ATTITUDE OF SLOVAK SMALL AND MEDIUM-SIZED ENTERPRISES TOWARDS RISK MANAGEMENT – INVESTIGATION OF THE REGIONAL DIFFERENCES

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Abstract: Contemporary trends highlight the need for education in each enterprise. The current business environment is characterized by many changes such as increased customer expectations and high levels of competitiveness in the environment. World trends, shows, that managers and owners of small and medium-sized enterprises (SMEs) perceived the need to take care of risk management in their enterprise. This issue has been analyzed and discussed for a long time. It is necessary to concentrate on this field mainly in the Slovak Republic. SMEs in Slovakia are very sensitive to changes in the environment.

The aim of this paper is to investigate regional differences in the attitude of Slovak SMEs towards risk management, with special emphasis on the attitude towards significance of the education in the field of risk management based on empirical research, which was provided by authors in 2017. This paper will evaluate: the level of dependence between the selected Slovak regions and the created space for discussion about risks in SMEs, the level of dependence between selected Slovak regions and the created space for employee education in risk management in SMEs, and the level of dependence between selected Slovak regions and the required education possibilities in the field of risk management. It will use: association, the Pearson's coefficient and the Tschuprov coefficient for evaluating the results.

Overall results of the empirical research point towards the significance and importance of using risk management in SMEs. The results, shows, that there is a very large association between investigating dependence. Based on the results, it is necessary to improve the level of education in the field of risk management, which will be based on current entrepreneurial requirements.

Introduction

Managers and owners of small and medium-sized enterprises (SME) are the ones faced with the responsibility to make decisions to ensure prosperity, stability, and gain the best level of competitiveness within their businesses. Every activity, which owners and managers of SMEs take has risk. The decision is provided in the risk condition (Agarwal et al., 2016). Managers and owners of SMEs perceived necessary education in the field of risk management, and its importance in their enterprise, too. Based on results of Global trends 2025 (2017), The American Institute of CPAs (2017), CGMA (2017), Enterprise risk management initiative (2017), which were realized, it is possible to say, that education in the company is the most useful perception by managers in the world. Risk management is very important for them too. They give some space in their company to educating employee in the field of risk management. Managers, who run an enterprise in Slovakia, perceived a lack of risk management process of their enterprises.

The aim of this paper is to investigate regional differences in the attitude of Slovak SMEs towards risk management, with special emphasis on the attitude towards significance of the education in the field of risk management based on empirical research, which was provided by authors in 2017. Authors will evaluate the level of dependence between selected Slovak regions and the created space for discussion about risks in SMEs, the level of dependence between selected Slovak regions and the created space for employee education in risk management in SMEs, and the level of dependence between selected Slovak regions and the required education possibilities in the field of risk management.

Literature review

The global business environment brings rapid changes into enterprise environments and enterprises are aware of the need for risk management in their business and the importance of it too. According to several authors Kozubikova et al., (2017), Gates et al., (2012), Fraser et al., (2016), Klučka et al., (2016) and Belás et al., (2018) there is global trend in risk management based on an early risk identification, improvement level of organizational culture, risk assessment and positive attitude to risk management.

Foreign studies (Enterprise risk management initiative 2017), (The American Institute of CPAs, 2017), (CGMA, 2017) highlight the shortcoming in risk management application in the world. The key findings from the studies are:

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- insufficiently risk management models,
- lack of support in enterprise risk management,
- insufficiently implementation of a risk management system,
- insufficient staff training in risk management,
- less delegating responsibility for risk control,
- not providing discussion about risks.

The risk management application encounters problems with content definition, risk responsibility, missing criteria, i.e. risk tolerance, insufficient focus on identifying source causes of risk, etc. The financial crisis in 2008-2009 raised interest in risk management in businesses. It strengthened the role of managing the risks of financial managers, but not far from that in European countries.

According to authors Nedeliakova et al., (2016) Kormancova (2013) and Hudakova et al., (2016) managers in most cases believe that all problems will be resolved in time and without bigger losses until they occur. Risk management in small and medium-sized enterprises in the Slovak Republic is limited to managing the market and investment risks, while other risks are neglected. Based on surveys, which were realized in 2013 and 2017 in enterprises environment, there is a need to raise awareness, evaluation and increase the knowledge of SMEs owners and managers about enterprise risk management.

Goals and research methodology

The aim of the paper is to investigate regional differences in the attitude of Slovak SMEs towards risk management, with special emphasis on the attitude towards significance of the education in the field of risk management based on empirical research, which was provided by authors in 2017.

The secondary goals of this contribution (based on empirical research) is to assess the level of dependence between:

- selected Slovak regions in which managers and owners of SMEs run a business and a created space for discussion about risks
- selected Slovak regions in which managers and owners of SMEs run a business and a created space for employee education in risk management,
- selected Slovak regions in which managers and owners of SMEs run a business and the required education possibilities in the field of risk management.

Based on the aims of these contributions, 3 research questions were established:

Q_1: Is dependence between selected Slovak regions in which managers and owners of SMEs run a business and a created space for discussion about risks?

Q_2: Is dependence between selected Slovak regions in which managers and owners of SMEs run a business and a created space for employee education in risk management?

Q_3: Is dependence between selected Slovak regions in which managers and owners of SMEs run a business and the required education possibilities in the field of risk management?

In order to meet the objective stated the empirical research methods (questionnaires, interviews with competent persons of SMEs), statistical methods, i.e., the analysis of dependence by the Chi-Square Test of Independence, Pearson's correlation coefficient and Tschuper´s correlation coefficient are used.

The Chi-Square Test of Independence is defined by Chajdiak et al., (1999) as a nonparametric statistical test to determine if two or more classifications of the samples are independent or not. A common question with regards to a contingency table is whether it has independence. By independence, we mean that the row and column variables are not associated (i.e. knowing the value of a row variable will not help us predict the value of a column variable, and likewise, knowing the value of a column variable will not help us predict the value of a row variable).

The methodology of calculation for the Chi-Square Test is divided into 4 main steps. It is necessary to establish a null and alternative hypothesis – the null hypothesis is that variables are independent, and the alternative hypothesis that variables are related (dependent). The second step is determining the significate level α. The third step is to calculate the Chi-Square Test of Independence based on formula (1) and the last step is comparing the computed Chi-Square with the critical value by the statistic tables for the established level of significance.

$$\aleph^2 = \sum_{i=1}^{m}\sum_{j=1}^{k}\frac{((a_ib_j)-(a_ib_j)_0)*(((a_ib_j)-(a_ib_j)_0)}{(a_ib_j)_0} \tag{1}$$

Association in this article was possible to investigate by Table 1 – the measures of association value and its interpretation.

Table 1: The measures of association value and its interpretation

A measure of association value	Degree of association
0.0	Perfect independence
(0.0-0.1)	Trivial association
<0.1-0.3)	Small association
<0.3-0.5)	Moderate association
<0.5-0.7)	Large association
<0.7-0.9)	Very large association
<0.9-1.0)	Nearly perfect association
1.0	Perfect association

Source: Cohen, 2016

The Pearson's correlation coefficient (r) is the most used nonparametric measure of association for two random variables. It is calculated through formula (2) (Wang, 2012). The Pearson correlation coefficient is a dimensionless measure that determines a linear relationship between two variables. Its value varies from -1 when there is a perfect negative linear relation, to +1 when there is a perfect positive linear relation. The closer this value to zero, the smaller is the degree of a linear relation. From the Pearson correlation coefficient, many other statistics are calculated, such as partial correlation, direct and indirect effects between variables in track analysis, and canonical correlation (Hair et al., 2009).

$$r = \sqrt{\frac{\aleph^2}{n+\aleph^2}} \tag{2}$$

Tschuper´s coefficient (T) is one of the indexes, based them is possible to calculate the degree of dependence between 2 qualitative characteristics. Tschuper´s coefficient (T) is calculated by the formula (3).

$$T = \frac{\aleph^2}{n*\sqrt{(m-1)*(k-1)}} \tag{3}$$

Results

The authors of this paper solve issues in the field of enterprise risk management various projects at the Faculty of Security Engineering, the University of Zilina, e. g.: the project KEGA No. 030ŽU-4/2018 "Research of Risk Management in Enterprises in Slovakia to create a new study program Risk Management for the FBI University of Zilina", the project VEGA No. 1/0560/16 "Risk Management of Small and Medium Sized Enterprises in Slovakia as Prevention of Company Crises" and the Internal Grant Scheme of Faculty of Security Engineering, the University of Zilina from the grant No. 201801.

In 2017 the investigators of the project VEGA supported by the Scientific Grant Agency realized the empirical research aimed at detecting the key entrepreneurial risks of the SMEs in Slovakia and the state of implementing the risk management process. 424 SMEs participated in this research. Out of 424 participants, 64 % were micro-companies, 24 % were small-sized companies and 12 % were medium-sized companies. From the point of view of the line of business the structure was as follows: 16 % industry; 24 % trade; 1 % agriculture; 12 % building industry; transport, information 6 %; 9 % accommodation, catering; 7 % business services; other types of services 22 %; other services 3 % .

The addressed owners and managers of the SMEs in Slovakia were asked to determine maximally three risks out of seven ones they consider as the key risks in their business. Out of the total number of 487 addressed SMEs we determined the percentage of the identified key risks of the SMEs in Slovakia as follows: the most serious risks were the market risks – 26 %; the financial risks – 21 %; the economic risks – 19 %; the personnel risks – 11 %; the operational risks – 9 %; the legal risks – 7 %; the security

risks – 6 % and the other risks – 1 %. Fig. 1 presents the share of identified key risks of SMEs in Slovakia in 2017 (Hudakova, 2018).

Figure 1: Share of identified risks of SMEs in Slovakia in 2017

Source: Authors
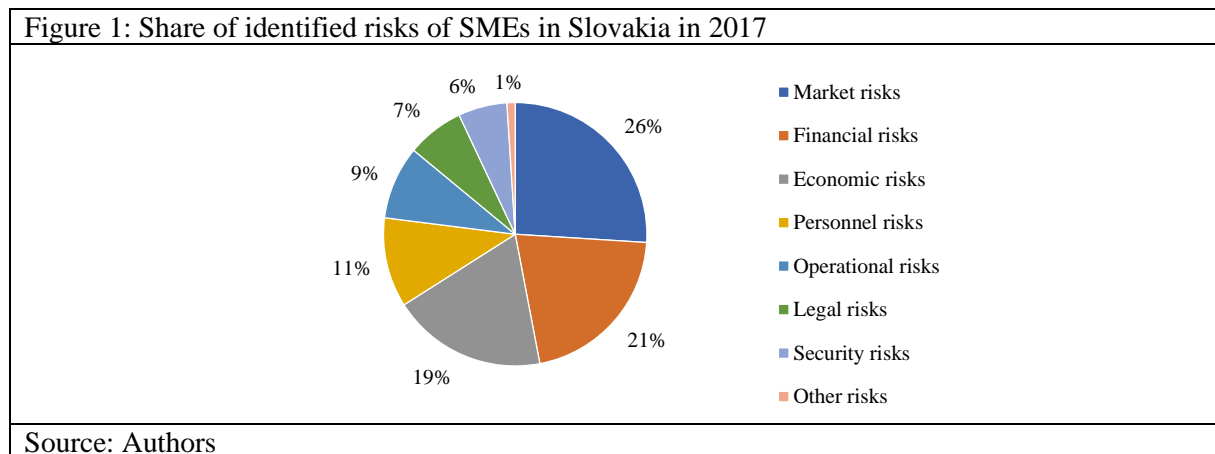
The results of our own empirical research show that market, financial, economic and personnel risks are among the four most important risks that negatively affect the current business environment of SMEs in Slovakia. The most important risks in terms of SMEs are market risks. Based on the calculations of the market risk variance analysis, it can be concluded that perceived market risks are dependent on the size of the enterprise in the conditions in Slovakia. Small and medium-sized enterprises are more vulnerable from the perspective of the market environment in comparison to big enterprise. 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.

The current issue of financial risk management is getting the same level of SME. 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 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.

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.

Significance level (α) was established as $\alpha = 0,05$. Authors consider established significate level as suitable for fulfilling the main aim of this contribution.

Table 2: Analysis of intensity dispersion of the SMEs´ perceived risks by the F-test

Variance of SMEs according to the length of the business	Sum of squares	Df	Average of squares	F-ratio	P-value
Between Groups	0.0902	3	0.0058	135.2604	0.0098
Within Groups	9.3523	484	0.0358		
Total	9.4425	487			

Source: Authors

After carrying out the analysis of the intensity dispersion of the perceived SMEs´ risks in Slovakia by owners and managers by using the parametric F-test (its value is 0.0098 – see the table 2). It is possible to consider the data as statistically significant because the value is lower than the selected level of significance (0.05). Based on this we can say that there is a certain level of dependence between the intensity of the SMEs´ perceived risks in dependence on the selected Slovak region of the investigated set of companies at the reliability boundary of 95 %.

Testing dependence between the selected Slovak regions in which managers and owners of SMEs run a business and a created space for discussion about risks

Contemporary trends highlight the importance of creating discussing key risks in foreign enterprises. Managers and owners may better gain positive risks (opportunities) and reduce negative risks (threats),

which may affect the enterprise. Managers and owners of SMEs discuss risks with their employee once a week. They perceived that it is necessary to run a business in the current dynamic business environment. Based on this fact, it is necessary to investigate hypothesis H_1: There is dependence between selected Slovak regions in which managers and owners of SMEs run a business and a created space for discussion about risks.

Table 3: Investigate of research question Q1 using association test						
Region	Test criterion for creating space for discussion about key risks					
	Monthly	Quarterly	Half Yearly	Annually	Without discussion	Summary
Bratislava	0.254	3.900	1.234	0.026	1.655	7.069
Trnava	4.420	0.105	1.502	0.839	1.303	8.169
Nitra	6.265	0.159	0.236	0.437	0.766	7.863
Trenčín	0.000	0.000	0.000	0.000	0.000	0.000
Žilina	2.663	0.053	0.144	0.000	1.969	4.830
Banská Bystrica	5.302	0.220	0.925	2.052	1.034	9.533
Prešov	0.179	0.005	0.054	0.520	0.596	1.352
Košice	0.792	0.002	0.886	0.043	0.977	2.701
Summary	19.876	4.443	4.981	3.917	8.300	41.518
Source: Authors						

Chi-Square was calculated based on formula (1) and it is for Q_1 41.518. Chi-Square based on the Table of Chi-Square distribution and is (0.05;7) 14.07. Based on fact that Chi-Square > Chi-Square-tab it is possible to create the hypothesis: There is dependence between selected Slovak regions in which managers and owners of SMEs run a business and a created space for discussion about risks. It is necessary to calculate the test force by the Pearson´s and Tschuprov´s correlation coefficient through formulas (2) and (3). The Pearson´s correlation coefficient was 0.896 and the Tschuprov´s correlation coefficient was 0.768. It is possible to say that the dependence between the selected Slovak regions in which the managers and owners of SMEs run a business and a created space for discussion about risks has a very large association.

Testing dependence between the selected Slovak regions in which managers and owners of SMEs run a business and a created space for employee education in risk management

Employee education is one of the highest perceived limitations of enterprises in Europe. Current trends highlight the importance of employee education. If enterprises educate their employees, they may be more successful in making decisions, run an enterprise activity or better manage risks in enterprises.

Table 4: Investigate of research question Q2 using association test							
Region	Test criterion of education of employee in SMEs						
	Yes, regularly	Yes, irregularly	No, we do not have time for education	No, educations are considered as useless	No, education is expensive	No, we do not find a course, which is suite for us	Summary
Bratislava	4.484	0.733	0.443	1.7604	0.0588	0.0545	7.5346
Trnava	1.759	1.138	0.002	1.5300	0.8278	0.1853	5.4405
Nitra	0.253	0.082	0.012	1.7554	1.3783	0.0738	3.5564
Trenčín	0.000	0.000	0.000	0.0000	0.0000	0.0000	0.0000
Žilina	2.561	0.442	0.111	1.9269	0.2010	0.6675	5.9118
Banská Bystrica	2.797	3.939	0.094	3.7146	0.9552	1.7689	1.2703
Prešov	0.088	1.201	0.483	0.7315	0.0941	1.4688	4.0689
Košice	1.678	1.634	0.544	1.4076	0.5731	0.0035	5.8420
Summary	7.127	7.218	1.234	7.7806	1.8234	3.9087	29.0930
Source: Authors							

The Chi-Square was calculated based on formula (1) and it is for Q_2 29.093. Chi-Square based on the Table of Chi-Square distribution and is (0.05;7) 14.07. Based on fact that Chi-Square > Chi-Square-tab

it is possible to create the hypothesis: There is dependence between selected Slovak regions in which managers and owners of SMEs run a business and a created space for employee education in risk. It is necessary to calculate the test force by the Pearson´s and Tschuprov´s correlation coefficient through formulas (2) and (3). The Pearson´s correlation coefficient was 0.816 and the Tschuprov´s correlation coefficient was 0.766. It is possible to say that the dependence between the selected Slovak regions in which the managers and owners of SMEs run a business and a created space for employee education in risk management has a very large association.

Testing dependence between the selected Slovak regions in which managers and owners of SMEs run a business and the required education possibilities in the field of risk management

Education institutes offer courses to improve skills and knowledge in many areas. Based on the authors' research the most used are courses which are focused on using methods, techniques, and tools in project management. Courses, which are offered in Slovakia are focused on general topics like management, accounting, etc.

Table 5: Investigate of research question Q3 using association test

Region	Test criterion of course requirements by managers and owners of SMEs				
	Curse focused on risk management	Curse for manage specific risks	Course for use methods, techniques, and tools in risk management	Any course	Summary
Bratislava	0.023	2.329	0.024	1.335	3.711
Trnava	1.272	0.129	2.890	1.670	5.960
Nitra	6.848	1.134	1.255	0.433	9.669
Trenčín	0.000	0.000	0.000	0.000	0.000
Žilina	0.730	0.010	0.939	0.905	2.585
Banská Bystrica	0.072	1.308	5.246	0.005	6.631
Prešov	0.134	0.210	1.795	0.382	2.522
Košice	1.715	0.344	0.807	0.022	2.888
Summary	10.794	5.464	12.955	4.752	33.966

Source: Authors

The Chi-Square was calculated based on formula (1) and it is for Q_3 33.966. Chi-Square based on the Table of Chi-Square distribution and is (0.05;7) 14.07. Based on fact that Chi-Square > Chi-Square-tab it is possible to the create hypothesis: There is dependence between selected Slovak regions in which managers and owners of SMEs run a business and the required education possibilities in the field of risk management. It is necessary to calculate the test force by the Pearson´s and Tschuprov´s correlation coefficient through formulas (2) and (3). The Pearson´s correlation coefficient was 0.855 and the Tschuprov´s correlation coefficient was 0.710. It is possible to say that dependence between the selected Slovak regions in which the managers and owners of SMEs run a business and the required education possibilities in the field of risk management has a very large association.

Conclusion

The overall results of this empirical research highlight the importance of taking care of the education of SMEs in the field of risk management in Slovakia. It is necessary to deal with risk management. The current state of education in this field point to the need to create courses which are focused on using methods, techniques and tools of teach risk management in SMEs.

For each research question Q_1: There is dependence between selected Slovak regions in which managers and owners of SMEs run a business and a created space for discussion about risks, Q_2: there is dependence between selected Slovak regions in which managers and owners of SMEs run a business and a created space for employee education in risk management and Q_3: there is dependence between selected Slovak regions in which managers and owners of SMEs run a business and the required education possibilities in the field of risk management was investigated had a large association. This means, that education depends on each Slovak region in general.

It is necessary to take care of education in the field of risk management especially risk management in SMEs. School institutions may create new study fields, which may be focused on risk management.

Based on the realized research, it is possible to say, that managers and owners perceived the need for another level of skills, education and courses. Manager and owner requirements are based on the current state of level, which is provided in their region. Typically, in Slovakia are differences between regions.

Managers and owners of SMEs perceive added value in risk management, but education must suit for their needs. If managers have knowledge, they may use the right methods and technique for running a business, they may minimalize risk if they use right strategy, and they may run a discussion about key risks in their enterprise.

Those factors are necessary to improve competitiveness of their enterprise, rise efficienty and value of the enterprise. 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.

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