

The Impact of the Difficult Economic Situation on the Operation of Slovak Companies in the Shadow of War

József POÓR¹, Silvia TÓBIÁS KOSÁR², Erika Seres HUSZÁRIK³, Tibor ZSIGMOND⁴,
Gábor SZABÓ-SZENTGRÓTI⁵, Zsuzsanna TÓTH⁶

Abstract

Purpose: The purpose of this study is to examine the organizational and human resource (HR) responses to the challenging economic conditions caused by the war and the COVID-19 pandemic. Given the limited evidence available on how organizations adapt to such crises, this research aims to develop a conceptual model and empirically investigate the influence of two specific factors: organizational size and direct economic ties with the Russian and Ukrainian markets. This study employs a mixed-method approach, combining both theoretical and empirical research. A conceptual model was first developed to outline potential organizational reactions to crisis conditions. The empirical part of the study involved data collection from 128 organizations, including companies and institutions, in Slovakia. The analysis was conducted to test two hypotheses regarding how organizational size and economic connections with the Russian and Ukrainian markets affect organizational and HR responses in times of war. The findings of the study indicate that neither organizational size nor direct economic linkages with the Russian and Ukrainian markets significantly influenced the responses of the organizations studied to the economic difficulties caused by the war. This suggests that other factors may play a more critical role in shaping organizational and HR strategies in response to crises. For theory, this study contributes to the existing literature by challenging the assumption that organizational size and direct economic ties to conflict-affected markets are primary determinants of organizational responses to crisis. For practice, the findings suggest that managers and HR professionals need to consider a broader range of factors beyond size and market exposure when developing strategies to cope with economic disruptions caused by global crises. This research is original in its focus on the specific impacts of war and pandemic-induced economic conditions on organizations in Slovakia. The study provides valuable insights into how organizations navigate crises, expanding the understanding of crisis management and organizational adaptability. It adds value by highlighting the need for more comprehensive models that consider a wider array of factors influencing organizational behavior in times of global economic disruption.

Keywords: COVID-19, War, Economic Situation, Adaptation, Management, Organizational Functioning, HR, Slovakia.

Introduction

There is currently very little literature on the impact of military operations in the war on companies and the internal functioning of their organizations. The available literature focuses on the effects of logistics, value chains, and energy. (Deloitte 2022; KPMG 2022; Markus, 2022). Military conflicts increase investor uncertainty about a company's future profitability, leading to share price volatility. Consequently, many publications deal with the consequences of such effects (Rigobon , Sack 2005; Choudhry 2010; Bhattacharjee et al.2023; Joshi et al. 2023).

This is why researchers from the Faculty of Economics and Informatics of J. Selye University, in collaboration with researchers from several countries (Austria, the Czech Republic, Croatia, Lithuania, Hungary, Germany, Romania, Slovakia, the USA), launched in June 2020 the research topic "Impact of the

¹ Research Professor, J. Selye University, Postal/full address: Street, Number, Town, Code, State (if any), Country: Ul. Hradná 21, 945 01 Komárno, Slovakia, ORCID ID (register here: <https://orcid.org/>); <https://orcid.org/0000-0002-6873-0646>, Email: poorj@ujss.sk.

² Associate Professor, J. Selye University, Postal/full address: Street, Number, Town, Code, State (if any), Country: , Bratislavská cesta 3322, 945 01 Komárno, Slovakia, ORCID ID (register here: <https://orcid.org/>); <https://orcid.org/0009-0005-8772-6836>, Email: kosars@ujss.sk.

³ associate professor, J. Selye University, Postal/full address: Street, Number, Town, Code, State (if any), Country, Bratislavská cesta 3322, 945 01 Komárno, Slovakia, ORCID ID (register here: <https://orcid.org/>); <https://orcid.org/0000-0002-6842-1579>, Email: huszarike@ujss.sk.

⁴ Assistant Professor, J. Selye University, Postal/full address: Street, Number, Town, Code, State (if any), Country, Bratislavská cesta 3322, 945 01 Komárno, Slovakia, ORCID ID (register here: <https://orcid.org/>); <https://orcid.org/0000-0002-2581-5519>, Email: zsigmond@ujss.sk.

⁵ Associate professor, Department of Management and Marketing, Faculty of Economics, Széchenyi István University, Street, Number, Town, Code, State (if any), Egyetem tér 1., 9026 Győr, Győr-Moson-Sopron megye, HUNGARY

⁶ Associate Professor, J. Selye University, Postal/full address: Street, Number, Town, Code, State (if any), Country, Bratislavská cesta 3322, 945 01 Komárno, Slovakia, Email: tothz@ujss.sk, <https://orcid.org/>, <https://orcid.org/0000-0002-1309-9308>

difficult economic situation - COVID-19, recovery, war - on the management, governance and HR of companies and organizations". Our research will seek to answer the question of what effects responding organizations expect war's impact on their business, management, and HR in the countries participating in the research. This paper presents partial results on the opinions of Slovak respondents.

The following is a review of the literature on this topic, which is further subdivided into subsections. These subsections will focus on the social and economic situation after the COVID-19 pandemic and the Russian-Ukrainian conflict. We also examine the development of economic indicators in Slovakia. In the second part of our article, we present the results of our primary research, which examines the situation of companies in the current challenging period. At the end of our article, we conclude with a summary of our main findings and conclusions and an indication of our plans for the future.

Literature Review

Several significant changes have influenced the economic development of different organizations (companies and institutions) in the previous years. These changes also confirm the validity of Jared Diamond's (1999) statement that "We can successfully prepare for the challenges of the future if we intelligently understand everything possible from the past" (1997). However, there is a return to past phenomena not previously experienced by today's generations of leaders, such as "crises, trade wars, emerging capital flight markets, widespread social unrest, geopolitical confrontation and the specter of nuclear war" (WEF 2023:6). Other historians have pointed out that the plague epidemics of the Middle Ages also had another crucial social consequence: a large number of deaths increased the value of labor, and serfs and peasants were able to negotiate more favorable terms with their landlords (Romsics 2021). These phenomena, which rhyme with the past, are nowadays living on in the AI guise of the global climate crisis and the 5.0 industrial revolution (Harai, 2023). In the following, we will analyze the significant impacts of these changes from the perspective of the literature.

COVID-19 Pandemic

Recent years have seen significant economic changes around the world. Part of this is due to the COVID-19 pandemic, an unprecedented phenomenon for most of the world's population. The quarantine obligations (Mahmoudi 2022), closures, and shutdowns of home offices and factories (Beibit et al. 2023) have caused significant damage to the economies of individual nations. Some companies survived with significant losses (e.g. financial, knowledge, market), while others went bankrupt. An enormous number of people have suffered mentally and emotionally from isolation and hopelessness. This was particularly prevalent among young people, women, and the disadvantaged (WHO, 2022; Németh et al., 2024). Slovakia also observed similar trends (Kralova et al.2022).

At the onset of the epidemic, researchers focused on the similarities and differences between HR crises and previous crises (Diamond, 2019; Fergusson, 2021). According to various sources, COVID-19 accelerated rather than disrupted HR trends that had already started/begun earlier (Caligiuri et al.2020; Parry et al.2021).

Not all firms have been affected equally by the COVID-19 global crisis (Dajnoki et al.2023). As we moved forward between each viral wave, more and more firms indicated that they found several new opportunities in this situation (Mura, Fóthy, Pásztóová 2022;).

In addition to telework, the epidemic has affected three trends that have had and continue to have a lasting impact on the workforce. They also significantly impact the use of digital tools for transactions, consultations, and collaboration. Changes during the epidemic also began to bring the use of automation and artificial intelligence technologies in the workplace to the fore. In addition to those above, it should be remembered that employees' relationships with work and their employers have changed significantly. This impact has manifested, among other things, in increased turnover, lower productivity, and increased days lost in Slovakia (Cedzová et al.2020) and neighboring Hungary (Berda et al.2023). While it should be borne in mind that all three trends were already taking place before the virus emerged, as indicated earlier, COVID-19 fundamentally changed their evolution (McKinsey 2021).

The biggest losers in the pandemic were the tourism, hospitality, beauty, entertainment, and retail sectors in Slovakia (Bálintová et al.2022) and other Eastern European countries (Béresné, Maklári 2021). After the first wave and the emergence of the second wave, it became clear that the pandemic would result in a significant economic contraction of 4-6% worldwide, except in China (+2%) and a few other countries (e.g. Ireland). However, the massive vaccination campaigns launched in the meantime have shown the light at the end of the tunnel - the possibility of 4-6% growth following the downturns.

Even though global unemployment has risen from 5.7% to 8% in the wake of the COVID-19 crisis (ILO 2021), developed countries in the developed world still face severe labor shortages in the recovery and the current situation. Looking to the future, Eastern European countries, including Slovakia's HR system and labor market, face several challenges (Stachova et al.2020). The general shortage of labor and skilled workers is becoming increasingly overwhelming after a labor oversupply; it is typically not workers looking for work but employers looking for people, especially in the western part of Slovakia.

Russia's war with Ukraine

Just when a straight road lay ahead - a way out of the epidemic - another threat appeared on the border: war (Vyas et al.2023; Zakeri et al.2022). The Russian-Ukrainian conflict has shaken people's growing optimism after COVID-19 (Pato et al.2022). Difficulties caused by the war include rising energy prices, transport costs, and the rising cost of living (Fiszeder, Malecka, 2022; Lin et al.2023; Keskin, Güven, 2022; Mariotti 2022; Szép et al.2022).

It is legitimate to ask what reasons led to the current war. Different authors give different reasons for this question. Without claiming completeness, the following influencing factors can be mentioned here:

- According to the well-known American author Marshal (2022), the current war can be explained mainly through geographical factors such as "Since the founding of the Grand Duchy of Moscow, Tsar Peter the Great, Stalin, Putin and all Russian leaders have faced the same difficulties, regardless of their ideology. The ports are still frozen, the plains of Eastern Europe - Ukraine - remain flat".
- Tarjányi (2023) believes that Putin wants to fulfill Russia's mission statement to fight the West and to fulfill the Russian way of thinking everywhere.
- Putin's bold criminal involvement has wholly paralyzed the West. Moreover, here again, came the idea from Zbigniew Brzezynsk (2014) that 'Russia is a great power with Ukraine, but not without it.

The significance of the Russo-Ukrainian war has also proved incomprehensible to most of the European population since the most recent wars in Europe took place decades ago, and world wars have only survived in our ancestors' stories and historical records. These two phenomena (pandemics and war) have had implications that were not previously anticipated - extreme inflation, energy shortages, and social tensions (Ribeiro et al.2023). Humanity has experienced many crises in its history. However, we have barely recovered from the 2008-2009 global financial crisis, and this one seems likely to be longer, more complex, and more profound (Kálmán et al., 2024b). In the current scenario, businesses operate in a highly complex and turbulent economic environment (Ajaz Khan et al.2023; Buckley 2022; Nazli 2023). This uncertain and volatile environment challenges all businesses - regardless of size. Many researchers are looking for solutions to these crises, agreeing that multiple disciplines are addressing the issue, but so far, no reassuring answers to how have been found (Bundy et al.2016). Increased economic and political uncertainty has forced macroeconomic forecasters to predict severe consequences shortly (Selenko et al.2018). They do so because they need more concrete experience with COVID-19 and the current war situation (De-Viljder 2023).

In this war, at least until today, Slovakia, together with two other V4 countries (Poland and the Czech Republic), has sided with belligerent Ukraine, providing all possible assistance, including military aid, and strongly condemning Russian aggression (HBS 2022).

In the 21st century, businesses must adapt to rapidly changing market conditions. The war between Russia and Ukraine is expected to pose additional economic and social challenges to which all organizations will soon respond (Kálmán et al., 2024a; Kőműves et al., 2022). It has become clear that companies and jobs are vulnerable in their current form in many respects. Economic problems and the resulting temporary or permanent production stoppages are an existential threat to companies, institutions, and their employees. This threatens to lead to the loss of many jobs (Boiral et al.2021).

The war crisis also offers an opportunity for countries and organizations to rethink their existing strategies. Undoubtedly, for companies, adapting quickly and taking advantage of the opportunities offered by post-war openings become even more critical factors than before (Goreczky 2020). Virág (2020) points out that an emergency or war situation not only has adverse effects but can also contribute to a faster diffusion of technology that determines the development of the economy.

In addition, robotization may become even more of a focus (Antón et al.2023; Valentini et al.2023). The Collins Dictionary 2023 has declared "artificial intelligence" or "AI" as the word of the year (BBC,2023). It could also bring the need to improve industrial production and the emergence of a better work-life balance thanks to the spread of home working (Diamond 2019). Based on the war research of Kőműves et al. (2022), farming organizations predominantly seek to address the negative impacts of war challenges and changes through specific solutions. There is a high degree of uncertainty that farmers' organizations experience in their day-to-day operations, and they are constantly looking for possible solutions to counter the negative impacts of war (Kálmán et al., 2024c). Overall, it can be said that in the current turbulent economic and socio-economic environment, where market and consumer demands are constantly changing, formulating and developing appropriate and sustainable corporate good practices is paramount (Lu et al.2023).

At the political level, various opinions have emerged on the end of the Russian-Ukrainian war. Experts agree that Russia, unlike Ukraine, is a nuclear power. It has a vast military machine, workforce, and resource reserves, and the researchers mentioned believe there is a good chance that Russia will sustain the conflict in the future. In the current situation, there is little that the West can do to prevent Ukrainians from attempting to retake all of the territories currently held by Russia - including parts that Moscow has formally, albeit illegally, annexed (Ash et al.2023). On the eve of the current war, author Ryan (2022) points out that the new situation will require a significant reconfiguration of war-related strategies and institutions. In particular, the author points out that innovative military technology is not enough. Committed and well-trained soldiers and innovative management methods are needed for successful warfare.

Other authors (Vicente et al.2023) believe that the current war raises the possibility of a rupture with the 1968 Treaty on the Non-Proliferation of Nuclear Weapons (NPT). The above was confirmed by the NATO summit in Kausnas (Boot et al.2023).

Methodology

The main objective of our research team's analysis was to answer the question of the impact of the recent period of crisis in several respects - during and after the unstable environment of COVID-19 and the Russian-Ukrainian war - on the respondent organizations' management, governance, and human resource management. In the introduction to the academic papers, we first reviewed the primary literature sources on the COVID-19 and war-affected economy and its impact on the socio-economic situation, drawing on literature sources. To identify this secondary information, we have primarily used several academic databases (Stapenhurt 2009; Brewster et al.2010). We have gathered the most relevant and up-to-date sources as a basis for our literature references. The sources were filtered in several steps using critical selection.

The empirical study is ex-post, as the researched topic was analyzed based on opinions and experiences related to the observation period. To achieve the main objective, a primary quantitative questionnaire survey was conducted among organizations in Slovakia between autumn 2022 and June 2023. The sampling of responding organizations was based on the simple random technique. The questionnaire used for the survey included several significant groups of questions such as general characteristics of the respondent organization, export/import relations with the Ukrainian and Russian markets, preparedness for the war situation, foreseeable micro- and macroeconomic effects of the war, impact of the war on the operation of the organizations, impact on the organization/management, as well as personal characteristics of the respondents and other possible suggestions for the respondent. In most cases, closed questions were used to simplify the questionnaire and the univariate and multivariate statistical analyses, with the other option retained for each question for individual comments. The questionnaire survey was conducted online. Out of the total number of questionnaires received, 128 verifiable responses were received from different organizations, out of the total number of incomplete questionnaires. The research topic covers a complex issue that can be analyzed from several angles.

Consequently, our research had several limiting factors, such as the time and financial resources available and the scale of the data collection in national and international terms. As our research is essentially benchmarking, the responses collected represent the wide range of organizations that completed the questionnaire. In the present paper, we illustrate the research results of our survey about two of our hypotheses.

It is worth looking at the evolution of Slovakia's leading economic indicators over the last period. In our work, we wanted to look at three economic indicators: the unemployment rate, GDP change, and the CPI price index. The latter was used to examine the change in inflation. Data were collected using Eurostat (2023) and OECD (2023a; 2023b). The current value for unemployment is given as a percentage, while for GDP and the CPI index, the change compared to the previous period is given as a percentage. We started our analysis with data from the fourth quarter of 2021, which was the last period (quarter) before the outbreak of the war. However, it is essential to note that the deployment of Russian troops had already started at the Ukrainian border in October 2021. As a result, some uncertainty and fear in the world economy could already be detected. At the same time, no one expected that after the military preparations, an actual military operation would start on the territory of Ukraine. In the table below, we have included the European Union (EU27) data alongside the Slovak data for comparability.

Table 1. Economic Indicators For Slovakia And The EU-27 Before And After The Outbreak Of War

		2021	2022				2023
		Q4	Q1	Q2	Q3	Q4	Q1
Unemployment rate	Slovakia	6.5	6.4	6.2	6.0	6.0	6.2
	EU 27	6.0	5.8	5.7	5.8	5.7	5.7
GDP change	Slovakia	0.465	0.232	0.177	0.292	0.267	0.260
	EU 27	0.718	0.826	0.669	0.381	-0.188	0.105
CPI index	Slovakia	5.5	9.3	12.5	14	15.2	15.1
	EU 27	4.9	6.5	8.8	10.3	11	9.4

Source: authors' own elaboration based on Eurostat (2023) and OECD (2023a; 2023b)

The results show that the unemployment rate has been moderately but positively affected by the conflict, falling from 6.5% (2021 - Q4) to 6.0% (2022 - Q3 and Q4). In contrast, GDP growth first fell significantly (2022 - Q2: 0.177%) in Slovakia before increasing to moderate growth later (2022 - Q3: 0.292% and 2022 - Q4: 0.267%). Based on the latest available data (2023 - Q1), Slovakia's GDP growth rate stagnated (0.260%). Notably, the 27 EU countries performed worst in the fourth quarter of 2022, with GDP falling (-0.188%) compared to the previous period. Then, Slovakia (2022 - Q4) performed better than the EU average (0.267%). The CPI price index, which illustrates inflation, steadily increased until the end of 2022

(2022 - Q4). Since then, there has been a moderate decrease in both Slovakia (2023 - Q1: 15.1%) and the EU (9.4%).

- *Slovakia's trade with Russia and Ukraine*

After the outbreak of the war, Slovakia significantly reduced its trade relations with Russia. The Slovak government imposed sanctions against Russia, restricting imports of Russian products and the activities of Russian companies in Slovakia. Slovak companies also voluntarily reduced their activities in Russia. Since the war, the former Slovak government has been working to diversify its trade relations and reduce its dependence on Russia. (Note: The Fico cabinet, which took power after the 2023 autumn elections, had no such vision at the time of writing.)

Examining the evolution of Slovakia's foreign trade (export and import values) with Ukraine and Russia is essential. For this purpose, we have prepared the following table.

Table 2. Slovakia's External Trade (Exports And Imports) With Ukraine And Russia (2013-2022) In Thousands Of Euros

	Ukraine		Russia	
	Export	Import	Export	Import
2013	557,274,400	583,834,400	2,567,741,100	5,697,839,100
2014	412,908,400	526,516,500	2,075,815,600	4,714,038,300
2015	405,669,600	447,125,400	1,460,914,800	3,999,057,000
2016	433,359,700	429,934,900	1,334,393,500	3,260,897,000
2017	581,553,900	631,443,800	1,498,474,600	3,642,845,300
2018	570,899,700	690,653,700	1,511,408,000	4,561,445,000
2019	688,306,100	611,316,500	1,425,444,000	4,454,163,300
2020	658,972,900	354,880,700	1,173,474,800	3,405,716,900
2021	825,612,300	775,926,400	1,338,063,400	5,560,956,900
2022	1,456,590,800	1,267,726,200	543,447,200	8,185,524,000

Source: Slovstat (2023a)

Table 2 shows that the Russian annexation of Crimea has had a significant impact on Slovakia's foreign trade with both Ukraine and Russia. For Ukraine, both exports and imports decreased from 2014 until 2016. Exports started to grow steadily again from 2016 onwards, with only minor fluctuations (from 2017 to 2018 and 2019 to 2020). The change in imports is somewhat more volatile. After a big jump in 2017, the value continued to increase in 2017, but then we saw a decline again in 2019 (€ 611 316.5). In 2020, Slovakia's imports from Ukraine almost halved (€ 354 880 700). This is due to the initial uncertainty caused by COVID-19. It can be seen that in 2021, the value of imports jumped again, doubling and surpassing the value in 2019 (775 926 400). As with exports, imports reached over 1 billion in 2022 (Slovstat, 2023).

Since the Russian annexation of Crimea in 2014, Slovakia's exports to Russia have steadily declined due to the economic sanctions imposed. The initial impact of COVID-19 is also felt here (by 2020, the value of exports fell to €1 173 474 800, down from €1 425 444 000 in 2019). In 2021, Slovakia's exports to Russia increased slightly (€1 338 063 400), but this value did not reach the pre-COVID-19 value of €1 425 444 000 in 2019. Slovakia's imports from Russia are a completely different picture. The effects of the 2014 sanctions were also initially visible here, but from 2017 onwards, an increase in values was observed. The impact of COVID-19 was strongly felt in 2020 (€3 405 716), but in 2021, exports almost reached the 2013 value (€5 560 956 900). In 2022, the value of imports reached €8 185 524 000, which is the inverse consequence of the war-related sanctions. Slovakia is highly dependent on energy from Russia. The sanctions have made access to these more complex, leading to increased prices (Slovstat, 2023).

As shown above, the increased exports to Ukraine could not compensate for the loss of Russian exports, and imports from Russia increased at a higher rate than those from Ukraine. Slovakia's external trade

balance in 2021 was EUR -4 173 207 600. By 2022, it had fallen to -7 453 212 200 euro. This shows that the sanctions imposed had a very negative impact on Slovakia in the year of the outbreak of the war.

Slovakia has tried to compensate for part of the loss of exports to Russia since the outbreak of the Russian-Ukrainian war by significantly increasing its exports to Turkey. This export increase is due to the efforts of Slovak companies to find new markets in the face of Russian sanctions. However, the article's authors warn that the increase in Slovak exports to Turkey is a potential "hole in the sanctions wall" through which Slovak products could end up in Russia. It is difficult to say how likely this is. However, this possibility exists due to a lack of transparency since Turkey is not a member of the European Union (Beracka, 2023).

- *The Impact of Inflation and the Energy Crisis on Smes and Large Companies*

Rising inflation and the emerging energy crisis have hurt SMEs across Europe. According to a report by the Federation of Small Businesses (FSB) in the UK, SMEs, like individuals, faced a very unfavorable economic situation in early 2022. According to the report, nearly two-thirds of SMEs spend 20% of their business costs on energy. Micro-businesses with fewer than ten employees were the hardest hit by the increase in energy costs in 2022, as they faced the same challenges as consumers but received a different level of protection from the government. In addition, the value of inflation in the country (UK) reached levels not seen for 30 years. The negative economic situation for SMEs continued in 2023. In the second quarter of 2023 (Q2), two in five SMEs in the UK saw their revenues fall compared to the previous quarter (Q1). Only one in three companies recorded an increase. Three in ten small businesses that took out loans had access to finance at 11% or more. This was compounded by higher-than-expected inflation. For 14% of SMEs, the number of employees has fallen, while only 12% have seen an increase (Forsdick 2023; FSB 2023).

Business expectations for SMEs in Slovakia were also significantly negative. Inflation reached 15% at the end of 2022 and remained at this level until February (15.4%), the highest inflation rate in the country since 2000. After that, a steady decline was observed, falling below 10% for the first time in July 2023 (9.7%). By August, the value had fallen to 8.8% (Trading Economics 2023; Slovstat 2023b). All this has created enormous challenges for SMEs. A further specific factor has been observed in Slovakia in the recent period. According to the Slovak Entrepreneurs' Association (Podnikateľská Aliancia Slovenska - PAS), 85% of companies rated the political culture and the functioning of the political system negatively. Also, 78% gave a negative rating to the sustainability of public finances and the efficiency of public administration. The business community's view is not surprising, as 2023 has been dominated by news of the complete collapse of the Slovak government (Kullová 2023)

Despite this, the number of SMEs has been on the rise in recent years:

Table 3. Evolution of The Number of Smes and Large Enterprises in Slovakia in Recent Years

	Total SMEs (0–249)	Large enterprises (250–)
2020	597,171	642
2021	634,309	655
2022	670,161	656

Source: Slovak Business Agency (2021; 2022a; 2023)

According to surveys by the Slovak Business Agency (2021; 2022a; 2023), the armed conflict in the neighboring country has reduced the demand for goods and services for 16.2% of SMEs. 8% of Slovak SMEs have suspended investment activities, while 7% have lost essential business contacts due to the war. High energy prices have caused more than 25% to reduce investment activity. According to Ján Solík, President of the Confederation of Slovak Entrepreneurs (Združenie podnikateľov Slovenska - ZPS), the Confederation was already working in 2021 to draw the government's attention to the problems related to the sudden change in energy prices. However, in his view, the government did not take the warning signs seriously and, during the COVID-19 pandemic, reacted with error after error and delay (Kullová 2023).

For large companies, it is interesting to note that the number of companies operating in Slovakia increased after the appearance of Covid-19 in 2020. While in 2020, there were 642 companies with 250 or more employees in the country, by 2021, there were 655. In the year of the outbreak of the war, however, the number of large Slovak companies increased by only one (656).

The Slovak Business Agency (2022b) surveyed the impact of the war on Slovak businesses in March 2022, immediately after the outbreak of the war. Of the companies surveyed, 15% considered the consequences of the conflict to be significantly difficult, while a further 34% considered the consequences of the conflict to be partly negative. Companies from industry (71%) and trade (65%) were the most negative. 45% of companies indicated that the war conflict did not impact their business. A further 6% could not yet clearly say what impact the war would have on their company.

According to the report (Slovak Business Agency, 2022b), 71% of the surveyed entrepreneurs felt the need to be adequately informed. Most companies (46%) expressed the need to improve the availability of information on the legal employment of Ukrainian refugees. This was mainly indicated by medium-sized companies (73%) and companies dealing with industry (64%).

The survey (Slovak Business Agency, 2022b) also showed that 63% of Slovak entrepreneurs were interested in employing Ukrainian citizens who had left their country. Medium (90%) and small enterprises (83%) showed the highest interest. In addition, representatives of companies in industry (89%) and construction (73%) were keen to employ Ukrainian migrant workers.

Results and Discussion

In our analysis, we examined the characteristics of the supply chain systems of the organizations we interviewed in light of the war situation and their activities in response to changes in the market environment.

- *Characteristics of the Organizations Surveyed*

As already indicated, a total of 128 respondents completed our questionnaire. Among the characteristics of the surveyed organizations, we also analyzed their distribution by type of ownership, the number of employees, and the location of their premises. Of the enterprises surveyed, 12.5% did not declare their ownership, the majority of respondents (65.5%) being domestic private enterprises and 11.7% foreign or mixed-ownership enterprises. A small percentage of the sample (1.6%) are non-profit organizations. The remaining respondents indicated other forms of ownership.

The classification of companies by size was based on the average number of employees used in the evaluation of the results of our research (Cranet, 2023). Based on the number of employees in the responding organizations, the distribution of respondents in the sample indicates that 86.7% of the sample belongs to the small and medium enterprise group. Of these, 43.2% are micro-enterprises, 19.5% are small enterprises, and 16.4% are medium-sized enterprises. This distribution does not fully reflect the distribution by size of enterprises in Slovakia over the period under study, according to the Slovak Statistical Office, but the trend is the same.

64.4% of the responding organizations are from the western part of the survey area. Enterprises from Prešov, Košice, Trenčín, and Žilina exceed this share by 3- 3%. The Banská Bystrica region received the lowest number of completions (1.6%).

- *H1: Regardless of whether or not organizations in Slovakia had previously traded with Russia and Ukraine, they needed to adapt their supply chain systems*

Based on our hypothesis H1, organizations registered in Slovakia must change their supply chain system regardless of their export country and activities. We tested this hypothesis in several steps.

First, we examined the export/import activities of Slovak firms in terms of the Russian and Ukrainian markets, not only in terms of products but also in terms of services received/provided.

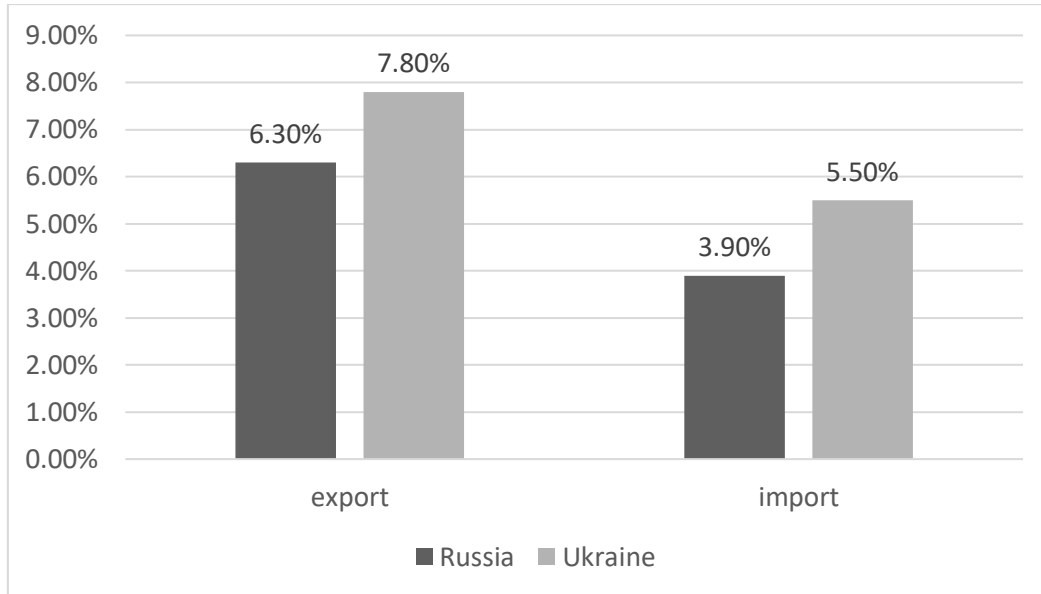


Figure 1. Characteristics of Export/Import Activities in the Light of The Primary Markets Involved in the War

Source: Authors' Own Elaboration

Based on the Slovak companies' answers, 6.30% of the respondents exported goods or services to Russia and 7.8% to Ukraine. The sampled organizations' import activity was less spread out, with 3.9% importing products or services from Russia and 5.5% from Ukraine. The remaining respondents had no import or export activity with the surveyed markets.

In our analysis, we looked at the implementation of draft measures organizations are taking to mitigate the adverse effects of the Russia-Ukraine war. The results on supply chain characteristics and the system itself are summarised in Table 4 below.

Table 4. Planned Measures Related To The Supply Chain System And Its Characteristics

Supply chain issue	Not at all	Rather not	Neutral	Rather typical	Typical	Do not know / no answer
No change needed	23.40%	12.50%	25%	8.60%	7.80%	22.70%
Seeking new sourcing alternative	16.40%	11.70%	17.20%	23.40%	13.30%	18.00%
Strengthen supplier network	13.30%	10.90%	11.70%	28.20%	14.80%	21.10%
Supply chain reorganization	15.60%	14.80%	21.90%	19.60%	8.60%	19.50%
Negatively affected the activities of organizations in our supply chain	1.60%	4.70%	5.50%	21.00%	50.80%	16.40%
Mean	14.10%	10.90%	16.30%	20.20%	19.10%	-

Source: authors' own elaboration

According to 23.40% of respondents, the war situation did not require any changes to their operational systems. Many organizations in Slovakia identified the need to find new sourcing alternatives (23.40%) and strengthen their supplier network (28.20%) as more typical to mitigate the adverse effects of the Russian-Ukrainian war. Regarding supply chain reorganization, respondents expressed a neutral (21.90%) - more typical (19.60%) attitude. More than half of the organizations surveyed (50.80%) fully agreed with the statement that the impact of the Russia-Ukraine war had negatively affected the activities of their supply chain organizations.

The interdependence of trading with Russia or Ukraine and changes in the supply chain were tested using analysis of variance. The Shapiro-Wilk normality test indicates that the sample is not normally distributed. The supply chain elements included unnecessary change, the search for new sourcing alternatives, strengthening the supplier network, and negatively affected activities related to the organizations' supply chains.

The results of the variance homogeneity are illustrated in Table 5 below.

Table 5. Homogeneity of Variance of Supply Chain Elements

Supply chain	Russia export/import	Ukraine export/import
No change needed	0.403	0.391
Search for new sourcing alternatives	0.087	0.029*
Strengthen supplier network	0.025*	0.067
Supply chain reorganization	0.371	0.035*
Negatively affected the activities of organizations in our supply chain	0.267	0.265

Source: authors' own elaboration

*Homogeneity of variance not met, p-value of Levene's test less than 0.05 significance level

The homogeneity of variance condition was not met for the export/import relationship with Russia with the strengthening of the supplier network and Ukraine's export/import activity with the search for new sourcing alternatives and supply chain restructuring, and these relationships were therefore excluded from further analysis. For the other options, the variances are not equal according to the null hypothesis of the Levene test, i.e. the homogeneity of variance condition is fulfilled.

The dependence between the remaining options was tested by analysis of variance.

Table 6. Analysis of Variance of Supply Chain Elements

Supply chain elements	Russia export		Russia import		Russia export/import		Ukraine export		Ukraine import		Ukraine export/import	
	F	Sig.	F	Sig.	F	Sig.	F	Sig.	F	Sig.	F	Sig.
No change needed	0.24 6	0.62 1	0.35 2	0.55 4	1.49 2	0.22 5	0.97 1	0.32 7	0.45 4	0.50 2	1.79 7	0.18 3
Search for new procureme	1.61 4	0.20 7	0.74 3	0.39 1	0.40 3	0.52 7	x	x	x	x	x	X

nt alternatives												
Strengthening the supplier network	x	x	x	x	x	x	0.657	0.42	3.464	0.066	0.058	0.81
Supply chain reorganization	2.388	0.126	0.083	0.774	0.767	0.383	x	x	x	x	x	X
Negatively affected the activities of organizations in our supply chain	0.316	0.575	0.418	0.52	0.485	0.488	1.087	0.3	1.481	0.226	0.215	0.644

Source: authors' own elaboration

The F-ratio in Table 6 shows the proportion of between-group and within-group variance quotients. Based on the significance level of the probability associated with the F test (p 0.05), the following conclusions can be drawn:

- neither the previous export nor the previous import nor the two together have any impact on the statement that No change is needed,
- neither the previous export nor the previous import nor the two together have any impact on the Search for new procurement alternatives statement,
- neither the previous export nor the previous import nor the two together have any impact on the Strengthening the supplier network statement,
- neither the previous export nor the previous import nor the two together have any impact on the Supply chain reorganization statement,
- neither the previous export nor the previous import nor the two together have any impact on the Negatively affected the activities of organizations in our supply chain statement,

Based on these correlations, the restructuring of supply systems and previous export/import activity related to Ukraine or Russia have no impact on the Slovakian respondents.

- *H2: Larger organizations in Slovakia have found it easier to cope with market changes due to the war situation*

We also analyzed the relationship between the difficulty adapting to the changed market environment caused by the Russian-Ukrainian war and firm size among the sample firms. Among the market indicators, we examined changes in inflation, turnover, raw material prices, and technological developments.

Slovak respondents assessed the war's likely impact on the expected inflation level in 2023 (see Figure 2).

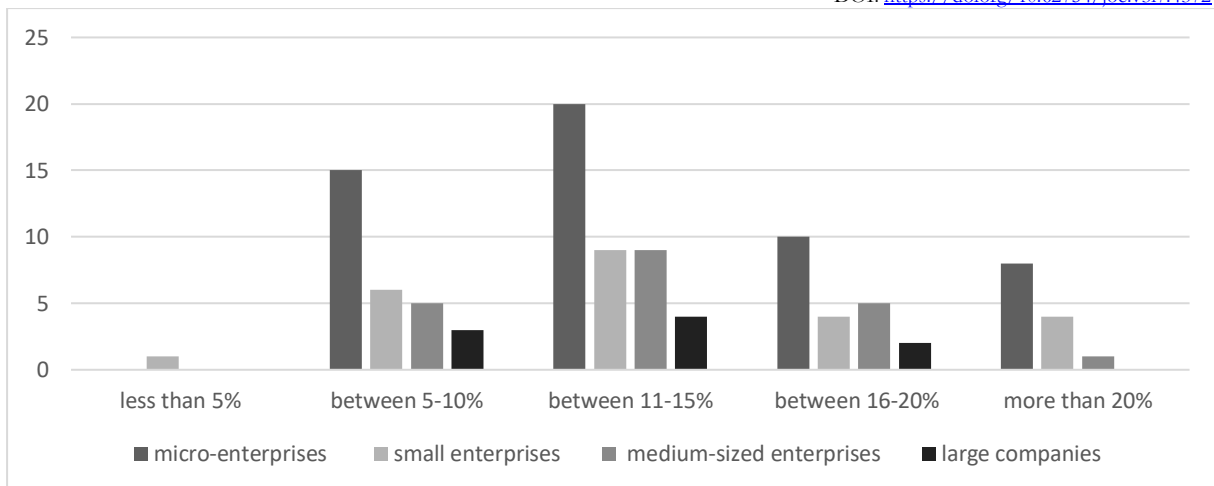


Figure 2. Projected Inflation Rate In 2023 By Company Size

Source: Authors' Own Elaboration

Based on 32.80% of the companies in the sample, the expected inflation rate in Slovakia is between 11% and 15%. This range was also the most frequent in terms of company size.

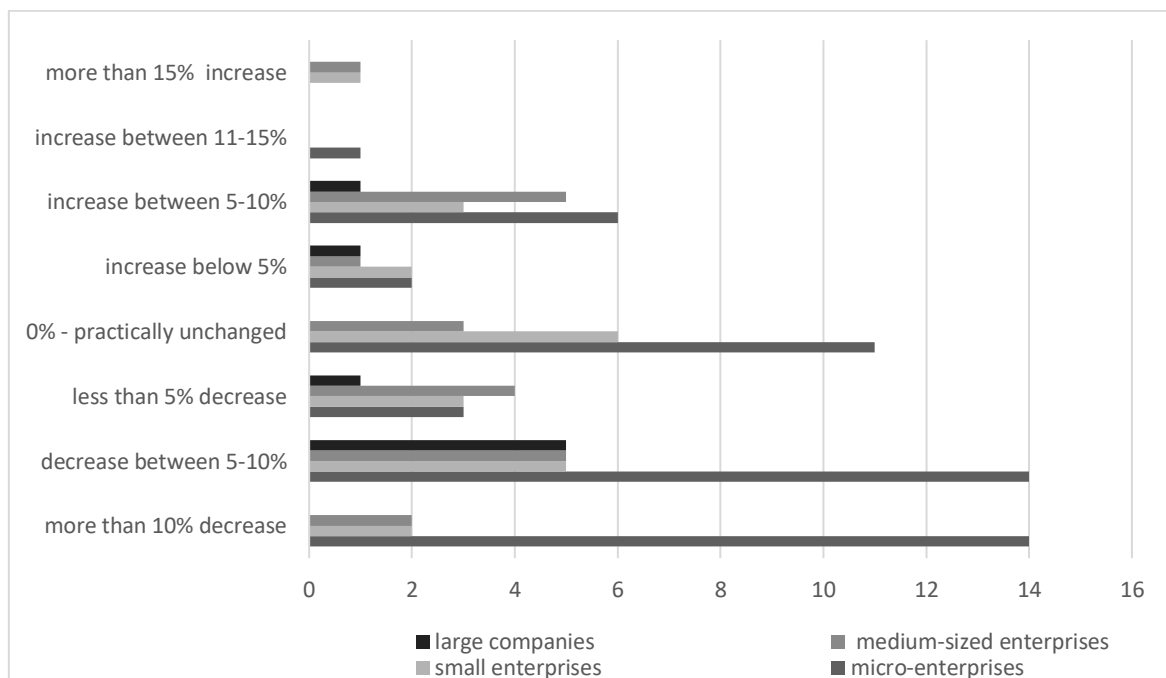


Figure 3. Evolution Of Turnover By Company Size In 2023

Source: Authors' Own Elaboration

22.70% of respondents forecast a decrease in turnover of between 5 and 10% by 2023. For micro-enterprises, most respondents expected a 5-10% decrease. For small enterprises, almost the same proportion expected a decrease of between 5-10% or 0% change (practically unchanged); and for medium-sized enterprises, most of the 50-50 responses expected a decrease of between 5-10% or an increase of between 5-10% in turnover. Large companies predicted a decrease in turnover of 5-10% in Slovakia by 2023.

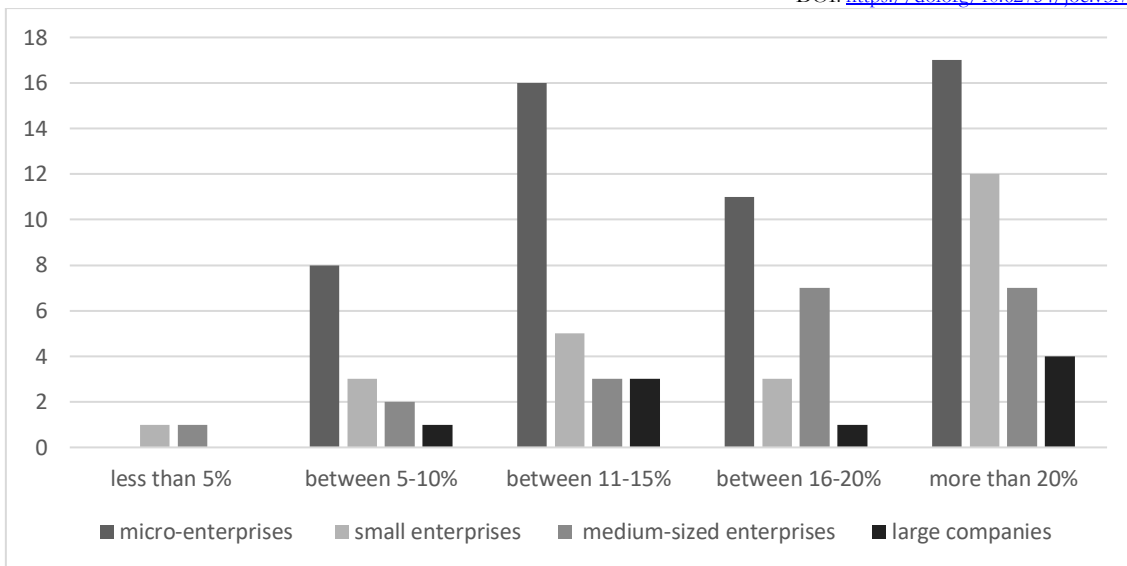


Figure 4. Evolution of Raw Material Prices By Company Size In 2023

Source: Authors' Own Elaboration

31.3% of organizations in Slovakia expect raw material prices to rise by more than 20% in 2023. Also, by company size, all groups indicated this option in the highest proportion.

Last, we analyzed the evolution of technological developments in the war-induced economic environment for the surveyed organizations.

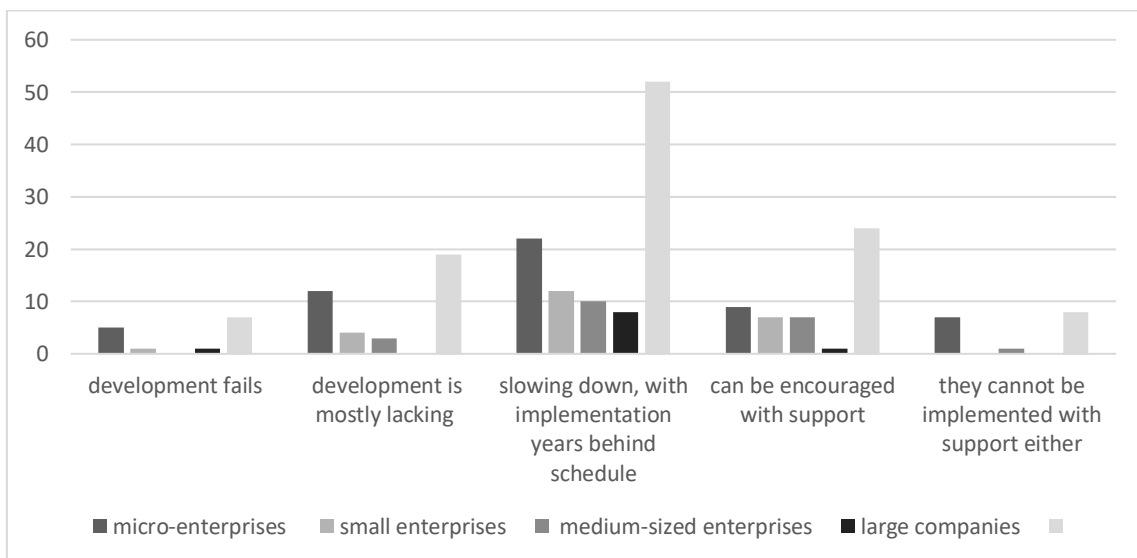


Figure 5. Technological Developments In 2023 By Company Size

Source: Authors' Own Elaboration

Even for micro, small, medium, and large enterprises, the most often marked alternatives are slowing down, with implementation years behind schedule. 40.60% of the total sample also indicated this option. The option of not making improvements at all was also frequently indicated in the SME sector. 18.80% of the surveyed organizations in Slovakia believe that subsidies can still stimulate technological innovation.

The relationship between firm size and the economic/development indicators we examined was examined using cross-tabulation analysis. After conducting the cross-tabulation analysis, a Chi-square test was used to examine whether a statistical correlation between the economic/development indicators presented and firm size could be detected at a 5% significance level.

Table 7. Chi-Square Test

Company size Economic/development indicators	Large enterprises	Small and medium enterprises
Inflation	0.804	0.820
Turnover	0.774	0.658
Increase in raw material prices	0.826	0.743
Technological development	0.301	0.331

Source: authors' own elaboration

For the data in the table, the significance level is, in all cases, more significant than 5%. Therefore, no small correlation can be shown between the examined variables, so no relationship can be shown between the analyzed economic impact indicators change and the company size.

Conclusion

In the theoretical part of our article, we analyzed, based on numerous sources, the direction in which different authors analyzed the effects of the difficult economic situation that arose due to the Russian-Ukrainian war (management, organization, and HR). Regarding the question raised, we found that many publications dealt with the general economic situation, inflation, GDP, and similar issues.

Much less, i.e. an insignificant number of empirical investigations (e.g. issues of supply chains) dealt with the internal effects of the situation. This can be explained, among other things, by the fact that there were relatively fewer partnership and business relationships with the Russian and Ukrainian markets and partners there.

We examined two hypotheses in the framework of our empirical study on the indicated topic. The results of the validity tests of the answers given are summarized in Table 8.

Table 8. Results of Validity Tests of Our Hypotheses

Serial number	Hypotheses	Hypothesis validity			Textual explanation
		Accepted	Partially accepted	Rejected	
1.	H#1: Regardless of whether Slovakian organizations have previously traded with Russia and Ukraine or not, it became necessary to transform their supply chain system			X	Restructuring the supply systems and previous export/import activities related to Ukraine or Russia does not affect the Slovakian companies surveyed.

2.	H#2: Larger Slovak organizations coped more easily with the market changes that occurred due to the war situation			X	No relationship between the analyzed economic impact indicators changes and the company's size can be shown.
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Source: authors' own elaboration

- *Research limitations and plans*

Among the research limitations are the relatively small number of samples and the respondents' selection method.

No satisfactory answer to how has been found regarding the topic (Bundy et al.2016; Frie, Meier, 2023). In this context, our aim was not to invent new theories (Wengraf2001;Mason 2002). Our experiences and conclusions in this study will contribute to a deeper understanding of how various Slovak organizations and employees adapt to the difficult economic situation caused by the war.

In parallel with the research presented in the article, we started the empirical survey presented here in several Central and Eastern European countries (the Czech Republic, Hungary, Lithuania, and Romania), which we will close soon. We plan to prepare a more extensive study on this research as soon as possible.

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