination, leadership, etc. and use psychological tools to work with people successful.

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