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Article

How the COVID-19 Pandemic Changed the Work of Managers: Case Study of Economic Managers

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Abstract: The COVID-19 pandemic has fundamentally changed the business environment in many sectors. This study analyzes how the pandemic and the resulting global economic crisis have influenced changes in management. The aim was to explore changes in the dominance of management functions through the lens of economic managers in various companies. A case study approach was adopted to achieve the research objective. The sample file consisted of 238 managers from various operational fields in the Slovak Republic. A new methodology was created to measure the overall changes. An indicator of the rate of change in the dominance of the management functions was calculated. The index consists of two factors: changes in the time devoted to each management function during the pandemic, and changes in the importance of basic activities performed within the individual management function. This study provides an overview of all industries and describes the changes in the context of a company's revenue development during the pandemic. It was discovered that the centralization of strategic decision making was significantly underestimated. Up to 78.69% of managers working in companies whose revenues decreased during the pandemic increased the time devoted to planning, and 90.98% of them decreased the time devoted to leading people.

Keywords: case study; COVID-19; economic managers; management functions; time management; revenue changes



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1. Introduction

The world has faced unprecedented conditions since the COVID-19 pandemic brought fundamental changes to the global economy. This situation highlights the need to apply the knowledge of general management to everyday work task performance. Some managers who perform their assignments routinely find themselves unprepared to deal with such major changes. The pandemic and consequent economic problems, transcended from national levels to worldwide crisis, showed managers' vulnerabilities and critical areas of their jobs. Managers' reactions differed based on the requirements of the companies and their perceptions of the changing reality. Many managers found themselves making decisions in the context of crisis management with the main goal being salvation of the company. Even though the decline in economies caused by the pandemic and the measures taken in response affected them to such an extent that they endangered their continuance, many managers were able to handle these extraordinary circumstances and react flexibly to them. Such cases clearly illustrate that the companies that pay sufficient attention to the development of their managers' key competences can adapt more swiftly and even turn a crisis into an opportunity. The way individual managers are familiarized with basal management functions can prove to be a key factor for success.

Several pandemics have greatly affected modern economies (Clay et al. 2018; Bristow 2013; Matchim 2019; Hardy 2006). One of the largest in terms of the number of affected companies and the economic consequences was the Spanish influenza pandemic in the second decade of the 20th century. In addition to the number of victims, extensive interventions

were required in economic processes. Institutions and companies were recovering from its influence for a long time, and this challenging process required fundamental changes in their approach to management. However, the management theory at the time was not yet as developed as it is currently, and companies could not rely on the experiences of their managers to accommodate the changes. The impact of the Spanish influenza pandemic was overshadowed by the later economic crisis, which had catastrophic effects on companies. Therefore, it can be concluded that there is no relevant precedence to the current business conditions caused by the COVID-19 pandemic that can be used to draw comparisons and rely on for guidance in the 21st century.

The COVID-19 pandemic has affected every business sector. Some of these sectors were positively influenced, their incomes increased, number of customers grew, and nowadays they are still in green numbers. On the other hand, more businesses have problems impacting their existence, with negative cash flows, employee redundancies and in many cases, with the need for temporary or permanent closure. Managers of these companies must change their work habits quickly. Home offices, new PC tools, skills, and software online meetings are only a few examples of changes that managers had to implement in their daily work routines during the COVID-19 pandemic crisis. Their everyday activities changed significantly and they mainly moved into an online sphere. Nowadays, managers often face the problem of a lack of personal contact with employees, increasing the need for training courses focused on online communication and missing computer skills. All of these factors can have a significant impact on the implementation of management functions. Some management functions became dominant and some were used less intensely. Provided examples have a lot in common, in terms of the inevitable necessity to change the way managers dedicate their time and effort to provide their companies with required continuity in their business operations. Furthermore, the quick response of corresponding managers was identified as one of the key components of their survival. However, what is absent from the existing collection of facts provided by current research studies is the way managers' duties have changed at their core as a reaction to the COVID-19 crisis. This research aims to answer this question by investigating shifts in the dominance of management functions through the lens of certain types of managers who perform similar tasks, regardless of the business sector. Therefore, economic managers in the Slovak Republic were selected as the subjects of this study.

2. Literature Review

COVID-19 was officially labeled as a global pandemic in the first quarter of 2020. The pandemic has brought about a new definition of what we consider everyday life in societies, mainly lockdowns and economic shutdowns worldwide. Social distancing has become a new phenomenon, and working from home has become the new norm for those who are lucky enough to remain employed (Lodhia et al. 2021). Since its outbreak at the start of 2020, the coronavirus (COVID-19) pandemic has spread worldwide. Managers in all sectors of the economy are currently working hard to address these challenges (Abdalla et al. 2022; Veselovská 2020; Münch and Hartmann 2022; Ivanov 2021; McAleer 2020; Danylyshyn 2020; Magableh 2021; Craighead et al. 2020; Mujeeb et al. 2021). The COVID-19-related disruptions have the potential to considerably affect global enterprises worldwide. Its effects on global societies became significant during the early stages of the COVID-19 outbreak (Ivanov 2020). Several service sectors of the economy, such as air passenger transport, tourism, hospitality, and culture, were initially hit the worst by this crisis. Societies have faced unprecedented major economic and social challenges. Historical records show that all major crises, such as wars, famines, and pandemics always bring significant changes that can have long-term effects on societies (Sarkis et al. 2020; Bengtsson and Brommesson 2022). Because each crisis is unique, it is difficult to design and implement solutions to overcome it, both at the level of the economy and for individual businesses (Yu et al. 2020; Mahmoudi et al. 2021). The main problem in finding effective solutions is to identify such measures and predict their effectiveness, since each such undertaking

is unique and few similar examples can be found. The risks to an enterprise facing a pandemic crisis are multifaceted and can cause disruptions that necessitate the complete restructuring of processes and, in extreme cases, even a focus on the enterprise's business (Vanany et al. 2021; Veselovská et al. 2020; Kähkönen et al. 2021; Hohenstein 2022).

Several solutions can be suggested. However, the real potential to overcome this crisis can often be found in an enterprise's internal environment. General management offers an immense assortment of potential options to diminish the impact of an economic crisis caused by an epidemic outbreak. Nevertheless, their outcomes, particularly their long-term effects, are yet to be tested in real business environments. Some practical examples are already available. Oswick et al. (2020) examined the mindset of those who made decisions shortly after a major event or disaster. These authors discovered people's tendency towards cohesion and increased unity, which ultimately makes it easier to take action and implement changes. However, the conditions for success are communication and an acceptable way to lead people. These findings can be applied not only to public organizations, but also to companies that urgently need to adapt to the crisis and strike a new balance. In addition, Majumder et al. (2021) emphasize the need for transparency, not only in communication but also in information management. Decision making based on transparent information must be ensured at any cost. Habanik et al. (2020) examined the relationship between managerial decision making and employee motivation in manufacturing companies. These authors reached the same conclusion, that transparency is a highly effective way to achieve desirable results. These findings can be applied to the current pandemic situation to overcome obstacles and to solve managerial problems. Buhagiar and Anand (2021) proposed a crisis management framework and discovered that during the COVID-19 crisis managers tended to focus more on control and leadership, thus neglecting planning. M. El Khoury et al. (2023) expressed the need for managers to alter even the baseline strategies in light of the evidence on changes in consumer behavior. Other authors, such as Foss (2020) and Hamada (2021), tackled the same issue of increased focus on leadership through the introduction of behavioral strategies targeting employee performance. Mahmoud et al. (2021) similarly focused on leadership in their research, however, they focused on this issue from the perspective of individual employees and provided interesting findings and recommendations on what managers should do to avoid the deterioration of employee performance due to the pandemic. Jónsdóttir et al. (2021) describe organizing as the "invisible work of managers", and as such, many strongly believe in its insignificance. The authors refute these beliefs and provide several examples of necessary and successful changes in the organization of work. Similarly, Valero (2021), Camp et al. (2022), and Palalar Alkan et al. (2022) call for new forms of work organization to discern the elements involved and their impact on quality. According to Selezneva (2020), the pandemic revealed that the present-day system of strategic planning and forecasting of development in Russia can be characterized by low-quality managerial decisions. The author suggests that the solution lies in adopting a new model of systematic control in companies.

Gunessee and Subramanian (2020) and Shao et al. (2022) focused on uncovering how far the neglect of ambiguity during the crisis went, and emphasized the efforts of managers to suppress the consequences of the crisis through the false illusion of control and increased preparation, which transformed into greater pressure on planning. The response to a threat by denying its potential significance and ignoring its consequences is a clear sign of bad leadership. This behavior was observed in many leaders at the state level, as well as in business practice, especially in the early stages of the pandemic (Grint 2020). In such cases, the solution is extremely difficult to implement. Trachsler and Jong (2020) and Watson and Mullen (2020) recommended leadership training and extensive risk management focus. Other authors have also looked for possible solutions to the relationship between decision making and planning on one side and risk management on the other (Watson and Mullen 2020; Nikolopoulos et al. 2021; Wang and Wu 2020). Some authors have explored solutions relying on strategic innovation and critical thinking, introducing new concepts and management systems into the corporate environment (Yigitcanlar et al.

2021; Klauser and Pauschinger 2022). Various authors agree that the onslaught of COVID-19 provides both challenges and opportunities for practice. However, the real success or failure of changes implemented by managers during the troubled times of the COVID-19 crisis remains to be tested. This can be considered a research gap and an opportunity to make considerable contributions, including this research study. Since many authors have suggested that this pandemic has challenged the essential principles of management, the premise of this research is to explore the fundamental tools of management using a relatively homogeneous sample of managers of a certain profession who perform similar work tasks and have teams of employees under their leadership. Economic managers were selected as statistical units to evaluate changes in their management work during the early stages of the pandemic. Economic managers can be found in nearly all enterprises regardless of the sector of the economy. However, the impact of pandemic disruptions on their management work could potentially differ according to the size of the company, business orientation, or the extent to which the company was affected by the consequences of the pandemic.

3. Results

To explore the changes in the dominance of each management function, time management comparison was selected as the primary approach to measure the changes in working time dedicated to performing tasks before and during the pandemic. Economic managers were asked to provide the approximate number of hours they had dedicated to management tasks before the pandemic and then during the pandemic. The data indicate that significant changes occurred in the number of hours per working day during which economic managers performed a management function (Figure 1).

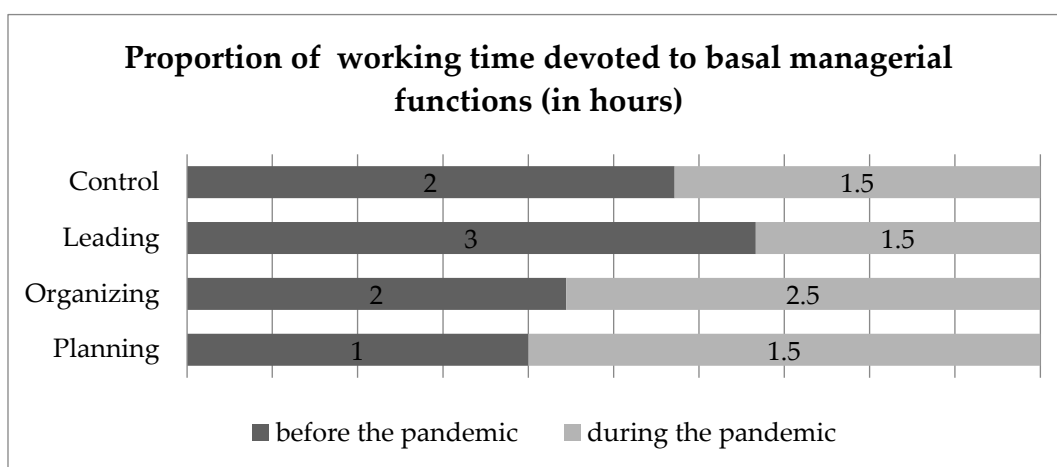


Figure 1. Changes in proportion of working time devoted to basal management functions.

Economic managers clearly needed to dedicate more time to planning and organizing; however, the most significant change was the decrease in time spent leading people. The average time dedicated to this management function decreased by half during the pandemic. Consequently, the time assigned to the control also decreased, although not as steeply. The proportion of working time devoted to each of the basal management functions before and during the pandemic was further analyzed in relation to the size of the company where the economic managers worked.

According to the data provided in Table 1, the highest rate of increase in planning hours was reported in micro or small companies, as up to 76% of economic managers working in these companies had to devote more time to performing this management function during the pandemic. The most significant changes were observed among these companies. Up to 84.11% of managers had decreased the number of hours they spent leading people during the pandemic. As there were no outstanding differences in the

changes in working time devoted to basal management functions among companies of different sizes, it can be concluded that the pandemic affected all companies' economic managers equally.

Table 1. Changes in proportion of working time devoted to basal management functions structured by the size of company.

Change in Working Time Devoted to Basal Management Functions (in % of Economic Managers)		Size of Company of Economic Manager (Based on Number of Employees)		
		Micro and Small	Medium	Large
		(Less than 50)	(51–249)	(250 or More)
Planning	Increase	75.50	66.67	70.83
	Decrease	24.50	33.33	29.17
Organizing	Increase	64.90	60.32	45.83
	Decrease	35.10	39.68	54.17
Leading	Increase	15.89	17.46	16.67
	Decrease	84.11	82.54	83.33
Control	Increase	48.34	22.22	25.00
	Decrease	51.66	77.78	75.00

However, there were two exceptions. The only notable difference in the nationwide trend can be observed in the time devoted to organizing by economic managers working in large companies. Whereas managers in micro-, small-, and medium-sized companies had to significantly increase the time they spent organizing, 54.17% of economic managers from large companies decreased the time devoted to this management function. Moreover, 75% or more of economic managers working in companies with more than 50 employees decreased the time dedicated to control, but what was insignificant was the proportion of economic managers from micro or small companies that decreased the time dedicated to control.

The information provided in Table 2 indicates the extent to which the work task focus changed during the pandemic, compared to the pre-pandemic state, in selected areas. The highest rate of change can be observed in the leadership style that economic managers had to adopt to lead their subordinates. However, only slightly more than half of the economic managers were forced to dedicate more of their efforts to this task (55.46%). Nearly 40% of the economic managers even stated that this task became less important during the pandemic. More than 80% of these managers observed an increase in their basic workload (83.19%), and only 2.52% of them stated that their workload decreased during the pandemic in comparison to the pre-pandemic situation. On the other hand, 58.82% of economic managers observed no significant change in their position in the organizational structure of the company, whereas 18.91% of them were elevated higher in the hierarchy and 22.27% were even deemed less important than before the pandemic.

These findings support those concerning the changes in working time devoted to basal management functions, as previously presented. However, it is important to examine these results through the lens of the economic performance of the manager's company. The changes in revenue during the pandemic were selected as an indicator of the extent of the pandemic's impacts on the company (Table 3).

Changes in revenue indicate how companies were affected by the COVID-19 pandemic and the consequent economic crisis. Since the exact level of impact will only be fully understood when the pandemic is over, economic managers were asked to provide the nature of the changes in revenue during the pandemic. The collected data create an interesting image of the business reality during the initial stages of these troubled times. It was discovered that the majority of companies reported a decrease in revenue during the pandemic (52.21%). Less than 20% of the companies in the sample file reported no

significant changes in revenue during the pandemic. These were mostly companies from the business sectors marked A, D, E, and P according to Table 1. On the other hand, nearly 30% of the companies experienced an increase in their revenue. Most of these were from category H (transport and storage). Interestingly, only 9.02% of economic managers whose companies experienced a decrease in revenue also experienced the need to increase the time devoted to leading their subordinates. On the other hand, up to 78.69% of managers working in companies whose revenue decreased during the pandemic increased the time devoted to planning, and 90.98% decreased the time devoted to leading people.

Table 2. Changes in work task focus before and during the pandemic.

Changes in Work Task Focus before and during the Pandemic (in % of Economic Managers)	Increase in Importance	No Change	Decrease in Importance
Economic goals of the company in the long run	38.24	60.92	0.84
Short-term economic goals of the company	72.27	18.49	9.24
Centralization of strategic decision making	7.14	45.80	47.06
Basic workload of economic manager activities	83.19	14.29	2.52
The need for qualifications to perform the activities of an economic manager	34.87	64.29	0.84
The position of the economic manager in the organizational structure of the company	18.91	58.82	22.27
Management of a group of employees who show signs of low motivation	16.39	68.91	14.71
Subordinate leadership style	55.46	4.62	39.92
Demands for productivity of economic manager	40.34	19.75	39.92
Controlling of activities in the company	29.41	47.06	23.53
Measuring the effectiveness of work activities and performance	57.98	13.03	28.99

Table 3. Changes in proportion of working time devoted to basal management functions structured according to the changes in revenue.

Change in Working Time Devoted to Basal Management Functions (in % of Economic Managers)		Changes in Companies' Revenue		
		Increase	No Change	Decrease
Planning	Increase	80.00	45.65	78.69
	Decrease	20.00	54.35	21.31
Organizing	Increase	61.43	45.65	68.03
	Decrease	38.57	54.35	31.97
Leading	Increase	12.86	41.30	9.02
	Decrease	87.14	58.70	90.98
Controlling	Increase	34.29	65.22	31.97
	Decrease	65.71	34.78	68.03

The possibility of a correlation between the time devoted to individual management functions and changes in company revenue was also explored. The Pearson's correlation test was performed at a level of significance of 95%. The test proved that both the change in working time devoted to planning and change in time dedicated to control have a direct correlation with companies' revenues; however, they are not very strong. On the other hand, an indirect correlation was discovered between the management function of leading subordinates and changes in companies' revenues. There was no statistically significant correlation between this factor and changes in working time devoted to organizing (Table 4).

Table 4. Correlations.

		Revenue Change
Planning	Pearson correlation	0.224
	Sig. (2-tailed)	0.039
	N	238
Organizing	Pearson correlation	−0.024
	Sig. (2-tailed)	0.065
	N	238
Leading	Pearson correlation	−0.318
	Sig. (2-tailed)	0.032
	N	238
Controlling	Pearson correlation	0.196
	Sig. (2-tailed)	0.024
	N	238

Identified correlations do not necessarily indicate causality; therefore, these findings do not provide solutions for companies in practice on how to set up the work of their economic managers so that the company secures an increase in revenue. The findings characterize the situation created by the pandemic and how managers' work has changed with regard to the development of the company's revenue. The identified dependencies provide an overview of how the managerial component of economic managers' work has changed, thus indicating future trends during the pandemic when a similar disruption of the economic and market environment would occur, or in the future.

The overall rate of change in the dominance of management functions was calculated according to the newly created methodology using the data collected from individual case studies. The index consists of two factors: changes in the time devoted to each management function during the pandemic and changes in the importance of basic activities performed within the individual management function. To ensure that both factors had the same influence on the final indicator, weights were added to each option for both factors. Table 5 lists all items included in the individual factors, the possibilities for their value ranges, and the assigned weights.

The overall indicator—the rate of change in dominance of management functions (RCMF) for every i -th manager—can be calculated according to the following formula:

$$RCMF_i = WTID_i + TDMF_i$$

$$WTID_i = 6 \times P_1 + 6 \times P_2 + 3 \times O_1 + 3 \times O_2 + 3 \times O_3 + 3 \times O_4 + 4 \times L_1 + 4 \times L_2 + 4 \times L_3 + 6 \times C_1 + 6 \times C_2 \quad (1)$$

$$TDMF_i = 12 \times TP + 12 \times TO + 12 \times TL + 12 \times TC$$

The methodology is based on characterizing the rate of change in each item for individual managers; thus, if there is an increase in time, dominance, or importance, the item is assigned a value of 1, which increases the value of the overall indicator. If there is no change in the item during the pandemic period compared to the pre-pandemic situation, then the item is assigned a value of 0, and thus does not contribute to the value of the resulting indicator.

If there was a decrease in time, dominance, or importance for a given item, the item was assigned a negative value, which reduced the value of the resulting indicator. Based on the formula for calculating the indicator, we can determine the theoretical values of the extremes: the maximum possible positive and negative changes in the dominance of management functions during the initial stages of the COVID-19 pandemic and the subsequent economic crisis. The highest positive change was based on the assumption of an increase in all individual items. Thus, the resulting indicator was 48. The maximum possible negative change assumes a decrease in all the items. The final indicator would have a value of −48 in such an extreme case. Both cases represent extremes that were

not recorded in practice; however, it is important to identify these values because they represent the lower and upper limits of the occurrence of the values of the created indicator. Zero represents a breakthrough value, because if the indicator has a positive value, we can conclude that the economic manager has increased the demand for their managerial work, represented by the increased need to devote time and effort to fulfilling basal management functions. Table 6 describes the possible interpretation of the indicator values based on the developed methodology.

Table 5. Indicator structure.

Designator	Item	Increase	No Change	Decrease	Weight
WTID	Changes in work task focus and importance before and during the pandemic				
Planning					
P1	Economic goals of the company in the long run	1	0	−1	6
P2	Short-term economic goals of the company	1	0	−1	6
Organizing					
O1	Centralization of strategic decision making	1	0	−1	3
O2	Basic workload of economic manager activities	1	0	−1	3
O3	The need for qualifications to perform the activities of an economic manager	1	0	−1	3
O4	The position of the economic manager in the organizational structure of the company	1	0	−1	3
Leading					
L1	Management of a group of employees who show signs of low motivation	1	0	−1	4
L2	Subordinate leadership style	1	0	−1	4
L3	Demands for productivity of economic manager	1	0	−1	4
Controlling					
C1	Controlling of activities in the company	1	0	−1	6
C2	Measuring the effectiveness of work activities and performance	1	0	−1	6
TDMF	Change in working time devoted to basal management functions				
TP	Planning	1	0	−1	12
TO	Organizing	1	0	−1	12
TL	Leading	1	0	−1	12
TC	Controlling	1	0	−1	12

Table 6. The interpretation of RCMF indicator values.

Scale	Interpretation
Between +48 and +16	Tendency to an overall increase in dominance of management functions
Between +15 and −15	Little or no significant change
Between −16 and −48	Tendency to an overall decrease in dominance of management functions

An increase was reported by 66.81% of Slovak managers. The results for individual managers can be further structured using various criteria related to the company in which they work. Table 7 shows the values of the RCMF indicator broken down by companies' subject of business activity according to SK NACE and company size.

Table 7. The values of the RCMF indicator structured by sector.

Company's Subject of Business Activity According to SK NACE	Percentage of Managers for Whom the RCMF Indicator Had a Positive Value	The Average Value of the RCMF Indicator	The Highest Recorded Value of the RCMF Indicator	The Lowest Recorded Value of the RCMF Indicator
A	74.67%	13	24	−21
B	23.47%	−2	9	−9
C	93.03%	35	42	3
D	81.22%	13	21	−9
E	87.89%	13	24	−12
F	89.70%	27	39	−18
G	92.42%	41	45	−3
H	79.82%	28	36	−27
I	58.89%	−12	15	−39
J	49.86%	−9	36	−36
K	35.58%	−6	27	−18
L	40.19%	−14	15	−42
M	76.67%	16	39	−12
N	75.93%	17	36	−30
O	81.09%	31	45	6
P	89.39%	31	45	−3
Q	91.84%	43	45	15
R	17.08%	−19	15	−39
Size of Company of Economic Manager (Based on Number of Employees)	Percentage of Managers for Whom the RCMF Indicator Had a Positive Value	The Average Value of the RCMF Indicator	The Highest Recorded Value of the RCMF Indicator	The Lowest Recorded Value of the RCMF Indicator
Micro and small (less than 50)	81.53%	22	39	−18
Medium (51–249)	68.02%	11	30	−15
Large (250 or more)	56.91%	8	42	−30

The average value of the RCMF indicator was 13.67, which indicates a slight increase in dominance and time burden devoted to the fulfillment of management functions. The highest average value of RCMF was in the healthcare, residential care, and social work sector of the economy, with wholesale and retail being a close second. These results also indicate the pandemic's impact on different economic sectors. According to the data provided in Table 7, the highest rate of change was recorded in the healthcare, residential care, and social work sector as expected. Only 7.58% of managers working in wholesale and retail sectors reported a decrease in time devoted to basal management functions. Almost no changes were recorded in the mining and quarrying sectors. There were sectors with no managers experiencing an overall decrease, such as industrial production, public administration and defense, compulsory social security, healthcare, residential care and social work, wholesale and retail, and repair of motor vehicles and motorcycles. On the other hand, the biggest decrease was recorded in the arts, entertainment, and recreation sectors, since 82.92% of managers reported that the time they devoted to basal management functions during the pandemic decreased. The sector with the highest variability was managers working in large companies; however, they also experienced a lower need to increase their focus on basal management function than managers from smaller companies. Individual correlations were tested using correlation coefficient calculations. It was discovered that the smaller the company, the greater the need for managers to increase their focus on basal management functions (correlation coefficient = 0.672, that means moderate to strong significance). Consequently, a *t*-test was used to verify the statistical significance of this finding. The results of the *t*-test proved that there was sufficient evidence to conclude

that there was a significant linear relationship between these two variables, because the correlation coefficient was significantly different from zero.

4. Material and Methods

The main aim of this research study was to explore changes in the dominance of management functions used by economic managers. Case study was chosen as the main method for collecting and analyzing data in randomly selected companies and organizations located in the Slovak Republic, during the period from April to November 2021, targeting their managers.

The research file was created as a representative sample of the base file according to the criterion of subject of business activity according to the Slovak statistical classification of economic activities (SK NACE). Table 8 provides the information on how these files are related.

Table 8. Structure of the base file and sample file.

Subject of Business Activity According to SK NACE	Base File		Sample File	
	No. of Economic Managers from Companies	%	No. of Economic Managers from Companies	%
A Agriculture, forestry, and fisheries	21,490	4.24	11	4.62
B Mining and quarrying	166	0.03	1	0.42
C Industrial production	84,316	16.64	34	14.29
D Supply of electricity, gas, steam, and cold air	339	0.07	1	0.42
E Water supply, sewage treatment and disposal, refuse, and waste disposal services	1283	0.25	2	0.84
F Construction	104,513	20.63	50	21.01
G Wholesale and retail; repair of motor vehicles and motorcycles	111,974	22.10	54	22.69
H Transport and storage	17,991	3.55	8	3.36
I Accommodation and food services	19,857	3.92	9	3.78
J Publishing, audiovisual and radio activities, telecommunications, and IT and other information services	18,087	3.57	8	3.36
K Financial and insurance activities	7269	1.43	4	1.68
L Real estate activities	7335	1.45	4	1.68
M Legal and accounting activities, management consultancy activities, architectural activities, technical testing and analysis, scientific research and development, other professional, scientific, and technical activities	60,946	12.03	27	11.34
N Administrative and support services	22,795	4.50	11	4.62
O Public administration and defense; compulsory social security	3220	0.64	4	1.68
P Education	9559	1.89	3	1.26
Q Healthcare, residential care, and social work	11,214	2.21	6	2.52
R Arts, entertainment, and recreation	4223	0.83	1	0.42
Total	506,577	100.00	238	100.00

The chi-squared test was used to verify the representativeness of the sample file, as previously applied by other authors (Bartková 2019; Zavadská and Zavadský 2018). The null hypothesis is based on the assumption that the sample is representative. An alternative hypothesis is the assumption of the sample's non-representativeness. From the mathematical

perspective, the hypotheses are formulated as $H_0 = F(x) = G(x)$ and $H_1 = F(x) \neq G(x)$. Statistical testing using the SPSS software was based on the following formula (2):

$$\chi^2 = \sum_{j=1}^r \frac{(n_j - m_j)^2}{m_j} \approx \chi^2_{(r-1)} \quad (2)$$

where χ^2 is the Pearson statistics; r is a line; n is the overall frequency in the base file; and m is the measured frequency.

Consequently, we find the critical value of the χ^2 distribution for $(r - 1)$ degrees of freedom and the selected level of significance α from tables of critical values of chi-squared. The test in this research was performed at a significance level of 95%. If the critical value is lower than the value of the tested statistics, the null hypothesis is rejected and an alternative hypothesis H_1 is accepted. The calculated chi-squared value for this sample was 0.105. This result can be interpreted as the acceptance of the null hypothesis. Therefore, it can be concluded that the sample file was representative of the base file.

Other statistical tools were used to evaluate the data and identify the significant findings. Possible correlations were tested using Pearson's correlation test and a simple correlation coefficient. The t -test was further applied to determine whether the observed correlation coefficient was significantly different from 0 and whether the correlation coefficient was statistically significant. Another important criterion designed to differentiate the companies in which economic managers operate was their size. The corresponding data are presented in Table 9.

Table 9. Structure of sample file according to the size of company.

Size of Company of Economic Manager (Based on Number of Employees)	No. of Economic Managers from Companies	%
Micro and small (less than 50)	151	63.45
Medium (51–249)	63	26.47
Large (250 or more)	24	10.08
Total	238	100.00

Moreover, up to 34 enterprises were newly founded in 2020 (14.29% of all companies in the sample file), which means that they have been on the market for less than a year and were formed during the pandemic. Their data was also used in the research. Even though these newly formed companies did not exist before the pandemic, the economic managers who this research targeted had worked in equal or similar positions in other companies, therefore, are eligible to provide their experiences and information on changes in their work caused by the pandemic.

5. Discussion and Conclusions

The main aim of this research study was to explore changes in the dominance of management functions used by economic managers. Various studies on crisis management have emphasized the centralization of strategic decision making as an essential management measure to ensure continuity of company operations (Lu and Williams 2021; Trachsler and Jong 2020; Urbaczewski and Lee 2020). However, the reality in the Slovak Republic is the opposite. Only 7.14% of economic managers experienced the implementation of this measure, and nearly half of them even observed an increase in the delegation of strategic decision-making tasks to lower levels of the company's hierarchy. Similarly, an opposing trend was observed for crisis management. It was discovered that 83.08% of managers did not change their leadership style or pay increased attention to employee motivation. At the same time, 39.92% of managers reduced their attention to leadership styles. Grint (2020) specifically described the need for leaders to decisively embody the principles of crisis management.

The pandemic and its resulting economic crisis have provided both opportunities and challenges regardless of the business focus or job position. This study focused on exploring how the most fundamental work of managers changed during these difficult times. Most managers found themselves dedicating more time and effort to the fulfillment of basal management tasks instead of focusing on their work tasks. However, this need for change was equally experienced by all the managers. This pressure was more intense for the managers of smaller companies, which could be caused by them having less financial possibilities or technical or technological background. Furthermore, not all sectors of the economy were impacted equally, as was already clear prior to this research, based on data from national economies as well as other research studies. However, the findings of this research shed light on this problem not only through the performance of the company, but also through recorded and documented changes in the work of individual managers. [Guo et al. \(2021\)](#) claimed that companies with manufacturing systems that are more responsive and resilient will be able to survive or even gain market share in the face of an unpredictable variable of an outbreak similar to the COVID-19 pandemic. The findings of this research study indeed support this claim, because the changes in revenue of companies operating in this sector of the Slovak economy showed no significant decrease in 2020; nevertheless, this was one of the sectors with the highest index describing the changes in managers' work. [Duan et al. \(2021\)](#) studied the complex operating environment of the finance sector. The conclusions of their research confirmed these results, which were also characterized in this study. They emphasized the increased pressure on risk management and, thus, the increase in the burden on economic managers in China. Under the conditions of the Slovak Republic, this phenomenon also manifested itself; however, only 35.58% of managers in this sector recorded an increase in the time lag in their managerial work. Furthermore, [Hidalgo et al. \(2022\)](#) emphasized the role of management in overcoming crises. The findings of this study also support the central role of management as a key driver of change.

The findings presented in this study characterize changes in managerial work and provide recommendations for companies. Indicating future trends during the pandemic, or when a similar disruption of the economic and market environment occurs, is an important tool for overcoming them. Therefore, these findings represent an important tool for predicting future situations that may arise and provide guidance for companies on how to prepare for changes in the organization of time and work tasks of this group of managers. The benefits of these findings can also be found in the possibility of incorporating them into strategic planning in various companies in the field of risk management and crisis management, with issues such as collaboration in coping with new technologies, and the critical role of leaders and work organizations with home office incorporation, which will be the most important challenges in post-pandemic business management. Of course, companies and society are not able to fully predict the future but according to previous COVID-19 experience they can be better prepared for the possible future trends. Furthermore, the fact that they will be thinking about possible scenarios can make them more flexible and resistant companies.

As the pandemic is ongoing, the business environment continues to evolve. No one knows how new variants and mutations of the virus will influence the government restrictions related to the business environment. The real success or failure of the changes implemented by managers during the COVID-19 crisis can only be evaluated after a certain time interval. Currently, we can only evaluate short-term results and map the changes caused by the pandemic and their impact on managers' work. The proposed methodology for measuring the change in the dominance of managerial functions is one of the ways to evaluate this phenomenon in practice. In the future, it will be possible to adjust the structure of the indicator by adding other items or adjusting the weights of the individual factors, which in the end can change the point of view of the evaluated factors. However, the complexity of the methodology provides a comprehensive picture of the real situation in business practice in Slovakia and maps the changes caused by the pandemic and economic crisis. Another way to expand this research is to complement the international dimension.

The proposed and presented methodology is general, so it is possible to apply it to the conditions of other countries and thus match the impact of the pandemic on the work of managers.

Evaluating and recognizing the changes that the pandemic brings to managers is a necessary step in proposing measures to deal with the consequences of the pandemic for companies. The results of this study suggest that one option is to seek management solutions directly from departmental and divisional managers' experiences and skills. The results of this research can help companies to plan for the future, to prepare and mitigate the risks associated with the COVID-19 pandemic without the company experiencing major shocks. Making companies prepare for a fight against external threats is strategic, and requires innovative and critical thinking. This finding also evokes new requirements that arise for the education of managers, which should include more emphasis on critical thinking and technical skills of managers. Managers who have experience and knowledge of the application of risk management and innovation management methods will be in greater demand in the market. Unexpectedly, the COVID-19 pandemic has appeared and caused massive disruptions worldwide. The entire world is looking forward to a new normal, to restart and evolve its operations.

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