

# THE DEPENDENCE OF PERCEIVED BUSINESS RISKS ON THE SIZE OF SMES

▪ *Maria Hudakova, Matej Masar, Maria Luskova, Milan Robin Patak*

## Abstract

The issues of risk management in small and medium-sized enterprises (SMEs) have been analysed and discussed for a long time. Nevertheless, it is still necessary to concentrate on this field, especially in the Slovak Republic. SMEs are very sensitive to changes in the business environment which are always reflected in the quantitative characteristics of this sector in a certain time interval. According to various global surveys and studies, risk management represents a significant contribution to the increasing competitiveness of enterprises in changes of the business environment. The aim of this paper is to statistically assess the dependence of perceived key business risks of SMEs on their size in Slovakia based on own empirical research carried out in 2017. The contribution also includes an assessment of key risk sources and an evaluation of the survey results compared to the results of surveys taken last year. Based on the results, market, financial, economic and personnel risks comprise the four most important risks that negatively affect the business environment of SMEs. Dependence perceived by the SME entrepreneurs was found among market factors, personnel risks, and business size. No dependence was found among the financial, economic and business risks. The overall results of the empirical research point to the need and importance of addressing the assessment of key risks and their resources in SMEs in Slovakia. The goal of the paper is to highlight through a relevant study the need to apply risk management in the SMEs and to bring the results of the research in Slovakia closer to world trends.

*Keywords: risk, risk source, risk management, risk assessment, small and medium-sized enterprises, competitiveness*

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## 1. INTRODUCTION

Today, managers are increasingly faced with the responsibility of taking important decisions to ensure prosperity, financial stability and competitiveness under uncertainty and risk conditions (Agarwal & Ansell 2016; Klučnikov & Popesko, 2017; Gumanti et al., 2017; Kliestikova et al., 2017; Ribau et al., 2017; Jankelová et al., 2018; Kliestik et al., 2018; Valaskova et al., 2018). Therefore, more and more businesses, not just large but also small ones, are beginning to realize the

need and importance of risk management (Lazányi et al., 2017; Wegner et al. 2017). According to various global surveys and studies (The American Institute of CPAs, 2017; Global trends 2025, 2017; Global risk, 2018), it can be said that risk management represents a significant contribution to increasing the performance, value, and competitiveness of enterprises going through dynamic changes in both the external and the internal environment. Investing in prevention will greatly decrease financial costs as compared to the cost of dealing with the consequences of negative events (Bialas, 2016).

In Slovakia as in developed countries in general, small and medium-sized enterprises represent an important part of their respective economies (Vojtovič, 2016; Ślusarczyk, 2017; Ivanová, 2017; Zygmunt, 2018). Good conditions prevail for small and medium-sized entrepreneurs in terms of risk management, as they are in close proximity to all aspects of individual operations, and they are in a position to recognize many strengths and vulnerabilities in their business.

Although small and medium-sized businesses owners are intuitively aware of the current sources of risks that affect their everyday lives, they are unlikely to be aware of such sources of risk they do not have direct experience with (Pietrasieński & Ślusarczyk, 2015; Bogodistov & Wohlge-muth 2017; Abbas, 2018; Kovácsné Mozsár & Michelberger, 2018). Therefore, as it is necessary to raise awareness and foreknowledge among SME managers about risk management in enterprises around the world, this is especially true for businesses in Eastern Europe and the Slovak Republic. The application of risk management in many companies in Slovakia compared to advanced countries shows considerable deficiencies (Sira et al., 2016). It is important for business managers to be able to identify the most serious risks, create frameworks for discussion, and propose preventive measures with a focus on preventing business crises (Belas et al. 2018). This outlook brings implications regarding the need for active and systematic risk management from SME managers as well.

## **2. THEORETICAL BACKGROUND**

### **2.1. The current state of risk management application in businesses in the world**

In regard to a rapid change in the global business environment, more and more enterprises have become aware of the need and importance of risk management in their business. According to several international surveys (Enterprise Risk Management, 2017; CGMA, 2017), the global trend in enterprise risk management application includes such factors as early risk identification, risk assessment, improvement of organizational culture, a positive approach to risk management, etc. Studies published outside of Slovakia (Hopkin, 2013; Gates et al., 2012; Fraser & Simkins, 2016) present the positive impacts of risk management on the quality of information, decision making influenced by risk, increasing the company value, ensuring competitiveness as well as achieving continuous improvement and risk prevention in order to ensure a smooth running of the enterprise. Risk management in the SMEs also depends on their attitude toward sustainable development, as is the case in the Czech Republic (Mikušová, 2017) as well as in Slovenia (Stubelj et al., 2017), where a company's risk management policy strongly depends on managers' responsibility to owners and other stakeholders.

Survey results of various world organizations, e.g. American institution ERM (Enterprise Risk Management), The North Carolina State University's ERM Initiative, in cooperation with the Global Management Accountant (CGMA, 2017), annually publish a report on global status and risk management control from the point of view of trends and opportunities for improvement. In this report, Global State of Enterprise Risk Oversight 2nd Edition, also declare results about the application of risk management in small and medium-sized enterprises in various regions of the world. The results show a growing interest in risk management in small and medium-sized enterprises and a positive perception of risk management as a way to influence the strategic success of an enterprise (Enterprise risk management initiative, 2017).

Even though companies are increasing their interest in implementing risk management from an enterprise perspective, there are still some shortcomings in the risk management application. It is evident from the foreign studies results, e.g. Report on the Current State of Enterprise Risk Surveillance: Trends and Opportunities, prepared by the North Carolina State University's ERM Initiative, in co-operation with the US Certified Public Accountants (CPAs). The key findings from the study are as follows (Enterprise risk management initiative, 2017; The American Institute of CPAs, 2017; CGMA, 2017):

- insufficiently flexible current risk management models to take into account market dynamics,
- lack of support for early identification of risks in an enterprise,
- inefficiently implemented risk management system in the company,
- the risk management process in an enterprise is not considered a strategic tool that provides a unique competitive advantage,
- there are insufficient resources in an enterprise to introduce a risk management system in an enterprise,
- enterprises do not provide training, advice on risk management,
- increasing pressures from external control institutions to provide risk information,
- delegating responsibility for risk control to internal audit,
- an unestablished systematic and effective reporting on the regular reporting of the greatest risks to owners,
- not providing space for discussion of key risks at regular meetings, etc.

One of the significant changes in the application of risk management in companies is the incorporation of risk management into the ISO 9001: 2015 Quality Management System standard. Risk management is integrated throughout the entire management system in a standard, with preventive measures forming a part of strategic planning, operational processes, and business controls. The adoption of ISO 31 000: 2009 Risk Management - Principles and Guidelines plays an important role in the application of risk management in enterprises. This standard has been published to make the implementation of the enterprise risk management system more effective. In addition to this standard, different global standards or risk management standards provide and recommend guidelines on how to apply an enterprise risk management system. These are not binding on the enterprise, however, and do not serve for certification purposes.



## 2.2. The current state of risk management application in companies in Slovakia

Based on survey information (FERMA, 2017; The risk management association, 2017; Institute of Risk Management, 2017), it can be said that the situation in the risk management application in enterprises in Eastern Europe and Slovakia is not favourable. The application of risk management is less systematic in many enterprises as compared to developed countries and is made with a certain reserve (Gavurova et al. 2017). According to several authors who have addressed this issue (Sira, 2016; Hudáková, 2017), there is a lack of a sufficiently interconnected comprehensive risk management framework, and the frameworks that are in place often work without a business strategy. This addresses issues of content definition, risk responsibilities, and missing criteria, i.e. risk tolerance, insufficient focus on identifying source causes of risk, etc. The financial crisis in 2008-2009 raised an interest in risk management in companies in Slovakia as well as strengthened the role of and encompassed tasks of financial managers concerning the risk management. This attitude was not far from that of European countries (Brachert et al., 2017; Androniceanu, 2017).

According to several experts dealing with this issue (Sira et al., 2016; Klučka & Grünbichler, 2016; Hudáková et al., 2017; Leskaj, 2017; Kelíšek et al., 2017), managers have a dangerous tendency toward exaggerated confidence that when problems occur, they will be resolved in time and without much loss. Enterprises do not know in detail the risks and opportunities of processes, nor the actual statistics for the target key risk indicators. Risk management is limited to financial and investment risks in the company, with risks in terms of production, quality, human factor failure, etc. remaining neglected. In some enterprises, risk management only takes place in the cases of extraordinary events and unexpected circumstances. One possible reason could be also the fact that enterprises often apply risk management initiatives often late, only when they already have problems and are then dealing with consequences rather than prevention.

In particular, risk under-estimation in the enterprise as well as the lack of knowledge and practical experience with risk management application, i.e. the general risk management approaches of managers, contribute to this fact.

The importance of dealing with risk management in an enterprise and the need to identify risks in the business environment in Slovakia is also testified to by the results of own survey of authors in 2013 and 2017 along with the results of various other risk management oriented scientific projects. Based on these surveys, certain conclusions concerning enhancing awareness and extending the knowledge of business owners and managers responsible for risk management processes were drawn up. It has been shown that the absence of risk management can be one of the main causes of entrepreneurial failure and loss of competitive advantage of enterprises in Slovakia (Hudáková & Lusková, 2016; Hudáková et al., 2017) In comparison with the situation abroad, the following conclusions were put forth:

- the benefits of introducing a risk management system in enterprises are not properly interpreted and understood, i.e. operational management of the problems that arise takes precedence over systemic preventive solutions,
- enterprise risks represent a significant problem in application, especially in the field of planning appropriate prevention measures to prevent or eliminate identified risks,

- a negative view of risk management in enterprises is caused in part due to incapability or, in fact, a feeling of powerlessness in the possibility of influencing risks (the whole risk management thus loses importance),
- the risk management system in the enterprise is, in terms of the terminology and its understanding in Slovakia, insufficiently elaborated upon and not shared or communicated further,
- the fragility of various risk management methodologies and standards, i.e. no comparison of advantages in the application of methods and tools for selected industries takes place and no guidelines exist in companies regarding the suitability of tools and methods,
- the practical application of risk management is inadequate in many enterprises in Slovakia and misinterpreted by business managers; managers do not understand that it is one of the fundamental tools of management,
- there is a shortage of practical guidelines on the application of the risk management system in enterprises in Slovakia; enterprises usually address the risks in specific fields separately without regard to the overall system view of the enterprise risk management,
- there is no institution in Slovakia to help companies with risk management application; such an organization would become a platform for communication and the exchange of experience in the field of risk management.

### 3. RESEARCH OBJECTIVE AND METHODOLOGY

The aim of this paper is to identify the most important risks and their resources based on empirical research carried out in small and medium-sized enterprises in Slovakia. The dependence between intensity of market, financial, economic and personal risks perceived by SMEs entrepreneurs along with the size of the particular enterprise was analysed with the use of selected methods and tools of statistics. The goal is to assess the key risks of SMEs compared to the results of research carried out in the previous years in Slovakia using the processed results to highlight the importance and need for managers to identify the most important risks and to apply risk management processes in SMEs with the emphasis on preventing enterprise crises.

In order to meet the objective stated, empirical research methods (questionnaire, interviews with competent persons of SMEs), statistical methods, i.e. analyses of variance using quantitative tools of statistics (percentages, averages, homoscedasticity, Bartlett's Test, Kolmogorov-Smirnov Test, F-test, Kruskal-Wallis Test, Box-and-Whisker Plot) and MS Excel software were used. Using statistical methods and tools, whether or not the average (mean) values of key risks are dependent on the number of years of enterprise activities was examined in firms in Slovakia.

To achieve the objective, the quantitative method "analysis of variance" was used. The analysis of variance was done with either parametric or non-parametric tests. Using the calculation of parametric tests, two basic conditions had to be met: the resulting p-value of the intensity of the key risks of the homoscedasticity test (identity of variances) as well as the normality test to verify intensities of risks had to be higher than the chosen level of significance 0.05.



## 4. RESULTS AND DISCUSSION

In 2017 within the project VEGA No. 1/0560/16 Risk Management of Small and Medium Sized Enterprises in Slovakia and Prevention of Company Crises, supported by the Scientific Grant Agency, an empirical research aimed at identifying the key business risks of SMEs in Slovakia and the state of application of the risk management process in enterprises was implemented. A total of 487 SMEs took part in the survey. From this number, 64 % were microenterprises, 24 % small enterprises and 12% medium-sized enterprises. The number of enterprises in terms of industry was 16 %, trade 24 %, agriculture 1 %, construction 12 %, transport, information 6 %, accommodation, catering 9 %, business services 7 %, other services 22 %, and additional services 3 %.

The addressed owners and managers of SMEs in Slovakia were to identify a maximum of three risks from a selection of seven business risks which they consider to be the key in their business. Of the total number of 487 SMEs addressed, the share of identified key risks of SMEs in Slovakia was identified as follows: market risks 26 %, financial risks 21 %, economic risks 19 %, personnel risks 11 %, operational risks 9 %, legal risks 7 % security risks 6 % and other risks 1 %.

Fig. 1 presents the share of the identified key risks of SMEs in Slovakia in 2017.

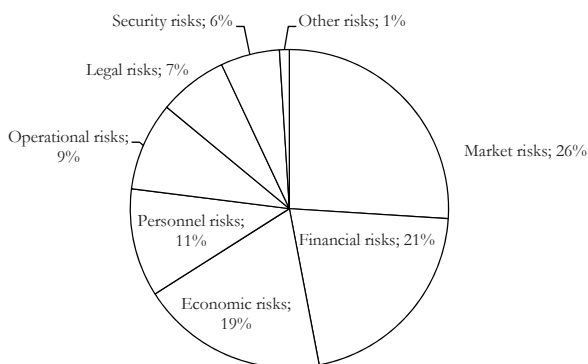


Fig. 1 – The share of identified key risks of SMEs in Slovakia in 2017. Source: authors' results

The next step in fulfilling the objective was to assess the dependence between the identified key risks and the size of the enterprise, i.e. to what extent the type of the perceived key risk depends or does not depend on the size of the enterprise in Slovakia (microenterprise, small and medium-sized enterprise). The first four most important risks were selected for the assessment, i.e. market, financial, economic and personal risks, using the quantitative method “analysis of variance”. The necessary information for the analysis of variance is given in Table 1. The table of characteristics of level and variability details the individual characteristics of the statistical set of individual risks in three groups of SMEs according to the size of the enterprise. The basic statistical characteristics (BSCs) are as follows:  $\mu$  – average intensity of risk to the enterprise,  $\sigma$  – standard deviation intensity of risk to the enterprise,  $\sigma^2$  – variance intensity of risk to the enterprise (Ojiako et al., 2012).

Tab. 1 – Basic statistical characteristics (BSCs) of individual risks in three groups of SMEs according to enterprise size. Source: authors' results

Main risk	BSCs	Micro-sized enterprise	Small-sized enterprises	Medium-sized enterprises
Market risks	$\mu$	45.020	41.930	45.000
	$\sigma$	0.215	0.177	0.163
	$\kappa$	0.919	1.163	-0.026
	$\sigma^*$	0.015	0.019	0.026
Financial risks	$\mu$	37.590	35.250	37.778
	$\sigma$	0.168	0.142	0.163
	$\kappa$	2.725	0.519	3.122
	$\sigma^*$	0.012	0.018	0.031
Economic risks	$\mu$	33.550	33.82	33.438
	$\sigma$	0.160	0.151	0.181
	$\kappa$	4.714	4.145	5.926
	$\sigma^*$	0.012	0.018	0.032
Personnel risks	$\mu$	32.950	32.220	30.741
	$\sigma$	0.169	0.027	0.182
	$\kappa$	3.771	-0.397	3.001
	$\sigma^*$	0.018	0.027	0.035

\* average

#### 4.1. Analysis of the intensity variance of perceived SME's market risks depending on enterprise size

Based on the SME's survey results, market risks were identified as the key and the most important risks. Using Bartlett's test ( $p$ -value = 0.284), the main assumption of homoscedasticity can be considered fulfilled. Also, based on the Kolmogor-Smirnov Test, the normality of the examined file was met. The values ( $p$ -value) of the test were: 0.090 for micro-enterprises (total number of employees up to 10), 0.135 for small enterprises (10-50 employees) and 0.189 for medium-sized enterprises (20-250 employees).

Tab. 2 – Analysis of the intensity variance of SME's market risks using the F-test. Source: authors' results

Variance of SME's according to the enterprise size	Sum of Squares	df	MS	F	P-value
Between Groups	0.6007	2	0.0325	18.3681	0.0081
Within Groups	1371.6645	339	0.0403		
Total	1377.6725	341			

After analysing the variance of market risks intensity in conditions of the Slovak Republic using a parametric F-test, the value of which is 0.0081 (Table 2), the data can be considered statistically significant since the value is less than the chosen significance level (0.05). On the basis of the above, it can be concluded that there is dependence between the intensity of the market risks that SME's are experiencing and the size of the enterprise at the confidence level 95% (Figure 2).

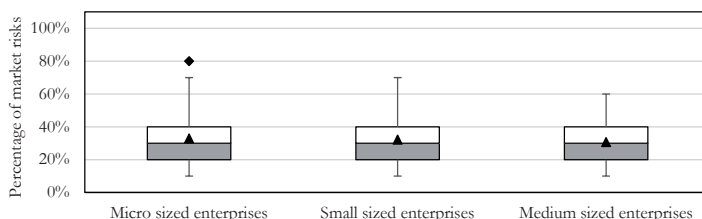


Fig. 2 – Results of the perceived market risks depending on enterprise size using a Box and Whisker plot. Source: authors' results

#### 4.2. Analysis of the intensity variance of perceived SME's financial risks depending on enterprise size

The financial risks were identified as the second most important key risks for SMEs. Using Bartlett's test ( $p$ -value = 0.391), the main assumption of homoscedasticity can be considered fulfilled. Also, based on the Kolmogor-Smirnov Test, the normality of the examined file was met. The values ( $p$ -value) of the test were: 0.085 for micro-enterprises (total number of employees up to 10), 0.171 for small enterprises (10-50 employees) and 0.231 for medium-sized enterprises (20-250 employees).

Tab. 3 – Analysis of the intensity variance of SME's financial risks using the F-test. Source: authors' results

Variance of SME's according to the enterprise size	Sum of Squares	df	MS	F	P-value
Between Groups	2.60	2	0.0130	31.914	0.0681
Within Groups	731.05	278	0.0263		
Total	733.65	280			

After analysing the variance of financial risks intensity in conditions of the Slovak Republic using a parametric F-test, the value of which is 0.0681 (Table 3), the data can be considered statistically nonsignificant since the value is higher than the chosen significance level (0.05). On the basis of the above, it can be concluded that there is no dependence between the intensity of the financial risks that SMEs are experiencing and the size of the enterprise at the confidence level 95% (Figure 3). From the point of view of the dependency hypothesis, this result can be considered correct since the financial risks are very specific. The size of the enterprise only partially influences them (as evidenced by the  $p$ -value close to significance level) (Figure 3).



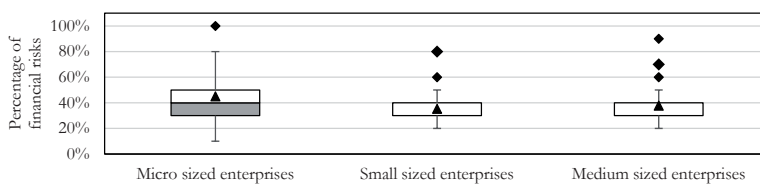


Fig. 3 – Results of perceived financial risks depending on the enterprise size using a Box and Whisker. Source: authors' results

### 4.3. Analysis of the intensity variance of perceived SME's economic risks depending on the enterprise size

The importance of economic risks in the business environment should not be doubted. The survey identified them as the third most important risks for SMEs in Slovakia. Using Bartlett's test ( $p$ -value = 0.211), the main assumption of homoscedasticity can be considered fulfilled. Also, based on the Kolmogor-Smirnov Test, the normality of the examined file was met. The values ( $p$ -value) of the test were: 0.150 for micro-enterprises (total number of employees up to 10), 0.417 for small enterprises (10-50 employees) and 0.231 for medium-sized enterprises (20-250 employees).

Tab. 4 – Analysis of the intensity variance of SME's economic risks using the F-test. Source: authors' results

Variance of SME's according to the enterprise size	Sum of Squares	df	MS	F	P-value
Between Groups	0.0005	2	0.0002	71.0132	0.1391
Within Groups	6.7931	263	0.0258		
Total	6.7935	265			

After analysing the variance of economic risks intensity in conditions of the Slovak Republic using a parametric F-test, the value of which is 0.1391 (Table 4), the data can be considered statistically nonsignificant since the value is higher than the chosen significance level (0.05). On the basis of the above, it can be concluded that there is **no dependence** between the intensity of the economic risks that SMEs are experiencing and the size of the enterprise at the confidence level 95%. From the point of view of the dependency hypothesis, this result can be considered correct since the economic risks are very specific. The size of the enterprise only partially influences them (as evidenced by the high  $p$ -value) (Figure 4).

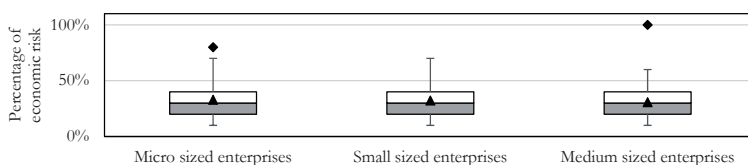


Fig. 4 – Results of perceived economic risks depending on enterprise size using Box and Whisker. Source: authors' results

#### 4.4. Analysis of the intensity variance of perceived SME's personnel risks depending on enterprise size

Personnel risks were identified as the fourth most important risk for SMEs in Slovakia. Using Bartlett's test ( $p$ -value = 0.392), the main assumption of homoscedasticity can be considered fulfilled. Also, based on the Kolmogor-Smirnov Test, the normality of the examined file was met. The values ( $p$ -value) of the test were: 0.112 for micro-enterprises (total number of employees up to 10), 0.209 for small enterprises (10-50 employees) and 0.225 for medium-sized enterprises (20-250 employees).

Tab. 5 – Analysis of the intensity variance of SME's personnel risks using the F-test. Source: authors' results

Variance of SME's according to enterprise size	Sum of Squares	df	MS	F	P-value
Between Groups	1.0250	2	0.0051	119.0351	0.0435
Within Groups	424.3923	148	0.0287		
Total	425.4172	150			

After analysing the variance of personnel risks intensity in conditions of the Slovak Republic using a parametric F-test, the value of which is 0.0435 (Table 5), the data can be considered statistically significant since the value is less than the chosen significance level (0.05). On the basis of the above, it can be concluded that there is **dependence** between the intensity of the personnel risks that SMEs are experiencing and the size of the enterprise at the confidence level 95% (Figure 5).

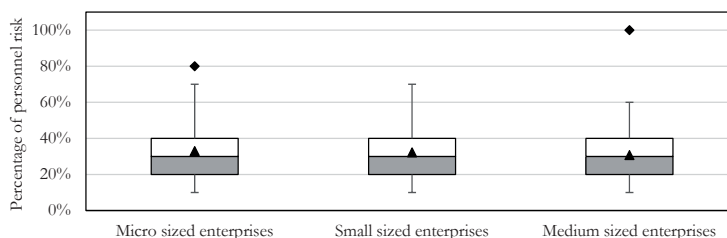


Fig. 5 – Results of perceived personnel risks in depending on the enterprise size using Box and Whisker. Source: authors' results

The results of our own empirical research show that market, financial, economic and personnel risks are among the four most important risks that negatively affect the current business environment of SMEs in Slovakia. Using statistical methods, the dependence between intensity of market, financial, economic and personnel risks perceived by entrepreneurs and the size of the enterprise was analysed.

The most important risks in terms of SMEs are market risks. Based on the calculations of a market risk variance analysis, it can be concluded that perceived market risks are dependent on the size of the enterprise in conditions in Slovakia. Small and medium-sized enterprises are more vulnerable from the market environment perspective in comparison with big enterprises. This is evidenced by further processed survey results that point to the greatest SMEs market risk intensity: loss of customers, strong competition in the industry, market stagnation, and supplier misbehaviour. This hypothesis is confirmed by many other authors who have done similar research (Kozubíková et al., 2017b; Belás et al., 2018; Kot, 2018; Popp et al., 2018; Oláh et al., 2018). Compared to the results of the 2013 statistical survey, it can be concluded that financial risks are still among the key risks of SMEs. Even in 2013, they were identified as the most important, with the 30% share of overall risks, and the dependence between perceived risks and the size of the enterprise was also identified.

Financial risks are significant in any business, whether it is a small or medium enterprise. When analysing the variance of SME financial risks, it can be said that perceived financial risks **are not dependent on the size** of the enterprise in the conditions of Slovakia. The current issue of financial risk management produces the same level of SMEs. This is also evidenced by further processed survey results that point to the greatest intensity of the SME's financial risk sources: inadequate business profit, unpaid receivables, inability to pay liabilities (insolvency) and company indebtedness. This opinion is confirmed by other authors who have addressed this issue (Kozubíková et al., 2017a; Belás et al., 2018; Ahmad et al., 2018). Compared to the results of the 2013 statistical survey, it can be concluded that financial risks still represent key risks of SMEs. Even in 2013, they were identified as the second most important risk, with a 22% share of overall risks, however in the most recent survey the dependence between perceived risks and the size of the enterprise was identified.

When assessing the **economic risks** of SMEs, it can be concluded that the perceived economic risks **are not dependent** on the size of the business in conditions in Slovakia. The economic risk assessment is not affected by the size of the SME. This is evidenced by further processed survey results that point to the greatest intensity of SMEs' economic risk sources: the evolution of tax and levy burden, the rise in prices of all types of energy, the poor availability of financial resources and the development of interest rates. Sources of economic risks are among the most binding ones that entrepreneurs perceive in terms of the questionnaire results. These results cannot be compared to the processed results of the 2013 survey because the economic risks were assessed within the market risks at that time.

Based on the personnel risks analysis, it can be concluded that the perceived personnel risks **are dependent** on the size of the enterprise. The number of employees affects the size of personnel risks. This is evidenced by further processed survey results that point to the highest intensity of personnel risks sources for SMEs: inadequate staff qualifications, high fluctuation of employees,

drop in working ethics and discipline, and staff mistakes. Compared to the results of the 2013 statistical survey, personnel risks are still among the key risks of SMEs. In 2013, they were identified as the third most important, with a 14% share of overall risks. The dependence between perceived risks and the size of the enterprise was also identified.

## 5. CONCLUSION

The overall results of our empirical research point to the significance and importance of addressing the assessment of key risks and their resources in SMEs in Slovakia. The findings emphasize the need for active and systematic work with risk as well as for preparation for the traps of the current business environment. Therefore, it is necessary to increase the level of knowledge of the possible causes and consequences of the risk, as well as the application of adequate measures for their reduction. Improving the level of risk management, therefore, requires enterprises in Slovakia to acquire the theoretical knowledge of the risk management process, methods, and tools that can be used in risk management.

Risk management can help SMEs not only avoid business mistakes but ensure proper management that is closely linked to the level of risk acceptability. Owners or managers should be able to apply risk management processes in enterprises using appropriate methods and tools to timely identify changes in cases of the development of an adverse business environment. The application of risk management leads to an improvement in business performance as well as to cutting costs. It is important that managers are convinced that effective risk management provides fewer negative surprises, greater financial stability as well as enhanced enterprise performance. It also provides opportunities for earning profits and maintaining a safe, productive and efficient company. The authors' efforts are to create step-by-step actions to promote the application of the risk management process in enterprises in Slovakia so that managers can manage risks and progressively move towards global trends. The results obtained will be compared with similar research at the international level with universities in the Czech Republic, Poland, Hungary, Serbia and other international organizations, e.g. using ISO/TC 262. The achieved results will form the basis for adoption by the professional public as well as by other organizations that are trying to help companies with the effective application of risk management processes in enterprises in Slovakia.

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### References

1. Abbas, S. A. (2018). Entrepreneurship and information technology businesses in economic crisis. *Entrepreneurship and Sustainability Issues*, 5 (3), 682–692. [https://doi.org/10.9770/jesi.2018.5.3\(20\)](https://doi.org/10.9770/jesi.2018.5.3(20)).
2. Agarwal, R., & Ansell, J. (2016). Strategic Change in Enterprise Risk Management. *Strategic change-briefings in entrepreneurial finance*, 25 (4), 427–439.

3. Ahmad, I., Oláh, J., Popp, J., & Máté, D. (2018). Does Business Group Affiliation Matter for Superior Performance? *Evidence from Pakistan. Sustainability* 2018, 10 (9), 3060 pp. 1–19. <https://doi.org/10.3390/su10093060>, <http://www.mdpi.com/2071-1050/10/9/3060>.
4. Andronicescu, A. (2017). The three-dimensional approach of Total Quality Management, an essential strategic option for business excellence. *Amfiteatru Economic*, 19(44), 61–78.
5. The American Institute of CPAs (Certified\_Public\_Accountants). (2017). [Online]. Available: <http://www.aicpa.org/Pages/default.aspx>.
6. Belás, J., Dvorský, J., Kubálek, J., & Smrčka, L. (2018). Important factors of financial risk in the SME segment. *Journal of International Studies*, 11(1), pp. 80–92.
7. Belas, J., Smrcka, J., Gavurova, B., & Dvorsky, J. (2018). The Impact of Social and Economic Factors in the Credit Risk Management of SME. *Technological and Economic Development of Economy*, 24 (3), pp. 1215–1230. <https://doi.org/10.3846/tede.2018.1968>.
8. Białas, A. (2016). Cost-benefits aspects in risk management. *Polish Journal of Management Studies*, 14 (1), pp. 28–39. <https://doi.org/10.17512/pjms.2016.14.1.03>
9. Bogodistov, Y., & Wohlgemuth, V. (2017). Enterprise risk management: a capability-based perspective. *Journal of risk finance*, 18(3), 234–251.
10. Brachert, M., Hyll, W., & Titze, M. (2017). On the simultaneity bias in the relationship between risk attitudes, entry into entrepreneurship and entrepreneurial survival. *Applied Economics Letters*, 24 (7), 477–480.
11. CGMA Global Management Accountant - Global State of Enterprise Risk Oversight 2nd edition (2017). [Online]. Available: <http://erm.ncsu.edu/library/research-report/cgma-report-on-the-global-state-of-enterprise-risk-oversight>.
12. Enterprise risk management initiative, North Carolina State University's ERM Initiative (2017). Report on the Current State of Enterprise Risk Oversight: Update on Trends and Opportunities 2015. [Online]. Available: <http://erm.ncsu.edu/library/article/current-state-erm-2015>.
13. FERMA (2017). European Risk and Insurance Report. Executive Summary of the FERMA, Risk Management Benchmarking survey. [Online]. Available: <http://www.ferma.eu/risk-management/>.
14. Fraser, J. R. S., & Simkins, B. J. (2016). The challenges of and solutions for implementing enterprise risk management. *Business horizons*, 59, (6) Special Issue: SI, 689–698.
15. Gates, S., Nicolas, J. L., & Walker, P. L. (2012). Enterprise Risk Management: A Process for Enhanced Management and Improved Performance. *Management Accounting Quarterly*, 13, (3), 28–38.
16. Gavurova, B., Packova, M., Misankova, M., & Smrcka, L. (2017). Predictive Potential and Risks of Selected Bankruptcy Prediction Models in the Slovak Business Environment. *Journal of Business Economics and Management*, 18(6), 1156–1173. <https://doi.org/10.3846/16111699.2017.1400461>
17. Global risk management survey, seventh edition. Navigating in a changed world (2018). [Online]. Available: <https://www.iaa.nl/SiteFiles/Global%20Risk%20Management%20Survey-7.pdf>.



18. Global trends 2025 (2017). A Transformed World. Washington D.C.: US Government Printing Office. [Online]. Available: [www.dni.gov/nic/NIC\\_2025\\_project.html](http://www.dni.gov/nic/NIC_2025_project.html).
19. Gumanti, T., Lestari, A., & Abdul Manan, S. (2017). Underpricing and number of risk factors of initial public offerings in Indonesia. *Business: Theory and Practice*, 18(1): 178–185. <https://doi.org/10.3846/btp.2017.019>.
20. Hopkin, P. (2013). *Risk Management*. London, U.K.: KoganPage.
21. Hudáková, M., Dvorský, J., Lusková, M., & Schönfeld, J. (2017). The Market Risk Analysis and Methodology of Its More Effective Management in Smes in the Slovak Republic. *Montenegrin Journal of Economics*, 13 (2), 151–161.
22. Hudáková, M., & Lusková, M. (2016). Global environment impacts on enterprise risk management. *Globalization and its socio-economic consequences: 16th international scientific conference*, Slovakia, Zilina: ZU - University of Zilina, pp. 694–701.
23. Institute of Risk Management. (2017). [Online]. Available: <https://www.theirm.org/>
24. Ivanová, E. (2017). Barriers to the development of SMEs in the Slovak Republic. *Oeconomia Copernicana*, 8 (2), 255–272. <https://doi.org/10.24136/oc.v8i2.16>.
25. Jankelová, N., Jankurová, A., Beňová, M., & Skorková, Z. (2018). Security of the business organizations as a result of the economic crisis. *Entrepreneurship and Sustainability Issues*, 5 (3), 659–671. [https://doi.org/10.9770/jesi.2018.5.3\(18\)](https://doi.org/10.9770/jesi.2018.5.3(18)).
26. Kelišek, A., Hudáková, M., & Titko, M. (2017). Assessment of approaches to measuring the quality of business environment in Slovakia. *Finance and performance of firms in science, education and practice: proceedings of the 8th international scientific conference*, Czech Republic. Zlín - Tomas Bata University, pp. 913–925.
27. Klietnik, T., Misankova, M., Valaskova, K., & Svabova, L. (2018). Bankruptcy prevention: new effort to reflect on legal and social changes. *Science and Engineering Ethics*, 24 (2), 91–803. <https://doi.org/10.1007/s11948-017-9912-4>.
28. Klietnikova, J., Misankova, M., & Klietnik, T. (2017). Bankruptcy in Slovakia: international comparison of the creditor's position. *Oeconomia Copernicana*, 8 (2), 221–237. <https://doi.org/10.24136/oc.v8i2.14>.
29. Ključnikov, A., & Popesko, B. (2017). Export and Its Financing in the SME Segment. Case Study from Slovakia. *Journal of Competitiveness*, 9 (1), 20–35. <https://doi.org/10.7441/joc.2017.01.02>.
30. Klučka, J., & Grünbichler, R. (2016). Risikomanagement: Verbreitung, Bedeutung und zukünftige Erwartungen: Ein Vergleich zwischen Österreich, Slowakei und Deutschland. *Controller Magazin, Arbeitsergebnisse aus der Controller-Praxis*, 41 (5), 49–54.
31. Kot, S. (2018). Sustainable Supply Chain Management in Small and Medium Enterprises. *Sustainability*, 10 (4), 1143.
32. Kovácsné Mozsár, A. L., & Michelberger, P. (2018). IT risk management and application portfolio management. *Polish Journal of Management Studies*, 17 (2), pp. 112–122. <https://doi.org/10.17512/pjms.2018.17.2.10>

33. Kozubíková, L., Homolka, L., & Kristalas, D. (2017a). The Effect of Business Environment and Entrepreneurs' Gender on Perception of Financial Risk in the SMEs Sector. *Journal of Competitiveness*, 9(1), 36–50. <https://doi.org/10.7441/joc.2017.01.03>.
34. Kozubíková, L., Dvorský, J., Cepel, M., & Balcerzak, A. P. (2017b). Important characteristics of an entrepreneur in relation to risk taking: Czech Republic case study. *Journal of International Studies*, 10 (3), pp. 220–233.
35. Lazányi, K., Virglerová, Z., Dvorský, J., & Dapkus, R. (2017). An analysis of factors related to “taking risks”, according to selected socio-demographic factors. *Acta Polytechnica Hungarica*, 14 (7), pp. 35–50.
36. Leskaj, E. (2017). The challenges faced by the strategic management of public organizations. *Administratie si Management Public*, (29), pp.151–161.
37. Mikušová, M. (2017). To be or not to be a business responsible for sustainable development? Survey from small Czech businesses. *Economic Research-Ekonomska Istraživanja*, 30 (1), pp. 1318–1338. <https://doi.org/10.1080/1331677X.2017.1355257>.
38. Ojiako, U., Papadopoulos, T., Thumborimuthi, Ch., & Yang, Y. F. (2012). Perception variability for categorised risk factors. *Industrial Management & Data Systems*, 112 (4), 600–618.
39. Oláh, J., Zéman, Z., Balogh, I., & Popp, J. (2018). Future challenges and areas of development for supply chain management. *LogForum*, 14 (1), pp. 127–138. <https://doi.org/10.17270/J.LOG.2018.238>.
40. Pietrasieński, P., & Ślusarczyk, B. (2015). Internationalization of small and medium enterprises – Empirical research review on barriers to entry into foreign markets. *Polish Journal of Management Studies*, 11(1), pp. 113–123.
41. Popp, J., Oláh, J., Machova, V., & Jachowicz, A. (2018). Private equity market of the Visegrad group. *Ekonomicko-manazerske spektrum*, 12 (1), pp. 1–15. <https://doi.org/10.26552/ems.2018.1.1-15>
42. Ribau, C., Moreira, A., & Raposo, M. (2017). SMEs innovation capabilities and export performance: an entrepreneurial orientation view. *Journal of Business Economics and Management*, 18(5), 920–934. <https://doi.org/10.3846/16111699.2017.1352534>.
43. The risk management association (2017). [Online]. Available: <http://www.rmahq.org/rma-europe-home>.
44. Sira, E., Vozarova, Kravcakova, I., & Radvanska K. (2016). Using of risk management at small and medium-sized companies in the Slovak Republic, *Economic annals-XXI*, 156( 1–2), 71–73.
45. Ślusarczyk, B. (2017). Shared Services Centres in Central and Eastern Europe: the Examples of Poland and Slovakia. *Economics and Sociology*, 10 (3), pp. 46–58. <https://doi.org/10.14254/2071-789X.2017/10-3/3>.
46. Stubelj, I., Dolenc, P., Biloslavo, R., Nahtigal, M., & Laporšek, S. (2017). Corporate purpose in a small post-transitional economy: the case of Slovenia. *Economic Research-Ekonomska Istraživanja*, 30 (1), pp. 818–835.



47. Valaskova, K., Kliestik, T., & Kovacova, M. (2018). Management of financial risks in Slovak enterprises using regression analysis. *Oeconomia Copernicana*, 9 (1), 105–121. <https://doi.org/10.24136/oc.2018.006>
48. Vojtovič, S. (2016). The Impact of the Structural Funds on Competitiveness of Small and Medium-Sized Enterprises. *Journal of Competitiveness*, 8 (4), 30 – 45. <https://doi.org/10.7441/joc.2016.04.02>
49. Wegner, D., Zarpelon, F. M., Verschoore, J. R., & Balestrin, A. (2017). Management practices of small-firm networks and the performance of member firms. *Business: Theory and Practice*, 18 (1), 197–207. <https://doi.org/10.3846/btp.2017.021>.
50. Zygmunt, J. (2018). Entrepreneurial activity drivers in the transition economies. Evidence from the Visegrad countries. *Equilibrium. Quarterly Journal of Economics and Economic Policy*, 13 (1), 89–103. <https://doi.org/10.24136/eq.2018.005>.

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## Contact information

*assoc. prof. Ing. Maria Hudakova, PhD.*  
University of Žilina  
Faculty of Security Engineering  
Department of Crisis Management  
Slovak Republic  
E-mail: [maria.hudakova@fbi.uniza.sk](mailto:maria.hudakova@fbi.uniza.sk)  
ORCID: <https://orcid.org/0000-0002-0756-0962>

*Ing. Matej Masar*  
University of Žilina  
Faculty of Security Engineering  
Department of Crisis Management  
Slovak Republic  
E-mail: [matej.masar@fbi.uniza.sk](mailto:matej.masar@fbi.uniza.sk)  
ORCID: <https://orcid.org/0000-0003-4189-2984>

*Ing. Maria Luskova, PhD.*  
University of Žilina  
Faculty of Security Engineering  
Department of Technical Sciences and Informatics  
Slovak Republic  
E-mail: [maria.luskova@fbi.uniza.sk](mailto:maria.luskova@fbi.uniza.sk)  
ORCID: <https://orcid.org/0000-0003-3975-4654>

*assoc. prof. Ing. Milan Robin Patak, Ph.D*  
University College of Business  
Czech Republic  
E-mail: [patak@vso-praha.eu](mailto:patak@vso-praha.eu)