RISK MANAGEMENT IN THE SEGMENT OF SMEs IN V4 COUNTRIES

(Significant Theoretical and Methodological Aspects)

Ing. Zuzana Virglerová, Ph.D.

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Author:

Ing. Zuzana Virglerová, Ph.D.

Tomas Bata University in Zlín

Faculty of Management and Economics

Reviewers:

Doc. Ing. Aleksandr Ključnikov, Ph.D., Pan-European University, Bratislava

Prof. Ing. Luboš Smrčka, CSc., University of Economics, Prague

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About the author

Zuzana Virglerova is a research worker at the Center for Applied Economic Research at Tomas Bata University in Zlín, Czech Republic, where she has been a faculty member since 2009.

She completed her Ph.D. at the same university in the program Finance with a research Modern Portfolio Theory and Key Exhaustible and Non-Renewable Resources. After doctoral studies, she modified a topic of research from investment's risks to business risks. In 2008-2016, she worked as a risk manager in a national financial company. She finished her studies of business law at Masaryk University in 2010 and she extended her knowledge in the area of business regulation. She is a chief of compliance department in a broker company and in a payment institution. Her research area focuses on risk management of SMEs, compliance issues and regulation of SMEs.

During her research career, she took part in many international conferences and international internships (e.g. at ISCAP – School of Accounting and Administration of Porto, Portugal, Institute of Technology Tralee, Ireland, European University Cyprus, BBA INSEEC Lyon and Bordeaux France, Gediminas Technical University, Vilnius, Lithuania, etc.).

She has been a director of the Editorial team of Journal of Competitiveness since 2017. Journal of Competitiveness is indexed in international databases such as Social Sciences Citation Index (Clarivate Analytics), EBSCOhost Online Research Databases, Ulrichsweb, ERIH PLUS, DOAJ, Google Scholar, and many others.

She has published many papers in international scientific journals as follows: Sustainability, Administratie si Management Public, Transformations in Business and Economics, International Journal of Interdisciplinary Educational Studies, Montenegrin Journal of Economics, E&M Economics and Management, etc.

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INTRODUCTION

Entrepreneurship is a significant part of economic system of every country and has an important effect on the entire society growth. SMEs are regarded as an engine of the economics because they employ more than 60% of all habitants of EU and add more than 50% of total value of the European economics (SBA, 2018a). Therefore, many authors are focused on the role of small and medium enterprises (SMEs) in the economic system (Czarniewski, 2016; Dobeš et al., 2017; Dubravska et al., 2015, Kozubikova et al., 2017).

The business environment is influenced by several factors. Some of them are impossible to manage – macroeconomic environment. In addition to the macroeconomic surroundings, businesses are also characterized by the microenvironment that surrounds them. This environment includes the financial environment (financial markets), the business environment (clients and suppliers), the legislative and political environment as well as the historical assumptions of the country. Systematic risks are connected with the macroeconomic surroundings. These risks depend on the overall economic development. Their sources are e.g. changes in the government's monetary and budgetary policy, changes in tax legislation, overall market changes, etc. These economic risks are similar for all economics units in the economic system. The risks, which are possible to be managed easily, are non-systematic (unique) risks. These are risks that are largely independent of the overall economic development, specific to individual companies, business projects respectively. The causes of these risks may be as follows: a significant production, more precisely a technological innovation in a certain production field, a new competitor on the market, loss of key (top) employees of the company, a breakdown of production facilities, etc. The success of companies depends on how well the company manages risks identification, anticipates them and takes the right approach to them. Risk management can be a key aspect of financial management and a critical area for a company’s survival, especially in case of small and medium companies.

This publication examines the important risks and assessment of risk management in the segment of SMEs in V4 countries. The main aim is to define theoretical and methodological aspects in the area of risk management and to quantify their impact on the risk management process in the corporate area. The

empirical quantitative research on risk management in SMEs within the Visegrad Group is used to meet the scientific objective.

The publication has a following structure. The theoretical part defines small and medium enterprises (SMEs), the importance of SMEs and the current situation of SMEs in V4 countries. Various types of business risks and factors influencing the risk perception and approach to risk management are presented. The last part of the first chapter is dedicated to risk management and its methods. Attention is also paid to the person responsible for risk management in companies. The following two chapters describe methods used in the process of data acquisition and data analysis. The main aim and several partial objectives and some scientific hypotheses connected to the objectives are presented in this part. This part is followed by a chapter that contains a number of tables and graphs that show the research results following its objectives. The last part is dedicated to discussion of the results, which are compared with several international researches conducted on a similar topic.

The ambition of this publication is to bring new theoretical and methodological aspects not only for the application in the business environment, but also in the field of education and, generally, in the academic environment in such a large area as the area of V4 countries is.

1 CURRENT SITUATION OF RISK MANAGEMENT IN SMES

1.1 Small and medium enterprises

Small and medium-sized enterprises (SMEs) have a great importance for the economy worldwide because they represent the competitive and dynamic part of the economic system. SMEs are competitors of large companies, especially in the field of increasing efficiency and innovations (Pavelkova et al., 2009). SMEs are one of the most important and valuable parts of the world economy (Badulescu, 2010; Karpak & Topcu, 2010), and as the most important engine of an economic growth (Henderson & Weiler, 2010). SMEs create and maintain functional market economy (Kessler, 2007). Economic progress is determined mainly by the survival of small and medium enterprises (Mura & Ključnikov, 2018).

The definition of SMEs is not the same in all countries. This publication uses the definition of SMEs of EU (according to Commission Recommendation 2003/361). This definition is based on staff headcount, either turnover or the total value of balance sheet. Micro companies are defined as the companies with less than10 employees and turnover or total balance sheet up to 2 mil. EUR. Small companies employ between 10-49 employees and have turnover or total balance sheet up to 10 mil. EUR. Medium-sized companies employ between 50-249 employees and have turnover up to 50 mil. EUR and total balance sheet up to 43 mil. EUR. The most frequent upper limit designating an SME is 250 employees, as in the European Union. However, some countries set the limit at 200 employees, while the United States consider SMEs to be companies with fewer than 500 employees (OECD, 2005). The SMEs in South Africa are limited by number of employees at the level of 200 (Du Toit et al., 2011). In Russia SMEs are limited by revenues and by number of employees at the level of 25 mil. EUR and 250 employees (European Investment Bank, 2013). SMEs outstandingly outnumber large companies in the most countries, and concurrently employ a significantly larger amount of people. It is argued that a vibrate SMEs sector is a foundation of economic growth of the country, which will ultimately lead to the overall development of the standard of living by lowering unemployment. (Jahur & Quadir, 2012). SMEs are also an

important driver for the development and renewal of national economies (Barbero et al., 2011; West et al., 2007; Wolf et al., 2012). It is important to emphasize the role of SMEs in stabilizing the economy. This is particularly true of developing economies which are naturally more vulnerable than advanced economies (Kolbari, 2019).

99.8% of all companies in the European Union belong to the category of SMEs. The same situation is also in countries of the Visegrad Group (Czech Republic, Slovakia, Hungary, Poland). Most of the experts agree that SMEs not only significantly contribute to the growth of employment and growth of Gross Domestic Product, but also carry out other social and economic duties (Henderson & Weiler, 2010; Karpak & Topcu, 2010; Mathur, 2011; Shuying & Mei, 2014). SMEs play a very important role in financing welfare of local communities and in sport and cultural life in the regions. The absence of this group of enterprises has a significant effect on existing social structures. SMEs create the largest number of new jobs. Therefore, their role should not be underestimated across regions and countries. In present competition, the SMEs gradually developed into the dominant force for international economic and social development (Shuying & Mei, 2014).

Many studies found that SMEs grow faster than lager companies (Fiala & Hedija, 2015). A smaller size of SMEs allows to realize a development of their strategies faster, often based on more aggressive entrepreneurial orientation, which also makes them responsible for the driving innovation and competition in many economic sectors (Anderson & Eshima, 2013). SMEs are more flexible and when they find any new opportunities, they hire new employees to penetrate the market (Blackburn et al., 2013). SMEs usually have a low degree of process standardization and they are more flexible. On the other hand, they operate with less automated production equipment and their access to resources is limited in comparison with larger companies (Müller et al., 2018). Managers of small and medium-sized enterprises know the current sources of risks, but they cannot recognize risks which have never been addressed (Abbas, 2018, Bogodistov & Wohlgemuth, 2017).

SMEs have several specific characteristics that are connected with their size. The main positive characteristics include a closer contact with a customer and a higher level of flexibility. The negative characteristics are caused by a lower

degree of diversification, limited markets and a higher risk level (Fetisovova et al., 2012). Larson & Shaw (2001) summarize that SMEs have the following characteristics:

- driven by one person,
- located primarily in rural areas,
- involved in trading and manufacturing,
- characterized by multiple start-up and failure rates,
- mostly a family business (a member of the family works in the business),
- founded primarily by women, and
- operated on a small basis with low income earnings.

The SME segment is also important for national stability of economies. SMEs only exceptionally leave the home country or transfer the capital out of the country (Breckova, 2016). It can also indicate that SMEs do not have enough financial sources to expand abroad (Autio et al., 2011; Lu & Beamish, 2001). SMEs mainly operate on the domestic market, partly because of shortage of resources and the fear of unknown foreign business practices (Chong et al., 2019). Baloch et al. (2018) state that a successful internalization process is a competitive advantage and a key source of foreign investment. According to resource dependency theory, a company's lack of certain critical resources and entry into new (foreign) environmental settings pushes it to seek additional resources from other market participants (Hillman et al., 2009).

SMEs are frequently confronted with major challenges. Compared to larger enterprises, SMEs profit less often from economies of scale and fewer have access to a wide resource base (Burgstaller & Wagner, 2015; Lavia López & Hiebl, 2015). Due to the usually low equity ratio of SMEs, they are relatively vulnerable to external events compared to larger enterprises (Altman et al., 2010). This illustrates that not only larger enterprises face various risks, but also SMEs, whose survival is more easily threatened due to their smaller set of – both financial and non-financial – resources.

SMEs are very sensitive to the economic downturn, but on the other hand, they are much more flexible in order to survive than larger companies, as they can more quickly adapt to changes in the market environment (Frenakova, 2007). Significant disadvantage of SMEs in a form of restricted access to external financing (bank loans and other forms of external financing) is mostly

caused by a high risk level of these firms, because they are generally characterized by a high degree of indebtedness and limited capability to provide the guarantee for their commitments; due to this fact, obtaining commercial loans is problematic for them (Kljucnikov et al., 2016). This may also be the reason why SMEs acquire loans under less favorable conditions, even in case that they present viable and profitable business plans (Majkova, 2012). This opinion was also presented by many other authors, including Ozturk & Mrkaic (2014), Kundid & Ercegovac (2011). Besides the factors, caused by the small and medium-sized enterprises themselves, their economic situation is highly dependent on the events that they cannot influence or cause. For instance, several authors devote their studies to the research of an impact of financial crisis on the concerned segment of enterprises. During the period of financial or economic crisis, the credit spread between large and small companies usually intensifies due to a higher risk perception of most of the SMEs, as it was presented above, and that perception usually leads to a trend of denial of credit for this segment. The higher borrowing costs for SMEs increase the probability of their default and hence, make them more vulnerable in a period of financial distress (Ardic et al., 2012; Casey & O'Toole, 2014; Kliestik et al., 2018, Kundid & Erecgovac, 2011; Ozturk & Mrkaic, 2014).

Enterprises are affected by business environment. It can help them, but at the same time it can mean the greatest threat. For small and medium enterprises, business orientation is a key element of their success (Brockman et al., 2012). Soininen et al. (2012) consider innovation, active attitude and risk acceptance as the basic characteristics of business orientation. According to Kuzmisin (2009), permanent challenges for all players in the business environment are the improvement of business conditions, support of entrepreneurial spirit, flexible labor markets, company and worker adaptability, investments in education and science, research and innovations, market access and secure supply of energy.

1.2 Countries of Visegrad Group (V4)

The Visegrad Group (also known as Visegrad Four or V4) is a bloc composed of the Czech Republic, Slovakia, Poland and Hungary. These countries from the Central European region make efforts to work together in a number of common interests within the European integration. Countries of V4

have always been part of a single civilization sharing cultural and intellectual values and common roots in diverse religious traditions. All countries of V4 aspired to be members of the European Union. They considered their integration into the EU as a next step in the process of overcoming artificial dividing lines in Europe through mutual support. They reached this goal in May 1 2004, when they became EU member states (International Visegrad Fund, 2019).

The Visegrad Group has not been created as an alternative to pan-European integration efforts, nor does it seek to compete with functional Central European structures. Its activities are not aimed to isolate their activities from another countries. The group tries to promote optimal cooperation with all countries, especially with neighboring countries, and it is interested in the democratic development of all parts of Europe (International Visegrad Fund, 2019).

The Visegrad Group wishes to contribute to building a European security architecture based on effective, functionally complementary and mutually reinforcing cooperation and coordination between existing European and transatlantic institutions.

In order to preserve and promote cultural cohesion, the Visegrad Group intends to promote its cooperation, the sharing of values in the fields of culture, education, science and exchange of information (International Visegrad Fund, 2019).

The source of business risks in V4 countries depends also on the sources of the risks that burden the individual countries. The table below shows the indicators that indicate the state of the selected risk sources in each economy.

Political stability is the highest in the Czech Republic (84.29%) and Slovakia (76.19%), the lowest in Poland (64.76%). In Hungary, political stability is 74.29%. The security measured by the terrorism index is on the 0-10 scale (when 10 means a strong influence) most positively perceived in Slovakia (0.12), then in Poland (0.72), Hungary (0.36) and last in the Czech Republic (1.56).

Indicator	CR	SR	PL	HU	Period	Measurement	Source
Political Stability and Absence of Violence/Terrorism: Percentile Rank	84.29	76.19	64.76	74.29	2017	Percentile rank 0 = unstable 100 = stable	Worldwide Governance Indicators
Terrorism index	1.56	0,12	0.72	0.36	2018	0-10 scale 0 = no influence	Institute for Economics and Peace
Corruption index	59	57	60	46	2018	0-100 100 = clean 0 = corrupt	Transparency International
Strength of legal rights	6.7	7	7	8.5	2013-2018	0-12 scale 0 = weak 12 = strong	World Bank
Ratio of firms paying for security	55.90 %	54.80 %	66.50 %	33.70%	2013	%	World Bank
Percentage of firms experiencing losses due to theft and vandalism	35.1%	13.3%	16.8%	10.0%	2013	%	World Bank
Percentage of firms identifying crime, theft and disorder as a major constraint	8.8%	3.6%	8.2 %	4.1%	2013	%	World Bank
Products shipped to supply domestic markets that were lost due to theft	0.4	0.3	0.9	2.0	2013	% of product value	World Bank
Risk of Catastrophic expenditure	0.30%	0.00%	0.20%	35.70%	2018	% of people at risk	World Bank
Change in the number of employees	1.07%	1.30%	0.88%	0.85%	2016-2018	Coefficient of variation (%) standard deviation/mean	EUROSTAT

*European Commission, Business and Consumer Surveys (ECBS)

CR= Czech Republic, SR=Slovak Republic, PL=Poland, HU=Hungary

Table 1: Source of the risk in V4 countries. Source: Institute for Economics and Peace (2019, Transparency International (2019), Institute for Economics and Peace (2019), The World Bank (2019).

The Corruption Index is the largest in the Czech Republic (59%), followed by Slovakia (57%), Poland (60%) and the lowest corrupt environment is in Hungary (46%). By contrast, the strength of legal rights was strongest in Hungary (8.5) over the past 5 years, followed by Poland and Slovakia (7), with the Czech Republic having the lowest position (6.7). A strength of legal rights index measures the degree to which collateral and bankruptcy laws protect the rights of borrowers and lenders and thus facilitate lending. The index ranges from 0 to 12, with higher scores indicating that these laws are better designed to expand access to credit.

According to World Bank, the ratio of firms paying for security is highest in Poland (66.5%), followed by the Czech Republic (55.9%), Slovakia (54.8%) and Hungary (33.7%).

Companies often suffer from damage caused by thieves and vandals, so this area is being analyzed. The first indicator is the percentage of firms experiencing losses due to theft and vandalism. This indicator is the highest in the Czech Republic (35.1%), compared to other countries almost double. In Poland 16.8%, Slovakia 13.3% and the lowest in Hungary 10%. The second indicator is the percentage of firms identifying crime, theft and disorder as well as major constraint. Here again the Czech Republic leads (8.8%), followed by Poland (8.2%), Hungary (4.1%) and Slovakia (3.6%). The last indicator of this group is products shipped to supply domestic markets that were lost due to theft. Hungary (2% of product value), Poland (0.9% of product value), the Czech Republic (0.4% of product value) and Slovakia (0.3% of product value) have the biggest problems in this area.

There are two main areas of personnel risk - the possibility of injury to employees and the possibility of employee loss. For this reason, the following two indicators were selected for the assessment: Risk of catastrophic expenditure and Change in the number of employees. The catastrophic expenditure is defined as direct out of pocket payments for surgical and anesthesia care over 10% of total income. The risk of catastrophic expenditure is highest in Hungary, reaching 35.7%, much lower numbers are indicated in other countries (Czech Republic - 0.3%, Poland - 0.2%, Slovakia - 0%). The change in the number of employees is 1.3% in Slovakia, 1.07% in the Czech Republic, 0.88% in Poland and 0.85% in Hungary.

1.2.1 SMEs in EU and V4 - Basic figures

European SMEs have increased their importance over the past few years and they are set to continue to grow in the near future. Over the period 2008 to 2017, gross value added generated by EU-28 SMEs increased cumulatively by 14.3% and SMEs employment increased by 2.5%. EU-28 SMEs made a significant contribution to the recovery and subsequent expansion of the EU-28 economy. They accounted for 47% of the total increase from 2008 to 2017 in the value added generated by the non-financial business sector, and for 52% of the cumulative increase in employment in the sector. In fact, their contribution exceeded what would have been expected on the basis of their relative importance in the economy.

The number of SMEs in the EU-28 increased by 13.8% between 2008 and 2017. The number of newborn SMEs markedly exceeds the actual increase in SME population because of a high mortality rate of SMEs, especially among young enterprises. Each new SME that survived over the period 2012-2015 required the birth of 9 SMEs that did not. (European Commission, 2019)

Two thirds of high-growth enterprises (i.e. firms with a three years growth rate in employment of at least 10%) are concentrated in 6 Member States: Germany (23.9% of all high-growth enterprises in 2015), the United Kingdom (14.4%), Spain (8.6%), France (8.4%), Italy (7.6%), and Poland (6.4%). Together, these 6 Member States accounted for 69% of all high-growth enterprises in the EU-28 in 2015.

The share of companies by size was comparable in the V4 Group in 2018. As can be seen from the table below, the largest share is represented by micro companies (Czech Republic - 96.1%, Slovakia - 96.6%, Poland 95.7%, Hungary 94.0%, in EU-28 – 93.1%). The whole segment of SMEs represents 99.8% of all companies in the Czech Republic, 99.9% in Slovakia, 99.8% in Poland, 99.8% in Hungary and 99.8% in all countries of European Union. The large companies make up the rest of the whole.

Class size	Czech Republic		Slovakia		Poland		Hungary		EU - 28	
	Num (000)	Share (%)	Num (000)	Share (%)	Num (000)	Share (%)	Num (000)	Share (%)	Num (000)	Share (%)
Micro	991	96.1	420	96.6	1 623	95.7	526	94.0	22 831	93.1
Small	32	3.1	12	2.8	55	3.2	27	5.0	1 420	5.8
Medium	7	0.7	2	0.5	14	0.9	5	0.8	232	0.9
SME	1 030	99.8	434	99.9	1 692	99.8	558	99.8	24 483	99.8
Large	1	0.2	1	0.1	3	0.2	1	0.2	46	0.2
Total	1 031	100.0	435	100.0	1 695	100.0	559	100.0	24 529	100.0

Table 2: Number of enterprises in thausends within V4 in 2018. Source: SBA, 2018a; SBA, 2018b; SBA, 2018c, SBA, 2018d.

The proportion of workers employed by each group of companies is slightly different in each country. SMEs employ 66.4% of all employees in the Czech Republic, 72% in Slovakia, 68.1% in Poland, 88.8% in Hungary and 66.4% in the European Union. The rest of the employees chose to work in large companies.

Class size	Czech Republic		Slovakia		Poland		Hungary		EU - 28	
	Num (000)	Share (%)	Num (000)	Share (%)	Num (000)	Share (%)	Num (000)	Share (%)	Num (000)	Share (%)
Micro	1 133	31.1	647	41.9	3 446	37.8	913	33.4	41 980	29.4
Small	632	17.4	230	14.9	1 177	12.9	520	19.0	28 582	20.0
Medium	680	18.7	235	15.2	1 585	17.4	450	16.5	24 202	17.0
SME	2 445	66.4	1 112	72.0	6 208	68.1	1 883	88.8	94 764	66.4
Large	1 193	33.6	432	28.0	2 907	31.9	853	33.6	47 933	33.6
Total	3 638	100.0	1 544	100.0	9 115	100	2 736	100.0	142 697	100.0

Table 3: Number of persons employed within V4 in 2018. Source: SBA, 2018a; SBA, 2018b; SBA, 2018c, SBA, 2018d.

SMEs are very important part of the economy not only for the number of employees but also for their value added. The value added by SMEs in the European Union is more than 56%, which is a bit bigger part than in each country of V4 Group. The proportion of value added by SMEs is almost 55% in the Czech Republic, 52.5% in Slovakia, 51% in Poland, and almost 54% in Hungary.

Class size	Czech Republic		Slovakia		Poland		Hungary		EU - 28	
	Bill. €	Share	Bill. €	Share	Bill. €	Share	Bill. €	Share	Bill. €	Share
Micro	20.2	19.9%	7.9	21.8%	33.7	16.5%	11.2	18.0%	1 513	20.7%
Small	14.5	14.3%	4.8	13.1%	28.0	13.7%	10.9	17.5%	1 302	17.8%
Medium	20.9	20.6%	6.4	17.6%	43.3	21.2%	11.4	18.3%	1 341	18.3%
SME	55.7	54.7%	19.1	52.5%	105.0	51.4%	33.5	53.7%	4 156	56.8%
Large	46.1	45.3%	17.3	47.5%	99.1	48.6%	28.9	46.3%	3 166	43.2%
Total	101.7	100.0	36.4	100.0	204.2	100.0	62.4	100.0	7 322	100.0

Table 4: Value added within V4 in 2018. Source: SBA, 2018a; SBA, 2018b; SBA, 2018c, SBA, 2018d.

1.3 Business risks of SMEs

The first risk definition was specified by Bernoulli, who in 1738 used the geometric mean for the risk measuring and the risk spreading for its minimizing (Bernoulli, 1954). Till now the term risk does not have a clear definition. Smejkal & Rais (2013); Fetisovova et al. (2012) and also Tichý (2006) present a definition of risk as follows:

- Aprobability or possibility of a loss, generally a failure.
- Variability of possible outcomes or uncertainty of achieving them.
- Deviation of actual and expected results.
- A probability of every result which is different from expectation.
- Risk of an incorrect decision.
- Possibility of a loss or a profit.
- A combination of event probability and its consequences.

According to Tarnóczi et al. (2015), general risk can be defined as the potential occurrence of an unfavorable event. Varcholová & Dubovická (2008) confirm that risk represents a threat of loss occurring at a certain level of knowledge of the surroundings. From the perspective of business decision-making, two component forms of a risk can be identified: uncertainty (neutral in relation to the entity) and the negative impact of uncertainty on the entity.

Božek & Urban (2008) define a risk from the qualitative and quantitative perspective. From a qualitative point of view, the risk can be defined as the possibility that an undesirable event will occur. This event is different from the expected condition of an asset or a development and can cause higher or lower losses on property, a personal injury or environment burden. From a quantitative perspective, the risk can be defined as the amount of loss expressed in monetary or other units. This amount can be calculated as a product of the probability of occurrence of an undesirable event and the expected extent of losses caused by the activation of a potential undesirable event.

Two concepts are closely linked to the risk:

- The concept of an *indeterminate result* - the result must be uncertain. If we identify risk, there must be at least two variants of the solution. If we know for certain that there will be a loss, we cannot talk about risk.
- *At least one possible result is undesirable*. In a general sense, it can be a loss where a certain amount of an individual's property is lost - it can be a yield that is lower than a possible return (Smejkal & Rais, 2013).

Many authors agree that most business decisions are made in conditions of uncertainty. That means that there is the same uncertainty (randomness) in the development of conditions for business activities, during these activities and in their outcome. If we can quantify the probability of diversion of actual processes and results from the expected level, we are talking about risk. The risk is therefore a quantified uncertainty (Fetisovova et al., 2012; Fadun, 2013; Sira & Radvanska, 2014).

Veber (2009) points out the need to distinguish between a risk and an uncertainty. Uncertainty in terms of risk management can be understood as the impossibility of a reliable forecasting of risk factors (sales prices of products, size of demand, purchase prices of raw materials, material and energy, exchange rates, etc.) affecting corporate economic results and thus their deviations (negative or positive) from the estimated results. This statement is confirmed also by Hnilica & Fotr (2009).

Risk is an integral part of entrepreneurship. It arises from imperfect knowledge of a situation. There are many consequences that are closely linked to a decision. However, it is possible to estimate which consequence will occur

with a certain degree of probability (Buganova & Luskova, 2013; Tarnóczi et al., 2015).

Business risk can be defined as the possibility (uncertainty) that the actual results of the business will deviate from the expected results, while these changes may be desirable or undesirable. According to the authors Rybarova & Grisakova (2010), risk is a qualitative and quantitative expression of threat, the level and degree of threat, and probability of its occurrence as a specified phenomenon and its consequences. Risk arises as an uncertainty in the fulfilment of objectives.

Hrašková & Bartošová (2014) pointed out that global economy creates risks for everyone. A profitable business cannot be operated without risk taking in the long period. Every risk provides an opportunity. Business situations are often unique in their unpredictability, complexity and changing environment during the whole business process. Entrepreneurs must have several characteristics in one person and demonstrate ability to act as an investor, inventor, accountant, seller, and marketing specialist, etc. For this reason, more knowledge and skills of entrepreneurs help to solve problems associated with the necessary decision making and can eliminate a number of incorrect decisions (Frese & Gielnik, 2014).

Business risk has a complex form because it includes many partial risks which are intertwined. However, the group of risks distinguished by various authors are different. Fetisovova et al. (2012) divides business risks into these groups: strategic risks, operational risks, financial risks, socio-political risks and reputational risk. Ebben (2005) classifies risks as follows: market risk, operational risk, opportunity risk, financial model risk and financial risk in the mix. Doering & Parayre (2000) and Mu et al.(2009) created three groups of risks connected to the new project development – market risk, organizational risk and technological risk. Ekanayake & Subramaniam (2012) worked in their research with financial risk, operational risk, environmental risk (a variety of social, economic, political and physical risks) and reputation risk. Epstein & Rejc Buhovan (2005) characterized strategic risk, reporting risk, operational risk and compliance risk. Myšková & Doupalová (2015) classified two groups of risks. The first group described only a negative side of risk where risks are perceived as a threat. The second group of risks perceives risks in term of

potential opportunity. Verbano & Venturini (2011, 2013) discussed nine different groups of risks – project risk, disaster risk, enterprise risk, engineering risk, financial risk, strategic risk, insurance risk, supply chain risk, clinical risk. Finally, Keizer et al. (2002) closed their research with the identification of four risk domains linked to the product innovation. The main risk in this area is technology risk (product design, manufacturing development), market/consumer/public/trade acceptance (analogue of market risk), finance (the vitality of business), and operations (internal organization, cooperation in development with other parties). Mostly economic, technical, financial and political risks are important for SMEs and have a huge impact on business environment (Belás et al., 2015; Dumitrescu et al., 2015, Fazli et al., 2015; Haviernikova et al., 2016; and Korombel, 2012). Lavastre et al. (2012) claim that business risks affect several branches of management such as operations, strategy, supply, customer relations, financial markets, legal, fiscal and regulatory requirements.

The research described in this scientific book adopted the group of risks as follows:

- **Market risk** (loss of costumers, a strong competition in the sector, market stagnation, and unreliable suppliers).
- **Economic risk** (development of taxes and mandatory contributions, poor availability of financial resources, development of interest rates, a rise in prices of all types of energy).
- **Financial risk** (insufficient profit of the company, corporate debt, unpaid receivables, inability to pay the liabilities).
- **Operational risk** (an insufficient utilization of production capacity, outdated production facilities, a low rate of innovation, an increasing number of complaints).
- **Personnel risk** (a high rate of employees' job changing, an insufficient staff qualification, employees' errors, decline in morale and discipline).
- **Security risk** (accidents and external threats as flood, fire, misuse of information, a low security of health and safety of employees, property crime – stealing).
- **Legal risk** (a low law enforcement, frequent changes of legislation, a low judicial independence, long time of resolution of litigation).

- **Other business risks** (corruption, clientelism, a low quality of services provided by public institutions, high administrative requirements for entrepreneurs)

1.3.1 Market risk

Market risks in risk management are risks associated with the success of an enterprise on the market. These risks include sales risks, demand risks, risks associated with consumer preferences and also competition behavior. The common denominator of many market risks is a change on the market. Moriarty & Kosnik (1989) state that market risk is derived from a product market acceptance, general market conditions and market evolution. A change of a market can be caused by various reasons – e.g. a change in the supply-demand relationship for a particular product, in the position of a supplier or a costumer, or in the economic situation of a particular country or group of countries (V4 Group, European Union, etc.). Non-commercial factors such as changes in production technology, seasonal and climatic influences and many others can also have an impact. These effects usually finish in price changes, production and acquisition costs and marketability of products and services.

The study provided by Sukumar et al. (2011) pointed out that consumer confidence is one of the most important factors in online business and it represents a high costumer-related market risk, especially for SMEs. The vitality of these companies depends on a costumer trust and reputation is the key factor for success.

Market risks are very common for enterprises which entering the market with a new product or being at a very initial stage of a new product development and searching for a new market. These enterprises must analyze who the competitors are, what products they offer, what competitive advantages they might have. To decrease the market risk at this level the entrepreneurs must analyze a potential future of the product and formulate their competitive strategies and tactics (Boyd et al., 1993).

The quantitative study of German SMEs showed that SMEs need to monitor market needs more closely than large companies and adjust their offer to meet their customers' needs. However, this creates higher dependence of the SMEs on their supply chains due to increased complexity (Thun et al., 2011).

1.3.2 Economic risk

Economic risks are in this publication described as changes in interest rates, development in taxes, a poor availability of financial resources and an energy price rise.

Interest rate risk can be observed in various forms. The first form is related to changes in interest rates in connection with variable loans and short-time financing. If the interest rates grow, the higher payments for variable loans are noticed. This situation leads to more expensive after-financing of the company's activity. On the contrary, the second form is connected to the company's cash and its revaluation on the bank accounts. With lower interest rates the evaluation of free cash is lower and the inflation can take all interests. The third form identified by Brealey et al. (2014) and Pavelková & Knápková (2009) is risk connected to the fixed bonds. If the interest rates decline, the issued bonds with fixed interest rates are becoming the expensive source of financing. Finally, a demand sensitivity can be caused by a change in the interest rate and can be considered as a part of the interest rate risk. The sensitivity estimation is complex, therefore it is difficult to measure this risk. The risk of interest rates is among 5 most important risks of organization from the treasury perspective. The impact of this risk depends on the level of leverage of a company and the type of risk. It is perhaps a reason why only 18% of companies focus on the management of the interest rate risk (Association for Financial Professionals, 2013).

All enterprises must be aware of a tax legislation, determination of the tax base, calculation of taxes and finally taxes development. Artemenko et al. (2017) sum up that the tax risk sources are as follow: regular changes in the tax legislation, establishment of new taxes, differences among regions or business entities, level of a tax burden. The lack of knowledge is not excuse for a wrong payment of taxes. Usually, the state authority responsible for a tax collection is not open to any discussion. Therefore, some problems with taxes can end up with insolvency or possibly bankruptcy. Tax risk plays an important role in big international companies. They need to manage every transaction under regulation of each country and manage effectively risks by applying components of the tax risk strategy. The risk of this type forces companies to have a specialist or entire departments that deal with tax issues.

Another serious economic risk is an availability of financial resources. Sometimes, it is a group of financial risks. This risk is connected to the credit risk which arises from the situation when a company provides a loan to the other entity and the debtor is unable to pay the loan in the future. Boyd & De Nicolo (2005) state that a lower risk on a bank market allows a bank to increase its profit through higher interest rates and bank feeds. This can lead to the higher risk of debtor's bankruptcy.

Another important economic risk is an increase in energy prices. Energy price risk management is sometime compared to a higher development of interest rates and foreign exchange markets. The risk of commodity markets is determined by the complexity of physical substance which cannot be simply manufactured, transported and delivered (Weron & Weron, 2000). For this complexity, managers of SMEs are dependent on the contracts with counterparties which sell energy. They do not often have a force to negotiate prices of the contract. They can only choose a duration of a fixed price of energy. The decision about a duration of a fixed contract is an important tool to manage this type of risk.

1.3.3 Financial risk

Financial risks exist in various forms and they cannot be avoided by any enterprises without a certain influence on their production or management. Financial risks appear in all aspects of financial management including the raise, use and distribution of capital. SMEs need to understand the characteristics and a cause of financial risks in relation to their business (Kljucnikov & Belas, 2016; Shuying& Mei, 2014). One of the biggest barriers to manage financial risk effectively is lack of information necessary for risk evaluation and risk management or an integration of new processes to eliminate a risk in the decision-making process (Hudakova et al., 2015). Belás et al. (2018) warn that the intensity of financial risk is influenced by various factors. It is necessary to analyze these factors regularly in relation to the specific features of a local business environment.

The financial risk in this research is perceived as a risk of insufficient profit of the company, a corporate debt, a risk caused by unpaid receivables (liquidity risk) and an inability to pay liabilities (insolvency).

Liquidity risk is primarily the result of additional risks of deviation from planned performance and may result in a lower income or more expenses. The liquidity measures the ability of a company to cover its expenses and also shows whether the company is able to manage the losses that have caused the risk. Low financial funds can cause problems with paying the obligations on time. This situation can result in a need of additional funds. With additional funds, the costs of liabilities increase, and the company may be at greater risk, which may result in a huge risk of liquidity and solvency. For this reason, the financial risk is one of the most important risks to manage because it can cause a failure of the business (Berman et al., 2011; Havlíček, 2011; Kafka, 2009, Napp, 2011). SMEs are less protected and less informed about the tools that help prevent the failure of the company due to a financial risk (El Kalak & Hudson, 2016; Kubickova & Soucek, 2013; Paul & Boden, 2011; Sauka & Welter, 2014). A partial or total equity consumption is another financial risk if the company is not able to generate profit during the year. However, this is the result of risks affecting the business. There can be several reasons – a decline in sales or a costs increase, high interest rates from liabilities, etc. (Pavelková & Knápková, 2009; Smejkal & Rais, 2013).

The financial risk can lead from financing of the business (Brealey et al., 2014). SMEs are highly dependent on external finance and usually a loan is the main source of financing available (Altman et al., 2010; Gama & Geraldes, 2012; Mutezo, 2013). The entrepreneurs want to be more flexible and reduce funding costs at the same time. It is important to perceive the duration of the loans in connection with the assets that are financed by the loan. The discrepancy in this rule can be seen in enterprises very often. Non-current assets are financed by short-term variable loans. It results in a decline in cash flow in the period when the interest rate grows. This fact can lead to a lower ranking of the company and worse conditions for an obtaining additional loan. Conversely, long-term financing of short-term assets may result in funding the asset which no longer exists. The company must pay interest rates for an asset which do not have anymore (Pavelková & Knápková, 2009).

To eliminate the financial risk, rules were formulated. The funding rules are based on the capital needs and setting out the basic principles which funds should be used under certain conditions to cover capital needs. Kislingerova

(2007), Scholleová (2008), Synek (2006), and many other authors analyze these four rules:

- **Golden rule of financing** – the long-term assets should be financed by equity and long-term debts. On the contrary, the short-term assets should be covered only by short-term debts.
- **Golden rule of risk compensation** – the equity should be higher or at least equal to the debt. It means that the owners of the company should undergo at least the same part of the risk as the borrowers.
- **Golden ration rule** – the rate of investments growth (calculated as the proportion of fixed assets at the end of the actual period, including the depreciation reached in the actual period, to fixed assets at the end of the last period) should not be higher than the rate of sales growth (calculated as the proportion of sales for goods, own products and services reached during the actual period to these sales in the last period).
- **Golden pari rule** – the equity in the total long-term funds should be higher than the rest of long-term funds.

Finally, high levels of debt financing can be a risk. If the return is lower than required interest rates from liabilities, company is unable to pay interest without a loss in that year, which cut some equity and can lead to a dramatic situation in the next period (Brealey et al., 2014; Mutezo, 2013; Smejkal & Rais, 2013). There are some objective factors which test the ability to manage an emergency situation. Sannajust (2014) finished his research in SMEs in Europe and the USA with the statement that SMEs suffer from the result of crisis much more than large companies. SMEs often experience the situation that the banks do not provide a loan for additional financing while large companies are rejected less often. Deakins et al. (2010) warn that the problem of SMEs with obtaining the loan can be caused by a limited and incomplete offer of financial products, or the toughness of financial market regulations. Typically, SMEs without economic history and a lack of sufficient collateral (start-up firms) or companies that are not sufficiently transparent have a huge problems with obtaining a bank loan (Belás et al., 2016).Young and small firms typically face difficulties in raising investment funds due to high levels of perceived risk by external investors. Altman & Sabato (2007) and Altman et al., (2010) investigated that 9 out of 10 surveyed enterprises used their own funds more

likely than the venture capital. Only 5% of the total enterprises had accessed this risky form of funding. Some authors stressed the differences among business areas and also the length of business in this context. This fact was confirmed by Mason & Harrison (2004) during their research of technology-based small firms. They found out that these companies at early stage are more risky than non-technology ventures at the same stage. For this reason they have difficulties to find some external funding. Ben-Ari & Vonortas (2007) pointed out that new knowledge-based companies are much less likely to attract external funding than other companies. Knowledge is in the heads of its founders and potential investors are afraid of risks which cannot understand.

SMEs prefer in some situation alternative external finance including the trade credits, loans from other companies or state grants instead of bank loans (Casey & O'Toole, 2014). Vickery (2008) stats that SMEs are more averse to the interest rate risk than large firms. It can be explained by research provided by Moore et al. (2000). They analyzed more than 4000 European SMEs and found out that SMEs are less sophisticated in terms of risk management practices than large companies. For this reason, it is particularly important for SMEs to be aware of the interest rate risk caused by variable interest rates. Kim & Vonortas (2014) state that for better educated SME owners, it is more natural to eliminate financial risks caused by interest rates.

1.3.4 Operational risk

Operational risk contains business challenges and risks connected to the people, systems and process utilized by companies. It can also include other classes of risks such as legal risk, fraud risk, supply-chain risk and environmental risk (Epstein & Rejc Buhovac, 2005). This publication specifies operational risk narrower because other risks which are usually part of this group are specified in following groups of risks (e.g. risks connected to the people are classified as personnel risks). Operational risks are divided into two groups – *production* (an insufficient utilization of production capacity, outdated production facilities, a low rate of innovation) and *satisfaction of the customers* (measured negatively by an increasing number of complaints).

The first group (production) considers facilities, products and production capacity. Problems may arise when the company, due to the lack of outdated equipment, is unable to produce enough world-class products and services. For

this reason, the company performance is lower than the competition performance and it can lead to higher costs, producing poor quality products or producing the products which are not demanded on the market. Moreover, the excess capacity means the allocation of fixed costs to the smaller number of units produced. An important risk factor for facilities is their age and functionality. Inadequate maintenance and poor service can lead to the high operational risk. Also, the use of outdated and unsuitable technologies is a major risk for the company's successful operation. The risk of technological obsolescence is sometimes defined as a separate group of risks. The use of obsolete or unsuitable technologies is a major risk to the company's successful operation. Innovation is necessary to maintain the business efficient during the whole period of the enterprise in progress. Innovation can be described as technological and market knowledge and according to the importance of the changed caused, it can be classified as incremental or radical (Sen & Ghandforoush, 2011). The innovation has become a critical factor for companies in order to improve their productivity, sales growth, competitiveness and efficiency (Guan et al., 2006).

Because of the importance of managing the obsolescence of facilities or products, three types of obsolescence are presented:

- *Technological* - technology is developing very quickly. Obsolescence may not only affect the obsolescence of a product as a whole, but also its component. A situation when a supplier no longer delivers components to a product that a business brings to the market is usual.
- *Functional* – the product or components are still on the market but the specific requirements have changed. As a result, the performance or reliability of the product can be outdated.
- *Economical*– a property loses value because of external factors such as loss of resources, new legislation, reduced demand, increased competition, reduced earnings or margins and other factors and restrictions.

1.3.5 Personnel risk

The efficiency and success of companies in today's highly competitive environment is dependent on the availability of raw material sources, technical

conditions, information, competitive advantages, financial resources and also on human resources. Human resources have been one of the most important resources in companies in recent decades. Two decades ago, the concept of human resources began to be used for work power, which is considered to be a source of a competitive success and add value in the manufacturing process (respectively in the process of services providing) (Bláha et al., 2005). Also Belás et al. (2013) consider a personnel policy as an important part of a corporate management, because it contains procedures leading to a satisfaction or a dissatisfaction of company employees with their working conditions. It is clear that satisfied employees are able to perform better, identify themselves with the strategy and culture of the company and can transfer their satisfaction to clients.

Personnel risk is tightly connected to the personnel management. Entrepreneurs should evaluate and motivate their employees. However, the evaluation of employees does not mean an application of proper personnel management. The difference between the work performance evaluation and work performance management is shown in the table below.

Work performance evaluation	**Work performance management**
Top-down assessment and evaluation	A joint dialogue-based process
Evaluation meeting (interview) once a year	Continuous research and assessment of work performance with one or more formal meetings
Classification, scoring	Classification and scoring less common
Monolithic system	Flexible process
Focus on some quantitative goals	Focus on some values, behavior and some goals
Often connected with reward	The link to the reward is less common
Bureaucratic system – complex paperwork	A minimum documentation
It is a matter of personnel department	It is a matter of some line managers

Table 5: The difference between the work performance evaluation and work performance management. Source: Armstrong (2007).

Human resource management can be seen as a purposeful and continuous process that takes place in certain economic, social, cultural and organizational terms and aims to achieve the required level of staff in relation to the company's goals. In principle, personnel policy consists of two separate areas:

- creating conditions for influencing the employee's behavior (organizational and methodological support of all personnel and social processes in the company), for which the relevant personnel department is responsible,
- a leading of people where there is an immediate impact on workers, such as initiatives, attitudes, value orientations, and employee performance, for which managers at the various levels of management in a particular enterprise are responsible (Belás et al., 2013).

If the human resource management does not do it properly or there are some mistakes of people responsible for this area, even more if there is no human resource management in the company, the personnel risks appear. One of the biggest difficulties for many companies is to find and attract employees with appropriate skills. The problem is more significant in small companies which may face some difficulties in attracting job position. Inadequately trained people create the potential for significant loss when internal systems and processes fail (Epstein & Rejc Buhovac, 2005)

The personnel risk in this publication is characterized as follows: a high rate of employees' job changing, insufficient staff qualifications, errors of employees, a decline in morale and discipline.

1.3.6 Security risk

Security risk is defined as a risk associated with the safety of assets, information and persons. Security risk usually includes 3 groups of risks:

- personal security - damage of property, health and life of people, personal data protection,
- physical security - damage to equipment, disruption of objects and systems,
- information risk - data, network or information security breaches, data misuse or data corruption.

Information technology (IT) is one of the most important factors for the development and competitiveness of enterprises in all sectors (Vaněk et al., 2011; Collins et al., 2006). Information Security Management is a part of management. It is focused on estabilishing, implementing, monitoring and improving information security in the company (Davidaviciene et al., 2019;

Radu, 2018; Rajnoha et al., 2017; Tvaronaviciene, 2018). According to Leach (2008), most companies define security risks as potential direct and indirect losses due to misuse, damage, destruction or unavailability of information. Jai Arul et al. (2011) define three basic rules describing safety objectives in the information system: ensuring confidentiality and integrity, ensuring the availability of information, ensuring the responsibility of the users of information system and the activity inside. Gródek-Szotak & Nesterak (2017) and Korenkova et al. (2019) state that management should approve all internal documents before sharing information with other subjects. Tu et al. (2018) and Oláh et al. (2019) focused their studies on identifying and modeling factors that contribute to the success of information security management. They identified six critical success factors such as business alignment, organizational support, IT competencies and organizational awareness of security risks and controls, and information security controls. Each of these factors affects information security, while the complex solutions include combinations of all of them.

Hallová et al. (2019) surveyed medium-sized enterprises in the Slovak Republic and found out that 61% of enterprises are not interested in detecting the state of their information and communications technology security. Moreover, 90 % of enterprises are not interested in external IT security management, even though they are not able to manage these risks with internal personnel sources. They pointed out that human factor is very important factor in reducing the number of safety incidents in companies. One of the ways how to reduce security risk should be implementing also a security training and employee training of IT.

The security risks were divided into the following categories: some accidents and external threats (flood, fire), misuse of information, a low security of health and safety of employees, a property crime (stealing).

1.3.7 Legal risk

For the reason of an increasing regulation, legal risk can be perceived at the level of operational risk. Moreover, the Aon Market Report (2018) states that the legal side is nowadays more important than sales. That statement suggests the absurd situation that managers need to be more careful about changes in legislation than about securing sales of their products. Managers must be especially aware of a new regulation. They have to consider not only national

law, but also European regulation. The last huge change in regulation was focused on personnel data protection. The EU General Data Protection Regulation (GDPR) is the most important change in data privacy regulation in the last 20 years. This regulation was handled across every sector around the world and followed the IT revolution in the last years. According to the Risk.net's (2019), it ranked 10 largest risks, which indicate the increasing importance of legal risks, additionally combined with the security risk. TOP 10 risks are as follows:

1. Data compromise
2. IT disruption
3. IT failure
4. Organizational change
5. Theft and fraud
6. Third-party risk
7. Regulatory risk
8. Data management
9. Brexit
10. Mis-selling.

Gao et al. (2013a) confirm that some enterprises have the significant problem with regulations when they apply for financing. Also, Djankov et al. (2007) state that SMEs are affected by the institutional and legal environment in the country. Furthermore, studies using firm-level data show that legal risks disproportionally affect SMEs' access to external financing and growth (Beck et al., 2005, 2006, 2008).

The legal risk for this publication is characterized as follows: low law enforcement, frequent changes in legislation, low judicial independence, long time of resolution of litigation.

1.4 The influence of the selected factors on entrepreneurship

An influence of different socioeconomic factors on the entrepreneurship was confirmed by many studies. For example, Minniti & Nardone (2007) found out that socioeconomic factors as a level of education or age play an important role in the business behavior. Boyer & Blazy (2014) examined that gender and age of the entrepreneur have a huge impact on the risk of failure of the business.

Individual characteristics of SME owners and SME ownership structure have a significant impact on the business direction of an organization and also on risk management practices (Acar & Göç, 2011; Gao et al., 2013b; Georgousopoulou et al., 2014; Kim & Vonortas, 2014).

Acar & Göc (2011) also showed that the characteristics of the industry are very important because an unstable demand or rapid technological change can influence the individual risk perception. Another key point in their study is that, compared to managers from developing countries, Western managers take more risks. Thus, risk appetite seems to vary with individual culture (Acar & Göc, 2011).

The risk management implementation in SMEs depends on certain characteristics, such as firm size, sector and ownership structure. Larger firms seem to be more likely to have a more developed risk management system; this reflects previous studies analyzing the relationship between size and risk management (Liebenberg & Hoyt, 2003; Paape & Speklé, 2012). Family firms appear to have fewer incentives to implement enterprise risk management (ERM) in which they show lower levels of ERM activity. The empirical findings reflect the literature (Beasley et al., 2005; Hoyt & Liebenberg, 2011; Paape & Speklé, 2012) and confirm that ERM approaches become more sophisticated with increasing size, institutional ownership and board encouragement and independence (Kleffner et al., 2003).

Beasley et al. (2005) state that operating sector is also important for approach to the risk management. Regulated industries such as financial institution have been at the forefront of risk management implementation. On the other hand, companies operating in more competitive sector are also more likely to implement risk management system (Kleffner et al., 2003; Paape & Speklé, 2012).

1.4.1 Size of the company

Size of the company is perceived as one of the most important indicators for risks and risk management. As size increases, the scope for threatening events is likely to differ in nature, timing and extent. This implies the need for a comprehensive risk-management strategy (Gordon et al., 2009). Larger firms will profit from greater resources and economies of scale when operating risk management. Therefore, it is noted that larger firms are more likely to

implement processes of risk management than their smaller counterparts (Beasley et al., 2005; Hoyt & Liebenberg, 2011; Pagach & Warr, 2011). Larger enterprises are more likely to be involved in investments in a company, which needs an appropriate controlling of investments and risk assessment. This study was conducted by Henschel (2006) in SMEs in Germany.

Beck (2005) indicates that all companies face some obstacles in business environment. The obstacles as financial and legal underdevelopment and corruption constraining a firm's growth are much more important for small companies. The quantitative study by Acar & Göç (2011) based on 32 survey responses from Turkey also showed that the perception of risks is linked with the company size. Entrepreneurs of SMEs have a higher perception of risks.

Generally, the assessment of the risks, type of risk faced by companies and intensity of its impact on the company varies according to the size of the company. These differences were mentioned in this publication from above. These differences in risk perception and the different risk management of small and medium-sized businesses also have a negative impact on other areas of the business environment. For example, worse conditions for financing a company (Belás et al., 2016; Chiou et al., 2012; Kljucnikov et al., 2016; Ramlee & Berma, 2013), an increasing probability of default (Ardic et al., 2012; Balcerzak et al., 2018; Ozturk & Mrkaic, 2014), the inability of payment of liabilities of insolvency (Strelcova, 2012), a worse position for exporting (Huyghebaert, 2006; Manole & Spatareanu, 2010; Minetti & Zhu, 2011).

1.4.2 Gender

Gender is one of most discussed social factors in business environment. Many authors are searching for a similarity or difference between women's behavior and men's behavior. Arano et al. (2010) analyzed risk averse in case of percentage of actual retirement assets invested in stocks – without any statistically significant difference among women and men. Dohmen et al. (2011) approved that women are more unwilling to take risks than men. This difference was confirmed during the research in Germany, when 22,000 people were asked about their perception of risk and their willingness to take a risk. Women were more unwilling in all domains (willingness to take risks in general, in car driving, in financial matters, in sport, in career and in health matters). Eriksson & Simpson (2010) tested hypotheses in an international

survey with 424 answers from India and 416 respondents from US. The hypotheses were focused on the lottery and connected risks. They found out lower risk preferences and less risky behavior by women from both countries. Ronay & Do-Yeong (2006) also confirmed differences in risk attitude between women and men in Australia. The study made by Watson & Newby (2005) of 673 SMEs in West Australia reported that male SME owners appear to show a greater risk appetite than female SME owners.

Most authors dealing with a different attitude to a risk in business, depending on gender that generally based on finding differences between men's and women's behavior have concluded, that men are more inclined to risk, more innovative and proactive in a business than women (Goktan & Gupta, 2015, Langowitz & Minniti, 2007, Lim & Envick, 2013), while some studies have come to opposite results (Runyan et al., 2006).

In the context of an attitude to the finance, the study of Garwe & Fatoki (2012) confirmed that gender does not have any significant impact on SME finance. They found no difference in the question of availability of credit from commercial banks to male and female-owned SMEs. According to their study, the commercial banks do not differ for male and female-owned SMEs while providing credits. North et al. (2010) confirm this argument stating that SMEs looking for finance owned and managed by women were more credit constrained than the men-owned SMEs due to the reason that women entrepreneurs assumed that they would be refused by banks and hence they even did not go to the bank for loans. The authors added that the reason for refusal of the female application is the lack of women’s experience with applying for a loan. Carter et al. (2007) have examined the effect of gender in the bank lending process in a small business when the loan applicant is a female or male. They have found that the application form submitted by a female applicant mostly results in a negative respond of a bank. On the other hand, many authors have confirmed the statement that the gender does not have any significant impact on SME finance (e.g. Freel et al., 2010; Gamage, 2013).

Langowitz & Minniti (2007) confirm that higher risk avoidance prevents women from starting a new business. In this context, Minniti & Nardone (2007) added that women are more afraid of failure than their man competitors. Male managers are more likely to take risk management decisions than their female

counterparts (Kouamé, 2010; Velandia et al. 2009). Perhaps for this reason, only 31% - 38% SMEs in developing countries are owned fully or partially by women (International Finance Corporation, 2013). In Asian-Pacific countries, the situation is similar – only 38% of all SMEs are owned by women (APEC, 2016).

The challenges that women identify in starting a business include discouraging social and cultural attitudes, lower levels of entrepreneurship skills, greater difficulty in accessing start-up financing, smaller and less effective entrepreneurial network and policy frameworks that discourage women's entrepreneurship. Women also have a different motivation for starting a new business than men. Women leave their jobs more often for the life goal to manage better their work-life balance (OECD, 2016). Man would like to achieve higher incomes and be successful in their area (Millian et al., 2014), while women perceive the success as an ability to take control of their destiny, build relationships with prospective clients and do things that fulfil them, men are more result-oriented, and usually set their definition of success as the achievement of the objectives (Bartoš et al., 2015).

1.4.3 Education

A different attitude to the business and its operating was noticed in the first stage of entrepreneurship - in the interest to be entrepreneur. In this context Velez (2009) has confirmed that highly educated people who exceed the college at least with one degree are more interested to have own business than less educated people. These people are more ambitious and are not satisfied with an average wage offered by other employers. Their less educated colleagues look for a stability in a working position and also for a stable monthly wage. He has also confirmed that less educated people are not able to accumulate their wealth and safe money for future. The research made by Kljucnikov et al. (2016) found out that the entrepreneurs with a higher education are better prepared for starting their own business because they are able to define quality parameters of the business environment and present their stance.

According to Van Der Sluis et al. (2008), higher levels of education such as university, or college level education are significantly related with higher performance of the entrepreneurship in relation to sales or profitability and also sustainability. Higher education of entrepreneurs is in negative relation with

their company's business failure. Higher education decreases the possibility of failure of business. On the other hand, the higher level of education of entrepreneurs has a positive impact on the business growth. People with higher education look for new opportunities more often than their less educated competitors (Rauch & Rijsdijk, 2013). Omerzel & Antoncic (2008) found out that a higher education level can increase the techniques and skills of an entrepreneur. These skills can lead to higher performance of the enterprise. Moreover, a number of studies point out that the entrepreneurial success not only depends on the entrepreneurial education, but also depends on different practical skills and knowledge about the business environment (O'Gorman & Terjesen, 2006).

In terms of the impact of the education level of an entrepreneur, Carter et al. (2007) found out that the process of applying for a loan at a bank depends on the applicant's education. The higher the applicant's education, the greater the likelihood that the bank will accept the application successfully. Carter's previous research stated that education is a very important factor in the field of funding, while women with at least secondary education use more equity funding from external financing than the less educated women competitors (Carter et al., 2003). In this context, Vos et al. (2007) identified that more educated entrepreneurs get usually lower interest rates on loans. Slavec (2014) confirmed that the level of education is a significant factor in case of acquisition of a bank loan in Slovenia. The fact that banks are more willing to finance a business of more educated entrepreneurs was also confirmed by Irwin & Scott (2010). According to these authors, the success rate of highly educated people is higher than by less educated ones became, advanced of knowledge of the business propositions and more organized load proposals.

In the context of decision making and risk management, it has been proven that managers with more years of education are more likely to take risk management decisions than those with less years of education (Kouamé, 2010; Velandia et al. 2009). As Kim & Vonortas (2014) showed, a SME owner higher education is positively related to adopting risk mitigation strategies, such as networking, and strategic actions to mitigate technological financial and operational risks. Also, a family background in terms of parental education plays a role in determining risk attitudes, indicating a positive correlation

between parental education and willingness to take risks (Dohmen et al., 2011). According to Wang (2012), it is noticeable that entrepreneurs with college or university education can manage the financial risk better than the secondary or primary educated entrepreneurs. Kim & Vonortas (2014) pointed out that better educated SME owners are more likely to take strategic action in order to mitigate financial risks, such as interest rate risk.

1.4.4 Age and length of business

Age is one of the most important social factors in business environment. This factor can be connected to the age of the entrepreneur (very often related to his/her knowledge and experience) and also to the length of business (business experience and history of the entrepreneurship). Older firms seem to be more successful than the younger ones (Islam et al., 2011). On the contrary, the younger SMEs have a higher growth rate than the older companies (Anderson & Eshima, 2013). In the context of entrepreneurs' age, Bonte et al. (2007) state that mostly people between 40 and 49 start a new business. They have accumulated experience from their previous jobs and have sufficient capital for starting a new business. The previous statement is not true in the area of hi-tech businesses where people between 20-30 start doing business. These people often need a start-up capital. Brunow & Hirte (2006) in this context state that people older than 45 (up to 59) have a higher overall level of productivity in comparison with people from the group 30 – 44 years old.

The age was proven also as an important factor in relation to the probability of delay of payments. Neuberger & Rathke-Dopppner (2014) found out that smaller companies have a lower level of liquidity and therefore, there is a higher probability of delays of payments to the suppliers. Young enterprises face higher interest rates from their loans than the older ones.

The study of Sepúlveda & Bonilla (2014) states that the age affects risk quadratically (first positively, but after some point negatively), and if there is prior experience of having to shut down a business, risk aversion increases. In can also influence negatively also the future of the entrepreneur.

The age also affects the risk-taking behavior of SME owners: Acar & Göc (2011) presented evidence that younger SME managers have higher risk appetites than the older ones. A possible explanation for the relationship between age and risk appetite was given by Gilmore et al. (2004). In their study,

SME managers with deeper knowledge (which may be related to their age) perceived risky situations more critically, took more informed decisions, and could be regarded overall as more risk-averse. Dohmen et al. (2011) confirmed on the sample of 22,000 people from Germany that as for women, the unwillingness to take risks is increasing with their age. Colombo et al. (2016) identified that younger companies suffer from financial risk connected to the financing constraints more than older and more experienced companies. This fact limits the growth of young firms. On the contrary, Belás & Ključnikov (2016) in the research of the entrepreneurial conditions in the Czech Republic found out that the perception of market and financial risks does not depend on the age of the entrepreneur.

In the case of credit risk, some authors have confirmed a strong relation between the credit risk and age of the entrepreneur (e.g. Bottazzi et al., 2014; Dong & Men, 2014; Lazanyi, 2014; Oliveira & Fortunato, 2006; Vos et al., 2007). Belás et al. (2016) analyzed the impact of age of the entrepreneur on the selected risk factors in the credit process. There is no significant difference between the age of a company and level of knowledge of credit conditions. On the contrary, it was proven by research of Bottazzi et al. (2014) and Vos et al. (2007) that the financing sources for younger companies are more limited than for larger and older companies. The perception of the credit risk is higher by younger companies than by the older ones (Belás & Ključnikov, 2016).

1.5 Risk management

1.5.1 Risk management in general

Business risk management can be defined as a structured and disciplined approach putting in harmony the strategy, human resources, technology and knowledge in order to evaluate and manage uncertainty of a company in the process of creating value. Risk management is a complex process which covers all the business threats and opportunities (De Loach, 2000). The ability to identify risks and adapt to the turbulent business environment become the critical success factors for many enterprises (Arena et al., 2010). The experience worldwide shows that risk management has become a common part of business operation and is seen as a key attribute of the success of SMEs. The system must cover identifying, measuring, monitoring and managing various

risks in business (Blanc Alquier & Lagasse Tignol, 2006; Hopkin, 2010; Lam, 2003; Vickery, 2008; Ziółkowska, 2012). Appropriate risk management as a part of the entrepreneurial orientation of an SME can help also it to internationalize (Karami, 2019). Risk management in the context of sustainability was highlighted by many authors (e.g. Font et al., 2016; Kornilaki et al., 2019; Oláh et al., 2019).

Risk management has different forms. According to Verbano & Turra (2007), it can be divided into these group:

- **Strategic risk management (SRM)**– a support to the strategic policies and corporate decision. It covers the identification and assessment of strategic risks which can mean an obstacle to reach a strategic goal of the organization (examples of risks – technological, brand, competition, project and stagnation risks).
- **Financial risk management (FRM)** – risk management focuses on managing financial risks such as credit risk, exchange rate, interest rates, price and liquidity. This type of risk management first occurred in the financial sector.
- **Enterprise risk management (ERM)** – a process of risk management which covers all business risks, sets the strategy across the enterprise and identifies potential events which can affect the entity. The concept of ERM must include three main characteristics: 1) it must include all lines of business, 2) it must include all types of risks, 3) it must be united with the overall business strategy. This type of risk management will be used in this publication because it most corresponds with its focus.
- **Insurance risk management (IRM)** – an instrument mostly used for risk transferring. This instrument looks for the best combination of protection/prevention and insurance, taking into account the economic and financial goals of the business.
- **Supply chain risk management (ScRM**) – a goal of this risk management is to organize the collaboration with a partner in the supply chain process in order to deal with the risks and uncertainties during logistic activities. Typical risks covered in this risk management are: relationships and innovation risks, logistics risk, financial and information risks.

- **Project risk management (PRM) –** a system integrated into the life cycle of a project. It must include a definition of objectives, an identification of sources of uncertainty, an analysis of these uncertainties and a formulation of responses given by management in case some risk appears. This type of risk management is focused on project risks such as technical, operational, organizational, economic, contractual, financial and political risks.
- **Disaster risk management (DRM)** – risk management focuses on reducing disaster risks in regions, mitigating the spread of disaster and maintaining the processes and structures.
- **Engineering risk management (EnRM)** – a system applied as a support to the management of a complex engineering system. This system considers technical and operational risks associated with human and organizational errors as well environmental risks.
- **Clinical risk management (CRM)** – a system improving a quality in healthcare. The aim of this risk management is to improve the quality of care for patients and to reduce the costs of reducing these risks paid by healthcare providers.

Enterprise risk management (ERM) is considered to be more important after the financial crisis of the early 21st century (Herbane, 2010; Mikes, 2009). The effects of ERM have only recently been explored (Beasley et al., 2008; Hoyt & Liebenberg, 2011; Pagach & Warr, 2011). The goal of ERM is searching for opportunities and their recognizing during upturns and also protecting the business against risks during downturns. ERM supports operational and strategic management decisions and also offers the competitive advantage for enterprise (Meulbroek, 2002; Nocco & Stulz, 2006; Stroh, 2005). More and more small businesses realize that risk management is very important for their operational and strategical management (Jankelová et al., 2018). Two streams of ERM can actually be seen: the first one tries to identify the advantages of ERM (Gordon et al., 2009; Hoyt & Liebenberg, 2011) and the second one is about recognizing the requirements for successful ERM implementation (Beasley et al., 2005; Pagach & Warr, 2011).

ERM covers some purposeful activities from risk prevention and risk management to limiting the amount of damage that can occur. It is intended to

detect and mitigate all dangers of impending a business activity throughout the complex concept as far as possible (Martinovičová, 2007). It is also important to pay attention not only to obvious risks, but also to potential or hidden risks, which are considered by a company to be impossible. Moreover, there are still new risks arising from the economic and social development of society and from legislative changes (Vávrová et al., 2009; Ducháčková, 2009).

The process of ERM contents of several steps:

- risk identification,
- risk classification (chapter 1.3.)
- risk analysis and risk assessment,
- choosing an appropriate method for risks reducing or eliminating (if possible) (chapter 1.5.2),
- review of the effectiveness of risk management (Ivascu & Cioca, 2014).

The risk identification is the first step to a successful risk management. According to Falkner & Hiebl (2015), SME managers can use three different methods to identify risks of loss:

- to analyze business assets, activities and staff,
- to analyze financial statements and identify the sources of potential financial losses,
- to analyze all operations or activities inside the company.

The first step of risk management process can identify significant risk and help to accept some method to handle them (Brustbauer, 2016). Mistakes in this phase can lead to the disastrous consequences such as costumer loss, environmental damage or bankruptcy (Hollman & Mohammad-Zadeh, 1984). Miller (2012) and Hennyeyová et al. (2010) state that the objective of any risk analysis within an organization is to identify and quantify the risks. After that the company can decide if they accept these risks or try to eliminate them. Without the knowledge of the risk, they cannot take appropriate decisions.

Henschel (2006) warns of the influence of management on the controlling department in the process of risk management. With an increasing size of the company, the influence of the controlling department increases too, and risk identification and risk evaluation are taken into account more frequently. Larger companies tend to take also external advice about risk management and their risk management is mostly more common than in small companies.

Smaller companies depend on the beliefs and attitudes of founding entrepreneurs. These entrepreneurs make decisions in terms of their business and do not use any special techniques of risk management. Furthermore, they ignore a particular risk despite having performed some form of risk identification and evaluation (Sparrow & Bentley, 2000). Lenzo et al. (2018) identify decision making as one of key factors in sustainability of SMEs in Italy.

The risk analysis is usually understood as a process of defining threats, the probability of their existence and the actual impact of the risk implementation, i.e. the determination of risks and their importance (Hálek, 2008). The risk analysis typically includes the following steps:

- **Asset identification** - definition of the entity under assessment and description of its assets. Assets is everything of a certain value for the company. Assets can be tangible (real estate, securities, money), or intangible (copyright, information). The basic characteristic of an asset is its value, which is based on an objective expression of a generally perceived price or a subjective valuation of the asset given by the entity. The value of the asset can be determined by: 1) the cost or other asset value, 2) the importance of the asset to the existence or behavior of the company, 3) the cost for a bridging the time of damage, 4) other aspects (specific for each asset).
- **Determining the value of each asset** - determining the value of each asset and its significance for the entity, evaluating the potential impact if the asset is lost, changed or damaged.
- **Identification of threats and weaknesses** - identifying the types of events and actions that can adversely affect the asset value, identifying subject weaknesses that may allow threats to occur.
- **Determining the importance of threats and degree of vulnerability** - determining the likelihood of a threat occurring and the degree of vulnerability of a subject to the threat (Smejkal & Rais, 2013).

The methods of risk analysis are divided into two groups – qualitative and quantitative methods (McNeill, 2005, Merna & Al-Thani, 2007). Qualitative methods are characterized by risks being expressed in a certain extent (for example, they are scored from 1 to 10, or determined verbally - small, medium,

large). Qualitative methods are simpler and faster, but more subjective. Qualitative methods include brainstorming, Delphi method, interviews, matrix risk diagram, etc. Quantitative methods are based on the mathematical calculation of the risk from the frequency of the threat and its impact. They usually express the impact in monetary units (annual projected losses). They are more exact than qualitative methods, but they are also more time-consuming. The disadvantage is their difficulty and often a highly formalized procedure. Quantitative methods are methods such as: CRAMM, @RISK, RiskPAC, RiskWatch (Lowther, 1994, Yadav & Jain, 2014).

Many SMEs do not apply risk management practices or do not apply them appropriately, because they cannot replace their human or material resources (Marcelino-Sádaba et al., 2014) and the lack of proper internal controls and assurance activities (Noorvee, 2006; Prinsloo et al., 2015). To cope with this limitation, Marcelino-Sádaba et al. (2014) suggest a simplified process to analyze risks in SMEs which consists of two variables only (probability measured as "highly unlikely", "unlikely", "likely" or "highly likely"; gravity measured as "negligible", "significant", "major" or "catastrophic"). Buchner & Weigand (2002) propose that business planning systems can support the identification of risks effectively and it can be helpful also in other areas of business. Weber (2000) and Rauch et al. (2000) in this context state that in Germany, the quality of planning is positively related to success. SMEs in Germany use the business planning for decreasing the uncertainties. The planning has a rather short time horizon and is not carried out in more detail. A frequent error made by business planning is no written business plan. The plan is only in mind of the owner-manager often.

The risk management practices in SMEs are very informal, which inhibits building of the risk management capacity in SMEs (Gao et al., 2013a; Poba-Nzaou et al., 2014). However, Brustbauer (2016) found numerous examples of SMEs that take a very proactive approach to the risk management. Terungwa (2012) states that the inability of business owners to adopt the processes of risk management leads to a decreasing of the sustainability of SMEs.

1.5.2 Methods for risk reducing

The risk reduction process needs to be viewed from two sides. The first one is to try to reduce potential risks as a precaution, the second one is to eliminate

the impacts of the actual threats. Thus, the methods can be distinguished into methods that eliminate the causes of risk (also preventive methods) and methods that reduce the adverse consequences of risk (consequent methods). Preventive methods include: offensive business management, risk retention, risk transfer, risk avoidance. Consequent methods include risk diversification, insurance, provisioning, obtaining additional information, etc.

1.5.2.1 Methods reducing the causes of risk

Offensive company management - business management is in the hands of managers. They must evaluate which methods reducing the risk to implement in their business plan. One of the best ways to prevent the entrepreneurial risk in a business is by having offensive management, characterized by:

- A right company development strategy and its implementation in the company. Strategic analysis is required.
- The preference and development of the company's strengths (by maintaining and developing the strategic advantage of the enterprise).
- An effort to achieve flexibility - an extremely fast response to changes in the internal environment of the company and its external environment (Smejkal & Rais, 2013).

Offensive management is connected to:

- A readiness for action (to connect employees with an internal activity),
- a marketing orientation of the management (to be close to the customer, the customer is in the first, second, third place…),
- a simple organizational structure (small administration),
- a professional cleanliness (not to enter unknown areas of business),
- some people who are the most important asset of the company - an informal communication with company employees, motivation for their education and qualification (Smejkal & Rais, 2013).

Risk retention - retention or risk taking is the most common method for risk reducing. All subjects face a great deal of risk and in many cases, nobody can deal with these risks. We can qualify risk retention as conscious and unconscious. By knowing retention, we call the situation when the entrepreneur realizes that he is facing some risk, but does not use any tool against his actions

to eliminate or reduce it. If the risk is not recognized, it is an unconscious retention and the entrepreneur takes the risk without any knowledge.

We also distinguish a voluntary retention from involuntary retention. Voluntary retention is the result of the entrepreneur's tacit consent to the risk, because there is no more attractive variants of the risk reduction. Non-voluntary retention is said to occur when the risk is accepted unconsciously (unconscious retention), but also when the risk cannot be eliminated (i.e.it cannot be transferred, reduced, or avoided).

If the entrepreneur decides to eliminate the risk in any way, he/she can basically choose from three approaches: risk can be reduced, transferred, or the entrepreneur can completely avoid the risk situation (Fotr & Hnilica, 2014; Tichý, 2006).

Risk transfer - it is one of the options characterized by a defensive risk approach. It means a transfer of risk to another entity. Therefore, the causes of the occurrence of undesirable events are not eliminated, but any subsequent impacts are dampened. The most typical risk transfer can be considered as follows:

- the most varied types of insurance,
- the conclusion of long-term purchase contracts at predetermined prices (elimination of a possible inflation or exchange rate risk),
- the conclusion of business contracts conditional on the collection of a minimum amount of goods (reduction of sales risk by its transfer to customers),
- leasing (transfer of the financial risk associated with the ownership of the item to the leasing company),
- selling short-term receivables - factoring - transfer of risk of non-payment of the receivable to the factoring company (Smejkal & Rais, 2013; Fotr & Hnilica, 2014; Srpová et al., 2011).

Taraba et al. (2015) suggested to SMEs techniques and instruments such as contractual prices, introduction of the penalization system for financial risk decreasing. These techniques can be considered as a risk transference. Creating different alliances and associations can also be one way of transferring risks to another subject or sharing them across multiple entities, reducing its effect or impact. Alliances with third parties can help small enterprises overcome

financial, technological or operational challenges which they would not be able to overcome themselves (Baum et al., 2000; Flatten et al., 2011; Nieto & Santamaría, 2010).

Risk avoidance - it is an approach where we do not rather implement the risk activity than we are exposed to a risk. This is a rather negative approach that is completely excluded for many risks. This approach is recommended in extreme cases only where the potential negative impact is so high that it is not possible to accept the given level of risk. Avoiding risks keep the business away from a further development (Smejkal & Rais, 2013; Fotr & Hnilica, 2014).

1.5.2.2 Methods reducing the adverse consequences of risk

Diversification – the aim of diversification is to spread business activities so that risk factors affect only one or some of them, and the business is not under the risk as a whole (Zuzák & Königová, 2009). On the other hand, any entry into a new sector or a new market is a risk and each decision about a diversification should be the result of a comparison of the expected effect expressed by a higher profit with the potential risk. Profit is always uncertain, and an unsuccessful diversification can lead to the significant deterioration from baseline (Zuzák, 2008). Tichý (2006) argues that the risk diversification consists in redesigning the risk portfolio. Above all, it is necessary to determine whether the project risk is diversified at all.

Professional literature distinguishes between systematic and non-systematic risks (e.g. Fotr & Souček, 2011; Veselá, 2011). Only non-systematic risks can be diversified. However, in addition to these, there are systematic risks that can be diversified.

Systematic risks depend on the changes of economic development. These risks are threatened in the same way by all economic units, respectively business activities. They depend on some overall market developments, therefore they are also named as market risks. They can arise from changes in monetary and budgetary policies, changes in taxation, overall market changes, etc.

Non-systematic risks are so-called unique risks. These are specific to individual companies or the business projects. They can arise from a significant production or technological innovation in a particular production area, entry of

a new competitor to the market, leaving of key employees, breakdown of production equipment, etc.

Risk diversification can take different forms, depending on what its aim is. An enterprise can diversify, for example, activities, products, markets and customers, insurance, etc.

An enterprise can make the following diversification:

- a focused diversification, where a new activity is linked to the existing business activities and all activities are interconnected,
- a horizontal diversification, which leads to different sectors, but the activities are intended for the same customers,
- a mixed (unrelated) diversification into completely different industries,
- a vertical diversification into supplier or consumer industries (Zuzák, 2008).

The focused diversification means an expansion of business activities with new products or services, or entering new markets. A typical example is the expansion of production activities by financial leasing (where, for example, a car manufacturer or technology facility supports the sale of its own products by offering these additional services) (Kotler & Keller, 2006).

The horizontal diversification is a decision to extend its existing market presence to other products or services of a different character. This diversification can take two forms depending on the character of the activities being expanded. When the diversification leads to activities similar to the current focus of the company, it is a *related diversification*. The company introduces products that are related to the company's know-how, its technological experience, and its financial and marketing capabilities. For example, the diversification of banks' services, which extend their portfolio of services offered, such as leasing companies, insurance companies, factoring companies, etc. This kind of diversification has its advantages and disadvantages. The advantage may be knowledge of the field and environment, know-how, database of customers, etc. The disadvantage is, however, too narrow diversification, where related fields interact – “the eggs are in several baskets, but we keep them in one hand” (Smejkal & Rais, 2013)

In case of *unrelated fields*, the existing production or business strategy is changed. For example, a food industry manufacturer decides to set up a travel

agency and car rental company. The inexperience with new markets and the area can ultimately lead to a failure. This diversification is the riskiest option of diversification strategies because the enterprise enters unknown sectors and isolated business activities do not allow the effect of synergies. Business activities take place in unrelated industries from a technological and customer point of view, and only a common brand can support them. An example of this is General Electric, which manufactures electronics, electric locomotives, nuclear reactors, etc., and then decided to enter the banking sector (former GE Money Bank - MONETA Money Bank since 2016) (Zuzák, 2008).

Vertical diversification is an entry into the supply or customer sector. The strategy aims to reduce costs by extending the value chain and eliminating the risks posed by suppliers and customers. An example is the Mercedes car manufacturer that bought an electrical company many years ago. There was a visionary assumption that the car of the future would increasingly use electronics and wanted to focus its development in this direction and influence and implement it itself (Zuzák, 2008).

Insurance – the principle of insurance is from the point of view of risk theory the exchange of the risk of a large loss (damage) for the security of a small loss (premium). The negative consequences of the risk of a future unfavorable situation are transferred to the insurance company which covers the damages in whole or only a part. Insurance is an alternative to creating own reserves for future negative events. The undoubted advantage is a reduction in the amount of fixed capital that can be invested more advantageously. A slight disadvantage is the security in the form of the necessary insurance coverage. The disadvantage may be insurance conditions, where in the case of a really high impact of damage, the insurance company tries to pass on the client's contribution or to completely exclude the responsibility. The qualitative study by Cioccio & Michael (2007) from Australia showed that small enterprises use insurance mostly as the primary tool for risk management. However, the insurance is sometimes associated with considerable costs and is basically used for covering some unexpected events.

The insurance is most important in trade, especially the international trade (i.e. foreign shipment insurance, insurance of foreign trade and territorial risks,

credit risks insurance, insurance of investments, liability insurance, etc.) (Smejkal & Rais, 2013).

Creating reserves - reserves are assets intended for use in exceptional circumstances. Reserves are one of the basic methods of reducing business risk. Companies most often create material and financial reserves. Materials allow to eliminate, for example, fluctuations in the supply of raw materials. Financial resources allow to survive if the company do not have enough money for operations in a short-term period.

When determining the amount of required reserves, it is appropriate to use audit methods, to determine the probable amount of costs needed to cover losses and to choose the type of reserve that is an optimal solution - for example, to choose a short-term financial instrument instead of keeping the money in the account with a higher profitability (term deposit, deposit certificate, treasury bill, highly liquid security, etc.) (Smejkal & Rais, 2013).

Obtaining additional information - a situation when we do not know anything about a business partner or an acting counterparty can be one of the causes of failure in the negotiations. Lack of information often leads to the errors in business choices and to the moral hazard. We may mitigate the impact of risk in obtaining additional information.

The negative impacts of individual risks are multiplied in times of financial crises. The last financial crisis has significantly changed the risk management perspective of small and medium-sized enterprises in the European Union. Based on several studies that have been prepared and published, the most common mistakes in the period of the crisis, which could have a negative impact on the company, are as follows: an incorrect cash flow management and insufficient financial risk management, and lack of early warning of the financial manager (Krištofík, 2010). Moore et al. (2000) pointed SMEs as less sophisticated in terms of risk management practices than larger entities.

1.5.3 The person responsible for risk management

The human capital has been identified as one of the key issues in developing effective risk management (Blanc Alquier & Tignol, 2006). It is strongly related to social capital, which enables human capital development within social environment (Sequeira & Rasheed, 2006). The human capital is important from two points of view. Firstly, the human characteristic of the

person who decides to implement effective risk management (business owner). Secondly, the human capital can be considered from the employees' perspective, which means who is involved in the entire risk management process (employees, person responsible for managing specific risks). Limited financial and human resources do not usually allow to manage all risks effectively. SMEs sometimes identify all potential risks, but they focus only on the most important risks and train their employees to manage these risks effectively (Moore et al., 2000; Bruns & Fletcher, 2008; Sukumar et al., 2011).

The implementation of risk management cannot be successful without strong support of *a business owner* (Beasley et al., 2005; Brustbauer & Peters, 2013). In companies, where a business owner dominates or where there is no professional manager, risk management is not propriate. This may be particularly evident in family-owned firms (Lovata & Costigan, 2002; Paape & Speklé, 2012). An entrepreneur's perception of risks and the ability to manage them, contingent upon personal and company-related resources, influences the respective risk-management approach (Herbane, 2010; Leopoulos, 2006; Nocco & Stulz, 2006).

The study of Henschel (2006) among German SMEs concluded that the influence of management decreases with the company size. The reason is that larger enterprises may have more competent employees or specialized department for risk management. In addition, with an increasing size of the enterprise, the importance of *a designated risk manager* or whole controlling department increases. Therefore, risk management becomes complex and partially independent. Finally, with an increasing size of the company, there are differences between persons responsible for internal and external risk management. Internally, they are called *quality management representatives*, and externally they charter ac*countants or management consultants* (Henschel, 2006). Watt (2007) states that larger firms tend to manage risks collectively (through the Board of Directors). On the contrary, within SMEs, risk management is often responsibility of one person or a small management team.

In large companies, primarily a *Board of Directors* is responsible for the risk management. Secondarily, *a risk manager* has this function. In more than half of the large enterprises, it is *an internal audit* which supervises and reviews the risk management. (PwC, 2000). In the research of Henschel (2006) related to

German SMEs, it was found out that in more than half of SMEs risk management is organized by *management together with a specific department*. Another frequent option is the risk management in hand of management, controlling departments or *designated employees of business units*. Only 3% of the SMEs studied have an internal audit.

2 OBJECTIVES, SCIENTIFIC QUESTIONS AND HYPOTHESES

The main scientific goal of the scientific publication is to define theoretical and methodological aspects in the area of risk management and to quantify their impact on the risk management process in the corporate area. Empirical quantitative research on risk management in SMEs within the Visegrad Group is used to meet the scientific objective. The main objective will be supported by several partial objectives:

1. to identify the socio-economic factors affecting the risk management process and quantify their impact on identification and risk management in the enterprise.
2. to classify the most significant risks of companies in the Visegrad Group area and to analyze the causes of individual risks and their impact.
3. to compare the access to the risks and risk management among V4 countries.
4. to make a comparison of research results with other world researches in the same field.
5. to create theoretical and methodological conclusions from the scientific research carried out.

There are four research questions analyzed in this publication:

RQ1: How do SMEs in V4 countries approach risk and risk management?

RQ2: Which sources of risks are most important in the current period in V4 countries? How are all sources of risks perceived by different groups of entrepreneurs (by gender, age, education, length of business)?

RQ3: Are there some differences in perceiving risks and risk assessment among V4 countries?

RQ4: Is it possible to quantify some dependences among the defined factors of risk management?

According to the research questions presented above, these scientific hypotheses were defined by using the estimation techniques:

H1: Major part of SMEs do not recognize risks and do not apply risk management practices appropriately. They perceive economic barriers as well

as a shortage of skilled employees. On the other hand, they do not provide any appropriate training to their employees regarding risk management.

H1a: 50% or more SMEs of V4 countries do not deal with risk management at all.

H1b: Less than 50% of SMEs of V4 countries consider risk management as a strategic tool that provides a competitive advantage.

H1c: More than 50% of SMEs of V4 countries do not pay attention to any of the activity within risk management such as risk identification or risk analysis, etc.

H1d: In most SMEs in V4 an owner of the company is responsible for risk management.

H1e: In more than 50% of SMEs from V4, risks are discussed yearly or are not discussed at all.

H1f: In more than 50% of SMEs from V4, the value of risk is not set.

H1g: Risk avoiding is the most popular way how to handle risks.

H1h: More than 50% of SMEs from V4 countries do not provide any education in risk management for their employees.

H1i: There is some statistically significant difference in the approach to risk management among V4 countries.

H2: There are some differences in perceiving the market risk and its sources in V4 countries in terms of socio-economic factors such as the gender, age of the entrepreneur and other factors such as the size and age of the company.

H2a: Companies that have been on the market for more than 5 years, perceive the action of market risk more intensively than younger companies.

H2b: Older entrepreneurs (31+) have a tendency to perceive the market risk more intensively than their younger colleagues.

H2c: There is some statistically significant difference between the perception of market risk in terms of gender, age and education of the entrepreneur, the size and age of the company.

H3: There are some differences in perceiving the economic risk and its sources in V4 countries in terms of socio-economic factors such as the gender, age of the entrepreneur and other factors such as the size and age of the company.

H3a: Companies that have been on the market for more than 5 years, perceive the action of economic risk more intensively than younger companies.

H3b: Older entrepreneurs (31+) have a tendency to perceive the economic risk more intensively than their younger colleagues.

H3c: There is some statistically significant difference between the perception of economic risk in terms of gender, age and education of the entrepreneur, the size and age of the company.

H4: There are some differences in perceiving the financial risk and its sources in V4 countries in terms of socio-economic factors such as the gender, age of the entrepreneur and other factors such as the size and age of the company.

H4a: Companies that have been on the market for more than 5 years, perceive the action of financial risk more intensively than younger companies.

H4b: Older entrepreneurs (31+) have a tendency to perceive the financial risk more intensively than their younger colleagues.

H4c: There is some statistically significant difference between the perception of financial risk in terms of gender, age and education of the entrepreneur, the size and age of the company.

H5: There are some differences in perceiving the operational risk and its sources in V4 countries in terms of socio-economic factors such as the gender, age of the entrepreneur and other factors such as the size and age of the company.

H5a: Companies that have been on the market for more than 5 years, perceive the action of operational risk more intensively than younger companies.

H5b: Older entrepreneurs (31+) have a tendency to perceive the operational risk more intensively than their younger colleagues.

H5c: There is some statistically significant difference between the perception of operational risk in terms of gender, age and education of the entrepreneur, the size and age of the company.

H6: There are some differences in perceiving the personnel risk and its sources in V4 countries in terms of socio-economic factors such as the gender, age of the entrepreneur and other factors such as the size and age of the company.

H6a: Companies that have been on the market for more than 5 years, perceive the action of personnel risk more intensively than younger companies.

H6b: Older entrepreneurs (31+) have a tendency to perceive the personnel risk more intensively than their younger colleagues.

H6c: There is some statistically significant difference between the perception of personnel risk in terms of gender, age and education of the entrepreneur, the size and age of the company.

H7: There are some differences in perceiving the security risk and its sources in V4 countries in terms of socio-economic factors such as the gender, age of the entrepreneur and other factors such as the size and age of the company.

H7a: Companies that have been on the market for more than 5 years, perceive the action of security risk more intensively than younger companies.

H7b: Older entrepreneurs (31+) have a tendency to perceive the security risk more intensively than their younger colleagues.

H7c: There is some statistically significant difference between the perception of security risk in terms of gender, age and education of the entrepreneur, the size and age of the company.

H8: There are some differences in perceiving the legal risk and its sources in V4 countries in terms of socio-economic factors such as the gender, age of the entrepreneur and other factors such as the size and age of the company.

H8a: Companies that have been on the market for more than 5 years, perceive the action of legal risk more intensively than younger companies.

H8b: Older entrepreneurs (31+) have a tendency to perceive the legal risk more intensively than their younger colleagues.

H8c: There is no statistically significant difference between the perception of legal risk in terms of gender, age and education of the entrepreneur, the size and age of the company.

H9: There are some differences in perceiving the other business risks and its sources in V4 countries in terms of socio-economic factors such as the gender, age of the entrepreneur and other factors such as the size and age of the company.

H9a: Companies that have been on the market for more than 5 years, perceive the action of other business risks more intensively than younger companies.

H9b: Older entrepreneurs (31+) have a tendency to perceive the other business risks more intensively than their younger colleagues.

H9c: There is some statistically significant difference between the perception of other business risks in terms of gender, age and education of the entrepreneur, the size and age of the company.

H10: There are some statistically significant differences in the assessment of risk management (according to the model in Appendix 2) in terms of gender age and education of the entrepreneur, the size, sector and age of the company.

3 RESEARCH, DATA PROCEDURES, METHODOLOGY

The publication uses original research made in V4 countries. The data was collected in 2017 and 2018. The survey was done by Tomas Bata University in Zlín, Czech Republic. The sample consisted of 1,781 enterprises in the V4. The composition of the sample represents small and medium-sized enterprises in the four countries analyzed. The data was collected through a standard questionnaire, in the form of an online survey. The answers given by respondents in the selected countries were recorded online. With the content and form of the questionnaire used in the survey, great effort was made to ensure the questions were comprehensible, and to completely filter out any ambiguity, even in terms of the order of questions. The questionnaire is attached (Appendix 1).

The statistical unit of research was a single enterprise (micro, small or medium). The entrepreneurs were selected using "the random selection method" (using the “Randbetween" function) from specialized databases of entrepreneurs for each country (Slovakia – Cribis database, Czech Republic – Albertina database, Poland – Central registration and information on business (CEIDG), Hungary – Hungarian Chamber of Commerce and Industry). By using this method, randomness was ensured. Out of 1,781 small and medium-sized enterprises analyzed, Slovakia provided 487 respondents (27%), Poland 498 respondents (28%), the Czech Republic 408 respondents (23%), and Hungary 388 respondents (22%). The refusal rate was 30%; the questions were answered in 70% of all enterprises surveyed.

The questionnaire consisted of two parts. The first part involved 8 questions: social and demographic factors (gender and age of the entrepreneur, entrepreneurship education, size of business, length and region of business and sector of business and in connection with international market. The second part included 22 questions: identification and evaluation of key risks and their sources (market, economic, financial and credit risk, operational, personnel, security, legal risks and other business risks). The questionnaire was translated into the entrepreneurs’ native languages (Czech, Polish, Slovak and Hungarian languages).

The description of the respondents is shown in the table below.

		Country								Total
		Czech Republic		Hungary		Poland		Slovakia		
Age	**Less than 30**	68	17%	158	41%	112	22%	99	20%	437
	31 and more	340	83%	230	59%	386	78%	388	80%	1344
Gender	**Male**	290	71%	232	60%	311	62%	325	67%	1158
	Female	118	29%	156	40%	187	38%	162	33%	623
Education	**University**	136	33%	279	72%	188	38%	172	35%	775
	Other education	272	67%	109	28%	310	62%	315	65%	1006
Total		**408**		**388**		**498**		**487**		**1781**

Table 6: Basic social characteristics of the respondents. Source: own research.

If we see the social characteristic of the respondents participated the research, we can conclude with the statements below.

The entrepreneurs responding the questionnaire were mostly older than 30 (80%), only in Hungary, these two age groups were almost equal. From the gender perspective, men were major part of the respondents in all countries (60-70%), women (only 30-40%). In the Czech Republic, the difference is the biggest, while in Hungary, the proportion of men and women is almost balanced. From the perspective of education, only Hungary is out of the V4 trend, which has 72% respondents with university education and 28% with other education. In the rest of the countries, the proportion of university education and other education is approximately 35:65.

		Country								Total
		Czech Republic		Hungary		Poland		Slovakia		
Size of the company	**Micro**	261	64%	241	62%	299	60%	314	64%	1115
	Small or Medium	147	36%	147	38%	199	40%	173	36%	666
Economic area	**Industry**	91	22%	41	11%	74	15%	72	15%	278
	Trade	93	23%	76	20%	158	32%	118	24%	445
	Agriculture	15	4%	62	16%	30	6%	9	2%	116
	Construction	63	15%	20	5%	34	7%	59	12%	176
	Transport	20	5%	24	6%	57	11%	31	6%	132
	Accommodation and restaurants	25	6%	41	11%	31	6%	42	9%	139
	Other services	101	25%	124	32%	114	23%	156	32%	495
Length of the business	**5 years or less**	84	21%	134	35%	134	27%	111	23%	463
	more than 5 years	324	79%	254	65%	364	73%	376	77%	1318

Table 7: Basic characteristics of the companies. Source: own research.

The structure of companies filling in the questionnaire was as follows:

- The Czech Republic (CR): micro business 261 (64%); small business 96 (24%), medium business 51 (12%); according to the sector: industry 91 (22%), trade 93 (23%), agriculture 15 (4%), construction 63 (15%), transportation 20 (5%), accommodation and restaurants 25 (6%), other services101 (25%). 84 companies (21%) being on the market for less than 5 years, 324 (79%) more than 5 years.
- Hungary (HU): micro business 241 (62%); small business 72 (19%), medium business 75 (19%); according to the sector: industry 41 (11%), trade 76 (20%), agriculture 62 (16%), construction 20 (5%), transportation 24 (6%), accommodation and restaurants 41 (11%), other services 124 (32%). 134 (35%) of enterprises being on the market for less than 5 years, 254 (65%) for more than 5 years.
- Poland (PL): micro business 299 (60%); small business 144 (29%), medium business 55 (11%); according to the sector: industry 74 (15%), trade 158 (32%), agriculture 30 (6%), construction 34 (7%), transportation 57 (11%), accommodation and restaurants 31 (6%), other services 114 (23%). 134 (27%) enterprises being on the market for less than 5 years, 364 (73) of total respondents from Poland being on the market for more than 5 years.

- Slovakia (SR): micro business 314 (64%); small business 115 (24%), medium business 58 (12%); according to the sector: industry 72 (15%), trade 118 (24%), agriculture 9 (2%), construction 59 (12%), transportation 31 (6%), accommodation and restaurants 42 (9%), other services 156 (32%). 111 enterprises (23 %) being on the market for less than 5 years, 376 enterprises (77%) for more than 5 years.

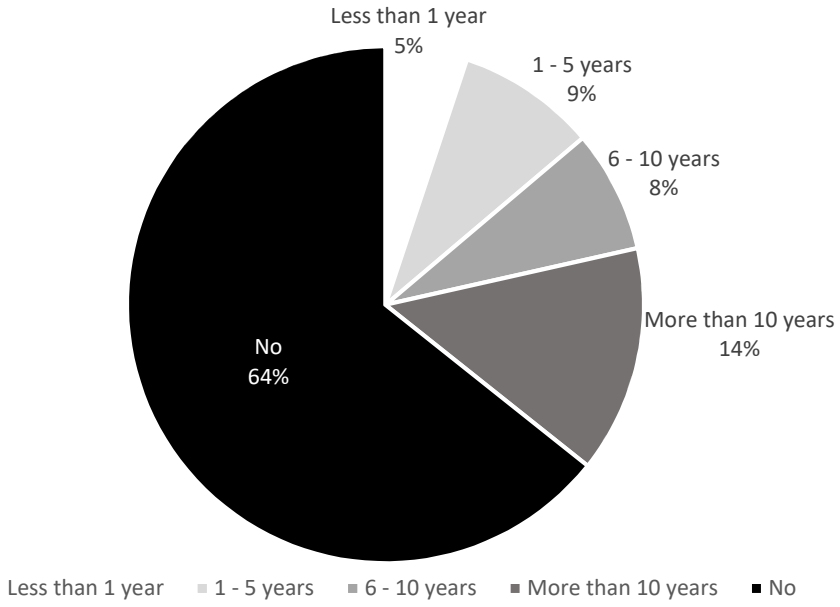

Fig.1. The companies'acitivity of the company on the international market. Source: own research.

It can be concluded that 64% of the V4 have no activity on the international market. 5% of entrepreneurs being active on the international market for less than 1 year, 9 % 1-5 years, 8 % 6-10 years and 14 % for more than 10 years.

The required number of respondents was proven also from the statistical point of view, too. The total number of respondents from each country fulfills the requirements for scholastic selection meaning, that the data have the reliability of 95% (with error of +/- 5%). The minimum size of the size of the sample size was calculated according to the formula $n = (1.96)^2 * p * (1 – p) / 0.05^2$ where p is the share of the sample. The calculated value of the size of a minimum sample in all countries is approximately 320-380 statistical units (share used 0.3-0.5). It confirms that the selected sample is statistically reliable.

The appropriate scientific and statistical methods were used when analyzing the situation of risk management in SMEs in V4 countries and validating hypotheses. The scientific methods can be divided into two groups: empirical and logical methods. Empirical methods are based on a direct or indirect observation of an object in reality. The method was used in the research of SMEs in V4 countries itself. Logical methods applied include:

- **Abstraction – concretization**

Abstraction is a process whereby only the essential characteristics of each object are separated. A model which contains only those features and characteristics which allows to get answer to the questions we ask is used. Concretization is an opposite process, when we look for a specific occurrence of a particular object from a certain object class and apply the characteristics applicable to that object class. The method of abstraction is one of the most useful in the formulation of essential features affecting the quantitative variables under investigation. The abstraction was used in the process of working on the questionnaire and while models of risks and risk management were created. The concretization was used by evaluating particular methods of risk procedures and methods used for risk management.

- **Analysis – synthesis**

Analysis is a process of real or thought division of the whole into its elementary parts. This method detects various aspects and features of phenomena and helps to distinguish essential phenomena from non-essential and random from regular. Synthesis is the process of merging parts of an object or phenomena, their features and properties divided by the analysis. It is possible to combine the knowledge gained by the research and use it in solving the given goal.

The analysis is used primarily for individual analyses within the theoretical aspects of the publication. The synthesis is especially suitable for formulation of conclusions of individual chapters and the whole publication.

- **Induction – deduction**

The method of induction represents general conclusions based on the knowledge about particularities. It is a process leading from individual facts to general conclusions. In the framework of the publication, induction is used to formulate the hypotheses. The deduction is based on well-known, verified and

generally valid conclusions, which it applies to individual unexplored phenomena. Deduction is used to verify the hypotheses which were set.

The publication uses qualitative and quantitative research. In the framework of quantitative research, the questionnaire was created to analyze the situation of perceiving of risks and risk management in SMEs in V4 countries. Qualitative research involves the analysis of relations, dependencies and properties of phenomena and their generalization. Within the framework of qualitative research, a critical research of secondary sources is carried out. This publication used almost 250 literature sources which were selected mostly from current national and international journals indexed in Scopus and Web of Science databases.

In the first stage, the descriptive statistics tools (pivot table, relative and absolute frequency) were used. The Chi-Square calculator for Contingency Table and Z-score were applied. The hypotheses were tested at the 95% level of statistical significance. The conditions for carrying out the Z-test (normal distribution of samples according to the statistical features and the representativeness of the sample – a number of respondents) were fulfilled. The IBM SPSS Statistics 23.0 analytical software for the data evaluation was used.

Risk perception of the risks was basically measured on a Likert type scale: a very low intensity; low intensity; medium intensity; high intensity and very high intensity. Moreover, the risk perception in the category “high” and “very high” was analyzed. The factor analysis was applied to each subset of risk sources in order to verify if all the items of each subgroup (i.e. market risk, financial risk, economic risk, etc.) measure the same construct. The factor analysis created an index for each subgroup. The index was converted to a 1-100 scale for a simple interpretation.

To analyze if each group of risk is perceived in different way, t-test was used. The Independent Samples t-test compares the means of two independent groups in order to determine whether there is statistical evidence that the associated population means are significantly different. The difference between the means is the signal, and the bottom part of the formula is the noise, or a measure of variability; the smaller there are differences in the signal and the larger the variability, the harder it is to see the group differences. The top part of the formula is easy to compute just find the difference between the means. The

bottom is a bit more complex; it is called the standard error of the difference (SE). To compute it, we have to take the variance for each group and divide it by the number of people in that group. We add these two values and then take their square root. The specific formula is as follows:

$$SE(\bar{X}_T - \bar{X}_C) = \sqrt{\frac{Var_T}{n_T} + \frac{Var_C}{n_C}} \quad (1)$$

The final formula for the testing is as follows:

$$t = \frac{\bar{X}_T - \bar{X}_C}{\sqrt{\frac{Var_T}{n_T} + \frac{Var_C}{n_C}}} \quad (2)$$

A high t-value signifies a considerable difference between the two group means and low variability of the data around the two group means. To statistically determine whether the t-value is large enough to conclude that the two groups are statistically different, we need to use a test of significance. The hypotheses were tested at the 95% level of statistical significance.

Processing of the publication is divided into multiple stages. The stages are designed in Fig. 2.

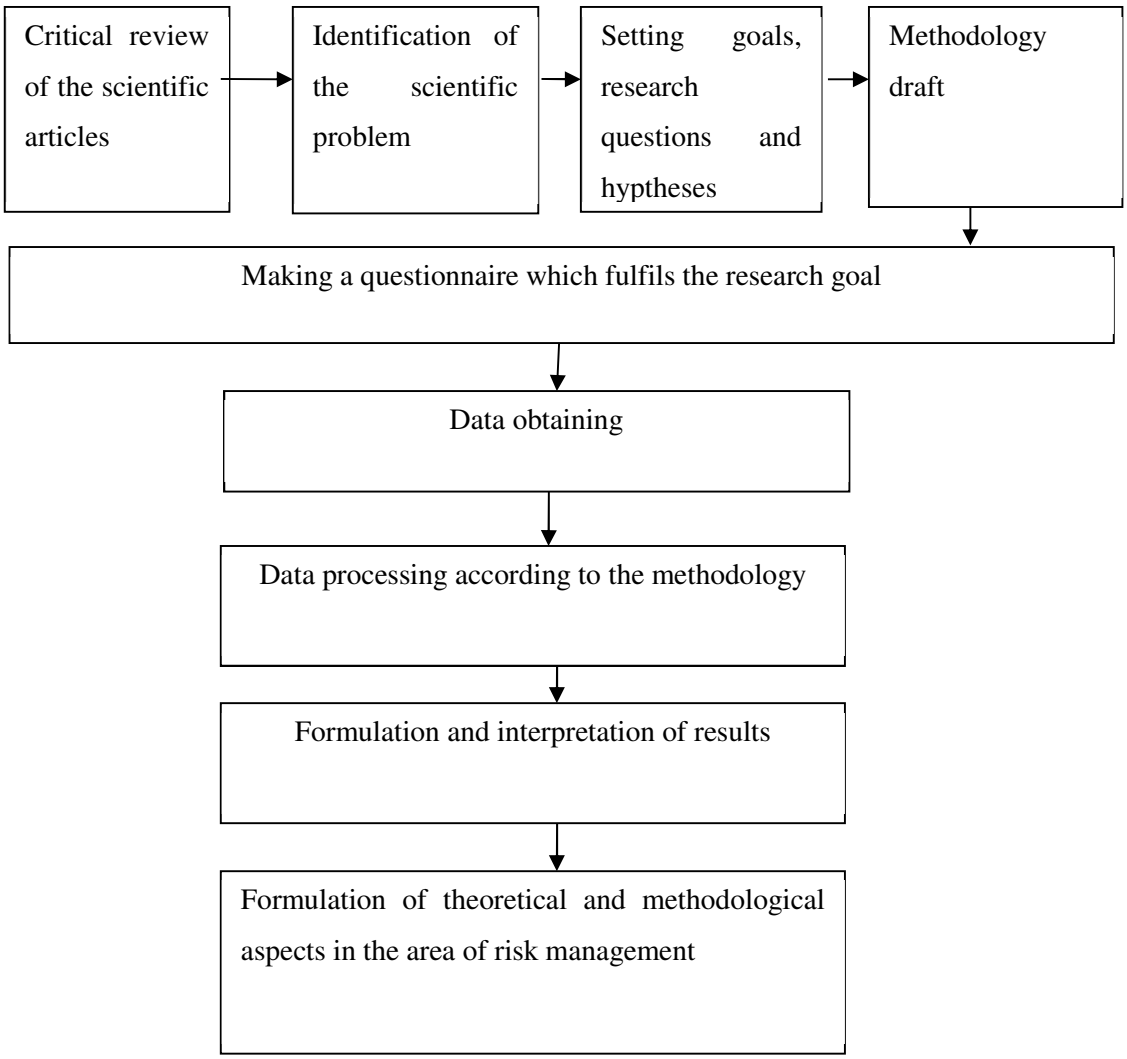

Fig. 2. Research procedure and publication of results. Source: own

4 RESULTS

4.1 The approach to risk management in V4

The following tables and images provide the results of research aimed of the approach to the risk management in SMEs in V4 countries. The questions were made to confirm the hypotheses formulated in chapter 2.

Do you deal with risk management in your company? If so, how long?	**Country**								**Total**
	Czech Republic		**Hungary**		**Poland**		**Slovakia**		
Less than 1 year	30	7%	59	15%	46	9%	29	6%	164
1 - 5 years	67	16%	60	15%	76	15%	69	14%	272
6 - 10 years	61	15%	27	7%	44	9%	62	13%	194
More than 10 years	78	19%	41	11%	45	9%	94	19%	258
No	172	42%	201	52%	287	58%	233	48%	893
Chi-square			11.487						
p-value			0.488						

Table 8: The application of risk management in the company. Source: own research.

Results from the table above confirmed that 50% of SMEs do not deal with risk management. Above this average of V4 countries can be found Poland (58%) and Hungary (52%). In Slovakia, 48% of SMEs have not applied risk management till yet. In the Czech Republic, 42% of SMEs do not deal with risk management. On the other hand, in the Czech Republic and Slovakia, 19% of companies applied risk management 10 years ago. Hungary has, in comparison with other V4 countries more companies (15%) which started with risk management less than 1 year ago. It can be concluded that in the Czech Republic there are more SMEs experienced in the risk management area, in Poland the situation is worse. Companies from Hungary have started to deal with risk management in the last 5 years. **H1a was confirmed.**

There are not statistically significant differences among the responses in V4 countries (chi-square 11.487, p-value = 0.488) at the 5% level of statistical significance.

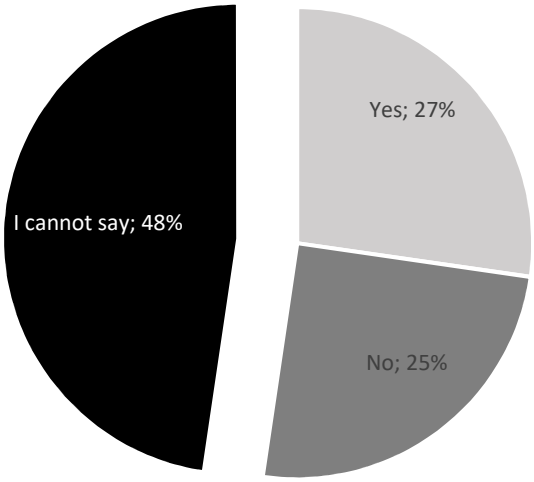

Fig. 3. Do you consider risk management in your company to be a strategic tool that provides a competitive advantage? Source: own research.

Risk management can be the competitive advantage if it is applied properly. As can be seen from the figure above, the risk management is considered as a competitive advantage by 27% of SMEs from V4 group only. 25% of them do not agree with this statement and 48% cannot say. **H1b was confirmed**. The differences in responses in each country can be seen in the table below.

Do you consider risk management in your company to be a strategic tool that provides a competitive advantage	**Country**								
	Czech Republic		**Hungary**		**Poland**		**Slovakia**		**Total**
Yes	99	24%	175	45%	95	19%	117	24%	486
No	118	29%	73	19%	137	28%	118	24%	446
I cannot Say	191	47%	140	36%	266	53%	252	52%	849
Chi-square	86.636								
p-value	<0.00001								

Table 9: Perceiving risk management as a strategic tool. Source: own research.

There are statistically significant differences among the responses in V4 countries (chi-square 86.636, p-value = <0.00001) at the 5% level of statistical significance.

Which of the main risk management activities do you pay most attention to?	**Country**								**Total**
	Czech Republic		**Hungary**		**Poland**		**Slovakia**		
Risk identification	36	9%	38	10%	41	8%	49	10%	164
Risk analysis (determining the probability and consequences)	42	10%	85	22%	58	12%	46	9%	231
Risk assessment (determining the risk importance)	19	5%	42	11%	62	12%	21	4%	144
Making steps to reduce risks	96	24%	68	18%	86	17%	103	21%	353
Risk monitoring	19	5%	18	5%	46	9%	31	6%	114
We pay the same attention to all activities	131	32%	84	22%	110	22%	114	23%	439
None at all	65	16%	53	14%	95	19%	123	25%	336
Chi-square	108.689								
p-value	<0.00001								

Table 10: The activities of risk management with the highest attention. Source: own research.

The next question was focused on the activities of risk management such as risk identification, risk analysis, risk assessment, risk reduction, and risk monitoring and attention the companies pay to them. It was found out that 25% of companies pay the same attention to all activities. The second most popular activity is risk reduction (20%), the third is risk analysis (13%). The rest of the activities achieved less than 10%. 19% of the companies studied do not pay any attention to these activities. **H1c was rejected.** There are statistically significant differences among the responses in V4 countries (chi-square 108.689, p-value = <0.00001) at the 5% level of statistical significance.

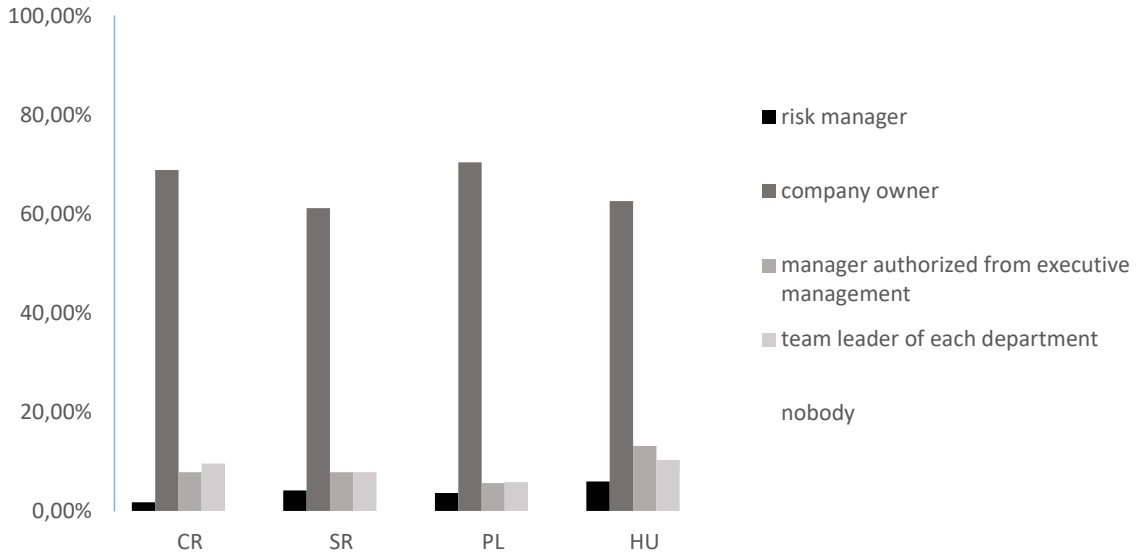

Fig. 4. The people responsible for risk management. Source: own research.

The second hypothesis was aimed at the person responsible for risk management in the company. Fig. 4 shows an overview of the situation in companies in V4 countries. The situation is almost similar. The most common is a situation when the person responsible for risk management is the company owner (CR 69%, SR 61%, PL 70%, HU 63%). It can mean that the company has not discussed the risks in the company yet. Some of the small and medium companies state that there is nobody responsible for risk management (CR 12%, SR 19%, PL 15%, HU 8%). The next two possibilities are as follows: manager authorized by the executive manager and a team leader of each department (each of these possibilities reaches up to 10% in all countries). A risk manager specialized in this activity is still a rare situation in V4 countries (CR 2%, SR 4%, PL 4%, HU 6%). Hungary with 6% is a little bit further in the risk management concept in comparison with other V4 countries. Numbers in detail can be seen in the table below.

Who is responsible for risk management in your company?	Country								Total
	Czech Republic		Hungary		Poland		Slovakia		
Risk manager	7	2%	23	6%	18	4%	20	4%	68
Company owner	281	69%	243	63%	349	70%	298	61%	1171
Manager authorized by executive management	32	8%	51	13%	28	6%	38	8%	149
Team-leader from each department	39	10%	40	10%	29	6%	38	8%	146
Nobody	49	12%	31	8%	74	15%	93	19%	247
Chi-square	56.120								
p-value	<0.00001								

Table 11: The person responsible for risk management in the company. Source: own research.

From the point of view of the entire V4 Group, in 66% of businesses, the owner controls the risks. Only in 4% of companies, a risk manager is established. 14% of companies admit that nobody controls the risks. **H1d was confirmed.** There are statistically significant differences among the responses in V4 countries (chi-square 56.120, p-value = <0.00001) at the 5% level of statistical significance.

How often do you make space for discussing the key risks in your company?	Country								Total
	Czech Republic		Hungary		Poland		Slovakia		
Monthly	114	28%	128	33%	61	12%	97	20%	400
Semi-annually	45	11%	47	12%	72	14%	56	11%	220
Quarterly	48	12%	80	21%	68	14%	52	11%	248
Yearly	48	12%	35	9%	84	17%	69	14%	236
Never	153	38%	98	25%	213	43%	213	44%	677
Chi-square	104.312								
p-value	<0.00001								

Table 12: Discussion about the key risks in the company. Source: own research.

If companies want to manage risks properly, they also need to provide space for discussion about risks. Therefore, the following hypothesis is focused on the frequency of discussions focused on the key risks in companies. As can be seen from the table above, 38% of companies from V4 countries never discuss

the key risks, 22% monthly, 14% quarterly, 13% yearly and 12% semi-annually. More than 50% of companies from V4 Group do not discuss risks more often than one year (an option yearly or never). **H1e was confirmed.** The best situation is in Hungary, where only 25% of companies do not discuss the risks, on the other hand, 33% of them discuss the key risks monthly. The worst situation is in Poland, where 43% of companies answered that they never discuss the key risks and only 12% of enterprise have a discussion every month. In the Czech Republic and Slovakia, the situation is very similar. There are statistically significant differences among the responses in V4 countries (chi-square 104.312, p-value = <0.00001) at the 5% level of statistical significance.

How do you set the value of risk?	**Country**								**Total**
	Czech Republic		**Hungary**		**Poland**		**Slovakia**		
Qualitatively (verbally – small, medium, big)	205	50%	154	40%	172	35%	185	38%	716
Semiquantitative (verbally with assigning the point value)	30	7%	50	13%	50	10%	37	8%	167
Quantitatively (using mathematical and statistical expression of risk)	14	3%	75	19%	52	10%	33	7%	174
We do not set the value of risk	159	39%	109	28%	224	45%	232	48%	724
Chi-square			104.840						
p-value			<0.00001						

Table 13: Setting of the value of risk. Source: own research.

The value of risk is a key step for evaluating the importance of the risk. The companies should know the value of risk to take a decision how to handle each risk. Even so, 41% of companies in V4 do not set the value of risk. **H1f was rejected.** 40% of companies choose a simpler method (quantitative), 10% use a mathematical and statistical expression of the risk value (qualitative method) and 9% use semiquantitative (a combination of verbal expression with assigning the point value). The best situation can be seen in Hungary, where 40% of all companies use some of the qualitative methods, 19% choose quantitative method, 13% semiquantitative method and only 28% (what is above the average of V4) do not set the value of risk. The factors considered by the value of risk determination can be seen in the table below. There are statistically significant differences among the responses in V4 countries (chi-square 104.840, p-value = <0.00001) at the 5% level of statistical significance.

Which factors do you consider when determining the value of risk?	Country								Total
	Czech Republic		Hungary		Poland		Slovakia		
Possible consequences of risk	65	16%	74	19%	69	14%	85	17%	293
Probability of risk formation	35	9%	55	14%	94	19%	0	0%	184
Potential consequences of risk and its probability	185	45%	193	50%	166	33%	209	43%	753
We do not set the value of risk	123	30%	66	17%	169	34%	193	40%	551
Chi-square	149.531								
p-value	<0.00001								

Table 14: Considering of the factors determining the value of risk. Source: own research.

SMEs in V4 Group consider most often potential consequences of risk and its probability (42%). The next important factors are possible consequences of risk (16%) and a probability of risk formation (10%). 31% of the addressed companies answered that they do not set the value of risk. There are statistically significant differences among the responses in V4 countries (chi-square 149.531, p-value = <0.00001) at the 5% level of statistical significance.

What methods do you use to reduce risk?	Country								Total
	Czech Republic		Hungary		Poland		Slovakia		
Insurance	183	45%	112	29%	191	38%	151	31%	637
Transfer of risk to a business partner	13	3%	16	4%	25	5%	10	2%	64
Financial reserves	74	18%	0	0%	140	28%	101	21%	315
Expansion of the production program	18	4%	22	6%	23	5%	17	3%	80
Risk avoiding	110	27%	233	60%	110	22%	201	41%	654
Other	10	2%	5	1%	9	2%	7	1%	31
Chi-square	231.071								
p-value	<0.00001								

Table 15: The methods for reducing risk. Source: own research.

If the methods for reducing risk were analyzed, it was found out that 37% of companies in V4 prefer risk avoiding, 36% pay for insurance to decrease a risk. On the third position, are financial reserves (18%). Other methods were not recognized very well. **H1g was confirmed**. If the situation is analyzed in detail, huge differences can be seen among the countries. In the Czech Republic, the most common method is paying insurance, risk avoiding and financial reserves.

In Slovakia companies prefer risk avoiding, insurance and financial reserves. In Poland, insurance is on the first place followed by financial reserves and risk avoiding on the third place. In Hungary, the situation is completely different. On the first place, risk avoiding is, the second and last significant place is taken by insurance. No addressed company creates financial reserves as a method for risk reducing. The most common methods used for risk management are shown in the figure below. There are statistically significant differences among the responses in V4 countries (chi-square 231.071, p-value = <0.00001) at the 5% level of statistical significance.

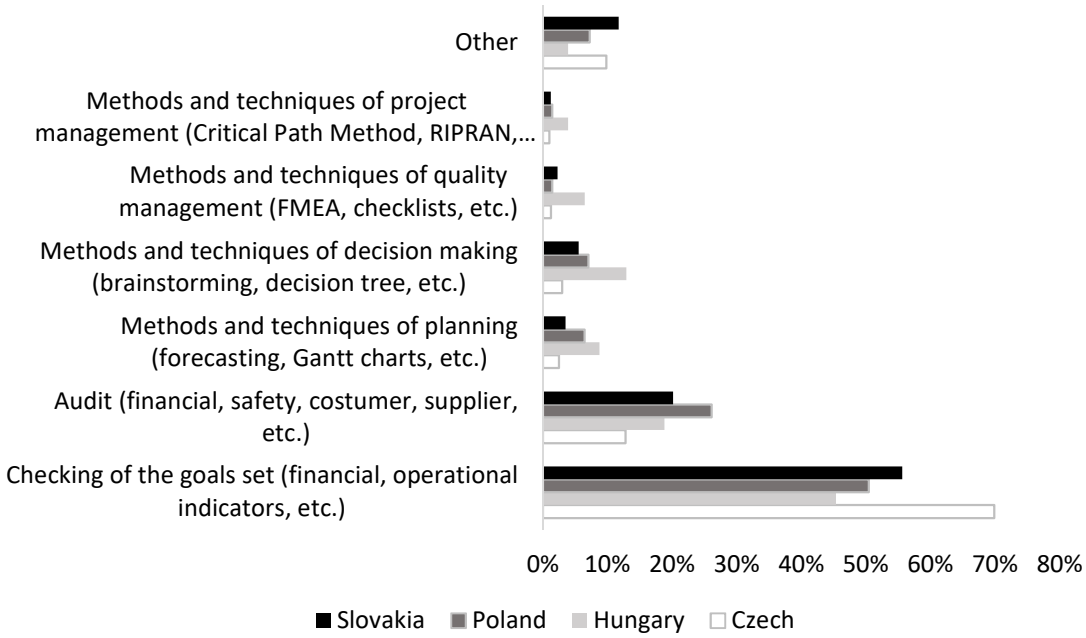

Fig. 5. Methods, techniques and tools do you used to manage risks in the company. Source: own research

The most common techniques/methods of risk management is checking of the goals set (financial, operational indicators, etc.). In total 55% of companies in V4 use this method. The second most often method is audit. Other methods reach 7% or less, and we can conclude that these methods are not widely used among SMEs in V4 Group. There are statistically significant differences among the responses in V4 countries (chi-square 151.885, p-value = <0.00001) at the 5% level of statistical significance.

Do you provide your employees with the opportunity of education in risk management?	Country								Total
	Czech Republic		Hungary		Poland		Slovakia		
Yes, regularly	79	19%	40	10%	55	11%	78	16%	252
Yes, irregularly	94	23%	116	30%	99	20%	90	18%	399
No, training is very expensive	13	3%	33	9%	60	12%	27	6%	133
No, we do not have time for these trainings	109	27%	98	25%	120	24%	115	24%	442
No, we have not found any training which would be suitable for our purposes	52	13%	68	18%	75	15%	60	12%	255
No, trainings in our company are considered to be useless	61	15%	33	9%	89	18%	117	24%	300
Chi-square	96.171								
p-value	<0.00001								

Table 16: Education provided to employees. Source: own research.

The next hypothesis was focused on the education of employees. If the employees are not educated in the risk management area, they cannot recognize risk and react against this risk. Only 36% of companies in V4 provide their employees with the opportunity of education in risk management. Others do not train their employees due to reasons as follows: lack of time – 25%, lack of usefulness of trainings – 17%, lack of suitable trainings on the market – 14%, price of the training – 7%. **H1h was confirmed**. The largest number of companies educate their employees in the Czech Republic (42%), then Hungary (40%), Slovakia (34%), and Poland (31%). The risk management education is considered to be the most useless in Slovakia, while in Poland, the cost of training is the main reason. There are statistically significant differences among the responses in V4 countries (chi-square 96.171, p-value = <0.00001) at the 5% level of statistical significance. **H1i was rejected.**

4.2 Sources of risks in V4

The most important source of risk is a strong competition in the sector (market risk) – almost 50% of SMEs perceive this risk as high or very high. Loss of costumers (market risk) is placed second – in total 45% of respondents perceive this risk as important.

Risks	Very low	Low	Medium	High (H)	Very high (VH)	H+VH
market risk – a strong competition in the sector	5.1	13.2	32.8	34.1	14.8	48.9
market risk - loss of customers	7.0	16.7	30.8	26.4	19.1	45.5
other business risk - high administrative requirements for entrepreneurs	11.8	16.8	27.3	23.5	20.6	44.1
economic risk - the development of taxes and mandatory contributions	5.3	16.0	35.9	27.1	15.7	42.8
financial risk - an insufficient profit of the company	8.8	20.8	32.3	25.8	12.4	38.1
economical risk - a rise in prices of all types of energy	9.2	22.1	35.6	24.9	8.3	33.2
legal risk - a long time of resolution of litigation	22.7	23.7	23.6	17.3	12.7	30.0
legal risk - frequent changes in legislation	15.7	26.8	31.2	16.5	9.8	26.3
personnel risk - insufficient staff qualifications	21.2	26.4	26.2	18.2	8.0	26.2
financial risk - unpaid receivables	26.7	23.3	23.9	19.3	6.8	26.1
personnel risk - high rates of job changing of employees	24.8	23.0	26.8	18.6	6.9	25.4
market risk - market stagnation	12.9	22.7	39.2	19.4	5.8	25.2
other business risk - corruption	30.7	23.1	21.0	14.7	10.6	25.2
other business risk - clientelism	25.9	23.4	26.5	16.3	7.9	24.2
market risk - unreliable suppliers	24.2	28.1	24.4	18.4	5.0	23.4
economical risk - poor availability of financial resources (loans, subsidies)	13.3	29.0	34.7	17.2	5.8	23.0
personnel risk – a decline in morale and discipline	23.8	25.2	28.1	17.0	6.0	23.0
financial risk - inability to pay for liabilities (insolvency)	31.7	24.1	21.8	14.6	7.7	22.3
legal risk – a low law enforcement	21.2	27.6	29.5	14.0	7.7	21.7
other business risk – a low quality of services provided by public institutions	21.3	26.3	30.8	15.1	6.5	21.6
legal risk - low judicial independence	25.4	29.3	25.5	13.8	6.1	19.8
personnel risk - errors employees (occupational injury)	27.0	28.7	24.8	14.4	5.1	19.4
economical risk - development of interest rates	16.8	32.5	32.7	14.5	3.4	17.9
security risk - misuse of information	28.6	30.8	22.9	12.9	4.8	17.7
security risk - accidents and external threats (flood, fire,…)	32.5	27.6	22.5	11.3	6.1	17.4
financial risk -corporate debt (a large share of debt capital)	33.7	26.9	22.5	13.0	3.9	17.0
operational risk – a low rate of innovation	22.3	30.6	30.3	13.3	3.4	16.7
operational risk - outdated production facilities	29.0	26.9	27.4	13.3	3.4	16.7
security risk - property crime (stealing)	33.6	26.8	23.2	11.3	5.1	16.3
operational risk – an insufficient utilization of production capacity	25.8	29.7	28.4	13.8	2.4	16.1
operational risk - an increasing number of complaints	35.7	27.7	20.7	12.6	3.3	15.9
security risk – a low security of health and safety of employees	34.5	30.8	22.7	9.8	2.2	12.0

Table 17: The importance (in %) of sources of risks in V4 countries.

Source: own research.

The third most important source of risk is high administrative requirements of entrepreneurs (other business risk) – 44% of entrepreneurs think that this risk is very important. The last risk which overcame the border of 40% is the development of taxes and mandatory contribution (economic risk). On the contrary, as less important are perceived the insufficient utilization of production capacity (operational risk), an increasing number of complaints (operational risk) and low security of health and safety of employees (security risk). The importance of risks in each country of V4 Group is depicted in the pie chart below.

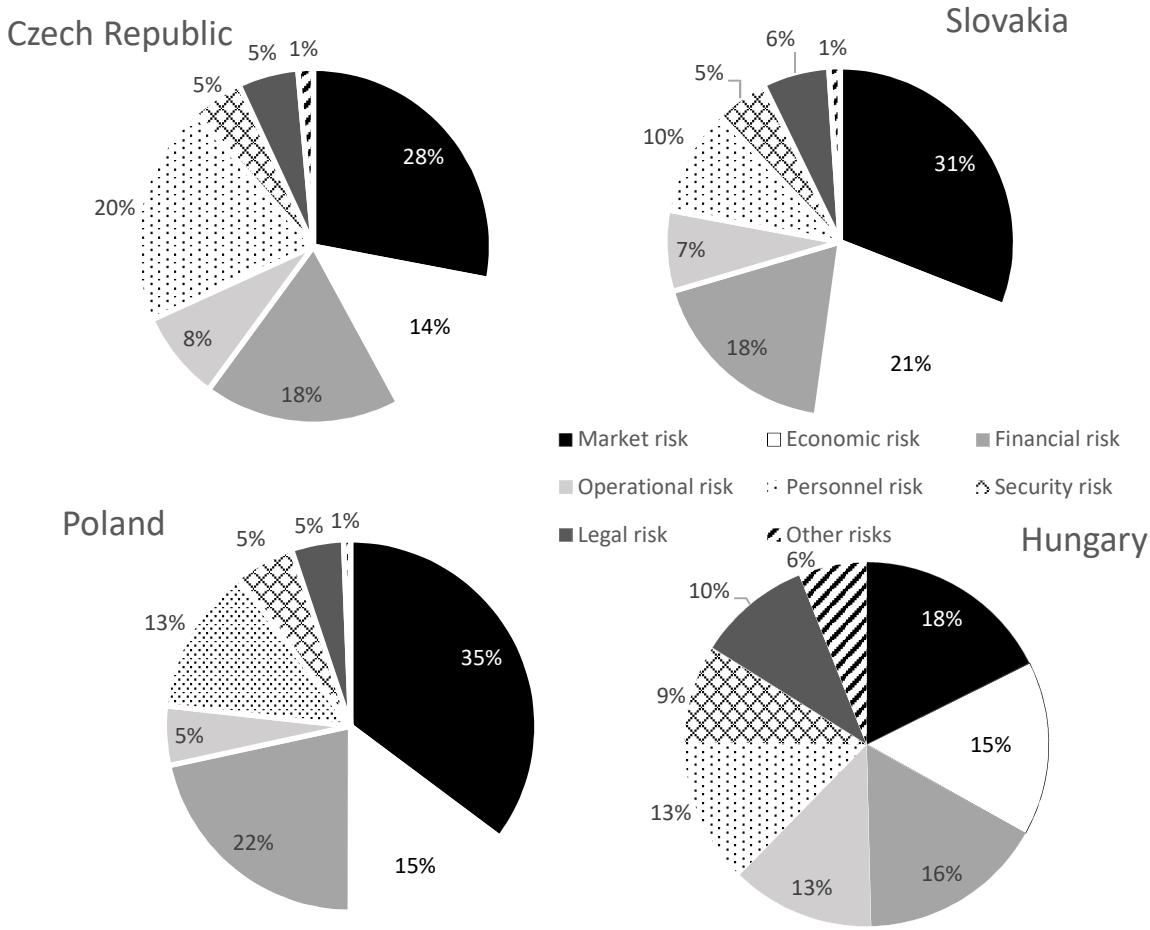

Fig. 6. The importance of risks in SMEs in V4 countries. Source: own research.

The figure above shows that the perception of the importance of the key group of risks in the Czech Republic, in Slovakia and in Poland is almost similar. The importance is given to the market risk, economic risk, financial

risk and personnel risk. In Hungary, there is a different situation. All risks are of a similar importance. It shows that in Hungary, there is a different perception of the importance of key risks.

4.3 Differences in perceiving risks and their sources in V4 countries

The analysis of perception of each group of risks by selected socioeconomic factors such as gender, age and education of the entrepreneurs and size and age of the company is in the tables below. The first table analyzes the dependences of length of business on the perception of each group of risks. Length of business was divided into two groups (5 years or less and more than 5 years) for using the independent sample t-test.

		Mean	t-test (p-value)
Market risk	5 years or less	51.66	
	more than 5 years	51.03	0.54
Economic risk	5 years or less	47.21	
	more than 5 years	46.63	0.59
Financial risk	5 years or less	43.19	
	more than 5 years	38.23	*0.00*
Operational risk	5 years or less	35.27	
	more than 5 years	33.21	0.08
Personnel risk	5 years or less	41.21	
	more than 5 years	38.16	*0.02*
Security risk	5 years or less	33.82	
	more than 5 years	30.71	*0.01*
Legal risk	5 years or less	37.96	
	more than 5 years	41.98	*0.00*
Other business risk	5 years or less	42.61	
	more than 5 years	42.87	0.85

Table 18: The influence of length of business on the perception of risks. Source: own research.

It can be seen from the table above that the dependence was confirmed in case of the financial, personnel, security and legal risk (p-value < 0.05). Two streams were confirmed. The financial risk, personnel risk and security risk are perceived by younger businesses more intensively than by the group of businesses being are on the market for more than 5 years. On the other hand, the legal risk is perceived more intensively by older businesses. Based on the

findings, **H2a, H3a, H4a, H5a, H6a, H7a, H9a were rejected**. **Only H8a was confirmed**.

The next table analyzes if there is a dependence between the age of the entrepreneur and the perception of each group of risk. The age of entrepreneurs was divided into two groups - entrepreneurs younger than 30 (considered to be beginners) on the market, and entrepreneurs over 30.

		Mean	t-test (p-value)
Market risk	Less than 30	50.90	
	31 and more	51.29	0.72
Economic risk	Less than 30	49.06	
	31 and more	46.03	*0.01*
Financial risk	Less than 30	42.16	
	31 and more	38.66	*0.01*
Operational risk	Less than 30	37.65	
	31 and more	32.47	*0.00*
Personnel risk	Less than 30	44.05	
	31 and more	37.30	*0.00*
Security risk	Less than 30	34.53	
	31 and more	30.54	*0.00*
Legal risk	Less than 30	38.35	
	31 and more	41.77	*0.02*
Other business risk	Less than 30	41.98	
	31 and more	43.07	0.44

Table 19: The influence of age of the entrepreneur on the perception of risks. Source: own research.

The dependence was confirmed in case of the economic, financial, operational, personnel, security and legal risks. There are two streams evident – with regard to the economic, financial, operational, personnel and security risk. The importance of these risks decreases with age, in case of the legal risk, the situation is reversed. Entrepreneurs over 31 perceive the legal risk more intensively than their younger competitors. Based on these findings, the hypotheses **H2b, H3b, H4b, H5b, H6b, H7b and H9b were rejected.** Only **H8b,** focusing on increasing the importance of perception of legal risk with age of the entrepreneurs **was confirmed**.

The table below shows the influence of gender of the entrepreneur on the perception of each group of risks.

		Mean	t-test (p-value)
Market risk	Male	50.48	
	Female	52.51	*0.03*
Economic risk	Male	45.55	
	Female	49.06	*0.00*
Financial Risk	Male	38.59	
	Female	41.26	*0.03*
Operational risk	Male	33.96	
	Female	33.34	0.57
Personnel risk	Male	39.33	
	Female	38.26	0.38
Security risk	Male	31.13	
	Female	32.24	0.32
Legal risk	Male	41.81	
	Female	39.29	0.05
Other business risk	Male	43.80	
	Female	40.95	*0.03*

Table 20: The influence of gender of the entrepreneur on the perception of risks. Source: own research.

The t-test confirmed the influence of gender of the entrepreneur in case of the market, economic, financial and other business risks only. The other risks are not perceived differently by each group. Most of the risks with regard to the gender group are perceived more intensively by women than by men (market risk, economic risk, financial risk). Only other business risk is perceived more intensively by men than women. There cannot be generally confirmed any statistically significant differences between the groups of risks and gender of the entrepreneurs. The differences are confirmed in case of market, economic, financial and other business risk only.

The next table analyzes the perception of risks in regard to education of the entrepreneurs. The education was divided into two groups – university and other education. Other education means lower education than university degree.

		Mean	t-test (p-value)
Market risk	Other education	50.37	
	University	52.26	*0.04*
Economic risk	Other education	48.51	
	University	44.53	*0.00*
Financial risk	Other education	39.35	
	University	39.74	0.74
Operational risk	Other education	32.20	
	University	35.75	*0.00*
Personnel risk	Other education	37.37	
	University	41.01	*0.00*
Security risk	Other education	31.33	
	University	31.77	0.67
Legal risk	Other education	41.54	
	University	40.14	0.26
Other business risk	Other education	42.87	
	University	42.72	0.90

Table 21: The influence of education of the entrepreneur on the perception of risks. Source: own research.

The independent samples t-test confirmed the influence of education in case of the market risk, economic risk, operational risk and personnel risk. In case of the market risk, operational risk and personnel risk, the more educated people perceive the intensity of these risks more seriously than the entrepreneurs with lower education. In case of economic risk, we can see the inverse situation. There cannot be generally confirmed any statistically significant differences between the groups of risks and education of the entrepreneurs. The differences are confirmed in case of market, economic, operational and personnel risks only.

The table below shows the intensity of perception of each risk group and the dependence of perception these risk on the group of micro companies and SMEs.

		Mean	t-test (p-value)
Market risk	Micro	49.97	
	Small or Medium	53.24	*0.00*
Economic risk	Micro	47.54	
	Small or Medium	45.49	*0.04*
Financial risk	Micro	38.23	
	Small or Medium	41.69	*0.00*
Operational risk	Micro	31.04	
	Small or Medium	38.27	*0.00*
Personnel risk	Micro	35.98	
	Small or Medium	43.94	*0.00*
Security risk	Micro	29.89	
	Small or Medium	34.24	*0.00*
Legal risk	Micro	40.69	
	Small or Medium	41.33	0.61
Other business risk	Micro	42.71	
	Small or Medium	42.96	0.84

Table 22: The influence of size of the company on the perception of risks. Source: own research.

The influence of size of the company was confirmed with regard to market, economic, financial, operational, personnel and security risk. While the market risk, financial risk, operational risk, personnel risk and security risk are perceived more intensively by SMEs than micro companies, the economic risk is perceived more intensively by micro companies than SMEs. There cannot be generally confirmed any statistically significant differences between the groups of risks and size of the company.

The figure below shows the overall insight into the dependencies between factors such as company size, age, gender and education of the entrepreneur and length of business and individual risk groups.

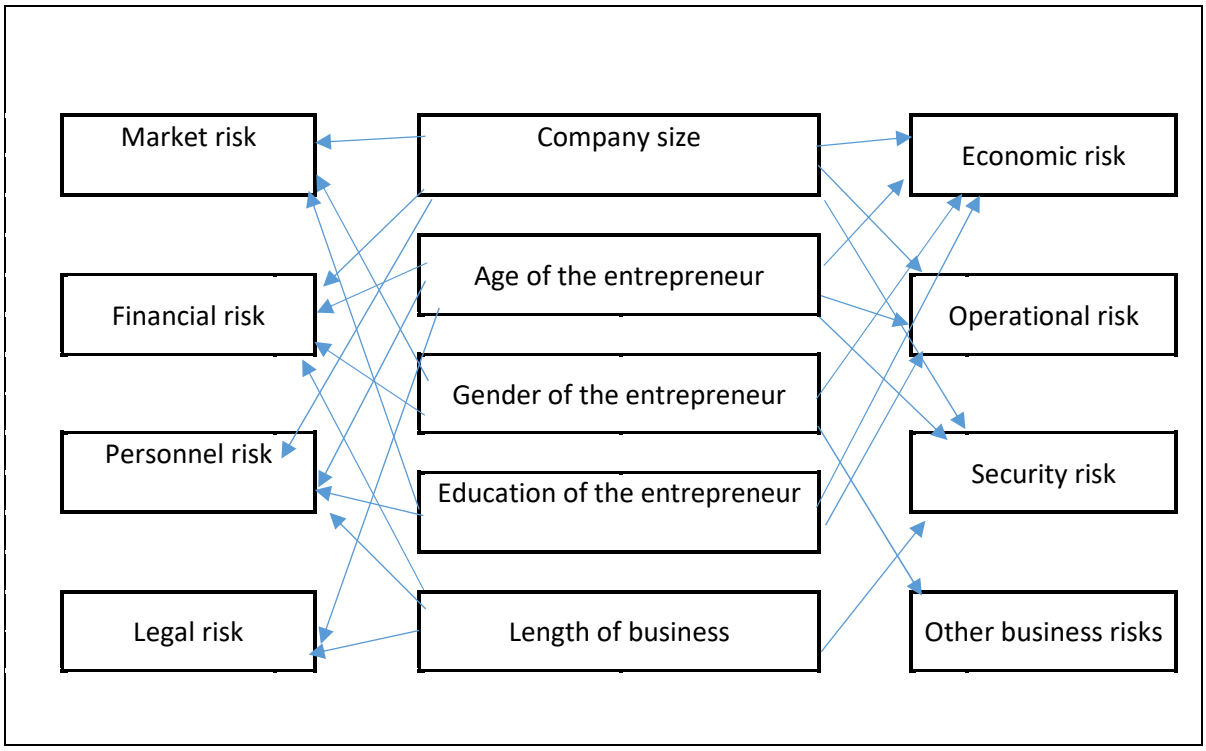

Fig. 7. Factors influencing the perception of risks. Source: own research.

The statistically significant differences can be seen with regard to:

- Company size – there is a relation to the market risk, financial risk, personnel risk, economic risk, operational risk and security risk.
- Age of the entrepreneur – there is a relation to the financial risk, personnel risk, legal risk, economic risk, operational risk and security risk.
- Gender of the entrepreneur – there is a relation to the market risk, financial risk, economic risk and other business risk.
- Education of the entrepreneur – there is a relation to the market risk, personnel risk, economic risk and operational risk.
- Length of business – there is a relation to the financial risk, personnel risk, legal risk and security risk.

The hypotheses H2c, H3c, H4c, H5c, H6c, H7c, H8c and H9c were confirmed. It cannot be said that there is generally a statistically significant difference between the perception of each group of risks and all selected factors. The existing differences are described above.

4.4 Differences in approaches to risk management in enterprises in the V4

The next part of the publication focuses on the approach to risk management. The model of risk management, which includes two parts - a risk identification and a risk assessment, was created (see Appendix 2 – the dependencies were added after results of the research). The model covers the preconditions as the company size, company sector, length of business and personal characteristics (gender, age, education) of the person responsible for risk management. The model analyzes if there are some differences in the risk identification and risk assessment according to these preconditions. The differences were analyzed by chi-square and p-value. Each factor of the preconditions was divided into two groups. Gender – M = male entrepreneur, F = female entrepreneur. Age was divided into the group of people up to 30 years old and the group of people of the age 31 and more. Education – U = University, OE = Other education. Size of the company – Micro = micro companies, SMEs = Small and medium enterprises. Length of business – the first group includes enterprises being active on the market for 5 years, the second group covers businesses with 6 and more years of experience.

The first two tables analyze the differences in the discussion about key risks in the company. As can be seen below, the most often answer given was "never" in each group. The differences in answers can be seen in the group of age of the entrepreneur (chi-square 15.532, p-value = 0,004), in education of entrepreneur (chi-square 60.865, p-value = 0,000) and size of the enterprise (chi-square 129.950, p-value = 0,000). If we see these differences in more detail, we can see that older people under evaluate the discussion about risks more than younger people (40% of older entrepreneurs never discuss the key risks in the company). From the education of entrepreneur's view, we can see that 27% of entrepreneurs with university education discuss the key risks monthly (in comparison with 19% of less educated entrepreneurs). The significant difference is also in case of the answer "never" – there is 44% of entrepreneurs with lower education who never discuss the risks. The discussion about risks is also under evaluated by micro companies (48% of them do not discuss the key risks). SMEs discuss the key risks much more often than micro companies.

	M	F	-30	31+	U	OE	Micro	SME	-5	6+
Monthly	265	135	107	293	210	190	222	178	108	292
	23%	22%	24%	22%	27%	19%	20%	27%	23%	22%
Semi-annually	143	77	54	166	100	120	111	109	59	161
	12%	12%	12%	12%	13%	12%	10%	16%	13%	12%
Quarterly	165	83	81	167	144	104	114	134	76	172
	14%	13%	19%	12%	19%	10%	10%	20%	16%	13%
Yearly	142	94	55	181	85	151	135	101	63	173
	12%	15%	13%	13%	11%	15%	12%	15%	14%	13%
Never	443	234	140	537	236	441	533	144	157	520
	38%	38%	32%	40%	30%	44%	48%	22%	34%	39%
Total	1158	623	437	1344	775	1006	1115	666	463	1318
chi-square		3.008		15.532		60.865		129.950		5.903
p-value		0.556		*0.004*		*0.000*		*0.000*		0.207

Note: M – male entrepreneur, F – female entrepreneur, -30 – entrepreneur younger than 30, 31+ - entrepreneur 31 and more, U – entrepreneur with university education, OE – entrepreneur with other education, Micro – micro enterprises, SME – small and medium enterprises, -5 – length of business lower or equal to 5 years, 6+ - length of business 6 and more years.

Table 23: How often do you make the space for discussions about key risks in your company? Source: own research.

When the differences among the sectors were analyzed, it was found out that there are differences between the answers across all the sectors (chi-square 59.923, p-value 0.001). The most discussed is the risk in the sector of agriculture. It can be caused by changes in weather conditions which requires immediate decisions. In total, 33% of the enterprises from Agriculture discuss the key risks every month. On the other hand, in total, 46% of entrepreneurs ignore discussions about the risks from the sector Other services (38% is average across all the sectors).

	I	T	A	C	T	AR	OS	Total
Monthly	72	100	38	37	29	34	90	400
	26%	22%	33%	21%	22%	24%	18%	22%
Semi-annually	43	59	13	24	11	10	60	220
	15%	13%	11%	14%	8%	7%	12%	12%
Quarterly	47	54	19	21	21	25	61	248
	17%	12%	16%	12%	16%	18%	12%	14%
Yearly	38	65	16	21	25	14	57	236
	14%	15%	14%	12%	19%	10%	12%	13%
Never	78	167	30	73	46	56	227	677
	28%	38%	26%	41%	35%	40%	46%	38%
Total	278	445	116	176	132	139	495	1781
chi-square								59.923
p-value								*0.001*

Note: I=Industry, T=Transport, A=Agriculture, C=Construction, T=Transport, AR=Accommodation and restaurants, OS=Other Services

Table 24: How often do you make the space for discussions about key risks in your company? - (the influence of economic area). Source: own research.

Within the "Risk identification", there is the setting of risk tolerance in the company. The statistically significant differences were identified in case of education of the entrepreneur (chi-square 10.785, p-value – 0.004) and size of the company (chi-square 9.025, p-value – 0.011). The older entrepreneurs set the border of risk more often than their younger colleagues.

	M	F	-30	31+	U	OE	Micro	SME	-5	6+
Yes, there is	341	160	146	355	240	261	292	209	127	374
	29%	26%	33%	26%	31%	26%	26%	31%	27%	28%
No, there is not	373	190	115	448	239	324	346	217	152	411
	32%	30%	26%	33%	31%	32%	31%	33%	33%	31%
I cannot say	444	273	176	541	296	421	477	240	184	533
	38%	44%	40%	40%	38%	42%	43%	36%	40%	40%
Total	1158	623	437	1344	775	1006	1115	666	463	1318
chi-square		5.437		10.785		5.639		9.025		0.444
p-value		0.066		*0.004*		0.060		*0.011*		0.801

Note: M – male entrepreneur, F – female entrepreneur, -30 – entrepreneur younger than 30, 31+ - entrepreneur 31 and more, U – entrepreneur with university education, OE – entrepreneur with other education, Micro – micro enterprises, SME – small and medium enterprises, -5 – length of business lower or equal to 5 years, 6+ - length of business 6 and more years.

Table 25: Is there a specified level of risk tolerance (border) in your company? Source: own research.

No statistically significant difference was identified in the answers across the sectors (chi-square 18.795, p-value – 0.094). Most often answer given was "I cannot say" – 40%. The border is set in 28% of all addressed companies only.

	I	T	A	C	T	AR	OS	Total
Yes, there is	90	125	38	40	38	37	133	501
	32%	28%	33%	23%	29%	27%	27%	28%
No, there is not	86	143	28	71	48	46	141	563
	31%	32%	24%	40%	36%	33%	28%	32%
I cannot say	102	177	50	65	46	56	221	717
	37%	40%	43%	37%	35%	40%	45%	40%
Total	278	445	116	176	132	139	495	1781
chi-square								18.794
p-value								0.094

Note: I=Industry, T=Transport, A=Agriculture, C=Construction, T=Transport, AR=Accommodation and restaurants, OS=Other Services

Table 26: Is there a specified level of risk tolerance (border) in your company? – (the influence of economic area). Source: own research.

The last part of the "Risk identification" is the searching for the causes of risks. There were identified two statistically significant differences – in the group of education of the entrepreneurs (chi-square 12.951, p-value – 0.002) and size of the company (chi-square 66.001, p-value 0.000). 78% of more educated people search for the causes of risks whereas 71% of entrepreneurs with lower education. The difference is much more noticeable in the group of micro and SMEs. Only 69% of micro companies search for the causes of risk, in comparison with 88% of SMEs.

	M	F	-30	31+	U	OE	Micro	SME	-5	6+
Yes, all risks concerned	291	163	110	344	212	242	233	221	105	349
	25%	26%	25%	26%	27%	24%	21%	33%	23%	26%
Yes, but only the most important risks concerned	553	321	220	654	398	476	533	341	237	637
	48%	52%	50%	49%	51%	47%	48%	51%	51%	48%
No	314	139	107	346	165	288	349	104	121	332
	27%	22%	24%	26%	21%	29%	31%	16%	26%	25%
Total	1158	623	437	1344	775	1006	1115	666	463	1318
chi-square		5.019		0.419		12.591		66.001		2.632
p-value		0.081		0.811		*0.002*		*0.000*		0.268

Note: M – male entrepreneur, F – female entrepreneur, -30 – entrepreneur younger than 30, 31+ - entrepreneur 31 and more, U – entrepreneur with university education, OE – entrepreneur with other education, Micro – micro enterprises, SME – small and medium enterprises, -5 – length of business lower or equal to 5 years, 6+ - length of business 6 and more years.

Table 27: Are you concerned with searching for the causes of risks (risk sources) in your company? Source: own research.

	I	T	A	C	T	AR	OS	Total
Yes, all risks concerned	77	111	35	38	42	39	112	454
	28%	25%	30%	22%	32%	28%	23%	25%
Yes, but only the most important risks concerned	145	230	55	96	62	63	223	874
	52%	52%	47%	55%	47%	45%	45%	49%
No	56	104	26	42	28	37	160	453
	20%	23%	22%	24%	21%	27%	32%	25%
Total	278	445	116	176	132	139	495	1781
chi-square								25.732
p-value								*0.012*

Note: I=Industry, T=Transport, A=Agriculture, C=Construction, T=Transport, AR=Accommodation and restaurants, OS=Other Services

Table 28: Are you concerned with searching for the causes of risks (risk sources) in your company? (the influence of economic area). Source: own research.

In the table above can be seen that there is a statistical difference in answers regarding searching for the risk sources among the sectors (chi-square 25.732, p-value 0.012). The causes of risks are sought most in Transport and least in Construction.

The next table presents the differences in responses regarding the factors considered when determining the value of risk. The differences were confirmed in three groups of factors – education of the entrepreneur (chi-square 21.625, p-value – 0.000), size of the company (chi-square 62.607, p-value – 0.000) and length of business (chi-square 21.269, p-value 0.000). The most significant difference can be seen in case of size of the company. 37% of micro companies do not set the value of risk, in comparison with 21% of companies from the segment of SMEs.

	M	**F**	**-30**	**31+**	**U**	**OE**	**Micro**	**SME**	**-5**	**6+**
Possible consequences of risk	76	217	76	217	139	154	188	105	90	203
	17%	16%	17%	16%	18%	15%	17%	16%	19%	15%
Probability of risk formation	55	129	55	129	84	100	110	74	69	115
	13%	10%	13%	10%	11%	10%	10%	11%	15%	9%
Potential consequences of risk and its probability	186	567	186	567	357	396	404	349	171	582
	43%	42%	43%	42%	46%	39%	36%	52%	37%	44%
We do not set the value of risk	120	431	120	431	195	356	413	138	133	418
	27%	32%	27%	32%	25%	35%	37%	21%	29%	32%
Total	437	1344	437	1344	775	1006	1115	666	463	1318
chi-square		4.588		5.435		21.625		62.607		21.269
p-value		0.205		0.143		*0.000*		*0.000*		*0.000*

Note: M – male entrepreneur, F – female entrepreneur, -30 – entrepreneur younger than 30, 31+ - entrepreneur 31 and more, U – entrepreneur with university education, OE – entrepreneur with other education, Micro – micro enterprises, SME – small and medium enterprises, -5 – length of business lower or equal to 5 years, 6+ - length of business 6 and more years.

Table 29: Which factors do you consider when determining the value of risk? Source: own research.

There was confirmed the statistically significant difference among sectors with regards to the question focused on factors considered when determining

the value of risk. The value of risk is not set in 35% of companies from the sector Construction and from the sector Other Services.

	I	T	A	C	T	AR	OS	Total
Possible consequences of risk	46	76	17	35	26	18	75	293
	17%	17%	15%	20%	20%	13%	15%	16%
Probability of risk formation	35	54	15	16	17	7	40	184
	13%	12%	13%	9%	13%	5%	8%	10%
Potential consequences of risk and its probability	126	177	55	64	57	69	205	753
	45%	40%	47%	36%	43%	50%	41%	42%
We do not set the value of risk	71	138	29	61	32	45	175	551
	26%	31%	25%	35%	24%	32%	35%	31%
Total	278	445	116	176	132	139	495	1781
chi-square								30.009
p-value								*0.037*

Note: I=Industry, T=Transport, A=Agriculture, C=Construction, T=Transport, AR=Accommodation and restaurants, OS=Other Services

Table 30: Which factors do you consider when determining the value of risk? - (the influence of economic area). Source: own research.

The table below presents the differences in answers regarding the way how the value of risk is set. The statistically significant differences are confirmed in each group. In case of gender of the entrepreneur (chi-square 9.092, p-value – 0.028), age of the entrepreneur (chi-square 51.026, p-value 0.000), education of the entrepreneur (chi-square 18.347, p-value 0.000), size of the company (chi-square 83.380, p-value 0.000), length of business (chi-square 29.601, p-value 0.000). As can be seen below, quantitative methods are used more often than semiquantitative and quantitative methods. The most noticeable difference can be seen in the group of micro and SMEs. While SMEs do not set the value of risk in 28% of cases, micro companies in almost 50%. Younger people prefer quantitative methods more than older entrepreneurs (18% versus 7%). Female entrepreneurs applicate the mathematical and statistical methods more often (12%) than their male colleagues (8%). Surprisingly, in younger enterprises quantitative methods used are more often than in the older ones.

	M	F	-30	31+	U	OE	Micro	SME	-5	6+
Qualitatively (verbally – small, medium, big)	485	231	147	569	324	392	421	295	162	554
	42%	37%	34%	42%	42%	39%	38%	44%	35%	42%
Semiquantitative (verbally with assigning the point value)	110	57	49	118	92	75	77	90	64	103
	9%	9%	11%	9%	12%	7%	7%	14%	14%	8%
Quantitatively (using mathematical and statistical expression of risk)	97	77	79	95	81	93	81	93	64	110
	8%	12%	18%	7%	10%	9%	7%	14%	14%	8%
We do not set the value of risk	466	258	162	562	278	446	536	188	173	551
	40%	41%	37%	42%	36%	44%	48%	28%	37%	42%
Total	1158	623	437	1344	775	1006	1115	666	463	1318
chi-square		9.092		51.026		18.347		83.380		29.601
p-value		*0.028*		*0.000*		*0.000*		*0.000*		*0.000*

Note: M – male entrepreneur, F – female entrepreneur, -30 – entrepreneur younger than 30, 31+ - entrepreneur 31 and more, U – entrepreneur with university education, OE – entrepreneur with other education, Micro – micro enterprises, SME – small and medium enterprises, -5 – length of business lower or equal to 5 years, 6+ - length of business 6 and more years.

Table 31: How do you set the value of risk? Source: own research.

	I	T	A	C	P	AR	OS	Total
Qualitatively (verbally – small, medium, big)	125	181	53	73	60	50	174	716
	45%	41%	46%	41%	45%	36%	35%	40%
Semiquantitative (verbally with assigning the point value)	31	31	20	10	14	15	46	167
	11%	7%	17%	6%	11%	11%	9%	9%
Quantitatively (using mathematical and statistical expression of risk)	21	47	10	16	11	20	49	174
	8%	11%	9%	9%	8%	14%	10%	10%
We do not set the value of risk	101	186	33	77	47	54	226	724
	36%	42%	28%	44%	36%	39%	46%	41%
Total	278	445	116	176	132	139	495	1781
chi-square								36.935
p-value								*0.005*

Note: I=Industry, T=Transport, A=Agriculture, C=Construction, T=Transport, AR=Accommodation and restaurants, OS=Other Services

Table 32: How do you set the value of risk? - (the influence of economic area). Source: own research.

From the table below can be seen that there are statistically significant differences in answers regarding setting the value of risk.

The following table presents the result of the answer regarding the catalogue of risks. There are statistically significant differences in the group of age of the entrepreneur (chi-square 6.751, p-value – 0.009) and size of the company (chi-square 50.415, p-value – 0.000). The younger enterprises create the risk catalogue more often (21%) than their older competitors (15%). In total, 25% of SMEs create the list of risks, in comparison with micro companies (only 12%).

	M	F	-30	31+	U	OE	Micro	SME	-5	6+
Yes	189	110	91	208	142	157	133	166	76	223
	16%	18%	21%	15%	18%	16%	12%	25%	16%	17%
No	969	513	346	1136	633	849	982	500	387	1095
	84%	82%	79%	85%	82%	84%	88%	75%	84%	83%
Total	1158	623	437	1344	775	1006	1115	666	463	1318
chi-square		0.517		6.751		2.312		50.415		0.063
p-value		0.472		*0.009*		0.128		*0.000*		0.803

Note: M – male entrepreneur, F – female entrepreneur, -30 – entrepreneur younger than 30, 31+ - entrepreneur 31 and more, U – entrepreneur with university education, OE – entrepreneur with other education, Micro – micro enterprises, SME – small and medium enterprises, -5 – length of business lower or equal to 5 years, 6+ - length of business 6 and more years.

Table 33: Do you have the risk catalogue (the list of risks) in your company? Source: own research.

There are statistically significant differences in answers regarding the list of risks among the economic sectors (chi-square 28.95, p-value 0.000). The list of risk is used most often in Industry, the least often in Construction area.

	I	T	A	C	T	AR	OS	Total
Yes	73	78	20	17	24	20	67	299
	26%	18%	17%	10%	18%	14%	14%	17%
No	205	367	96	159	108	119	428	1482
	74%	82%	83%	90%	82%	86%	86%	83%
Total	278	445	116	176	132	139	495	1781
chi-square								28.95
p-value								*0.000*

Note: I=Industry, T=Transport, A=Agriculture, C=Construction, T=Transport, AR=Accommodation and restaurants, OS=Other Services

Table 34: Do you have the risk catalogue (the list of risks) in your company? (the influence of economic area). Source: own research.

The next question of the research was focused on the way how the differences between reducing the impact risk and the costs incurred to reduce them are evaluated. It was found out that there are statistically significant differences in three group – gender of the entrepreneur (chi-square 8.929, p-value – 0.030), age of the entrepreneur (chi-square 11.452, p-value – 0.010), size of the company (chi-square 59.477, p-value – 0.000). The most significant differences are between micro enterprises and SMEs, when more than 30% of micro enterprises answered that they do not evaluate the benefits of measures decreasing the risks. In the segment of SME, it is lower – 18%.

	M	F	-30	31+	U	OE	Micro	SME	-5	6+
We monitor the costs and benefits of the reduced impact of risk	277	157	131	303	190	244	226	208	112	322
	24%	25%	30%	23%	25%	24%	20%	31%	24%	24%
We monitor the difference in case of the key risks	201	140	86	255	165	176	185	156	102	239
	17%	22%	20%	19%	21%	17%	17%	23%	22%	18%
We make the evaluation by estimation only	371	173	120	424	236	308	363	181	130	414
	32%	28%	27%	32%	30%	31%	33%	27%	28%	31%
We do not evaluate the benefits of measures decreasing the risks	309	153	100	362	184	278	341	121	119	343
	27%	25%	23%	27%	24%	28%	31%	18%	26%	26%
Total	1158	623	437	1344	775	1006	1115	666	463	1318
chi-square		8.929		11.452		5.866		59.477		3.986
p-value		*0.030*		*0.010*		0.118		*0.000*		0.263

Note: M – male entrepreneur, F – female entrepreneur, -30 – entrepreneur younger than 30, 31+ - entrepreneur 31 and more, U – entrepreneur with university education, OE – entrepreneur with other education, Micro – micro enterprises, SME – small and medium enterprises, -5 – length of business lower or equal to 5 years, 6+ - length of business 6 and more years.

Table 35: How do you evaluate the difference between reducing the impact of risk and the costs incurred to reduce it? Source: own research.

The statistically significant differences were also confirmed in when comparing the sectors. It can be said that the methods of evaluation of a

difference between reducing the impact of risk and the costs incurred to reduce them are different across the economic sectors (chi-square 47.652, p-value – 0.000).

	I	T	A	C	T	AR	OS	Total
We monitor the costs and benefits of the reduced impact of risk	79	122	27	32	39	29	106	434
	28%	27%	23%	18%	30%	21%	21%	24%
We monitor the difference in case of the key risks	57	83	32	31	21	28	89	341
	21%	19%	28%	18%	16%	20%	18%	19%
We make the evaluation only by estimation	80	126	38	49	54	37	160	544
	29%	28%	33%	28%	41%	27%	32%	31%
We do not evaluate the benefits of measures decreasing the risks	62	114	19	64	18	45	140	462
	22%	26%	16%	36%	14%	32%	28%	26%
Total	278	445	116	176	132	139	495	1781
chi-square								47.652
p-value								*0.000*

Note: I=Industry, T=Transport, A=Agriculture, C=Construction, T=Transport, AR=Accommodation and restaurants, OS=Other Services

Table 36: How do you evaluate the difference between reducing the impact of risk and the costs incurred to reduce it? - (influence of economic area). Source: own research.

The last question of risk assessment was the training for employees from the area of risk management. There are statistically significant differences in case of gender of the entrepreneur (chi-square 14.566, p-value – 0.012), education of the entrepreneur (chi-square 25.223, p-value – 0.000), size of the company (chi-square 78.145, p-value – 0.000), length of business (chi-square 17.207, p-value – 0.000). The most noticeable differences are in case of size of the company. Micro companies do not provide the training to employees more often than SMEs due to the uselessness of this training (micro 22%, SME 9%). 48% of SMEs provide the training, to the employees regularly or irregularly, while in the segment of micro enterprises, it is only 30%.

	M	F	-30	31+	U	OE	Micro	SME	-5	6+
Yes, regularly	171	81	62	190	103	149	134	118	51	201
	15%	13%	14%	14%	13%	15%	12%	18%	11%	15%
Yes, irregularly	257	142	113	286	200	199	201	198	116	283
	22%	23%	26%	21%	26%	20%	18%	30%	25%	21%
No, training is very expensive	75	58	41	92	44	89	79	54	49	84
	6%	9%	9%	7%	6%	9%	7%	8%	11%	6%
No, we do not have time for these trainings	305	137	104	338	192	250	292	150	106	336
	26%	22%	24%	25%	25%	25%	26%	23%	23%	25%
No, we have not found any training which would be suitable for our purposes	148	107	55	200	128	127	169	86	58	197
	13%	17%	13%	15%	17%	13%	15%	13%	13%	15%
No, trainings in our company are considered to be useless	202	98	62	238	108	192	240	60	83	217
	17%	16%	14%	18%	14%	19%	22%	9%	18%	16%
Total	1158	623	437	1344	775	1006	1115	666	463	1318
chi-square	14.566		9.810		25.223		78.145		17.207	
p-value	*0.012*		0.081		*0.000*		*0.000*		*0.004*	

Note: M – male entrepreneur, F – female entrepreneur, -30 – entrepreneur younger than 30, 31+ - entrepreneur 31 and more, U – entrepreneur with university education, OE – entrepreneur with other education, Micro – micro enterprises, SME – small and medium enterprises, -5 – length of business lower or equal to 5 years, 6+ - length of business 6 and more years.

Table 37: Do you provide your employees with the opportunity of education in risk management. Source: own research.

The statistically significant differences were also confirmed when comparing the economic sectors (chi-square 54.207, p-value – 0.004). Training is provided more often by companies from Industry, the least often from Trade.

	I	T	A	C	T	AR	OS	Total
Yes, regularly	50	60	15	30	19	13	65	252
	18%	13%	13%	17%	14%	9%	13%	14%
Yes, irregularly	73	88	32	41	33	37	95	399
	26%	20%	28%	23%	25%	27%	19%	22%
No, training is very expensive	12	46	10	13	13	9	30	133
	4%	10%	9%	7%	10%	6%	6%	7%
No, we do not have time for these trainings	66	104	37	49	30	26	130	442
	24%	23%	32%	28%	23%	19%	26%	25%
No, we have not found any training which would be suitable for our purposes	36	67	13	19	19	18	83	255
	13%	15%	11%	11%	14%	13%	17%	14%
No, trainings in our company are considered to be useless	41	80	9	24	18	36	92	300
	15%	18%	8%	14%	14%	26%	19%	17%
Total	278	445	116	176	132	139	495	1781
chi-square								54.207
p-value								*0.004*

Note: I=Industry, T=Transport, A=Agriculture, C=Construction, T=Transport, AR=Accommodation and restaurants, OS=Other Services

Table 38: Do you provide your employees with the opportunity of education in risk management? - (influence of economic area). Source: own research.

The hypothesis **H10 was confirmed** but the area of differences must be specified. The model in Appendix 2 shows the result of this testing.

No.	Hypotheses	Validated (Y/N)
H1a	50% or more SMEs of V4 countries do not deal with risk management at all.	Y
H1b	Less than 50% of SMEs of V4 countries consider risk management as a strategic tool that provides a competitive advantage.	Y
H1c	More than 50% of SMEs of V4 countries do not pay attention to any of the activity within risk management such as risk identification or risk analysis, etc.	N
H1d	In most SMEs in V4 an owner of the company is responsible for risk management.	Y
H1e	In more than 50% of SMEs from V4, risks are discussed yearly or are not discussed at all.	Y
H1f	In more than 50% of SMEs from V4, the value of risk is not set.	N
H1g	Risk avoiding is the most popular way how to handle risks.	Y
H1h	More than 50% of SMEs from V4 countries do not provide any education in risk management for their employees.	Y
H1i	There is some statistically significant difference in the approach to risk management among V4 countries.	N
H2a	Companies that have been on the market for more than 5 years, perceive the action of market risk more intensively than younger companies.	N
H2b	Older entrepreneurs (31+) have a tendency to perceive the market risk more intensively than their younger colleagues.	N
H2c	There is some statistically significant difference between the perception of market risk in terms of gender, age and education of the entrepreneur, the size and age of the company.	Y
H3a	Companies that have been on the market for more than 5 years, perceive the action of economic risk more intensively than younger companies.	N
H3b	Older entrepreneurs (31+) have a tendency to perceive the economic risk more intensively than their younger colleagues.	N
H3c	There is some statistically significant difference between the perception of economic risk in terms of gender, age and education of the entrepreneur, the size and age of the company.	Y

H4a	Companies that have been on the market for more than 5 years, perceive the action of financial risk more intensively than younger companies.	N
H4b	Older entrepreneurs (31+) have a tendency to perceive the financial risk more intensively than their younger colleagues.	N
H4c	There is some statistically significant difference between the perception of financial risk in terms of gender, age and education of the entrepreneur, the size and age of the company.	Y
H5a	Companies that have been on the market for more than 5 years, perceive the action of operational risk more intensively than younger companies.	N
H5b	Older entrepreneurs (31+) have a tendency to perceive the operational risk more intensively than their younger colleagues.	N
H5c	There is some statistically significant difference between the perception of operational risk in terms of gender, age and education of the entrepreneur, the size and age of the company.	Y
H6a	Companies that have been on the market for more than 5 years, perceive the action of personnel risk more intensively than younger companies.	N
H6b	Older entrepreneurs (31+) have a tendency to perceive the personnel risk more intensively than their younger colleagues.	N
H6c	There is some statistically significant difference between the perception of personnel risk in terms of gender, age and education of the entrepreneur, the size and age of the company.	Y
H7a	Companies that have been on the market for more than 5 years, perceive the action of security risk more intensively than younger companies.	N
H7b	Older entrepreneurs (31+) have a tendency to perceive the security risk more intensively than their younger colleagues.	N
H7c	There is some statistically significant difference between the perception of security risk in terms of gender, age and education of the entrepreneur, the size and age of the company.	Y
H8a	Companies that have been on the market for more than 5 years, perceive the action of legal risk more intensively than younger companies.	Y
H8b	Older entrepreneurs (31+) have a tendency to perceive the legal risk more intensively than their younger colleagues.	Y

H8c	There is no statistically significant difference between the perception of legal risk in terms of gender, age and education of the entrepreneur, the size and age of the company.	Y
H9a	Companies that have been on the market for more than 5 years, perceive the action of other business risks more intensively than younger companies.	N
H9b	Older entrepreneurs (31+) have a tendency to perceive the other business risks more intensively than their younger colleagues.	N
H9c	There is some statistically significant difference between the perception of other business risks in terms of gender, age and education of the entrepreneur, the size and age of the company.	Y
H10	There are some statistically significant differences in the assessment of risk management (according to the model in Appendix 2) in terms of gender age and education of the entrepreneur, the size, sector and age of the company.	Y

Table 39: Evaluation of hypotheses. Source: own research.

4.5 Summary of theoretical and methodological aspects in the area of risk management

Based on the empirical research and previous analyses of perceiving risks and the approach to risk management in SMEs in V4 countries, these findings can be formulated:

- There are differences in the application of risk management among countries of V4 Group. SMEs in the Czech Republic are more experienced in the area of risk management. In Poland, the situation is the worst. SMEs from Hungary have focused more on the risk management area for the last 5 years. Nevertheless, using risk management is regarded as a competitive advantage by 27% of SMEs out of the whole V4 Group.
- The importance of risks in the Czech Republic, Slovakia and Poland is similar. The importance is given to the market risk, economic risk and personnel risk. In Hungary, all risks are of a similar importance. Hungary has a different perception of the importance of key risks. The most important source of risk is a strong competition in the sector (market risk). The sources of risks are perceived differently in terms of social factors (gender, age and education of the entrepreneur) and characteristics of the company (size and length of business).

- In SMEs, risks are managed by the owner most often. Having the risk manager specialized in this activity is still a rare situation. A little further is Hungary, where in 6% of companies, there is a risk manager. Even worse, in 14% of the addressed companies nobody manages risks.
- Older entrepreneurs under evaluate the discussion about risks more often than their younger colleagues. Younger people prefer the quantitative methods such as mathematical and statistical methods for expressing the risks. Older entrepreneurs choose the qualitative methods (less scientific) more often.
- Only 36% of companies in V4 offer the opportunity of education in the risk management area to their employees. More educated people perceive risks and their sources more seriously and look for a method in order to reduce them.
- Some risks are perceived more intensively by women then by men (market risk, economic risk, financial risk). Only other business risks are perceived more intensively by men than by women. Women apply mathematical and statistical methods in the process of risk management more often than men.
- Micro companies generally under evaluate the application of the risk management processes (48% of them do not discuss key risks, 50% do not set the value of risk, 30% do not evaluate the benefits of measures decreasing the risks). Micro companies do not provide the training for employees in the risk management area.

5 DISCUSSION

In this part, the previous results are compared to other national and international researches. The comparison is divided into two sections. The first part sums up the importance of business risks for SMEs in V4 countries and compares the influence of selected factors on perceiving business risks as well. The second part focuses on the approach to the risk management and methods used in the process of risk management, and examines the influence of selected factors on the risk management process.

5.1 The importance of business risks and the influence of selected factors on perceiving business risks

The importance of risk perception is similar in the Czech Republic, Slovakia and Poland. Most attention is paid to the market risk, economic risk, financial risk and personnel risk. By contrast, in Hungary, risks are perceived differently. The companies give approximately the same importance to all the risks analyzed. This finding means that companies in Hungary perceive the importance of risks differently than in other V4 countries. The most important source of risk is a strong competition in the sector (market risk) - almost 50% of SMEs perceive this risk as high or very high. The second place is taken by a loss of costumers (market risk) - in total, 45% of respondents perceive this risk as serious. The third most important source of risk is high administrative requirements for entrepreneurs (other business risk) - 44% of entrepreneurs consider this risk as very important. The research shows that V4 countries are less exposed to financial risk sources than Serbia (see details in Oláh et al, 2019).

Statistically significant dependencies were confirmed for all factors (gender, age and education of the entrepreneur, size of the company, length of business). However, not all factors have a statistically significant effect on all the risks identified. Gender of entrepreneurs was identified as an important factor in case of the market, economic, financial and other business risks. This result corresponds with the conclusion of Boyer & Blazy (2014). The perception of the other risks is independent of entrepreneur's gender. The market risk, economic risk and financial risk are perceived by women more intensively than by men (market risk, economic risk, financial risk). These risks are considered

at the beginning of the entrepreneurship. It is perhaps the reason why women have higher risk avoidance which prevents them from starting a new business. This fact was confirmed by Langowitz & Minniti (2007). What is more, women are more afraid of failure than their male competitors (Minniti & Nardone, 2007). Dohmen et al. (2011) also approved the higher willingness to take risks by men than by women. Eirksson & Simpson (2010) confirmed lower risk preferences and risky behavior in case of women in Australia. A lower inclination to the risk in case of gender of the entrepreneur was confirmed also by Goktan & Gupta (2015), Langowitz & Minniti (2007), Lim & Envick, (2013). There are also opposite results (e.g. Runyan et al., 2006). Other business risks from this research are perceived more intensively by men than by women. The age of the entrepreneur was identified as an important factor regarding the economic, financial, operational, personnel, security and legal risks.

There are two streams evident with regard to economic, financial, operational, personnel and security risk. The importance of these risks decreases with age, in case of the legal risk, the situation is reversed. Entrepreneurs over 31 perceive the legal risk more intensively than their younger competitors. The entrepreneur's education is an important factor in perception of the market risk, operational risk and personnel risk. Entrepreneurs with a university degree perceive these risks more intensively than entrepreneurs with a lower education degree. The situation regarding the economic risk is opposite - entrepreneurs with lower education perceive it more intensively than university-educated entrepreneurs. This situation is perhaps caused by their knowledge of market risk and better solutions of various problems. This result is the exact opposite to the opinion pointed out by Kim & Vonortas (2014).

As for the company size, dependencies were identified in case of the economic, financial, operational, personnel and security risk. While in case of the market risk, operational risk, personnel risk and security risk, these risks are perceived more intensively by SMEs than by micro companies, the economic risk is perceived more intensively by micro enterprises. Acar & Göc (2011) confirmed a higher perception of risks by SMEs as well. As for the length of business, there is a dependency between the length of business and

financial, personnel, security and legal risk. The financial risk, personnel risk and security risk are perceived more intensively by younger businesses than by a group of businesses being on the market for 6 or more years. On the other hand, the legal risk is perceived more intensively by older businesses. Belás & Ključnikov (2016) also confirmed that perception of the credit risk is higher by younger companies than by the older ones. Dvorský et al. (2018) proved that the length of business reduces the differences in the evaluation of important credit risk factors in regard to the entrepreneur's gender and age.

5.2 The approach to risk management and the influence of selected factors on the risk management process

The research conducted in SMEs within V4 Group analyzed whether the process of risk management was applied in companies and which methods were used. Risk management was found to be a competitive advantage for 27% of companies. Almost half of the addressed companies are unable to consider whether risk management is beneficial to the company or not. This situation perhaps exists because they have not applied risk management until now. Therefore, they cannot judge whether it would give them a competitive advantage. According to the research results, risk management is more widespread in the Czech Republic than in other V4 countries. Despite this positive fact, there is 42% of SMEs which have not applied any risk management practices in the Czech Republic. Hungarian SMEs in this area seem to be different from other V4 countries for several reasons. According to the research results, Hungarian companies are headed by a higher percentage of university-educated managers. A total of 72% of the entrepreneurs surveyed stated that they had obtained higher education. Within the V4 group, the average of university educated addressed entrepreneurs is only 43%. The others achieved lower than university education. Hungary differs in that, there is a high percentage of SMEs compared to other countries that started with risk management less than a year ago. Hungary is also the country where the highest percentage of risk managers is (6%). In V4 countries, the risk is most often managed by a business owner. Only 4% of the companies surveyed established a position of a risk manager. Hungary is thus slightly above average. 14% of the addressed V4 companies even claim that no one is dealing with risks in the

company. The second most frequent variant of the person responsible for risk management is a manager authorized by the executive manager and team leader of each department (each of these options reached in the questionnaire survey up to 10% in all addressed countries).

The research shows that there is not enough space for discussion about key risks in SMEs. 38% of the addressed companies do not discuss risks at all, 13% once a year, 12% semi-annually, 13% quarterly, and 22% once a month. It means that more than 50% of the addressed companies do not discuss risks more than once a year. H1e was confirmed. The worst situation is in Poland, where 43% of the respondents do not have any space to discuss the risks that could ultimately have fatal consequences for a company. The factors, for which differences in responses have been identified, are as follows: the age and education of the entrepreneur, size of the enterprise and the economic sector. The relationship between the entrepreneur's education and risk management was confirmed by Gilmore et al. (2004). They stated that education is obviously connected to knowledge and the mangers with better knowledge can perceive risky situations more critically and take more informed decisions. Discussions about key risks are most underestimated by older entrepreneurs (over 31). 40% of older entrepreneurs have never given a chance to discuss risks in their companies. It is a reverse result compared to Acar & Göc (2011). They presented that younger SME managers have higher risk appetites than the older ones and do not pay high attention to the risks as the older ones do. In case of the entrepreneur's education, it can be summarized that the entrepreneurs who have achieved lower than university education pay lower attention to discussing key risks than more educated entrepreneurs. This fact was also approved by Kljucnikov et al. (2016). They state that the entrepreneurs with a higher education are better prepared for starting their own business and are able to define all the risks better. Higher-educated people look for new opportunities, which can have a positive impact on their businesses (Rauch & Rijsdijk, 2013). SMEs discuss key risks much more often than micro companies. Risks are discussed more often in the sector of agriculture than in other sectors. This result supports the research of Vavřina & Martinovičová (2014). Their research is focused on economic performance of SMEs in V4 Group in the agricultural area. They state that the risk management in agricultural business has to be part

of the business activities regardless of their size. The influence of the effective risk management on labor productivity was statistically proved.

The value of risk is one of the first steps in risk management. For each risk, there must be assigned a value so that the business can decide whether the risk is important. If the risk is regarded as serious, management must take a decision about the risk mitigation methods or, if a risk appears, the risk is only retained. Although this step is very important, 41% of respondents do not set the value of risk. The factors, for which differences in responses have been identified, are the entrepreneur's age and size of the company. Older entrepreneurs determine the risk value more often than their younger colleagues.

Quantitative methods (verbally - small, medium, big), qualitative methods (mathematical and statistical expression of risk) or semi-quantitative methods (verbally with assigning the point value) can be used to determine the risk value. Quantitative methods are used more often than semiquantitative and quantitative methods. The most noticeable difference can be seen in the micro and SMEs group. While SMEs do not set the value of risk in 28% of cases, micro companies in almost 50%. Younger people prefer quantitative methods compared to older entrepreneurs (18% versus 7%). Female entrepreneurs apply mathematical and statistical methods more often (12%) than their male colleagues (8%). Surprisingly, quantitative methods are used more often in younger enterprises than in the older ones.

After setting the value of risk each risk should be recorded in the risk catalogue. Following the factors which influence the decision about having the risk catalogue, it was found out that the younger entrepreneurs have the risk catalogue more often (21%) than their older competitors (15%). In total, 25% of SMEs keep the list of risks compared to 12% of micro companies.

After evaluating the risk management methods used, it can be said that the most popular method adopted for successful risk management is Risk Avoiding. A total of 37% of V4 companies mentioned this option as the method most widely used. This attitude corresponds to the general belief of small and medium-sized entrepreneurs about the benefits of risk management and the methods used. 36% of respondents choose insurance as a suitable method for risk reduction. It should be noted that insurance is not a suitable method for reducing all business risks. It is always necessary to determine the value of the

asset and the importance of the asset to the company and to compare it with the amount that must be spent to reduce such risk. In case of insurance, this ratio is not always in favor of risk reduction. Therefore, insurance is recommended for serious risks only that would have a fatal impact on the company existence (e.g. fire, flood and similar circumstances).

An alternative to insurance is having financial reserves. A total of 18% of the entrepreneurs surveyed chose this option. This method is recommended when there is a high probability that the risk will occur, but another method to reduce the risk, such as insurance, would be expensive. In this case, it is recommended to prepare the cash flow of the company for the situation gradually and create a financial reserve to address the risk. Other methods (e.g. transfer of risk to a business partner or expansion of the production program) were not evaluated as important. The reason perhaps is their non-use or ignorance. The choice of risk reduction methods varies from country to country. In the Czech Republic, the most common methods are as follows: insurance, risk avoidance and financial reserves. In Slovakia companies prefer risk avoiding insurance and financial reserves. In Poland, the first place is taken by insurance, then financial reserves follow and risk avoiding is on the third place. In Hungary, the situation is completely different. The first place is taken by risk avoiding, the second and last significant place is insurance. No addressed company create financial reserves as a method of risk reduction.

The approach of SMEs to the education in risk management was also analyzed. It was found that only 36% of companies in the V4 Group provide risk management training to their employees. This low number indicates a violation of the applicable legislation, where a duty of every entrepreneur is to provide their employees legal training (such as work safety and fire protection). The companies that do not provide training think that the main reasons for that are the lack of time (25%), lack of usefulness of trainings (17%), lack of suitable trainings on the market (14%) and the price of training (7%). The most useless is the risk management education in Slovakia, while in Poland the main reason is the cost of training. The factors influencing training decisions correspond with the gender, age, entrepreneurship and size of the company, length of business and economic sector. The industry characteristics are very important for risk identification and the process of risk management (Acar &

Göc, 2011). The most noticeable differences are in case of the company size. Micro companies do not provide training to employees more often than SMEs due to the uselessness of training (micro 22%, SMEs 9%). 48% of SMEs provide training to employees regularly or irregularly, while in the segment of micro enterprises, it is only 30% of them.

The interesting findings can be also found by searching for the causes of risks. 78% of more educated entrepreneurs search for the causes of risks in comparison with 71% of entrepreneurs with lower education. The difference is much more noticeable in the group of micro and SMEs. Only 69% of micro companies search for the causes of risk, in comparison with 88% of SMEs. This result corresponds with conclusions made by Beasley et al. (2005), Liebenberg & Hoyt (2003), Kleffner et al. (2003), Pagach & Warr (2011) and Paape & Speklé (2012). They found out that there is a statistically significant relationship between company size and risk management applied within a company. Larger companies are more likely to implement the process of risk management than the smaller ones.

CONCLUSION

The main objective of the publication was to define theoretical and methodological aspects in the area of risk management and to quantify their impact on the risk management process in the corporate area. For empirical research, the questionnaire was used. The data were collected in SMEs in the area of V4 countries. In total, 1,781 managers from SMEs filled in the online questionnaire in 2017-2018. The hypotheses were formulated and tested. The results provide interesting data about risks and risk management in the area of V4 countries as well as the comparison among these countries. A low level of knowledge of risk management in SMEs was confirmed. SMEs are not aware of benefits of risk management and do not evaluate the benefits of measures decreasing the risks. The situation is worse in case of micro companies. On the other hand, risk management is perceived as a competitive advantage by ¼ of addressed companies.

There are some differences in perceiving the risks and their sources among the entrepreneurs in terms of their social characteristics (gender, age and education of entrepreneur) and the characteristics of the company (size, length of business). In the Czech Republic, Slovakia and Poland, risks are perceived in a similar way. Hungary is different in terms of the risk intensity perception, attitude to the risk management and risk management application. The publication provides many interesting results in risk management area.

Theoretical and practical benefits of this publication can be identified. *The main theoretical contribution* is the extension of knowledge in the field of risks and risk management in the area of V4 countries. The current situation in this field was analyzed and some interesting aspects were used to compare member countries. Theoretical and methodological aspects were formulated. Furthermore, the publication enriches a science with a comprehensive critical research of literature sources which were used in the theoretical part. More than 250 sources from international databases such as Web of Science and Scopus were analyzed, and the findings increased the quality of empirical research and the quality of the analysis too.

Theoretical implications in the academic area are obvious. The findings will be used for updating materials for teaching the course focused on business management. The up-to-date information from the area of risk management

enriches the course provided by the university and the students get new information. The results indicated that SMEs are not aware of the process of risks identification and methods used to decrease or eliminate the risks. The university can organize workshops or entrepreneurial education focused on this underestimated area of risk management.

The results of the empirical research have *practical benefits as well*. These can be useful for government and regional associations which are focused on help and optimization of business environment for SMEs. The specialized companies focused on training of entrepreneurs can use the research results to identify shortcomings in the area of risk management. Company owners or risk managers can be inspired by the methods of risk management described in this publication.

The research results provide interesting information, which is intended primarily for the professional public and associations that help SMEs in selected countries. Despite the merit, several limits of this research can be defined. The first is the territorial validity of the research. The research was conducted in V4 countries, so its results cannot be generalized. The second is understanding of the questionnaire, which was translated from English into the home language in the specific country. The translation could contain inaccuracies, vague expressions, or errors that affected the answers. The differences found in this research can be caused by differences related to four of the countries' membership in the European Union. The causes of this differences were not analyzed in detail. Finally, it cannot be rule out that the questionnaire might have been completed by a person who is not the owner of the business or is not responsible for risk management in the company.

SUMMARY

Small and medium-sized enterprises (SMEs) have a great importance for the economy worldwide because they represent the competitive and dynamic part of the economic system. European SMEs have increased their importance over the past few years and they are set to continue to grow in the near future. In 2018, the whole segment of SMEs represented 99.8% of all companies in the Czech Republic, 99.9% in Slovakia, 99.8% in Poland, 99.8% in Hungary and 99.8% in all countries of European Union.

Enterprises are affected by several risks. Risk is an integral part of entrepreneurship and in case of SMEs, it can be a crucial factor of business success. Business risk can be defined as the possibility (uncertainty) that the actual results of business will deviate from the expected results. There are different types of business risks distinguished by various authors. This publication divided business risks into the groups as follows: market risk, economic risk, financial risk, operational risk, personnel risk, security risk, legal risk and other business risks. The importance of business risks in the Czech Republic, Slovakia and Poland is similar. The importance is given to the market risk, economic risk and personnel risk. In Hungary, all risks are of a similar importance.

The sources of risks are perceived differently in terms of social factors (gender, age and education of the entrepreneur) and characteristics of the company (size and length of business). Some risks are perceived more intensively by women then by men (market risk, economic risk, financial risk). Other business risks are perceived more intensively by men than by women. More educated people perceive risks and their sources more seriously and look for a method in order to reduce them.

Enterprise risk management (ERM) is considered to be more important after the financial crisis of the early 21st century. It covers some purposeful activities from risk prevention and risk management to limiting the amount of damage that can occur. The activities are as follows: risk identification, risk classification, risk analysis and risk assessment, choosing an appropriate method to reduce risk and a review the effectiveness of ERM. An inability of business owners to adopt the processes of risk management leads to a decreasing sustainability of SMEs. Nevertheless, SMEs do not have a specialist

for a risk management and risks are most often managed by the owner. Micro companies generally underestimate the application of the risk management processes. What is more, they do not provide the training for employees in the risk management area.

The approach to the business risks management depends on individual characteristics of the SME owners and SME ownership structure. The decision on how to handle risks very often depends on gender, age and education of the entrepreneur. Two groups of methods for risk reduction can be defined as quantitative and qualitative methods. The quantitative methods are based on a mathematical calculation of risk from the frequency of a threat and its impact. The qualitative methods are characterized by risks being expressed in a certain extent (for example, they are scored from 1 to 10, or determined verbally - small, medium, large). The qualitative methods are simpler and faster, but more subjective. Surprisingly, in younger enterprises, the quantitative methods are used more often than in the older ones. It was proven that women apply mathematical and statistical methods in the process of risk management more often than men.

It can be concluded that there are differences in many areas of risk identification and risk management among the countries of V4 Group.

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LIST OF ABBREVIATIONS

CRM	Clinical risk management
DRM	Disaster risk management
EnRM	Engineering risk management
ERM	Enterprise risk management
EU	European Union
FRM	Financial risk management
IRM	Insurance risk management
PRM	Project risk management
ScRM	Supply chain risk management
SME	Small and medium enterprises
SRM	Strategic risk management
V4	Visegrad countries

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APPENDIX I: QUESTIONNAIRE

RISK MANAGEMENT IN SMALL AND MEDIUM ENTERPRISES IN …….

We would like to address you with a request to fill in a questionnaire. which will be used for international scientific research. The results of our research focussing on the state of risk management in small and medium enterprises in ……. will be used for international comparisons and for educational purposes at …….. We want to contribute to the discussion about the importance of risk management in today's turbulent business environment.

Thank you for your cooperation!

Please mark your response with a cross.

---

1. *What gender are you?*
   ☐ man ☐ woman

2. *How old are you?*
   ☐ younger than 30 (including 30) ☐ 31-50 ☐ over 50

3. *What education did you achieve?*
   ☐ primary school ☐ high school ☐ university

4. *Which region of the republic are you active in?* (according to the structure of your country)
   ☐ ☐ ☐ ☐

5. *What size is your company?*
   ☐ micro company (less than 10 employees) ☐ small company (less than 50 employees)
   ☐ medium company (less than 250 employees)

6. *Which economic area is your company active in?*

☐ industry ☐ trade ☐ agriculture ☐ construction ☐ transport

☐ accommodation and restaurants ☐ other services ☐other:……..

7. *How long have you been doing your business?*

☐ less than 1 year ☐ 1-5 years ☐ 6-10 years ☐ more than 10 years

8. *Is your company active on the international market too? If so. how long?*

☐ yes, less than 1 year ☐ yes, 1-5 years ☐ yes, 6-10 years

☐ yes, more than 10 years ☐ no

9. *Do you deal with risk management in your company? If so. how long?*

☐ yes, less than 1 year ☐ yes, 1-5 years ☐ yes, 6-10 years

☐ yes, more than 10 years ☐ no

10. *Do you think that you are aware of how to manage risks in your company properly? If so. why?*

☐ yes, we have not had any risk event in our company yet

☐ yes, we train our employees in the areas required by law

☐ yes, we create financial reserves for risk events in our company

☐ no, we do not perceive threats

☐ other: ……

11. *Tick the sources of business risks (causes) below on a scale from 1 to 5, when 1 means minimal intensity and 5 means maximal intensity of risk effect on the business.*

		The intensity of the sources of business risks				
	Sources of business risk	1 very low	2 low	3 medium	4 high	5 very high
1.	**Sources of market risk**					
	loss of customers					

	a strong competition in the sector					
	market stagnation					
	unreliable suppliers					
	other source…….					
2.	**Sources of economic risk**					
	development of taxes and mandatory contributions					
	poor availability of financial resources (loans. subsidies)					
	development of interest rates					
	a rise in prices of all types of energy					
	other source…….					
3.	**Sources of financial risk**					
	an insufficient profit of the company					
	corporate debt (a large share of debt capital)					
	unpaid receivables					
	inability to pay for liabilities (insolvency)					
	other source…….					
4.	**Sources of operational risk**					
	an insufficient utilization of production capacity					
	outdated production facilities					
	a low rate of innovation					
	an increasing number of complaints					

	other source…….					
5.	**Souces of personnel risk**					
	a high rate of job changing					
	insufficient staff qualifications					
	errors made by employees (occupational injury)					
	a decline in morale and discipline					
	other source…….					
6.	**Source of security risk**					
	accidents and external threats (flood. fire…)					
	misuse of information					
	a low level of security and health safety of employees					
	property crime (stealing)					
	other source…….					
7.	**Source of legal risk**					
	a low law enforcement					
	frequent changes in legislation					
	a low judicial independence					
	long legal disputes					
	other source…….					
8.	**Other sources of business risks**					
	corruption					

	clientelism					
	a low quality of services provided by public institutions					
	high administrative requirements for entrepreneurs					
	other source…….					

12. Which of the following risks do you consider currently be a key in your business? Please mark maximum 3 answers. Please note in % the intensity level of the risk(s). The sum must be 100 %.

☐ market risk .....%

☐ economic risk .....%

☐ financial risk .....%

☐ operational risk .....%

☐ personnel risk .....%

☐ security risk .....%

☐ legal risk .....%

☐ other risk ....%

13. Who is responsible for risk management in your company?

☐ risk manager ☐ company owner ☐ manager authorized by executive management

☐ team-leader from each department ☐ nobody

14. Do you consider risk management in your company to be a strategic tool that provides a competitive advantage?

☐ yes ☐ no ☐ I cannot say

15. How often do you make the space for discussing about key risks in your company?

☐ monthly ☐ semi-annually ☐ quarterly

☐ yearly ☐ never

16. Is there a specified level of risk tolerance (border) in your company?

☐ yes, there is

☐ no, there is not ☐ I cannot say

17. Which of the main risk management activities do you pay most attention to?

☐ risk identification

☐ risk analysis (determining the probability and consequences)

☐ risk assessment (determining the risk importance)

☐ making steps to reduce risks

☐ risk monitoring

☐ we pay the same attention to all activities

☐ none at all

18. Are you concerned with searching for the causes of risks (risk sources) in your company?

☐ yes, all risks concerned ☐ yes, but only the most important risks concerned

☐ no

19. Which factors do you consider when determining the value of risk?

☐ possible consequences of risk ☐ probability of risk formation

☐ potential consequences of risk and its probability ☐ we do not set the value of risk

20. How do you set the value of risk?

☐ qualitatively (verbally – small. medium. big)

☐ semiquantitative (verbally with assigning the point value)

☐ quantitatively (using mathematical and statistical expression of risk)

☐ we do not set the value of risk

21. Do you think that experience of the risk manager is more important than using sophisticated techniques when determining the value of risk?

☐ yes ☐ no

☐ experience of the risk manager and sophisticated techniques are equally important

22. What measures do you take to reduce risk?

☐ insurance

☐ transfer of risk to a business partner

☐ financial reserves

☐ expansion of the production program

☐ risk avoiding

☐ other.....

23. Do you have the risk catalogue (the list of risks) in your company?

☐ yes ☐ no

24. How do you evaluate the difference between reducing the impact of risk and the costs incurred to reduce them?

☐ we monitor the costs and benefits of the reduced impact of risk

☐ we monitor the difference in case of the key risks only

☐ we make the evaluation only by estimation

☐ we do not evaluate the benefits of measures decreasing the risks

25. What methods, techniques and tools do you use for risk management in your company?

☐ checking of the goals set (financial. operational indicators. etc.)

☐ audit (financial. safety. costumer. supplier. etc.)

☐ methods and techniques of planning (forecasting. Gantt charts. etc.)

☐ methods and techniques of decision making (brainstorming. decision tree. etc.)

☐ methods and techniques of quality management (FMEA. checklists. etc.)

☐ methods and techniques of project management (Critical Path Method. RIPRAN. etc.)

☐ other .....

26. Do you provide your employees with the opportunity of education in risk management?

☐ yes, regularly

☐ yes, irregularly

☐ no, training is very expensive

☐ no, we do not have time for these trainings

☐ no, we have not found any training which would be suitable for our purposes

☐ no, trainings in our company are considered to be useless

27. Would you welcome training in risk management? If so. in what area?

☐ yes, comprehensive training in risk management

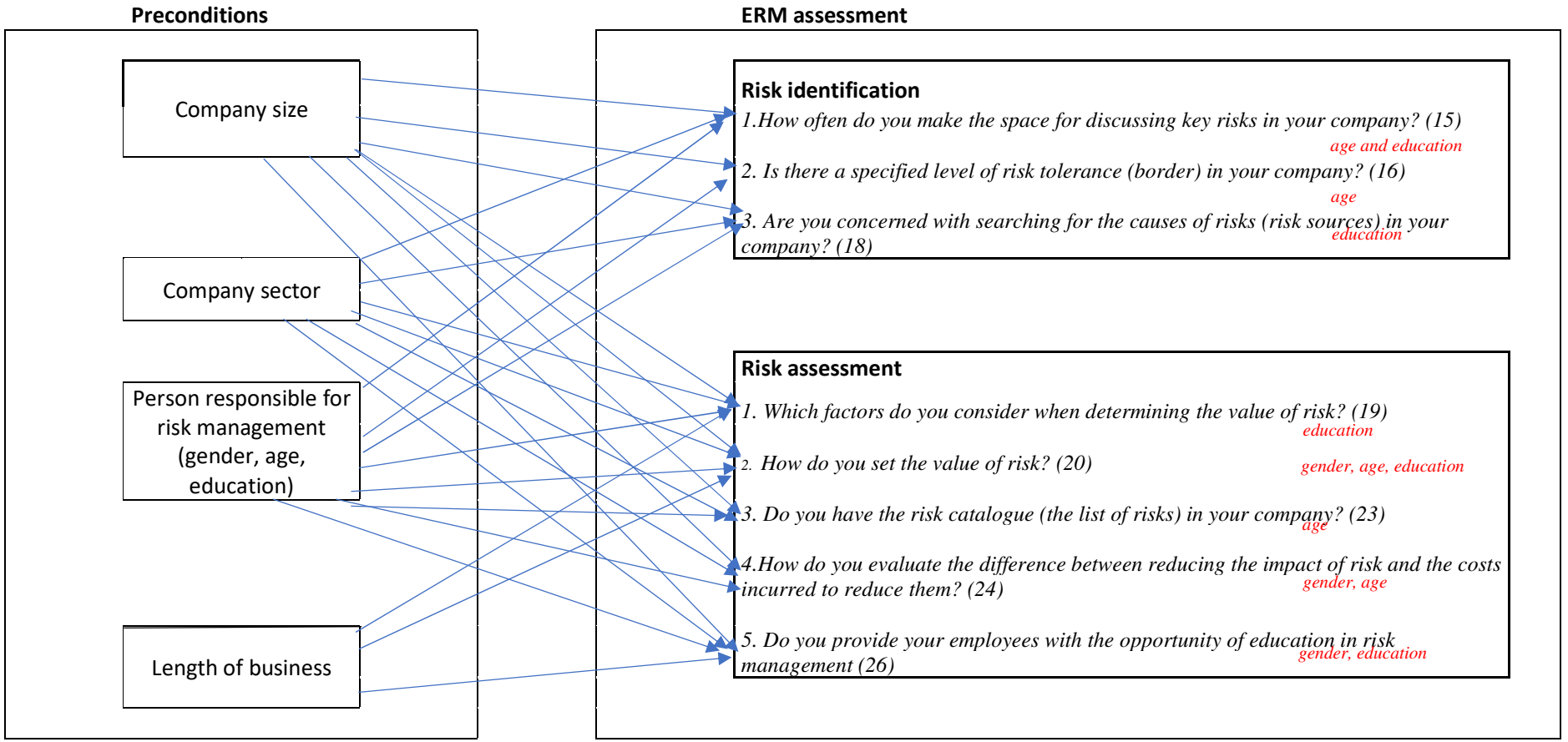
☐ yes, training focused on the application of methods. techniques and tools of risk management

☐ yes, training focused on specific risks (e.g. financial. project. safety…)

☐ yes, in the area(s) of .....

☐ none

APPENDIX II: MODEL OF RISK MANAGEMENT OF SMES IN V4 COUNTRIES



RISK MANAGEMENT IN THE SEGMENT OF SMEs IN V4 COUNTRIES (Significant Theoretical and Methodological Aspects)

Ing. Zuzana Virglerová, Ph.D.

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