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The impact of the COVID-19 pandemic on selected areas of a management system in SMEs

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ABSTRACT

The current pandemic, that has wider economic and social impacts, will put to the test all enterprises, which will be forced to search for new survival strategies and to create existential prognoses of business operations during great economic and social uncertainty and new crises whose impacts are hard to predict. This fact motivated the team of authors to realise the study that aims at researching and quantifying the impacts of the pandemic COVID-19 on selected areas of management in SMEs in the Czech Republic (CR) and the Slovak Republic (SR). The research sample consisted of 1502 SMEs, 822 SMEs before the pandemic, 680 SMEs during the pandemic, 814 from CR, and 688 from SR. Attitudes between SMEs according to nationality and period of research were verified with a chi-squared test and Kruskal-Wallis tests. The results of both countries confirmed that the pandemic has a negative impact on the financial performance of SMEs. The government economic measures may help the enterprises to recover, said 40.0% of Czech entrepreneurs, but only 30% of Slovak entrepreneurs. However, the entrepreneurs in SMEs equally perceive other aspects of corporate governance and business risk management during the pandemic.

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1. Introduction

Financial and economic crises belong to the society's existence and to the development processes of the countries' economies in the individual continents. The COVID-19 pandemic crisis has been significantly different from the previous crises by its onset, development, range, strong impacts on economy and proper functioning of the countries. The pandemic crisis was characteristic by its unpredictable duration, and also its impacts on different areas of economy. It does not have any geographical boundaries, million of

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people has died due to this crisis, and it has also shocked many economics of the individual countries. The pandemic crisis had led to the deepest recession, and also to the financial crisis. Similarly, it has impacted the most vulnerable part of population, and vulnerable countries in the global economy. The negative impacts of the pandemic on the countries' economies significantly depend on the structural aspects of economies and the current socio-economic conditions (Mazzanti et al., 2020). The pandemic crisis considerably deteriorated economic, business and investment environments, the companies massively dismissed their employees and became insolvent, that resulted in a jeopardise of the financial sector, and they also deferred their expenditures and investments (Gray, 2020; Karácsony, 2020; Kornelius et al., 2020). Consequently, the pandemic crisis may have significant impacts on the countries' economies in the future. Gavril et al. (2020) highlight the vulnerabilities of the European countries to the pandemic crisis and they recommend certain policies to eliminate its impacts. It was considerably difficult, for the countries' governments, to create adequate policies and to implement them efficiently.

Small and medium-sized enterprises (SMEs) play an important role in the economy of a majority of the countries and simultaneously, they have been impacted by the pandemic crisis the most rapidly and to the greatest extent (Dimson et al., 2020; Waiho et al., 2020). Many countries' governments had been actively responding to the compensations for their losses, and also to the avoidance of their bankruptcies by proper political measures. Multiple mechanisms were prepared and promptly implemented, while it was also very important to develop new optimal strategies for a post-crisis period (Alves et al., 2020; Virglerová et al. 2020; Wójcik & Ioannou, 2020).

Many international institutions and research teams were producing economic reports on support platforms that should promptly help to create adequate policies for the countries' economies (e.g., Espitia et al., 2020; UNCTAD, 2020a; 2020c; United Nations, 2020; WTO, 2020). These reports clearly declared the previous fatal macro-economic consequences of the pandemic crisis, such as closing the economies, limitation of social and economic lives of individuals and enterprises (Besenyő & Kármán, 2020; Cepel et al., 2020; Chaves-Maza & Fedriani Martel, 2020; Rezk et al., 2020). However, there were some international institutions that focussed on the micro-economic issues of the pandemic crisis e.g., the International Labour Office, which pointed to multiple dimensions of the personnel risks in the companies (ILO, 2020). Also, ILO (2020) considered as very important aspects health and safety in the workplace, respect for human rights, etc. besides employment issues.

Managers, flexibility of the business processes, financial stability and complexity of business and procedural links influenced risk management rate in SMEs. Also, these facts may have had different effects on a different perception of the pandemic crisis impacts by managers in SMEs.

The above-mentioned facts motivated the team of authors to realise this study that aims at researching and quantifying the impacts of the COVID-19 pandemic crisis on selected areas of the corporates' governance in SMEs.

2. Literature review

Many research studies examine effects and impacts of the pandemic crisis on different areas of the country's economy, and also society. The results of these studies

represent a valuable discussion platform and important recommendations for the policies' creators and also for relevant institutions, even they are considerably heterogeneous from the point of a research sample, and also from the point of measurement types and assessment of the pandemic impacts. Al-Fadly (2020) examined negative economic impacts caused by the COVID-19 pandemic in SMEs, specifically, in tourism sector in Kuwait. The author interviewed selected sample of SMEs that were affected by the pandemic in order to identify the most important factors, which influence business, labour force, supply chain and cash flow in SMEs. The analyses concluded that the pandemic caused high unemployment, and the government measures are required to reduce negative impacts of the pandemic and to avoid bankruptcy in SMEs. Aribisala and Olufolarin (2020) analysed the effects of the COVID-19 pandemic on employment in SMEs in Nigeria. The authors emphasise an importance of active government measures that may reduce negative pandemic impacts, and the bankruptcy of many SMEs. Juergensen et al. (2020) examined the economic effects of the pandemic on SMEs, while they especially focussed on the manufacturers. In their study, the authors distinguish between immediate impacts and long-term impacts of the pandemic on SMEs in terms of the global value chains. The demand disruption and the logistic challenges, that depend on the rate and the severity, and differ from the company and the sector, were result of the short-term impacts. The study concludes that the political interventions may not be universal, but they have to take into account the pandemic impact on the individual companies and sectors. Innovations, internationalisation and networks' formation are required to support the renewal and the growth of SMEs.

Sectoral heterogeneity of the studies indicates the specificities of the companies, and those processes within the companies that are impacted by the pandemic the most. For instance, the study by the Malaysian authors, Waiho et al. (2020), also uses a case study to declare the impacts of the COVID-19 pandemic on the aquaculture sector in Malaysia. The authors create wider discussion framework in order to develop such strategies that could also be used by other sectors and countries with similar economic characteristics. However, Belanová (2020) draws attention to the critical consequences of the COVID-19 pandemic on micro, small and medium-sized companies in Slovakia. In the analysis, the author states that almost 8.9% of the entrepreneurs in SMEs were forced to terminate their business activities during the pandemic. On the other hand, those entrepreneurs who survived and continued in their activities (57%) had difficulties with the declining demand for their products and services.

Wójcik and Ioannou (2020) perceive the pandemic impacts more broadly. The authors especially examine the macro-economic impacts of the pandemic. Also, the authors state that the financial regulation may slow down, the consolidation processes of the companies may continue, and the business services in the financial sector may grow as a consequence of the pandemic crisis. However, the authors argue over the differences between local, regional financial centres and international centres, and their significance at the financial markets. Razumovskaia et al. (2020) assess the effectiveness of Russian government policy to support SMEs during the pandemic crisis. The authors focussed on the development of cognitive – econometric model,

while they created a system of key indicators, which influence the economic development in SMEs. Similarly, the authors assessed the impacts of the public policy tools on the economic development in SMEs based on the econometric methods. In conclusion, the study contains important implications, while the authors declare that private and government institutions may use the developed cognitive model to permanently monitor efficiency of the public policies, which were created to support SMEs.

Dimson et al. (2020) present the results of McKinsey survey that was conducted in August 2020 on the sample of 2200 SMEs in five European countries: France, Germany, Italy, Spain and the United Kingdom. It focussed on the assessment of the COVID-19 pandemic crisis impacts. Almost 70% of the respondents confirmed revenue decline that caused serious economic consequences in the company. More than half of the respondents expected that their entrepreneurship may be terminated in one year due to the pandemic crisis. However, there were those respondents (20%) who used various forms of government support e.g., tax reliefs, and/or payments to furloughed staff. Similarly, as other authors, Eggers (2020) emphasises an importance of SMEs in the economy of a country. The author examined 69 manuscripts in order to analyse an impact of the previous crises on SMEs. Consequently, the author suggests some prevention options on how to avoid an economic decline within the country in the area of strategies, finances, and institutional environment.

In the study by Deschryvere et al. (2020), the authors state that in many countries, the governments accepted support measures during the pandemic crisis. However, majority of those measures dealt only with short-term issues of liquidity. Thus, the authors consider the role of aid programs and support mechanisms in order to renew the economic structure. Also, the authors declare that it is important to remove any obstacles that prevent from innovations, and to offer solutions to policies' creators and agencies that support SMEs for solving these system problems caused by the pandemic. Similarly, technological development level, including digital technologies use in SMEs, influences overall pandemic impacts.

Priyono et al. (2020) evaluate to what extent SMEs are able to switch to various levels of digital transformations of their processes. This rate is related to digital literacy of SMEs that varies from company to company. The authors, whose study has limitations especially in generalising the results for different sectors of the economy, emphasise the need to research digital aspects in the transformation processes of the companies on the sample of SMEs in various sectors. In the reports, many institutions intensively evaluated negative pandemic impacts on multiple economic areas. Their analyses' results assess the impacts from a short-point of view. However, these findings are necessary to create such policies that would form effective systems in order to implement different grant mechanisms and supports. Subsequently, it is possible to assess to what extent the targeting of support mechanisms and policies was successful in preventing the bankruptcies of the most sensitive economic sector – SMEs (Bouer, 2020; United Nations Ethiopia (UNE), 2020; UNCTAD , 2020a; UNCTAD , 2020b; UNCTAD , 2020c; United Nations, 2020; Espitia et al., 2020; WTO, 2020).

The study by Kornelius et al. (2020) emphasises a necessity to create effective strategies that would support SMEs during the pandemic, and that would also focus on

other aspects apart from the elimination of negative impacts. This study covers strategies from various countries that successfully retain SMEs during a pandemic. The innovative capacities of SMEs are very important. Consequently, it is inevitable to set such strategies that would maintain SMEs by using the innovative potential of the companies, and that would not be only used as business compensation for damages. Also, the authors use experiences of multiple countries and search for optimal strategy that could be used in especially those countries, where the impacts in SMEs are the most critical. Some authors declare that it is important to obtain as much information as possible on the national SMEs and to closely monitor all factors that have an impact on their survivals in order to formulate effective strategies which would eliminate the COVID-19 pandemic impacts. In the study, Nurunnabi (2020) showed an example of Saudi Arabia and how this country solved all changes in SMEs survival strategies during the pandemic. The author used interviews with the executive directors in 111 SMEs out of six administrative sectors. As the author suggests, close monitoring may provide a sufficient flexibility to implement all necessary emergency plans in SMEs.

Karácsony (2020) emphasises negative changes in unemployment in Hungarian SMEs during the COVID-19 pandemic. The author conducted a survey via on-line questionnaires from 383 managers in SMEs. The survey results showed significant changes in the number of labours, its structure, and also employment methods that were implemented due to the pandemic crisis in Hungarian SMEs.

These research studies encourage the implementation of the follow-up research focussed on changes in the management systems in SMEs caused by the pandemic crisis. Although many countries have introduced the different support mechanisms to eliminate the risks and to support entrepreneurship, their efficiency has varied across the different SME sectors and countries. Many SMEs will be touched by the effects of the crisis and the economic recovery of their processes in the long term as well as ensuring the enterprise growth and prosperity will be a part of their strategic objectives. This will also have an impact on the creation of new risk management systems in the enterprise that should be more flexible to reflect on predictable as well as unpredictable changes in the external business environment and in the global environment too.

3. Aim, data and methodology

The main aim of this study is to examine and to quantify the impacts of the COVID-19 pandemic on the selected areas of the corporates' governance in SMEs. The primary research was carried out in the SMEs in the Czech Republic and the Slovak Republic. The study focuses on two periods of the research. The first period of research, so-called pre-crisis (before the pandemic crisis) examines the period from 09/2019 to 02/2020. The second period of research analysis the period from 11/05/2020 until 17/05/2020. The electronic questionnaire was used to carry out the research, while the entrepreneurs and/or the senior managers in the SMEs, who performed business activities in the Czech Republic and in the Slovak Republic, were the respondents.

3.1. Data collection

3.1.1. The first period of research

The CRIBIS database (universal register of companies, organisations and self-employed in CR and in SR) was used to create the database of SMEs, while the database provided the SMEs contact data. The selection file obtained represented 5% of all the companies in a given region. The process for creation a sample file of SMEs was realised with using the same steps for both countries: i. definition of the basic set of SMEs (SME: maximum 249 employees); ii. assignment a serial number; iii. generation random numbers with application the statistical function "Randbetween"; iv. assignment SMEs to randomly generated numbers; v. finding out contacts (e-mail and telephone number) on company. The selected companies were contacted via e-mail in order to fill in the on-line questionnaire. Totally, in the Czech Republic, there were contacted 8.250 SMEs and 10.100 SMEs in the Slovak Republic. In the Czech Republic, the number of returned filled in questionnaires was 5.5%, while in the Slovak Republic it was 3.6%. The first part of researched material (electronic questionnaire) contained demographic questions, and the second part included researched statements that focus on the selected areas of the corporates' governance. The ratio between the number of correctly and incorrectly filled in questionnaires was represented by 97.5%/2.5% of respondents. The questionnaires with not consistent attitudes of the respondent on selected statements were excluded from the following quantitative analysis.

3.1.2. The second period of research (during the pandemic)

Similarly, the collection of the primary data was done via electronic form using the MNFORCE SK & CZ panel (external organisation for support for the data collection and market research). In the Czech Republic, the research sample contained 360 respondents, while there were 320 respondents in the Slovak Republic. The main criterion was defined in a formation of selection files as a maximum number of self-employed at a level of 60%.

Sample size of analysis. The minimum of the number of respondents was calculated with following data: margin of error – 5%; confidence level – 90%; population size – 1 000 000; response distribution – 50%. The results showed that, the minimum of the number of respondents ($n = 271$) was confirmed for each research sample (according to the periods of research (BP – before the pandemic, DP – during the pandemic) and nationality of respondent (CR, SR) – see 3.4 Demographics structure of SMEs).

3.2. Statements

The questionnaire contained 26 questions. In the first section were formulated demographics questions on characteristics of companies and of respondents. In the second section were formulated the following statements (marked by symbols ST1 – ST16) to selected areas of the corporates' governance in order to achieve the study's aim.

ST1: I do business (corporate governance) intensively (more than 8 hours per day).

ST2: My business activities increased at least of 30% as a consequence of coronavirus in a comparison to last year.

ST3: We were forced to make significant changes in the organisation of activities in our company due to coronavirus.

ST4: At present, I consider active use of on-line marketing tools and social media as the most important factor in reducing the probabilities of the company's bankruptcy.

ST5: I assess the market risk (absence of marketing for my company) as reasonable.

ST6: Our company uses innovative ways to obtain new markets and to retain the existing customers.

ST7: I consider the coronavirus effects as intense, but not as liquidating for my company.

ST8: We have transformed into electronic distribution of our goods and services due to coronavirus.

ST9: The pandemic impacted our business activities.

ST10: I suppose that the earnings decreased year-over-year due to coronavirus.

ST11: I assess personnel risk in the company as appropriate and it does not have any negative impact on my business.

ST12: The importance of personnel risk on the activity of my company decreased during the coronavirus period.

ST13: I consider the economic measures of the government that focus on fighting coronavirus as appropriate.

ST14: The economic measures of the government that focus on fighting coronavirus may help us to survive.

ST15: I assess positively the financial performance of our (my) company.

ST16: I manage financial risk during the coronavirus period.

Respondents replied to these statements as follows: (A1) absolutely agree, (A2) agree, (A3) neutral, (A4) disagree, (A5) absolutely disagree.

In the statement ST9, the following answer options were set:

- Minimal impacts (ST9_1);
- Business interruption due to loss of demand (ST9_2);
- Customers cancelled their orders (ST9_3).

In the statement ST10, the following answer options were set:

- by 10% (ST10_1);
- from 11 to 20% (ST10_2);
- from 21 to 30% (ST10_3);
- from 31 to 40% (ST10_4) and more than 41% (ST10_5).

3.3. Methodology and statistical methods

The statistical hypotheses were formulated in order to verify the differences in the answers between the selected groups of the respondents:

Table 1. The demographic structure of respond.

Business size	CR		SR		Industry	CR		SR	
	BP	DP	BP	DP		BP	DP	BP	DP
Micro-enterprise	63.9	47.5	58.7	62.8	Manufacturing	17.4	16.9	19.0	12.5
Small enterprise	23.6	20.8	28.8	19.1	Trade	20.1	23.1	20.7	24.4
Medium enterprise	12.5	31.7	12.5	18.1	Construction	13.9	9.7	11.1	8.1
Legal form	CR		SR		Transport	2.2	5.6	4.1	4.7
	BP	DP	BP	DP	Agriculture	2.4	1.4	2.2	1.9
Self-employed	29.7	42.2	16.0	50.3	Travel	2.4	3.9	2.7	1.9
Ltd.	58.6	32.2	72.3	35.3	Services	29.3	24.4	30.1	36.9
Joint stock company	7.5	17.5	5.7	7.8	Other industry	12.3	15.0	10.1	9.6
Other type	4.2	8.1	6.0	6.6	Length of operating	CR		SR	
The highest attained education	CR		SR			BP	DP	BP	DP
	BP	DP	BP	DP	Up to 5 years	12.1	31.1	14.4	33.4
HS without diploma	10.1	14.2	3.5	9.7	From 5 to 10 years	14.1	18.1	14.1	24.1
HS with diploma	40.8	51.1	17.4	51.6	More than 10 years	73.8	50.8	71.5	42.5
Bachelor's degree	7.5	11.7	5.7	8.1	Gender	CR		SR	
Master's degree	37.0	18.3	63.6	26.2		BP	DP	BP	DP
Doctorate degree	4.6	4.7	9.8	4.4	Men	71.2	50.3	68.8	53.8
Age of respondents	CR		SR		Women	28.8	49.7	31.2	46.2
	BP	DP	BP	DP	Respondents' status	CR		SR	
Up to 35 years	15.2	32.8	24.0	32.8		BP	DP	BP	DP
From 36 to 45 years	23.3	30.3	28.7	30.0	Business owner	78.0	47.8	77.5	60.0
From 46 to 55 years	26.9	19.7	38.5	25.3	Business manager	22.0	52.2	22.5	40.0
Aged 55 and older	34.6	17.2	8.8	11.9					

Note: HS - High School; BP - Before Pandemic, DP - During Pandemic. Source: own data.

H1: There are no statistically significant differences:

- in overall structure of assessments (H1A),
- in positive attitudes (A1 + A2) (H1B);
- in statements to a management of: business (ST1), market risk (ST5 and ST6), personnel risk (ST11) and financial risk (ST15);
- between respondents before and during the pandemic in business environment in the Czech Republic (H1A_ST1_CR, ..., H1B_ST15_CR) and in the Slovak Republic (H1A_ST1_SR, ..., H1B_ST15_SR).

H2: There are no statistically significant differences:

- in overall structure of assessments (H2A),
- in positive attitudes (A1 + A2) (H2B);
- in statements to a management of: business (ST2, ST3, ST4), market risk (ST7, ST8, ST9 and ST10) depending on a respondent's country during the pandemic.

H3: There are no statistically significant differences:

- in overall structure of assessments (H3A),
- in positive attitudes (A1 + A2) (H3B);
- in statements to a management of personnel risk (ST12, ST13, ST14) and financial risk (ST16) depending on a respondent's country during the COVID-19 pandemic.

The 'Chi-square calculator for 5×5 (or less) Contingency table' (verification of H1A, H2A, H3A) was used to assess the statistically significant differences between selected numbers of respondents depending on a period of research and nationality

of a respondent. The Contingency tables (see e.g., Tables 2–6) contain absolute and relative variance. The Pearson's Chi-squared test consisted of a calculation of theoretical variances and subsequent comparison with empirical variances in order to calculate the test criterion (Agresti, 1992). A minimum variance at level 5 for each group of respondents in the contingency table was a prerequisite for the application of the Pearson's Chi-squared test. If p-value of the Chi-squared test was higher than significance level ($\alpha = 5\%$), then it was not possible to reject the null hypothesis (Goodman, 1970). Test significance depends on allocation ratio of actual and forecast variances (Wald, 1943; Wallis, 2013). A range of selection file is influenced by a reliability of empirical results (Baglivo et al., 1988). 'The z-test calculator for 2 population proportions' verified significant differences in respondents' variance with positive attitudes to the statements (A1 + A2) according to selected criterion. If p-value from the z-test is higher than α (5%), then it is not possible to reject a hypothesis (verification of H1B, H2B, H3B). All empirical results with applying the Chi-square test were verified also a non-parametric approach (type of answers are nominal variables; Kruskal-Wallis test – see appendix). The software SPSS Statistics processed all calculations.

3.4. Demographic structure of SMEs

Summary and characteristics of research samples in both periods of research:

The first period of research:

n = 822 SMEs (454 in the Czech Republic, 368 in the Slovak Republic).

The second period of research:

n = 680 SMEs (360 in the Czech Republic, 320 in the Slovak Republic).

Overall number of respondents in both periods of research was 1502 SMEs (54.7% the first period of research, 45.3% the second period of research).

Also, it is important to understand the structure of these basic groups of respondents in both countries: the Czech Republic (CR) and the Slovak Republic (SR).

4. Results

This chapter contains the analysis' results that are divided into four areas, which focus on a management of business, market risk, personnel risk, and financial risk. These areas were selected to examine the primary aim of this research, while they fully correspond with areas that are defined in the international research studies. Chapter 2 provides an overview of research studies, including a part of these international studies. Table 2 contains the results of descriptive statistics of the research samples according to the period of research and nationality.

4.1. Business management

Table 3 illustrates respondents' attitudes to intensity of focus on business according to the basic research perspectives – two periods of research (before the pandemic and during the pandemic), and according to the regional perspective (CR and SR).

Table 2. Selected descriptive characteristics of statements.

	Statements (ST)										
	ST2	ST3	ST4	ST7	ST8	ST9	ST10	ST12	ST13	ST14	ST16
SR (DP)	n	320	320	320	320	320	320	320	320	320	320
	Me.	4	2	2	2	2	3	3	3	3	2
	Mo.	4	2	2	2	1	1	3	2	4	2
	SD	1.316	1.073	1.062	1.272	0.751	1.710	0.959	1.222	1.113	0.986
	Min.	1	1	1	1	1	1	1	1	1	1
	Max.	5	5	5	5	3	6	5	5	5	5
CR (DP)	n	360	360	360	360	360	360	360	360	360	360
	Me.	4	2	2	2	2	3	3	3	3	2
	Mo.	4	2	2	2	1	1	3	2	2	2
	SD	1.299	1.196	1.039	0.996	0.770	1.706	1.011	1.110	1.122	0.924
	Min.	1	1	1	1	1	1	1	1	1	1
	Max.	5	5	5	5	3	6	5	5	5	5
CR (BP)	ST	ST1	ST5	ST6	ST11	ST15	ST1	ST5	ST6	ST11	ST15
	n	454	454	454	454	454	360	360	360	360	360
	Me.	2	2	2	2	2	2	2	2,5	2	2,5
	Mo.	1	2	2	2	2	2	2	2	2	2
	SD	1.244	1.022	1.085	1.140	0.989	1.116	1.007	0.972	0.984	1.026
	Min.	1	1	1	1	1	1	1	1	1	1
	Max.	5	5	5	5	5	5	5	5	5	5
SR (BP)	ST	ST1	ST5	ST6	ST11	ST15	ST1	ST5	ST6	ST11	ST15
	n	368	368	368	368	368	320	320	320	320	320
	Me.	2	3	2	3	2	2	2	2	2	3
	Mo.	1	2	2	2	2	2	2	2	2	2
	SD	1.092	0.944	0.996	1.096	0.987	1.073	1.037	1.017	1.049	1.044
	Min.	1	1	1	1	1	1	1	1	1	1
	Max.	5	5	5	5	5	5	5	5	5	5

Note: CR – Czech Republic; SR – Slovak Republic; BP – Before Pandemic; DP – During Pandemic; Me. – Median; Mo. – Mode; SD – Standard deviation; Min. – Minimum; Max. – Maximum; n – Number of respondents. Source: own data.

Table 3. Respondent spends more than 8 hours per day doing business (ST1).

Countries Covid-19	The Czech Republic (CR)		The Slovak Republic (SR)		Z-test (p-value)
	BP	DP	BP	DP	
A1 (%)	204 (44.9)	81 (22.5)	155 (42.1)	74 (23.1)	CR: BP/DP
A2 (%)	107 (23.6)	155 (43.1)	113 (30.7)	147 (45.9)	(A1 + A2)
A3 (%)	74 (16.3)	53 (14.7)	54 (14.7)	44 (13.8)	0.889
A4 (%)	39 (8.6)	56 (15.6)	37 (10.0)	44 (13.8)	(0.373)
A5 (%)	30 (6.6)	15 (4.1)	9 (2.5)	11 (3.4)	SR: BP/DP
n	454	360	368	320	(A1 + A2)
Chi-square (p-value)	63.383 (0.00001)*		31.728 (0.00001)*		1.086 (0.276)

Note: BP - Before Pandemic; DP - During Pandemic; * Statistically significant on $\alpha=5\%$; n - Number of respondents. Source: own data.

Table 4. Respondents' perception of other statements to business management during the pandemic.

Type of Answer	ST2		ST3		ST4		Z-test (A1 + A2) (p-value)
	CR	SR	CR	SR	CR	SR	
A1 (%)	29 (8.1)	36 (11.3)	91 (25.3)	88 (27.5)	59 (16.4)	44 (13.8)	ST2: CR/SR
A2 (%)	78 (21.7)	50 (15.6)	128 (35.6)	120 (37.5)	143 (39.7)	139 (43.4)	0.822 (0.412)
A3 (%)	61(16.9)	50 (15.6)	59 (16.4)	32 (10.0)	98 (27.2)	75 (23.4)	ST3: CR/SR
A4 (%)	98 (27.2)	105 (32.8)	62 (17.2)	58 (18.1)	45 (12.5)	43 (13.4)	-1.122 (0.263)
A5 (%)	94 (26.1)	79 (24.7)	20 (5.5)	22 (6.9)	15 (4.2)	19 (6.0)	ST4: CR/SR
n	360	320	360	320	360	320	-0.283 (0.779)
Chi-square (p-value)	7.183 (0.127)		6.217 (0.184)		3.474 (0.482)		

Note: n - Number of respondents; CR - Czech Republic, SR - Slovak Republic. Source: own data.

Table 5. Business uses innovative ways to obtain new markets and to retain the existing customers (ST6).

Countries Covid-19	The Czech Republic (CR)		The Slovak Republic (SR)		Z-test (p-value)
	BP	DP	BP	DP	
A1 (%)	79 (17.4)	29 (8.0)	61 (16.6)	29 (9.1)	CR: BP/DP
A2 (%)	150 (33.0)	151 (41.9)	125 (34.0)	141 (44.1)	(A1 + A2)
A3 (%)	137 (30.2)	110 (30.6)	119 (32.3)	85 (26.6)	0.125 (0.904)
A4 (%)	66 (14.5)	55 (15.3)	57 (15.5)	48 (15.0)	
A5 (%)	22 (4.9)	15 (4.2)	6 (1.6)	17 (5.2)	SR: BP/DP (A1 + A2)
n	454	360	368	320	
Chi-square (p-value)	17.810 (0.001)*		20.793 (0.0003)*		0.676 (0.497)

Note: BP - Before Pandemic; DP - During Pandemic; * Statistically significant on $\alpha=5\%$; n - Number of respondents. Source: own data.

Results in Table 3 show the difference of overall structure in respondents' answers in both countries that relates to an increased difficulty in a management of business activities of the companies caused by the pandemic crisis (CR - BP/DP: p-value = 0.00001; SR - BP/DP: p-value = 0.00001). The hypotheses, H1A_ST1_CR and H1A_ST1_SR, were rejected. Results did not confirm differences in a variance of respondents in positive attitudes (A1 + A2) due to the pandemic (CR - BP/DP: p-value of Z-test = 0.373; SR - BP/DP: p-value of Z-test = 0.276). The hypotheses, H1B_ST1_CR and H1B_ST1_SR, were not rejected.

Table 4 provides respondents' attitudes to other statements of business management (ST2, ST3, ST4) during the pandemic depending on a country.

Table 6. Respondents' assessment of other statements to market risk management.

T.A.	ST7		ST8		ST9		ST10	
	CR	SR	CR	SR	CR	SR	CR	SR
A1 (%)	56 (15.6)	39 (12.2)	21 (5.8)	27 (8.4)	156 (43.3)	143 (44.7)	98 (27.2)	82 (25.6)
A2 (%)	204 (56.7)	174 (54.4)	96 (26.7)	90 (28.1)	129 (35.8)	118 (36.9)	63 (17.5)	45 (14.1)
A3 (%)	41 (11.4)	36 (11.2)	69 (19.2)	54 (16.9)	75 (20.9)	59 (18.4)	78 (21.7)	67 (20.9)
A4 (%)	47 (13.0)	56 (17.5)	113 (31.4)	88 (27.5)			46 (12.8)	50 (15.6)
A5 (%)	12 (3.3)	15 (4.7)	61 (16.9)	61 (19.1)			75 (20.8)	76 (23.8)
n	360	320	360	320	360	320	360	320
Chi-S.	4.530 (0.339)		3.542 (0.472)		0.615 (0.735)		3.088 (0.543)	
p-value								
			Chi-S.		Chi-S.		Chi-S.	
			p-value		p-value		p-value	

Note: T.A. – Type of answer; n – Number of respondents; CR – Czech Republic, SR – Slovak Republic; Chi-S. – Chi-Square test. Source: own data.

The results (see Table 4) did not show the differences of overall structure in respondents' answer to selected statements (ST2, ST3, ST4) due the country of businesses (ST2: p-value of Chi-square test = 0.127; ST3: p-value of Chi-square test = 0.184; ST4: p-value of Chi-square test = 0.482). The hypotheses H2A_ST2, H2A_ST3, H2A_ST4 were not rejected. Also, there were no statistically significant differences in a variance of respondents in positive attitudes (A1 + A2) to selected statements due to the country of the respondent during pandemic (ST2 - CR/SR: p-value of Z-test = 0.412; ST3 - CR/SR: p-value of Z-test = 0.263; ST4 - CR/SR: p-value of Z-test = 0.779). The hypotheses H2B_ST2, H2B_ST3, H2B_ST4 were not rejected.

4.2. Market risk management

This part focuses on analysis and assessment of the research statement ST5.

Respondents' structure according to the number of responses depending on the research perspectives (period of research, respondent's country) is stated as follows:

Before the pandemic in CR/during the pandemic in CR/before the pandemic in SR/during the pandemic in SR) in absolute (relative) number:

A1 - 72/32/33/26 (15.9/8.9/9.0/8.1);

A2 - 187/174/145/152 (41.1/48.3/39.3/47.5);

A3 - 133/67/122/58 (29.3/18.6/33.2/18.1);

A4 - 39/77/58/71 (8.6/21.4/15.8/22.2);

A5 - 23/10/10/13 (5.1/2.8/2.7/4.1).

Significant differences in overall structure of variances of respondents before the pandemic and during the pandemic in CR were confirmed by the results obtained (BP/DP: the Chi-squared = 44.974; p-value = 0.00001) and in SR (BP/DP: the Chi-squared = 22.212; p-value = 0.0002). The hypotheses H1A_ST5_CR and H1A_ST5_SR were rejected.

The number of positive responses (A1 + A2) to ST5 was as follows: before the pandemic in CR - 259 (57.0%); during the pandemic in CR - 206 (57.2%); before the pandemic in SR - 178 (48.4%); during the pandemic in SR - 178 (55.6%). There were no significant differences between respondents in positive attitudes (A1 + A2) to the statement, ST5, in both countries (CR - BP/DP: Z-test = -0.050; p-value = 0.960; SR - BP/DP: Z-test = -1.900; p-value = 0.057). The hypotheses H1B_ST5_CR and H1B_ST5_SR were not rejected.

Table 5 shows a structure of the respondents' attitudes to the statement ST6 depending on the research perspectives.

Table 5 provides results that show the pandemic impact on overall structure of respondents' attitudes to ST6 in CR and in SR (CR - BP/DP: p-value = 0.001; SR - BP/DP: p-value = 0.0003). The hypotheses H1A_ST6_SR and H1A_ST6_CR were rejected. On the other hand, the results did not confirm any differences in a variance of respondents in positive attitudes (A1 + A2) due to the pandemic in both countries (CR - BP/DP: p-value of Z-test = 0.904; SR - BP/DP: p-value of Z-test = 0.497). The hypotheses, H1B_ST6_CR and H1B_ST6_SR, were not rejected.

Table 6 contains a structure of the respondents' variances according to answer type to other statements that are related to market risk management (ST7, ST8, ST9 and ST10) according to a respondent's country during the pandemic.

The results (see Table 6) did not show the differences of overall structure in respondents' answer to selected statements (ST7, ..., ST10) due the country of businesses (ST7/ST8/ST9/ST10: p-values of Chi-square test = 0.339/0.472/0.735/0.543). The hypotheses H2A_ST7, H2A_ST8, H2A_ST9 and H2A_ST10 were not rejected.

Also, there were no statistically significant differences in a variance of respondents in positive attitudes (A1 + A2) to selected statements (ST7, ST8) due to the country of the respondent during pandemic (ST7 – CR/SR: p-value of Z-test = 0.110; ST8 – CR/SR: p-value of Z-test = 0.267). The hypotheses H2B_ST7, H2B_ST8 were not rejected.

4.3. Personnel risk management

This subchapter primarily deals with analysis and assessment of the research statement, ST11.

The respondents' structure according to number of responses that depend on the research perspectives (period of research, respondent's country) is listed as follows:

Before the pandemic in CR/during the pandemic in CR/before the pandemic in SR/during the pandemic in SR) in absolute (relative) number:

A1 – 61/38/48/26 (13.4/10.6/13.0/8.1);

A2 – 170/165/122/136 (37.4/45.8/33.2/42.5);

A3 – 115/98/98/72 (25.4/27.2/26.6/22.5);

A4 – 70/43/82/70 (15.4/11.9/22.3/21.9);

A5 – 38/16/18/16 (8.4/4.5/4.9/5.0).

Significant differences in overall structure of the respondents' variance before and during the pandemic in CR were confirmed by the results obtained (BP/DP: the Chi-squared = 11.487; p-value = 0.022). On contrary, in SR, these differences were not confirmed (BP/DP: the Chi-squared = 9.037; p-value = 0.060). The hypothesis H1A_ST11_CR was rejected. On the other hand, the hypothesis H1A_ST11_SR was not rejected.

Number of positive responses (A1 + A2) to the statement, ST11, was as follows: before the pandemic in CR – 231 (50.9%); during the pandemic in CR– 203 (56.4%); before the pandemic in SR – 170 (46.2%); during the pandemic in SR – 162 (50.6%). The significant differences between the respondents in positive attitudes to the statement, ST11, in both countries were not confirmed (CR – BP/DP: Z-test = 1.564; p- value = 0.188; SR – BP/DP: Z-test = -1.160; p- value = 0.246). The hypotheses H1B_ST11_CR and H1B_ST11_SR were not rejected.

Table 7 provides the respondents' attitudes to other statements of personnel risk management (ST12, ST13, ST14) according to a respondent's country during the pandemic.

Table 7. Assessment of other statements to personnel risk management during the pandemic.

Type of Answer	ST12		ST13		ST14		Z-score (A1 + A2) (p-value)
	CR	SR	CR	SR	CR	SR	
A1 (%)	29 (8.1)	17 (5.3)	26 (7.2)	19 (5.9)	25 (6.9)	10 (3.1)	ST12:CR/SR
A2 (%)	100 (27.8)	99 (30.9)	144 (40.0)	121 (37.8)	119 (33.1)	86 (26.9)	0.822 (0.412)
A3 (%)	143 (39.7)	119 (37.2)	83 (23.1)	49 (15.3)	105 (29.2)	76 (23.8)	ST13:CR/SR
A4 (%)	65 (18.0)	70 (21.9)	75 (20.8)	81 (25.3)	70 (19.4)	99 (30.9)	-1.122 (0.263)
A5 (%)	23 (6.4)	15 (4.7)	32 (8.9)	50 (15.7)	41 (11.4)	49 (15.3)	ST14:CR/SR
n	360	320	360	320	360	320	-0.283 (0.779)
Chi-square (p-value)	4.867 (0.301)		13.719 (0.008)*		19.790 (0.001)*		

Note: * Statistically significant on $\alpha = 5\%$; n – Number of respondents; CR – Czech Republic, SR – Slovak Republic. Source: own data.

The results (see Table 7) did not show the differences of overall structure in respondents' answer to selected statement (ST12) due the country of businesses (ST12: p-value of Chi-square test = 0.301). On other hand, the results show the differences of overall structure in respondents' answer to selected statements (ST13 and ST14) due the country of businesses (ST13/ST14; p-values of the Chi-squared test = 0.008/0.001). The hypothesis H3A_ST12 was not rejected, while the hypotheses H3A_ST13, H3A_ST14 were rejected.

Also, there were no statistically significant differences in a variance of respondents in positive attitudes (A1 + A2) to selected statements (ST12, ST13, ST14) due to the country of the respondent during pandemic (ST12 – CR/SR: p-value of Z-test = 0.412; ST13 – CR/SR: p-value of Z-test = 0.263; ST14 – CR/SR: p-value of Z-test = 0.779). The hypotheses H3B_ST12, H3B_ST13, H3B_ST14 were not rejected.

4.4. Financial risk management

This subchapter analyses and assesses the research statement, ST15.

The respondents' structure according to number of responses that depend on the research perspectives (period of research, respondent's country) is stated as follows:

Before the pandemic in CR/during the pandemic in CR/before the pandemic in SR/during the pandemic in SR) in absolute (relative) number:

A1 – 105/27/64/21 (23.1/7.5/17.4/6.6);

A2 – 200/153/170/117 (44.1/42.5/46.2/36.5);

A3 – 103/92/76/94 (22.7/25.6/20.7/29.4);

A4 – 31/69/51/66 (6.8/19.2/13.9/20.6);

A5 – 15/19/7/22 (3.3/5.2/1.8/6.9).

The results confirmed significant differences in overall structure of the respondents' variance before the pandemic and during the pandemic in CR (BP/DP: the Chi-squared = 57.796; p-value = 0.00001), and in SR (BP/DP: the Chi-squared = 39.974; p-value = 0.00001). The hypotheses H1A_ST15_CR and H1A_ST15_SR were rejected. The number of positive responses (A1 + A2) to ST15 was as follows: before the pandemic in CR – 305 (67.2%); during the pandemic in CR – 180 (50.0%); before the pandemic in SR – 234 (63.4%); during the pandemic in SR – 138 (43.1%). The

Table 8. The results of Kruskal-Wallis tests.

	ST1				ST5				ST6				ST11															
	CR		SR		CR		SR		CR		SR		CR		SR													
CH	BP	DP	BP	DP	BP	DP	BP	DP	BP	DP	BP	DP	BP	DP	BP	DP												
N	454	360	368	320	454	360	368	320	454	360	368	320	454	360	368	320												
>Me	143	124	100	99	195	154	190	142	225	180	182	150	223	157	100	86												
<=Me	311	236	268	221	259	206	178	178	229	180	186	170	231	203	268	234												
K-W	19.605***		16.044***		3.914*		3.807*		4.570*		4.069*		4.274*		3.173													
CH	ST15				ST2				ST3				ST4				ST7				ST8				ST9			
	CR		SR		CR		SR		CR		SR		CR		SR		CR		SR		CR		SR		CR		SR	
N	454	360	368	320	320	360	320	360	320	360	320	360	320	360	320	360	320	360	320	360	320	360	320	360	320	360	320	360
>Me	149	180	134	182	79	94	112	141	137	158	107	100	149	174	59	75												
<=Me	305	180	234	138	241	266	208	219	183	202	213	260	171	186	261	285												
K-W	46.63***		36.532***		0.181		1.259		0.080		2.563		0.213		0.615													
CH	ST10				ST12				ST13				ST14				ST16											
	CR		SR		CR		SR		CR		SR		CR		SR		CR		SR		CR		SR		CR		SR	
N	320	360	320	360	320	360	320	360	320	360	320	360	320	360	320	360												
>Me	126	121	85	88	131	107	148	111	129	139																		
<=Me	194	239	235	272	189	253	172	249	191	221																		
K-W	2.401		0.401		9.367**		17.075***		0.205																			

Note: CH – Characteristics; Me – Median; n – Number of respondents; CR – Czech Republic, SR – Slovak Republic; K-W – Kruskal-Wallis test; * Statistically significant on $\alpha=5.0\%$; ** Statistically significant on $\alpha=1.0\%$; *** Statistically significant on $\alpha=0.1\%$. Source: own data.. Source: own data.

significant differences between respondents in positive attitudes to the statement ST15 in both countries were confirmed (CR – BP/DP: Z-test = 4.961; p-value = 0.0000; SR – BP/DP: Z-test = 5.372; p-value = 0.0000). However, the hypotheses H1B_ST15_CR and H1B_ST15_SR were rejected.

The research statement, ST16, assessment.

Respondents' structure according to number of answers that depend on the research perspectives (period of research, respondent's country) is listed as follows:

Before the pandemic in CR/during the pandemic in CR/before the pandemic in SR/during the pandemic in SR) in absolute (relative) number:

A1 – 40/32 (11.1/10.0);

A2 – 181/159 (50.3/49.7);

A3 – 88/80 (24.4/25.0);

A4 – 42/32 (11.7/10.0);

A5 – 9/17 (2.5/5.3).

The results did not confirm any significant differences in overall structure of the respondents' variance depending on a country (CR/SR: Chi-square = 4.168; p-value = 0.384). Number of positive attitudes (A1 + A2) to ST16 was as follows: during the pandemic in CR – 221 (61.4%); during the pandemic in SR – 191 (59.7%). Also, there do no statistically significant differences between the respondents in positive attitudes to the statement, ST16, during the pandemic (CR/SR: Z-test = 0.453; p-value = 0.652). The hypotheses H3A_ST16 and H3B_ST16 were not rejected.

The results with applying the Kruskal-Wallis tests confirmed (see appendix) the correctness of evaluation of formulated hypotheses with applying the Chi-square tests.

5. Discussion

The analyses' results presented interesting findings that represent a valuable platform for a creation of the concepts of strategic planning for competent authorities, and also for various regional clusters and institutions that focus on a support of SMEs business environment development. The results are summarised from subchapters 4.1 – 4.4.

The Czech entrepreneurs do business (for more than 8 hours) in both periods of research (before/during the pandemic – A1 + A2: 68.5%/65.6%) at approximately the same level as the Slovak entrepreneurs (before/during the pandemic – A1 + A2: 62.8%/69.0%). There are only 29.8% of the Czech entrepreneurs and 26.9% of the Slovak entrepreneurs who stated that intensity of their business activities increased at least by 30% in comparison to a period before the pandemic. Also, 60.9% of SMEs in CR and 65.0% of SMEs in SR were forced to make significant changes in the organisation of activities due to the pandemic. The on-line marketing tools and social networks are considered as the most important factors to reduce a probability of a company's bankruptcy by 56.1% of SMEs in CR and by 57.2% of SMEs in SR. However, an influence of a respondent's country was not confirmed in the above-mentioned statements.

The following facts were determined in a research of market risk: the entrepreneurs more negatively perceived a lack of marketing for their companies during the pandemic as opposed to the period before the pandemic. In the business environment in CR, the lack of marketing increased of more than 9.5% (increase from 13.7% to 24.2%), and in the business environment in SR, it increased of 8.0% (increase from 18.5% to 26.5%). Negative pandemic effects were confirmed in both countries. Every second SME stated that it used innovative tools to obtain new markets and to retain existing customers (CR/SR before the pandemic = 50.4%/50.6%; CR/SR during the pandemic = 39.6%/53.2%). In this case, the pandemic effects were not confirmed in any of these countries.

The entrepreneurs in both countries (A1 + A2 – CR/SR = 72.3%/68.8%) declared that the pandemic effects on their companies are obvious, but not liquidating. Similarly, one third of SMEs stated that a company transformed into electronic distribution of goods and services in relation to the pandemic (A1 + A2 – CR/SR = 32.5%/36.5%). Further, almost 20.8% of SMEs in CR and 23.8% of SMEs in SR assumed that their earnings decreased year-over-year of more than 41%. However, an influence of a respondent's country was not confirmed in the above-mentioned statements.

Personnel risk is also very important. In many studies, it was considered as the most critical factor for maintaining a company's existence. The Czech entrepreneurs more positively perceive personnel risk adequacy without any negative impacts on their businesses (A4 + A5: before the pandemic = 23.8% and during the pandemic = 16.4%). The COVID-19 pandemic positive impact on a perception of personnel risk in CR was confirmed as opposed to SR. Every third entrepreneur (A1 + A2: CR = 35.9%; SR = 36.2%) declared that personnel risk significance on a business activity was reduced during the pandemic. However, an influence of a respondent's country was not confirmed. The economic measures of the government that focus on fighting

coronavirus are considered as sufficient by only 30% of entrepreneurs in SR and by 40% of entrepreneurs in CR. Entrepreneur's country as a research factor was statistically significant.

Also, financial performance is an important factor that may quantify economic pandemic effects on the companies' function and existence. SMEs entrepreneurs more negatively perceived financial performance of their companies during the pandemic as opposed to the period before the pandemic. Financial performance decreased of 17.2% (A1 + A2: from 67.2% to 50.0%) in the business environment in CR and of 20.3% (A1 + A2: from 63.4% to 43.1%) in the business environment in SR. Negative pandemic impacts were confirmed in both countries. Six out of ten entrepreneurs stated that they are able to manage the financial risk during the pandemic. However, an influence of a respondent's country was not confirmed.

The pandemic crisis has a different character, progress and unpredictable impacts in contrast to previous crises. Thus, an elimination of its consequences has to be systematic, the measures have to be created and implemented at both, macro and micro-levels, and they have to have national and international dimension. Also, it has multiple dimensions – organisational, managerial and political when taking the national aspect of the pandemic crisis impacts' solution into account. In this context, Dobrowolski (2017) draws attention to the risk of ethnic crises' creation. Many companies have had their own crisis management during and before the pandemic, however none of the crisis scenarios, the crisis systems (mechanisms), and/or a company's crisis management may solve a crisis, where the economic risks of the countries prevail. There are many authors who argue over a significance of crisis scenarios' development for the companies. However, majority of these authors consider retrospective data, and subsequently, these crisis scenarios have frequently basis on unreal assumptions. The pandemic crisis that has started in March 2020 was unpredictable. Consequently, it was impossible to predict any of its effects on the worldwide economy.

Companies have to have high-quality emergency and/or crisis plans that are part of their strategic management systems. It is necessary to assess them regularly, and to create optimal models of strategic management that would reflect on unpredictable, and less unpredictable risks (Chang et al., 2008; Christensen et al., 2012; Dobrowolski, 2017, 2020). However, the pandemic scenarios have not been applied in the strategic management models of the companies yet. Although, there were pandemics in the past in some parts of the world, they were not global, and they did not have such negative economic, health and social effects.

Therefore, it is important to institutionalise the thinking in crisis prevention and to focus as on crisis responses, so its effects' solutions at micro-level (from a company's perspective). As Jaques (2010) states in his study, it is necessary to implement crisis itself into development scenarios of a company as inevitable and planned phenomenon. Many research studies that deal with reactions of the economic subjects in the economic system provide experiences with solving crisis effects in a short-term, and also long-term period (Ajaz Khan et al., 2019; Alves et al., 2020; Åslund, 2020, Megyesiova & Lieskovska, 2018; Čižo et al., 2020). The authors examined adaptability of developed models on the economic conditions of different countries in order to

create multiple recommendations that are verified by practice, and to share valuable knowledge, to create prevention processes that would be updated in the context of a company's strategy, its efficiency, success, and vulnerability.

Some of SMEs showed their adaptability to their operations in alternative conditions in a very short period of time (on-line regime of satisfying new demands, etc.) even the pandemic crisis impacted all sectors. The partial results of this study's analyses prove it. In the future, SMEs will need to flexibly respond to any unpredictable future events and to mitigate the economic risks by various alternative operation models (Dvorský et al., 2019; Ik & Azeez, 2020; Srovnalíková et al., 2020). However, many companies have remained dependent on the government support that was just temporary, short-term, and/or insufficient and especially finite, when considering a range of economic compensation help, in some countries. Thus, the bankruptcy risks have not been removed, but have been postponed in many companies. Some authors argue that there is a need to create targeted government support that would be differentiated from multiple perspectives to have the highest effect (e.g., Aribisala & Olufolarin, 2020; Bouer, 2020; Cepel et al., 2020; Humphries et al., 2020; Juergensen et al., 2020 and others). These conclusions emerge from a standardisation processes in support mechanisms of individual governments that have not always brought the expected effects. Also, some authors assume that weak signals that would indicate impending crisis will not be ignored and social capital will be of higher importance as a consequence of catastrophic impacts of the COVID-19 pandemic (Cepel et al., 2020; Dobrowolski, 2020a).

The study's results represent valuable information for a creation of national and regional policies that focus on SMEs support, and also for institutions that deal with an improvement of a high-quality business environment and regional development.

6. Conclusion

The primary aim of this study was to research and to quantify the COVID-19 pandemic crisis impacts on selected areas of companies' management in SMEs in the Czech Republic and in the Slovak Republic. The empirical research results show significant differences in overall structure of attitudes to selected statements of business, market, personnel and financial risk management due to the pandemic in both countries. The most negative COVID-19 pandemic effects were determined in the respondents' attitudes to a positive assessment of financial performance of a company in CR (before/during the pandemic – 67.2%/50.0%) and in SR (before/during the pandemic – 63.4%/43.1%). In CR, the entrepreneurs in SMEs (40.0%) more positively perceived a statement that government measures may help businesses to survive in contrast to the entrepreneurs in SMEs in SR (30.0%). However, the entrepreneurs in SMEs identically perceived other aspects of business management and business risks management during the pandemic. The research focussed only on two countries, the Czech Republic and the Slovak Republic, which may represent the study's limitation in SMEs sector. There are strong economic, societal and social links between these two countries since the separation. Thus, a research of differences between both countries may reveal the reasons of a different risk perception and impacts of new

factors that were not involved in the primary research assumptions. Also, the selected statistical methods have their limitations. However, the t-test results are identical with the study's results. These results provide a valuable platform for a creation of policies, and concepts for strategic plans that focus on structural reforms for economic recovery and municipalities in both countries. Similarly, the results enable to create prediction scenarios and models to manage crises that have to have a systematic character. The results also provide an image of entrepreneurs' relationships to different forms of risks, their adaptability to different macro-economic and micro-economic conditions, and flexibility level for the policies' creators. This flexibility level is important in the phase of SMEs survival, and also in the process of use of support mechanisms, innovation programs, and transformation changes in the companies during the crisis.

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Data availability statement

The first period of research: The CRIBIS database (universal register of companies, organisations and self-employed in CR and in SR) was used to create the database of SMEs, while the database provided the SMEs contact data. The selection file obtained represented 5% of all the companies in a given region. The selected companies were contacted via e-mail in order to fill in the on-line questionnaire. Totally, in the Czech Republic, there were contacted 8.250 SMEs and 10.100 SMEs in the Slovak Republic. In the Czech Republic, the number of returned filled in questionnaires was 5.5%, while in the Slovak Republic it was 3.6%. The first part of researched material (electronic questionnaire) contained demographic questions, and the second part included researched statements that focus on the selected areas of the corporates' governance. The ratio between the number of correctly and incorrectly filled in questionnaires

was represented by 97.5%/2.5% of respondents. The questionnaires with not consistent attitudes of the respondent on selected statements were excluded from the following quantitative analysis.

The second period of research (during the pandemic): Similarly, the collection of the primary data was done via electronic form using the MNFORCE SK & CZ panel (external organisation for support for the data collection and market research). In the Czech Republic, the research sample contained 360 respondents, while there were 320 respondents in the Slovak Republic. The main criterion was defined in a formation of selection files as a maximum number of self-employed at a level of 60%.

References

- Agresti, A. (1992). A survey of exact inference for contingency tables. *Statistical Science*, 7(1), 131–153. <https://doi.org/10.1214/ss/1177011454>
- Ajaz Khan, K., Çera, G., & Nėtek, V. (2019). Perception of the Selected Business Environment Aspects by Service Firms. *Journal of Tourism and Services*, 10(19), 111–127. <https://doi.org/10.29036/jots.v10i19.115>
- Al-Fadly, A. (2020). Impact of COVID-19 on SMEs and employment. *Entrepreneurship and Sustainability Issues*, 8(2), 629–648. [https://doi.org/10.9770/jesi.2020.8.2\(38\)](https://doi.org/10.9770/jesi.2020.8.2(38))
- Alves, J. C., Lok, T. C., Luo, Y. B., & Hao, W. (2020). Crisis management for small business during the COVID-19 outbreak: survival, resilience and renewal strategies of firms in Macau. *Frontiers of Business Research in China*, 14, 26. <https://doi.org/10.1186/s11782-020-00094-2>
- Aribisala, A., & Olufolarin, O. (2020). Economic impact of COVID-19 lock down on small medium enterprise (smes) in lagos state. *International Journal on Integrated Education*, 3(7), 62–68. <https://doi.org/10.31149/ijie.v3i7.490>
- Åslund, A. (2020). Responses to the COVID-19 crisis in Russia, Ukraine, and Belarus. *Eurasian Geography and Economics*, 61(4-5), 532–514. <https://doi.org/10.1080/15387216.2020.1778499>
- Baglivo, J., Olivier, D., & Pagano, M. (1988). Methods for the analysis of contingency tables with large and small cell counts. *Journal of the American Statistical Association*, 83(404), 1006–1013. <https://doi.org/10.1080/01621459.1988.10478692>
- Belanová, K. (2020). Impact of corona crisis on SMEs in the Slovak Republic. *International Journal of Social Sciences and Education Research*, 6(2), 150–156. <https://dergipark.org.tr/tr/pub/ijsser https://doi.org/10.24289/ijsser.754130>
- Besenyő, J., & Kármán, M. (2020). Effects of COVID-19 pandemy on African health, political and economic strategy. *Insights into Regional Development*, 2(3), 630–644. [https://doi.org/10.9770/IRD.2020.2.3\(2\)](https://doi.org/10.9770/IRD.2020.2.3(2))
- Bouey, J. (2020). Assessment of COVID-19' s impact on small and medium-sized enterprises. implications from China. RAND Corporation. Available online: <https://www.rand.org/pubs/testimonies/CT524.html>
- Cepel, M., Gavurova, B., Dvorsky, J., & Belas, J. (2020). The impact of the COVID-19 crisis on the perception of business risk in the SME segment. *Journal of International Studies*, 13(3), 248–263. <https://doi.org/10.14254/2071-8330.2020/13-3/16>
- Chang, S. I., Tsai, C. F., Shih, D. H., & Hwang, C. L. (2008). The development of audit detection risk assessment system: Using the fuzzy theory and audit risk model. *Expert Systems with Applications*, 35(3), 1053–1067. <https://doi.org/10.1016/j.eswa.2007.08.057>
- Chaves-Maza, M., & Fedriani Martel, E. M. (2020). Entrepreneurship support ways after the COVID-19 crisis. *Entrepreneurship and Sustainability Issues*, 8(2), 662–681. [https://doi.org/10.9770/jesi.2020.8.2\(40\)](https://doi.org/10.9770/jesi.2020.8.2(40))
- Christensen, B. E., Glover, S. M., & Wood, D. A. (2012). Extreme estimation uncertainty in fair value estimates: Implications for audit assurance. *AUDITING: A Journal of Practice & Theory*, 31(1), 127–146. <https://doi.org/10.2308/ajpt-10191>

- Čižo, E., Lavrinenko, O., & Ignatjeva, S. (2020). Analysis of the relationship between financial development and economic growth in the EU countries. *Insights into Regional Development*, 2(3), 645–660. [https://doi.org/10.9770/IRD.2020.2.3\(3\)](https://doi.org/10.9770/IRD.2020.2.3(3))
- Deschryvere, M., Mikkola, M., & Conn, S. (2020). On the structural barriers to public innovation support for SMEs and the opportunity COVID-19 can offer to overcome these barriers. *Journal of Innovation Management*, 8(2), 16–25. https://doi.org/10.24840/2183-0606_008.002_0003
- Dimson, J., Mladenov, Z., Sharma, R., & Tadjeddine, K. (2020). COVID-19 and European small and medium-size enterprises: How they are weathering the storm. <https://www.mckinsey.com/industries/public-and-social-sector/our-insights/covid-19-and-european-small-and-medium-size-enterprises-how-they-are-weathering-the-storm>.
- Dobrowolski, Z. (2017). *Combating corruption and other organisational pathologies*. Peter Lang GmbH, Internationaler Verlag der Wissenschaften.
- Dobrowolski, Z. (2020a). After COVID-19. Reorientation of crisis management in crisis. *Entrepreneurship and Sustainability Issues*, 8(2), 799–810. [https://doi.org/10.9770/jesi.2020.8.2\(48\)](https://doi.org/10.9770/jesi.2020.8.2(48))
- Dobrowolski, Z. (2020b). The supreme audit institutions readiness to uncertainty. *Entrepreneurship and Sustainability Issues*, 8(1), 513–525. [https://doi.org/10.9770/jesi.2020.8.1\(36\)](https://doi.org/10.9770/jesi.2020.8.1(36))
- Dvorský, J., Petráková, Z., & Polách, J. (2019). Assessing the market, financial, and economic risk sources by Czech and Slovak SMEs. *International Journal of Entrepreneurial Knowledge*, 7(2), 30–40. <https://doi.org/10.2478/ijek-2019-0008>
- Eggers, F. (2020). (2020). Masters of disasters? Challenges and opportunities for SMEs in times of crisis. *Journal of Business Research*, 116, 199–208. <https://doi.org/10.1016/j.jbusres.2020.05.025>
- Espitia, A., Rocha, N., & Ruta, M. (2020). COVID-19 and Food Protectionism: The Impact of the Pandemic and Export Restrictions on World Food Markets. Policy Research Working Paper; No. 9253. World Bank, Washington, DC. <https://openknowledge.worldbank.org/handle/10986/33800> License: CC BY 3.0 IGO.
- Gavril, S., Coca, O., Creanga, D. E., Mursa, G. C., & Mihai, C. (2020). The Impact of the Crisis Generated by Covid-19 on the Population Concerns. A comparative Study at the Level of the European Union. *Transformations in Business & Economics*, 19(2B(50B)), 703–719.
- Goodman, L. A. (1970). The multivariate analysis of qualitative data: Interactions among multiple classifications. *Journal of the American Statistical Association*, 65(329), 226–256. <https://doi.org/10.1080/01621459.1970.10481076>
- Gray, R. S. (2020). Agriculture, transportation, and the COVID-19 crisis. *Canadian Agricultural Economics Society*, 68, 239–243 <https://doi.org/10.1111/cjag.12235>
- Humphries, J. E., Neilson, C., & Ulysea, G. (2020). The Evolving Impacts of COVID-19 on Small Businesses Since the CARES Act. Cowles Foundation Discussion Paper No. 2230. NYU Stern School of Business, Available at SSRN: <https://ssrn.com/abstract=3584745> or <http://dx.doi.org/10.2139/ssrn.3584745>
- Ik, M., & Azeez, A. A. (2020). Organisational green behavioural change: The role of Change Management. *International Journal of Entrepreneurial Knowledge*, 8(1), 34–48. <https://doi.org/10.37335/ijek.v8i2.98>
- International Labour Office (ILO). (2020). *Prevention and mitigation of COVID-19 at work for small and medium-sized enterprises. Action checklist and follow up*. International Labour Office – ILO.
- Jaques, T. (2010). Reshaping crisis management: the challenge for organizational design. *Organizational Development Journal*, 28(1), 9–17. <http://www.issueoutcomes.com.au/Websites/issueoutcomes/Images/Reshaping%20crisis%20management%20ODJ.pdf>
- Juergensen, J., Guimón, J., & Narula, R. (2020). European SMEs amidst the COVID-19 crisis: assessing impact and policy responses. *Journal of Industrial and Business Economics*, 47(3), 499–510. <https://doi.org/10.1007/s40812-020-00169-4>

- Karácsony, P. (2020). The impact of the coronavirus (COVID-19) on the employment characteristics of Hungarian SMEs. *Virgil Madgearu Review of Economic Studies and Research*, 13(2), 105–117. <https://doi.org/10.24193/RVM.2020.13.63>
- Kornelius, Y., Dewi Buntuang, P. C., & Biden, C. R. K. (2020). Rethinking of strategy defending small and medium-sized enterprises (SMEs) during COVID-19 pandemic. In *Proceedings of the International Conference on Community Development (ICCD 2020)* (pp. 786–790). <https://doi.org/10.2991/assehr.k.201017.173>
- Mazzanti, M., Mazzarano, M., Pronti, A., & Quatrosi, M. (2020). Fiscal policies, public investments and wellbeing: mapping the evolution of the EU. *Insights into Regional Development*, 2(4), 725–749. [https://doi.org/10.9770/IRD.2020.2.4\(1\)](https://doi.org/10.9770/IRD.2020.2.4(1))
- Megyesiova, S., & Lieskovska, V. (2018). Analysis of the sustainable development indicators in the OECD countries. *Sustainability*, 10(12), 4554. <https://doi.org/10.3390/su10124554>
- Meng, R. C., & Chapman, D. G. (1966). The power of chi square tests for contingency tables. *Journal of the American Statistical Association*, 61(316), 965–975. <https://doi.org/10.1080/01621459.1966.10482187>
- Nurunnabi, M. (2020). Recovery planning and resilience of SMEs during the COVID-19: experience from Saudi Arabia. *Journal of Accounting & Organizational Change*, 16(4), 643–653. <https://doi.org/10.1108/JAOC-07-2020-0095>
- Priyono, A., Moin, A., & Putri, V. N. A. O. (2020). Identifying digital transformation paths in the business model of SMEs during the COVID-19 pandemic. *Journal of Open Innovation: Technology, Market, and Complexity*, 6(4), 104. <https://doi.org/10.3390/joitmc6040104>
- Rathore, U., & Khanna, S. (2020). From Slowdown to Lockdown: Effects of the COVID-19 Crisis on Small Firms in India, <https://ssrn.com/abstract=3615339> or <https://doi.org/10.2139/ssrn.3615339>
- Razumovskaia, E., Yuzvovich, L., Kniazeva, E., Klimenko, M., & Shelyakin, V. (2020). The Effectiveness of Russian government policy to support SMEs in the COVID-19 pandemic. *Journal of Open Innovation: Technology, Market, and Complexity*, 6(4), 160. <https://doi.org/10.3390/joitmc6040160>
- Rezk, M. A., Piccinetti, L., Radwan, A., Salem, N. M., Sakr, M. M., & Khasawneh, A. (2020). Egypt beyond COVID 19, the best and the worst-case scenarios. *Entrepreneurship and Sustainability Issues*, 8(2), 147–162. [https://doi.org/10.9770/jesi.2020.8.2\(9\)](https://doi.org/10.9770/jesi.2020.8.2(9))
- Srovnalíková, P., Semionovaitė, E., Baranskaitė, E., & Labanauskaitė, D. (2020). Evaluation of the impact of sharing economy on hotel business. *Journal of Tourism and Services*, 20(11), 150–169. <https://doi.org/10.29036/jots.v11i20>
- UNCTAD (2020a). Global trade. UNCTAD - Division on International Trade and Commodities, 8. https://unctad.org/system/files/official-document/ditcmisc2020d2_en.pdf
- UNCTAD (2020b). United Nations Conference on Trade and Development. Maximizing sustainable agri-food supply chain opportunities to redress COVID-19 in developing countries UNCTAD, 17. https://unctad.org/system/files/official-document/ditctabinf2020d9_en.pdf
- UNCTAD (2020c). Impact of the COVID-19 pandemic on trade and development: transitioning to a new normal. https://unctad.org/system/files/official-document/osg2020d1_en.pdf
- United Nations (2020). Policy Brief: The impact of COVID-19 on Food Security and Nutrition. United Nations, 23. https://www.un.org/sites/un2.un.org/files/sg_policy_brief_on_covid_impact_on_food_security.pdf
- United Nations Ethiopia (UNE). (2020). Proposal for socio-economic response and recovery in the aftermath of COVID-19, 87. https://unsdg.un.org/sites/default/files/2020-07/ETH_Socioeconomic-Response-Plan_2020.pdf
- Virglerova, Z., Conte, F., Amoah, J., & Massaro, M. R. (2020). The perception of legal risk and its impact on the business of SMEs. *International Journal of Entrepreneurial Knowledge*, 8(2), 1–13. <https://doi.org/10.37335/ijek.v8i2.115>
- Waiho, K., Fazhan, H., Dahlianis Ishak, S., Azman Kasan, N., Jung Liew, J., Norainy, H., & Ikhwanuddin, M. (2020). Potential impacts of COVID-19 on the aquaculture sector of Malaysia and its coping strategies. *Aquaculture Reports*, 18, 100450. <https://doi.org/10.1016/j.aqrep.2020.100450>

- Wald, A. (1943). Tests of statistical hypotheses concerning several parameters when the number of observations is large. *Transactions of the American Mathematical Society*, 54(3), 426–482. <https://doi.org/10.1090/S0002-9947-1943-0012401-3>
- Wallis, S. (2013). Z-squared: The origin and application of χ^2 . *Journal of Quantitative Linguistics*, 20(4), 350–378. <https://doi.org/10.1080/09296174.2013.830554>
- Wang, Y., Hong, A., Li, X., & Gao, J. (2020). Marketing innovations during a global crisis: A study of China firms' response to COVID-19. *Journal of Business Research*, 116, 214–220. <https://doi.org/10.1016/j.jbusres.2020.05.029>
- Wang, Y., & Li, M. (2011). The role of internal audit in engineering project risk management. *Procedia Engineering*, 24, 689–694. <https://doi.org/10.1016/j.proeng.2011.11.2719>
- Wójcik, D., & Ioannou, S. (2020). COVID-19 and finance: Market developments so far and potential impacts on the financial sector and centres. *Tijdschrift voor economische en sociale geografie*, 111(3), 387–400. <https://doi.org/10.1111/tesg.12434>
- WTO. (2020). Helping SMEs Navigate the COVID-19 Crisis, WTO Working Papers, No. 2020/08, WTO, Geneva, 1–8. <https://doi.org/10.30875/2e95e9bf-en>.