

Habilitation Thesis Summary

**Risk Management in the Segment of SMEs in V4
Countries (Significant Theoretical and
Methodological Aspects)**

**Řízení rizik v segmentu malých a středních podniků v zemích
Visegrádské skupiny
(Významné teoretické a metodologické aspekty)**

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Course: Management a ekonomika podniku

Zlín, November 2022

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Published by Tomas Bata University in Zlín in **Habilitation Thesis Summary** edition in 2022.

Key words: *risk, small and medium enterprises, risk management, V4*

Klíčová slova: *riziko, malé a střední podniky, řízení rizik, V4*

The full version of the Habilitation Thesis can be found at the Central Library of TBU in Zlín.

ISBN 978-80-7678-106-1

ABSTRACT

The presented scientific publication focuses on risk management in SMEs in the Visegrad Group area. The main objective is to define theoretical and methodological aspects in the area of risk management and quantify their impact on the risk management process. The main objective is accomplished by the partial objectives, focused on the identification and quantification of the impact of the socio-economic factors affecting the risk management process, classification of the most significant risks of companies in the V4 countries, analysis of the causes of individual risks, and the comparison of the approach to the risks and risk management between the V4 countries.

The publication defines small and medium enterprises and clarifies a focus on V4 countries. The classification of risks and their specifics are introduced to determine the scope of the focus. The size of the company, age, gender and education of the entrepreneur and length of business for the analysis of influences on entrepreneurship are chosen as factors influencing the risks and the risk management approach. Various methods for risk management are described to complement the possibilities of approach to risk management. The next part describes the main scientific goal and several partial objectives. The last chapter includes the discussion of the importance of the business risks and the influence of selected factors on perceiving business risks, and on the approach to the risk management and the influence of selected factors on the risk management process.

The results provide scientific knowledges 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. Some differences in risks perceiving 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) were introduced. The summary in form of theoretical and methodological aspects were formulated. The findings enrich the knowledge in the field of risks and risk management in the area of V4 countries. The results have also practical implications for government and regional associations which are focused on help and optimization of business environment for SMEs. Company owners or risk managers in SMEs should be aware of the responsibility for setting up risk management in their businesses and they should educate themselves and their employees in this area to recognize and manage all risks threatening the business appropriately.

ROZŠÍŘENÝ ABSTRAKT V ČESKÉM JAZYCE

Malé a střední podniky hrají významnou úlohu ve světových ekonomikách, protože reprezentují velmi konkurenční a dynamickou oblast ekonomik. Tyto podniky jsou vnímány jako důležitý prvek zajišťující stabilitu ekonomik. V rámci Evropské unie patří celkem 99,8 % podniků do kategorie malých a středních podniků. Tato kategorie zaměstnává více než 66 % ekonomicky aktivních obyvatel EU a na tomto území také vytváří více než 50 % přidané hodnoty. Mnoho výzkumníků se zaměřuje na oblast podnikání, ale odlišnost velkých firem a jejich menších konkurentů není v mnoha oblastech dostatečně analyzována. Malé a střední podniky jsou zranitelnější než velké společnosti, protože mnohdy nemají dostatečné zdroje, a to jak materiální, finanční, tak ani personální. Často se v těchto podnicích potýkají také s nedostatkem znalostí a zkušeností, které mohou vest k podnikatelskému neúspěchu.

Turbulentní změny na trhu, které ovlivňují celou ekonomiku, mají zásadní vliv i na vývoj malých a středních podniků. Tlak na inovace, efektivní nastavení interních procesů, důraz na zvyšování udržitelnosti a konkurenceschopnosti pro tento segment přináší velké výzvy, kterým musí s využitím svých zdrojů čelit. S těmito výzvami přichází i množství rizik, které podniky musí nejen identifikovat a analyzovat jejich možný dopad, ale také v konečném důsledku efektivně řídit. Bez aktivního přístupu k rizikům lze podnikání jen velmi těžko rozvíjet a podniky mohou ztratit svoji konkurenceschopnost nebo dokonce skončit bankrotem. I když jsou malé a střední podniky proti větším podnikům více flexibilní, neschopnost identifikovat hrozby a neznalost procesů pro řízení rizik jim znemožňuje jejich flexibilitu efektivně využít v konkurenčním boji na trhu. Oblast risk managementu je v malých a středních podnicích stále podceňovanou oblastí, což podnikům neumožňuje snižovat podstupovaná rizika na akceptovatelnou úroveň a přináší hrozby podnikatelského neúspěchu.

Tato habilitační práce zkoumá podnikatelská rizika a přístup malých a středních firem k řízení rizik, a to v zemích Visegrádské skupiny (Česká republika, Slovensko, Polsko a Maďarsko). Hlavním cílem práce je definovat teoretické a metodologické aspekty v oblasti řízení rizik, a kvantifikovat jejich dopad do procesu řízení rizik. Práce má několik dílčích cílů. Prvním dílčím cílem je identifikovat socio-ekonomické faktory, které ovlivňují proces řízení rizik a kvantifikovat jejich dopad do oblasti řízení rizik. Práce se snaží také klasifikovat nejvýznamnější rizika, se kterými se potýkají malé a střední podniky v zemích Visegrádské skupiny, a analyzovat jejich dopad do činnosti podniku. Nezanedbatelnou vědeckou hodnotu má mezinárodní porovnání vnímání rizik a metod používaných pro řízení rizik v jednotlivých zemích Visegrádské skupiny a také porovnání dosažených výsledků s již publikovanými vědeckými výsledky na mezinárodní úrovni.

Úvodní kapitola habilitační práce představuje segment malých a středních podniků a definuje ekonomický a sociální význam daného segmentu

podnikatelských subjektů pro světové ekonomiky. Malé a střední podniky jsou považovány za motor ekonomického růstu a bez jejich přítomnosti by světové ekonomiky nedosahovaly požadovaného ekonomického rozvoje. Existuje mnoho definic malých a středních podniků. Tato habilitační práce využívá definici Evropské unie (dle nařízení 2003/361), dle které jsou podniky rozdělovány dle počtu zaměstnanců, ročního obrátu a roční bilanční sumy. V tomto výzkumu jsou analyzovány podniky, které zaměstnávají do 249 zaměstnanců, mají roční obrát do 50 mil. EUR a roční bilanční sumu do 43 mil. EUR. Malé a střední podniky jsou považovány za flexibilní část trhu, jejíž procesy nejsou příliš standardizované, ale na druhou stranu pracuje s limitovanými zdroji a nízkou úrovní automatizace. Pozitivní charakteristikou těchto podniků je, že mají bližší vztah k zákazníkovi a dokážou se lépe změnit na trhu přizpůsobit. Negativní je však nízký stupeň diverzifikace a s tím spojený vyšší stupeň rizikovosti jejich činnosti.

Následující subkapitola se věnuje základním charakteristikám zemí Visegrádské skupiny a analýzou indikátorů, které mohou mít vliv na zdroj podnikatelských rizik. Mezi tyto indikátory byly zařazeny například politická stabilita, index terorismu, korupční index, síla vymahatelnosti práv, riziko katastrof, zločinů apod. Zdrojem těchto indikátorů byly databáze Eurostat, Světová banka, Transparency International apod. Z tohoto porovnání vychází zajímavé odlišnosti mezi jednotlivými analyzovanými zeměmi. Například Česká republika a Slovensko jsou hodnoceny jako země s nejvyšší politickou stabilitou, Polsko naopak vykazuje v rámci analyzovaných zemí nejnižší politickou stabilitu. Korupční index je nejvyšší v České republice, naopak nejnižší korupce byla zaznamenána v Maďarsku.

Další subkapitola habilitační práce se věnuje přestavení podnikatelských rizik. I když jednoznačná definice rizika neexistuje, tématem rizik se zabývá mnoho autorů. Na základě provedené literární rešerše byla rizika rozdělena do osmi skupin dle jejich věcné náplně. Jedná se o tato rizika: tržní, ekonomické, finanční, provozní, personální, bezpečnostní, právní a další podnikatelská rizika. Mezi další podnikatelská rizika byla zařazena rizika, která jsou významná, ale věcně nejsou zařaditelná do některé z předchozích skupin. Jedná se o riziko korupce, klientelismus, nízká kvalita veřejných služeb, vysoké administrativní požadavky na podnikatele). Jednotlivé skupiny rizik jsou definovány a podpořeny stávající vědeckou literaturou. V rámci jednotlivých skupin byla identifikována konkrétní rizika, na které byly podnikatelé konkrétně blíže dotazováni.

Následující subkapitola se zabývá vlivem socio-ekonomických faktorů na podnikání, přístup k rizikům a jejich řízení. Na základě literární rešerše byly faktory definovány jako velikost firmy, pohlaví podnikatele, vzdělání podnikatele a délka podnikání. Bylo zjištěno, že dle stávající vědecké literatury tyto faktory ovlivňují nejen postoj k podnikání, ale také ovlivňují přístup k rozpoznávání rizik a k jejich řízení. Například velké podniky disponují často speciálním oddělením, které je zodpovědné za proces identifikace rizik a jejich řízení. Malé podniky

mnohdy nemají ani pověřeného člověka a řízení rizik zůstává zodpovědností majitele podniku. Výzkumníci také tvrdí, že existují významné rozdíly mezi vnímáním rizik a přístupem k nim mezi ženami a muži. Zatímco muži snášejí větší úroveň rizika, ženy aplikují metody pro snižování rizik mnohem dříve. Přístup k rizikům je také ovlivňován vzděláním podnikatelů. Pokud podnikatel nemá dostatek informací o oblasti rizik a jejich řízení, dochází k nevědomé retenci rizik, které ovlivňuje fungování podniku. Délka podnikání sebou přináší zkušenosti s riziky a pozitivně ovlivňuje přístup k jejich řízení.

Další subkapitola je věnována procesu řízení rizik a jsou zde představeny nejen jednotlivé formy risk managementu, ale také jednotlivé metody aplikované pro řízení rizik. Z různých forem řízení rizik byla zvolena forma Enterprise Risk Management (ERM), které zahrnuje komplexní strategii přístupu k rozličným rizikům v rámci podnikatelské činnosti. Metody řízení rizik byly rozděleny do dvou skupin – metody, které snižují příčiny vzniku rizik (například ofenzivní řízení podniku, převod rizika, vyhýbání se riziku), a metody, které redukuje dopady rizika (například diverzifikace, pojištění nebo tvorba rezerv). V této subkapitole je věnována pozornost také definici pozice risk managera a variantám, kterými je tato pozice v podnicích zajišťována.

V druhé kapitole habilitační práce je definován hlavní cíl, pět dílčích cílů a jsou zde představeny výzkumné otázky a hypotézy, které vedou k naplnění cílů práce. Výzkumné otázky jsou věnovány jak obecnému přístupu k rizikům a řízení rizik v rámci malých a středních podniků zemí Visegrádské skupiny, tak specifickým otázkám týkajících se zdrojů rizik, rozdílů ve vnímání rizik a přístupu k risk managementu v zemích Visegrádské skupiny a také závislosti mezi socioekonomickými faktory a řízením rizik. Habilitační práce obsahuje 10 hlavních hypotéz a 33 dílčích výzkumných hypotéz. Hypotézy se zaměřují na vliv definovaných socio-ekonomických faktorů na vnímání rizik a přístupem k jejich řízení. Zkoumány jsou také rozdíly ve výsledcích v jednotlivých zemích Visegrádské skupiny.

Třetí kapitola popisuje provedený mezinárodní výzkum, na základě kterého byla sbírána požadovaná data. Protože byl výzkum proveden ve čtyřech zemích formou empirického dotazníkového šetření, dotazníky byly pro zajištění srozumitelnosti překládány do mateřských jazyků jednotlivých zemí. Přesnost překladu a správné zvolení zdroje pro výběr oslovovaných podnikatelských subjektů v jednotlivých zemích vyžadoval zapojení partnerských univerzit. Výzkum byl proveden v letech 2017 a 2018 na celkem 1 781 podnicích ze zemí Visegrádské skupiny. Jednotlivé podniky byly voleny náhodným výběrem z databází v jednotlivých zemích. Dotazníky byly distribuovány přímo majitelům podniků nebo osobě, která je zodpovědná za řízení rizik. Získaná data byla nejprve podrobena deskriptivním statistickým nástrojům a poté byly využity analytické statistické metody vhodné pro daný výzkumný vzorek a pro dosažení zvoleného cíle. Byly zvoleny metody Chí-kvadrát a Z-skóre, faktorová analýza a nezávislý t-test.

Čtvrtá kapitola prezentuje dosažené výsledky a nové vědecké poznatky v oblasti řízení rizik dle definovaných kritérií. Habilitační práce definuje teoretické a metodologické aspekty v oblasti řízení rizik a přístupu podnikatelů k této části strategického managementu. Tato kapitola je rozčleněna do čtyř oblastí dle oblastí definovaných hypotéz. V závěru této kapitoly je uvedena tabulka, která přehledně zobrazuje verifikaci jednotlivých definovaných hypotéz. Tato kapitola je uzavřena sumárním přehledem teoretických a metodologických aspektů v oblasti řízení rizik. Jednotlivé výsledky jsou porovnány s výsledky mezinárodních vědeckých výzkumů v rámci následující kapitoly věnované diskuzi.

Na základě provedeného empirického výzkumu je možné tvrdit, že mezi zeměmi Visegrádské skupiny existují statisticky významné rozdíly v přístupu k řízení rizik. V České republice mají podnikatelé malých a středních podniků vzhledem k ostatním zemím nejvíce zkušeností s řízením rizik. Nejméně zkušeností projeví podnikatelé z Polska. V Maďarsku dochází k rostoucímu významu risk managementu v posledních 5 letech. Nicméně řízení rizik jako konkurenční výhodu vnímá pouze 27 % všech oslovených podnikatelů ze všech zemí Visegrádské skupiny. Vnímání rizik je obdobné v České Republice, Slovensku a Polsku. Za nejdůležitější rizika jsou považována tržní, ekonomická a personální rizika. Podnikatelé z Maďarska uváděli všechna rizika s obdobnou důležitostí, není zde tedy stejné vnímání rizik jako ve zbývajících zemích Visegrádské skupiny. Jako nejvýznamnější riziko podnikatelé vnímají silnou konkurenci. Vnímání rizik závisí na pohlaví, věku a vzdělání podnikatele a na velikosti podniku a délce podnikání.

V rámci výzkumu byl potvrzen fakt, že pozice risk managera v malých a středních podnicích není stále definována. Nejčastěji řídí rizika vlastník podniku. Alarmujícím faktem je, že ve 14 % oslovených společností neřídí rizika nikdo. Z analyzovaných zemí je v této oblasti nejdále Maďarsko, kde 6 % oslovených společností prohlašuje, že obsadili speciální pozici risk managera, který je zodpovědný pouze za řízení rizik.

Podnikatelé ze segmentu mikro podniků obecně podceňují aplikaci metod pro řízení rizik (48 % oslovených nediskutuje o klíčových rizicích, 50 % nestanovuje hodnoty rizika a 30 % nevidí přínosy z aplikace metod pro řízení rizik). Oblastí, kde jsou rizika nejvíce diskutována, jsou průmyslové podniky a podniky ze sektoru zemědělství. Mikro společnosti také neprovádí školení svých zaměstnanců v oblasti řízení rizik. Obecně v segmentu malých a středních podnikatelů pouhých 36 % oslovených nabízí svým zaměstnancům školení v oblasti řízení rizik. Výzkum dokazuje, že více vzdělaní podnikatelé vnímají podnikatelská rizika, vyhodnocují je a hledají vhodné metody pro jejich řízení.

Výzkum prokázal, že existuje statistický rozdíl ve vnímání rizik a jejich přístupu mezi muži a ženami. Ženy vnímají některá rizika intenzivněji než muži. Jedná se například o tržní riziko, ekonomické riziko a finanční riziko. Pouze ostatní podnikatelská rizika jsou vnímána intenzivněji muži než ženami. Ženy

častěji než muži aplikují pro řízení rizik matematické a statistické metody, které jim pomáhají efektivně rizika řídit.

Věk podnikatelů byl potvrzen jako významný faktor v oblasti vnímání rizik a přístupu k nim. Negativním jevem však je, že starší podnikatelé podceňují diskuzi ohledně rizik častěji než jejich mladší kolegové. Mladí podnikatelé využívají v procesu řízení rizik častěji kvantitativních metod, jako jsou matematické a statistické metody. Starší podnikatelé spoléhají na méně sofistikované kvalitativní metody řízení rizik.

Hlavním přínosem habilitační práce je rozšíření teoretických znalostí z oblasti řízení rizik v malých a středních firmách v zemi Visegrádské skupiny. Publikace kriticky analyzuje více než 250 stávajících vědeckých literárních zdrojů, které ústí ve formulaci výzkumných otázek a vědeckých hypotéz. Vědecké poznatky jsou aktuální, protože byly získány ze současného empirického výzkumu. Vedle teoretických přínosů výsledků, mohou být definovány také jejich praktické přínosy. Výsledky mohou být inspirací pro jiné podnikatele aktivní na trhu pro efektivnější identifikaci a řízení rizik. Mohou být také nápomocny k definici problémů malých a středních firem ze strany podpůrných organizací, které poskytují malým a středním podnikům podporu při jejich podnikání (například při tvorbě speciálních webů mířených pro pochopení ekonomických teorií a podnikatelských vodítek, při školení v různých oblastech apod.). Teoretické poznatky mohou být přínosem také při pedagogické činnosti v rámci kurzů zaměřených na podnikový management. Tyto informace mohou pomoci studentům k pochopení aktuální situace v oblasti rizik a jejich řízení ve vybraném segmentu podnikatelských subjektů.

Výsledky výzkumu poskytují zajímavé informace z oblasti řízení rizik s mezinárodním dopadem. Tyto informace mohou být užitečné nejen pro odbornou veřejnost a podniky, ale také pro veřejné organizace, jejichž úkolem je malé a střední podniky v jednotlivých zemích podporovat a pomáhat jim překonávat překážky v podnikání. Navzdory přínosům habilitační práce nelze přehlížet několik limitů výzkumu. Prvním z nich je územní platnost výzkumu. Tento výzkum probíhal pouze na území čtyř států, proto jeho výsledky nemohou být zobecnovány. Druhým limitem může být chybné porozumění dotazníku, který byl překládán do mateřského jazyka a překlad nemusel vyznít ve všech jazycích shodně. Navíc překlad mohl obsahovat vágní výrazy nebo nepřesnosti, které ovlivnily odpovědi v jednotlivých zemích. Rozdíly ve výsledcích výzkumu mohou být ovlivněny rozdílností čtyř analyzovaných zemí. Rozdíly v makroekonomických datech, kulturních či politických oblastech nebyly v rámci výzkumu detailně analyzovány. Nelze také vyloučit, že předložený dotazník vyplnila jiná osoba než vlastník podniku nebo risk manager. Tímto faktem mohou být ovlivněny jednotlivé odpovědi.

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1 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; Dubravská 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 main 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 the main 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.

2 ACTUAL STATE OF THE ART IN A FIELD OF STUDY

2.1 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).

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). SMEs outstandingly outnumber large companies in the most countries, and concurrently employ a significantly larger amount of people. It is argued that a vibrant 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 larger 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).

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.

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.

2.2 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 on 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 main publication contents the table with indicators selected risks of each country according to the worldwide institutions (Institute for Economics and Peace, Transparency International, Institute for Economics and Peace, The World Bank). The table is also described in detail in the main publication.

The main publication contents also the basic figures of SMEs in EU and in Visegrad countries. Number of enterprises, number of persons employed in SMEs and value added by SMEs are analyzed.

2.3 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. Many definitions of risk exist.

According to Tarnóczy 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.

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).

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.

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 the main publication 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)

Each group of risks is supported in the main publication by the published scientific results of world researchers.

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 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. 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).

Economic risks are in the main 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. Brealey et al. (2014) and Pavelková & Knápková (2009) identified the interest rate risk as a risk connected to the fixed bonds. 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. Energy price risk management is sometime compared to a higher development of interest rates and foreign exchange markets. Availability of financial resources can be defined as a next economic risk. 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. 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.

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 is one of the most important risks to manage because it can cause a failure of the business (Berman et al., 2011; Havlíček, 2011; 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). 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 & Geraldles, 2012; Mutezo, 2013). 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).

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). 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.

Personnel risk is tightly connected to the personnel management. 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). 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.

Security risk is defined as a risk associated with the safety of assets, information and persons. 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 establishing, implementing, monitoring and

improving information security in the company (Davidaviciene et al., 2019; Radu, 2018; Rajnoha et al., 2017; Tvaronaviciene, 2018).

For the reason of an increasing regulation, **legal risk** can be perceived at the level of operational risk. 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 disproportionately affect SMEs' access to external financing and growth (Beck et al., 2005, 2006, 2008).

2.4 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).

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., 2008). 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.

The 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), 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 (Manole & Spatareanu, 2010; Minetti & Zhu, 2011).

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. 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).

Education as an important factor of entrepreneurship was identified by Velez (2009) who 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. 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 (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.

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).

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. It can also influence negatively also the future of the entrepreneur. The age also affects the risk-taking behavior of SME owners: Acar & Gök (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.

2.5 Risk management

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; Ziólkowska, 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 groups: Strategic risk management, Financial risk management, Enterprise risk management, Insurance risk management, Supply chain risk management, Project risk management, Disaster risk management, Engineering risk management, Clinical risk management. The main publication focuses on Enterprise risk management (ERM).

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 strategic 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). The process of ERM contents of several steps: risk identification, risk classification, risk analysis and risk assessment, choosing an appropriate method for risks reducing or eliminating and review of the effectiveness of risk management (Ivascu & Cioca, 2014).

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.

2.5.1 Methods for risk reducing

The main publication describes many methods for risk reducing. This habilitation thesis summary contents only the most common methods. 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). 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). Avoiding risks keep the business away from a further development (Smejkal & Rais, 2013; Fotr & Hnilica, 2014). A common method for risk reducing is a 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). Professional literature distinguishes between systematic and non-systematic risks (Veselá, 2011). Only non-systematic risks can be diversified. However, in addition to these, there are systematic risks that can be diversified. Next method of risk reducing is an 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 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). The same authors distinguish also creating reserves as one of the methods for risk reducing. 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.

2.5.2 The person responsible for risk management

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. 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. Secondly, a risk manager has this function.

3 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 financial 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 financial 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 financial 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 financial 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 financial 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 financial 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.*

Confirmation or rejection of the abovementioned hypotheses through the chosen scientific methods is a part of this scientific monograph. The defined hypotheses are closely related to the main and partial objectives of the monograph, while their confirmation or rejection is important for the formulation of the conclusion of this scientific study.

4 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 in the main publication.

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. 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		
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 1: Basic social characteristics of the respondents. Source: own research.

		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 2: Basic characteristics of the companies. Source: own research.

The structure of companies filling in the questionnaire is described in the main publication.

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 $n = (1.96)^2 * p * (1 - p) / 0.052$ 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. The main 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.

5 THE MAIN RESULTS AND DISCUSSION

The results of the research are fully presented in the main publication. This part is divided into 5 main parts on 28 pages, devoted to the following fields of the research:

- The approach to the risk management
- Source of risks in the Visegrad countries
- Differences in perceiving risks and their sources in the Visegrad countries
- Differences in approaches to risk management in enterprises in the Visegrad countries.
- Summary of theoretical and methodological aspects in the area of risk management

This last part of the results (Summary of theoretical and methodological aspects in the area of risk management) is presented in this thesis together with the summary of the evaluation of the hypotheses. More details could not be published in this thesis due to the length limitation of the habilitation thesis summary.

5.1 Evaluation of the scientific hypotheses

The next table presents the evaluation of main and partial scientific hypotheses.

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 financial 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 financial 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 financial 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 financial 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 financial 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 financial 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 3: Evaluation of hypotheses. Source: own research.

5.2 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 than 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 a 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.

In the following 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.

5.3 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. Eriksson & 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.

5.4 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 managers 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 & Gök (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 & Rijdsdijk, 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 qualitative 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.

6 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.

6.1 The main theoretical and practical contribution

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.

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.

6.2 The main contribution to teaching and academic experience

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.

6.3 Limitations of the research

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.

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Belás, J., Chovancová, B., Gavurová, B., Ključnikov, A., Čepel, M., Kotásková, A., Virglerová, Z. (2018). *Firemní management*. Žilina: Georg.

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Virglerová, Z., Kozubíková, L., & Vojtovič, S. (2016). Influence of selected factors on financial risk management in SMEs in the Czech Republic. *Montenegrin Journal of Economics*, 12(1), 21-36. <https://doi.org/10.14254/1800-5845.2016/12-1/1>

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Vzdělání

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2009-2013	Univerzita Tomáše Bati ve Zlíně, Fakulta managementu a ekonomiky Ukončení: udělen titul Ph.D. Disertační práce: Moderní teorie portfolia s využitím klíčového vyčerpateľného a neobnoviteľného zdroje
2007-2010	Masarykova univerzita v Brně, Právnická fakulta Ukončení: udělen titul Bc. Bakalářská práce: Regulace obchodníků s cennými papíry
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2000-2004	Obchodní akademie Znojmo Ukončení: maturita

Zaměstnání

2018-dosud	BV Consulting & Regulation s.r.o. jednatelka
2013-dosud	Univerzita Tomáše Bati ve Zlíně Vědecko-výzkumný pracovník Ředitelka redakce Journal of Competitiveness Akademický pracovník – odborná asistentka
2008-dosud	Roklen360 a.s. (dříve FINANCE Zlín, a.s.) Obchodník s cennými papíry a platební instituce Vedoucí oddělení compliance a AML officer

Odborné stáže a přednášky na zahraničních univerzitách

6/2018	Gediminas Technical University, Vilnius, Litva
4/2015	BBA INSEEC Lyon and Bordeaux, Francie
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5/2014	ISCAP – School of Accountng and Aministration of Porto, Portugal

Účast na odborných konferencích (posledních 4 roky)

9/2019	Řecko – Kalamata - 14th European Conference on Innovation and Entrepreneurship, příspěvek: Horizontal and Vertical Cultural Differences in the Content of Conflict Styles
10/2018	Slovensko – Bratislava - Economics Management Finance (EMF 2018) – příspěvek: Impact of selected factors on the perception of the macroeconomic and financial environment of SMEs (empirical study from Czech Republic and Slovak Republic)
9/2018	Portugalsko – Aveiro - 13th European Conference on Innovation and Entrepreneurship – příspěvek: The relationship between business environment and innovativeness of SMEs in the Czech Republic and Slovakia
6/2018	Švédsko - Stockholm - 40th International Academic Conference – příspěvek: Determinants of Business Risks With Impact on SMEs in V4 countries

Projekty výzkumu a vývoje

- 2021 – 2023 - National Research, Development and Innovation Office – člen řešitelského týmu - projekt s názvem: Sustainable liquid biofuels (bioethanol, biodiesel) production and their multifunctional impact (University of Debrecen, hlavní řešitel Domicián Máté)
- 2021 – 2023 - TAČR, Program ÉTA (TL05000418) – člen řešitelského týmu Vysoká škola podnikání a práva, a.s., projekt s názvem Přizpůsobit se!!! Výzva pro sektor služeb v Moravskoslezském kraji
- 2020 – 2021 - VEGA (registrační číslo 1/0210/19) – vědecký spolupracovník na projektu s názvem: Research of innovative attributes of quantitative and qualitative fundamentals of the opportunistic earnings modelling
- 10/2014 – 12/2015 - TAČR (TD020291) – člen řešitelského týmu, projekt s názvem: Research on the development of professional orientation of high school students with regard to parameterization their further studies and labor market.
- 5/2013 – 11/2014 - člen týmu projektu OPVK CZ.1.07/2.2.00/28.0328 - Creating a modular system of granting credits in bachelor studies for the purpose of motivation in the form of student profiling professions in line with trends in the labor market

Členství

- Člen mezinárodní asociace pro inovativní sociální výzkum, University of Salerno
- Člen redakčních rad mezinárodních recenzovaných vědeckých časopisů:
 - European Journal of Interdisciplinary Studies (Scopus)
 - Forum Scientiae Oeconomia (Scopus)
 - Journal of Competitiveness (Web of Science, Scopus)
 - Ekonomicko-manazerske spektrum
- Člen v programových/organizačních výběrech vědeckých konferencí a seminářů:
 - 11th International conference on applied economics contemporary issues in economy
 - 8th International scientific conference new trends in management and production engineering-regional, cross-border and global perspectives
 - Mezinárodní vědecká konference EMF (Univerzita Tomáše Bati ve Zlíně)
 - International Scientific Conference: Economics, Management, Finance and Social Attributes of Economic Systems (EMFSA 2016)

Jazykové znalosti

Angličtina	C1 (pokročilý)
Italština	B2 (středně pokročilý)
Němčina	B1 (mírně pokročilý)

Ing. Bc. Zuzana Virglerova, Ph.D.

**Risk Management in the Segment of SMEs in V4 Countries
(Significant Theoretical and Methodological Aspects)**

Řízení rizik v segmentu malých a středních podniků v zemích Visegrádské
skupiny

(Významné teoretické a metodologické aspekty)

Habilitation Thesis Summary

Published by Tomas Bata University in Zlín

nám. T. G. Masaryka 5555, 760 01 Zlín.

Printing: 50 copies

The publication was not edited.

1st edition

Year of publishing: 2022

ISBN 978-80-7678-106-1