



## EXAMPLES OF GOOD AND BAD PRACTICES OF INDUSTRIAL ENTERPRISES IN SLOVAKIA IN OVERCOMING THE CRISIS SITUATION DUE TO THE COVID-19 PANDEMIC

*Exemplos de boas e más práticas de empresas industriais na Eslováquia para superar a situação de crise devido à pandemia de COVID-19*

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### ABSTRACT

Unpredictable changes in the business environment highlight the necessity for businesses to move towards agile management and business models. The period of the COVID 19 pandemic and the aftermath of restrictive anti-epidemiological measures have shown that the ability to be prepared to implement change, to react in a timely and effective manner to changes in the environment, which means being agile, is becoming an essential prerequisite for both survival and success. For this reason, we conducted research aimed at finding out how Slovak manufacturing enterprises coped with the changes caused by the pandemic COVID 19. The aim of the paper is to highlight examples of good and bad practices of industrial enterprises in the conditions of the Slovak Republic in overcoming the pandemic crisis situation through case studies. The method of semi-structured interviews with owners and top managers of representative manufacturing enterprises of individual industries was used to compile the case studies. The findings from the interviews were compared and linked to secondary data from the finstat.sk database of financial statements regarding the development of financial ratios before and during the pandemic. Based on the comparison of reactions, implemented changes and taken measures in enterprises with the change in financial indicators, we identified cases of good and bad practice. The results show that enterprises that took advantage of the newly emerging demand for new health goods and reoriented their production, as well as enterprises that digitized and optimized processes, achieved significantly better results in sales, profit and profitability than in the pre-pandemic period. Conversely, businesses that have sought only to cut costs by temporarily closing operations or reducing staff without optimisation measures and innovation have seen their financial situation worsen, run into losses and increased indebtedness.

**Keywords:** Manufacturing enterprises, Corona crisis, Enterprise agility, Case studies

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## EXEMPLOS DE BOAS E MÁIS PRÁTICAS DE EMPRESAS INDUSTRIAIS NA ESLOVÁQUIA PARA SUPERAR A SITUAÇÃO DE CRISE DEVIDO À PANDEMIA DE COVID-19

*Examples of good and bad practices of industrial companies in Slovakia to overcome the crisis situation due to the COVID-19 pandemic*

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### RESUMO

Mudanças imprevisíveis no ambiente de negócios destacam a necessidade de as empresas avançarem para uma gestão e modelos de negócios ágeis. O período da pandemia de COVID 19 e o rescaldo das medidas anti-epidemiológicas restritivas mostraram que a capacidade de estar preparado para implementar mudanças, de reagir de forma atempada e eficaz às mudanças no ambiente, o que significa ser ágil, está a tornar-se um desafio. pré-requisito essencial para a sobrevivência e o sucesso. Por esta razão, conduzimos uma investigação destinada a descobrir como as empresas industriais eslovacas lidaram com as mudanças causadas pela pandemia COVID 19. O objetivo do artigo é destacar exemplos de boas e más práticas de empresas industriais nas condições da República Eslovaca. na superação da situação de crise pandémica através de estudos de caso. O método de entrevistas semiestruturadas com proprietários e gestores de topo de empresas industriais representativas de indústrias individuais foi utilizado para compilar os estudos de caso. As conclusões das entrevistas foram comparadas e ligadas a dados secundários da base de dados finstat.sk de demonstrações financeiras relativamente ao desenvolvimento dos rácios financeiros antes e durante a pandemia. Com base na comparação das reações, mudanças implementadas e medidas tomadas nas empresas com a alteração dos indicadores financeiros, identificamos casos de boas e más práticas. Os resultados mostram que as empresas que aproveitaram a procura emergente de novos bens de saúde e reorientaram a sua produção, bem como as empresas que digitalizaram e optimizaram processos, alcançaram resultados significativamente melhores em vendas, lucros e rentabilidade do que no período pré-pandemia. Por outro lado, as empresas que procuraram apenas reduzir custos através do encerramento temporário de operações ou da redução de pessoal sem medidas de otimização e inovação viram a sua situação financeira piorar, incorrer em perdas e aumentar o endividamento.

**Palavras-chave:** Empresas de manufatura, Crise corona, Agilidade empresarial, Estudos de caso

## INTRODUCTION

The COVID-19 pandemic has negatively affected the level of unemployment and the economic and financial situation of businesses and households around the world, including Slovakia. Enterprises have struggled with a lack of liquidity due to anti-pandemic measures. The threat of massive layoffs and a drop in investments motivated governments to take significant measures to avert an excessive increase in corporate bankruptcies and unemployment (Schivardi & Romano, 2020). As a result of lockdowns and increased health concerns, consumers have been forced to buy more goods online and use more digital services. For the first time in history, global exchange, travel and supply chains have been seriously disrupted (Shibata, 2021).

Exploring the implications of the pandemic for business has been the subject of research by many authors or institutions since the first year of the global spread of the pandemic. There have been several studies based on literature searches and published articles. Harel (2021) investigated the impact of the COVID-19 pandemic on business and presented a practice-oriented summary of the most important aspects that redesign business in the context of COVID-19. Carracedo (2021) sought to identify current research lines developed in the context of COVID-19 and their impact on the business environment using a text mining methodology in published articles in prestigious journals. Engidaw (2022) analyzed the challenges of small businesses during the coronavirus pandemic in developing countries, specifically in Ethiopia through secondary data analysis. Statistical analysis of secondary data was also undertaken by Golubeva (2021), who focused on the performance of firms in 13 countries during the COVID-19 outbreak using a regression-based performance model for firms whose data were collected by the World Bank. Piva & Guerini (2023) contributed their work to the research by examining the impact of the COVID-19 pandemic and pandemic-related policies on the creation of new firms through statistical analysis of secondary data. In Slovakia, Žárská & Sochuľáková (2022) focused on quantitative research on the impact of the pandemic on the functioning of small and medium-sized enterprises through the analysis of secondary statistical data. The Slovak Business Agency (SBA), which regularly published the results of questionnaire surveys during the pandemic period, investigated the impact of the pandemic on the business of SMEs in Slovakia (SBA, 2022). Primary questionnaire research was used by Akbari et al. (2023) who addressed the implications of the COVID-19 pandemic on marketing performance with respect to the role of technology in the hotel chain through the structural equation modelling (SEM) method. Stalmachova and Strenitzerova (2021a) investigated the impact of the pandemic on employment in the transport and telecommunications sectors through a questionnaire survey, which revealed that employers in the transport and telecommunications sectors were the most likely to have benefited from changes in work organisation. Ghadir et al. (2022) addressed the impact of the COVID-19 outbreak on supply chain risks through expert questioning. Acciarini and Boccardelli (2021) investigated through four case studies how large companies operating in Italy were able to respond to the crisis to ensure business continuity and developed an integrated policy framework of specific strategic responses. The impact of the pandemic on business through case studies was also analysed by Coleman (2021) in the field of medical supply chains, by Meng et al. (2021) in Nike, and by Castro et al. (2022) in the issue of entrepreneurial motivation. There is also a large number of studies in the literature dealing with the impacts of COVID-19 on SMEs' entrepreneurship (see the search in Janáková Sujová and Kupčák, 2023).

The study of the literature helped to reveal gaps in knowledge and analyses, which became the main reasons for the focus of our study. The first reason is the focus on manufacturing enterprises. Trading companies, service enterprises and generally the service industries most affected by the pandemic have been analysed by several research agencies and government institutions or authors of academic articles. The results are known and publicly available. The analysis of industrial enterprises during the corona crisis has not received special attention, only within the SME group. The second reason is the use of the case study approach, which is scarce in the existing literature when examining the issue, and we did not find this approach at all in publications concerning the impact of the pandemic on Slovak enterprises. Case studies are particularly suited to a comprehensive examination of an event to test a theoretical concept, so in the case of our research we used this approach. Third, the paper seeks to fill a gap in the literature by analysing the impact of pandemics on enterprises in the context of enterprise agility. The pandemic period brought unforeseen changes in the business environment and unexpected government actions. This situation forced enterprises to react immediately and act with agility. The coronacrisis literally tested the ability of enterprises to be agile and to apply agile principles and business models. The impact of the coronacrisis

and the changes in the way firms do business are therefore a good case for examining businesses in the context of the business agility, which is the ability of businesses to respond to unexpected changes in a timely and effective manner and to implement unplanned, rapid change.

The aim of the paper is to highlight examples of good and bad practices of industrial enterprises in the conditions of the Slovak Republic in overcoming the pandemic crisis situation through case studies created on the basis of guided interviews with managers of firms and linking them to the development of financial indicators during the pandemic period. The main research question is: *Did the agile approach help manufacturing firms in the Slovak Republic to successfully manage the coronacrisis?*

## 1 LITERATURE REVIEW

The specific nature of the current period has been stressed, for example, by Bozorgmehr et al. (2020), who argue that the specific problem of Europe is that the COVID-19 crisis converges and interacts with three other global crises: governance, economic, and migration. Such a combination of critical factors makes the situation much more comprehensive and complicated. According to Kuc-Czarnecka (2020) and Zinecker et al. (2021) almost all countries in the world have taken actions in the form of different levels of lockdown due to the lack of any successfully proven remedy that could be able to prevent a major rise in the number of infection cases, however with the negative impact on the national economies and the level of economic activity of their citizens.

### 1.1 Impact of the pandemic on businesses in the Slovak Republic

In the Slovak Republic, the COVID-19 pandemic caused a significant drop in the Slovak GDP due to closed operations, problems with the disruption of supply chains, or restrictions on the mobility of people. While before the spread of the pandemic, the medium-term forecast of the National Bank of Slovakia (2019) spoke of a 2.2% growth of the Slovak economy for 2020, the GDP growth was negative (-) 4.4%. A negative outcome was the decline in investments by companies and the state, which fell by more than 15% at the end of the year 2020. A partial recovery of the Slovak economy occurred in 2021 when the GDP recorded an increase of approx. 3% (Statistical Office of the Slovak Republic 2021). The SME sector was the biggest victim of the economic crisis caused by the epidemic, with 9.8% of businesses closed due to the hopeless situation. Government restrictions and quarantine measures to mitigate the spread of the virus have led to the closure of businesses in various sectors. With the introduction of government set of supporting measures called Lex Corona, the Slovak government has sought to preserve jobs, keep businesses alive and prevent negative effects (Mura et al., 2022).

Social disengagement measures and safety concerns have contributed to the reduction in consumption. People have reduced purchases and services to essentials, which has affected many industries, especially retail, tourism, and restaurant operations. Business closures and reduced consumption have led to rising unemployment. Many people lost their jobs or were exposed to short-term or part-time work. Svabova et al. (2022b) analyzed and quantified the impact of the COVID-19 pandemic on unemployment. The results of the study showed that the most affected sectors according to the NACE classification were F - construction, I - accommodation and food service activities and R - arts, entertainment, and recreation, showing an increase in unemployment of 89%, 88%, and 65%, respectively. The paper of Harman (2021) deals with the impact of the pandemic on the labour market in the Slovak Republic. The results showed a more negative impact on men than on women.

Some industries such as information technology and online services have experienced growth due to the need to shift to digital ways of working, learning and communicating (Bolek & Zelina, 2021). The COVID-19 pandemic has implied significant changes in the ways organizations operate. According to the data available in Statista database, employees working from home increased from 3.7% in 2019 to 5.7% in 2020 (Statista 2020). Digital technologies allowed work to continue despite strict measures and restrictions in society. Many companies, using the digital technologies, adapted and overcame the current situation and made work easier for employees. They have allowed people to connect with friends, family, colleagues, or superiors at any time (Almeida et al., 2020; Narayanamurthy et al., 2021).

With limited access to physical stores and the need for social distancing during the pandemic, the demand for online shopping has increased. E-commerce businesses experienced growth while traditional retail stores

struggled to maintain their operations (Aydogan, 2020). A study by Stalmachova and Strenitzerova (2021b) found that some types of goods were more frequently purchased online during the pandemic, and the number of online purchases of food and ready-to-eat food and beverages increased.

Many countries have provided various forms of financial support and incentives to businesses to help them overcome the difficulties associated with the pandemic. These measures were intended to sustain the economy and minimise the negative consequences. In the study of Chubarova et al. (2020), the authors compared public policy response to pandemics in Slovakia, the Czech Republic and Russia. Belanová (2022) evaluated the measures to help SMEs in the Slovak Republic through a comparison with selected EU countries and the financial impact of these measures on the Slovak economy even in other crisis (Fedorková, 2017). The most widespread measures in connection with the pandemic taken by the Slovak government included measures relating to income tax, direct loans, and wage contributions. Measures in structural policies have been implemented only to a limited extent.

## 1.2 Business agility in the context of the COVID-19 pandemic

Companies needed to be able to deal with changes during pandemic period. According to research conducted, 73.5% of research journals wrote that business agility is one way for companies to be able to face, respond, and adapt quickly to changes and competition in the market (Bashkarada & Koronios, 2018; Cai et al., 2019; Darvishmotevali et al., 2020; Martínez-Caro et al., 2020; Zaini et al., 2020). Companies can create and change strategies and tactics related to business agility so that companies can use them to cope with fluctuating internal and external changes (Ahl, 2020; Barlette & Baillette, 2020).

Enterprise agility is the ability of the firm to cope with turbulent environments with efficiency which not only allows the company to survive in an uncertain environment but also can have a tremendous impact on the company (Wageeh, 2016). Business agility is the main capability that allows companies to be able to see changes and act effectively to maintain and improve sustainable performance and allows organizations to adopt an extended enterprise network while operational agility refers to the extent to which a company can easily and quickly change its business operations to adapt to the current market environment (Gerster et al., 2020). This of course allows the company to see changing opportunities, and threats in the environment so that it can provide a fast and focused response to customers and stakeholders by configuring the company's internal resources and processes (Mansur et al., 2021). Customer agility enables the company to capitalize on changes in the marketplace (Babatunde, 2021) by providing new value that can help improve internal operations customization so that the company can expand its competitive action and grow in market position (Ricardianto et al., 2020).

## 2 METHODOLOGY

The intention of the research, the results of which are presented in this paper, was to find out to what extent the manufacturing companies of the Slovak Republic were able to be agile in coping with the changes caused by the pandemic Covid 19. This is because all the changes in the pandemic period were unexpected, and in order to survive the companies had to react quickly and implement unplanned changes and actions, which is typical of an agile approach.

To this end, we designed a structure of guided interviews with owners and managers of manufacturing firms from selected industries and conducted a total of 35 interviews. The content of the interviews was constructed based on insights from the literature reviewed on business agility as well as the impact of the pandemic on business operations. Businesses were selected to be representative of their length of time in the market, size, ownership and the level of financial performance relative to the industry as a whole. Semi-structured interviews were chosen to allow for open-ended responses and follow-up questions on the topic. The interviews were conducted in person, at the end of 2023, when the effects of the pandemic had already died down. The guided interviews included 14 questions focused on obstacles, challenges, innovation opportunities arisen in pandemic period, taken financial and non-financial measures in the company to maintain business continuity, changes and impacts caused by coronacrisis, achieved results due to measures taken.

The second part of the research was the analysis of changes in the financial indicators of the analyzed companies during the pandemic, i.e. the analysis of data in 2019-2022: sales, revenue, profit, return on sales and

equity, profit margin, debt, inventory. The data source was the financial statements database finstat.sk, which is obliged by law to publish all financial information of active companies in the Slovak Republic.

To increase validity, secondary data from the financial database was consulted along with primary data as a means of refining the findings. Sources of secondary data included financial statements of the firms, annual reports and data archived on the websites of the surveyed firms. We triangulated all data from primary and secondary sources using the procedure outlined by Tellis (1997).

The results of the interviews and secondary data analysis were compiled into case studies. Case studies are particularly well suited to a comprehensive examination of an event to test a theoretical concept; in the case of our research, this was to test the agility of Slovak firms during a coronacrisis. The main advantage of collecting data by case study is using multiple sources of evidence that help in the triangulation process and increase the richness and quality of the findings (Yin, 2018). To ensure reliability, we designed a formal, uniform case study protocol. This protocol contains three parts, created by grouping responses to structured interview questions, namely: obstacles and challenges addressed, actions implemented, and results achieved.

In the final stage, we identified the enterprises with the most significant improvement in business performance during the pandemic as best practice cases and the enterprises whose situation was most worsened by the pandemic as examples of poor practice. These selected studies are presented in the results.

### 3 RESULTS

The case studies show that all manufacturing enterprises in the country faced these same challenges and obstacles during the pandemic:

- Increased safety and hygiene measures and associated increased costs.
- The transition to online communication and the associated need to procure online tools, platforms and train staff to work online.
- Staff absenteeism due to sick leave, mandatory quarantine and related business continuity issues.
- Emergence of new demand for health, hygiene and disinfection products.

During the pandemic period, some industries were affected by interruptions in the supply of inputs, closure of plants, breakdown of customer relationships - a drop in demand and orders.

#### 3.1 Best Practices

Companies that were able to improve their financial performance in a period full of restrictions and limitations and use the pandemic as a business opportunity to their advantage are best practice cases. Of the businesses surveyed, 5 such businesses were identified, as we outline in the following text.

##### 1. *An enterprise in the metallurgical sector, medium sized, with 25 years of tradition:*

*Barriers and challenges addressed (specific):* Decrease in demand for products

*Measures implemented:*

- Increased employee safety, reduced virus transmission and thus reduced staff downtime were addressed by investing in robotization of production - increased digitalization of processes, introduction of automated, robotic production.

- Exploiting the high emerging market demand for scarce goods (safety features and devices): reorganisation of part of the metallurgical production to produce protective masks, shields, temperature gauges for organisations and their employees, including the development of the products in the in-house research and development department.

- Raising funds for investment by selling less needed assets and stock of materials not needed for the new production.

- Emphasis was placed on delivery compliance, satisfying both original and new customers

- Increasing the use of online platforms in both communication and commerce

*Results achieved:*

- Retention of jobs with the possibility of providing special financial non-financial benefits

- Entry into new market segments, acquisition of new customers
- Positive impact on financial results: decrease in debt by 20%, increase in profit margin to 38%, increase in sales by an average of 12% annually (2020-2022), increase in profit by almost 40% in 2020 and by 55% in 2022.

**2. Enterprise in the furniture industry, medium-sized, with 27 years of tradition.**

*Obstacles and challenges addressed (specific):* need to close for 1 week, increased demand for products - market opportunity, increase in raw material prices

*Measures implemented:*

- Optimisation of processes - increase in efficiency and automation of processes and labour productivity
- Development and production of a new product line for the new demand: home office furniture
- Use of state aid to maintain jobs
- Use of bridging loan to invest in new technologies and digitisation
- Securing funding for operations from the company's financial reserves and savings
- Contracting electricity prices for the next two years (maintaining production costs)
- Conclusion of long-term business contracts, stabilisation of customer relations

*Results achieved:*

- Creation of sufficient stocks of raw materials and supplies at lower prices
- Entry into new market segments, acquisition of new customers
- Positive impact on financial results: increase in profit by 235.00% on average (2020-2022), decrease in indebtedness by 25.20%, decrease in profit margin to 47.20%, increase in sales by 20.58% on average each year (2020-2022)
- Reorganisation of processes and workflows

**3. Enterprise in the food industry, micro-enterprise with 10 years of tradition**

*Obstacles and challenges addressed (specific):* disintegration of customer markets and decline in orders, search for new markets and distribution routes

*Measures implemented:*

- Expansion of the offer with a new product in response to increased customer demand - Health protection
- deliveries in the shortest possible time
- Digitisation of processes and creation of an online trading area (e-shop)
- Selling off stocks of original products at very low prices,

*Results achieved:*

- Positive impact on the company's financial indicators: threefold increase in sales, achievement of approximately 10 times higher profit than before the pandemic, even with a drop in gross margin to 19.20%, debt ratio dropped to 84.90%
- Decrease in work in progress and inventory levels, especially in 2021
- Entry into new market segments, acquisition of new customers

**4. Enterprise in the engineering industry, small enterprise with 20 years of tradition**

*Obstacles and challenges addressed (specific):* decline in orders, search for new markets

*Measures implemented:*

- Preparation and launch of production of new products in response to the new demand (disinfection gates and racks for businesses) using the same input materials
- Use of State aid to maintain jobs and provide staff cover
- Sale of assets to maintain liquidity and ability to repay liabilities
- Increase in input and energy prices was offset by a reduction in profit margin to 28.80%, which was a short-term detriment to earnings

*Results achieved:*

- Retention of jobs with the possibility of providing special financial non-financial benefits
- Entry into new market segments, acquisition of new customers

- Significant increase in revenue by 184.65% and profit by almost 273.68% in 2022 compared to 2020, decrease in debt by 20%
- More flexible processes and production system

**5. A company in the chemical industry, with over 100 years of tradition, is classified as a medium-sized enterprise.**

*Obstacles and challenges addressed (specific):* loss of large customers but gain of end consumers; shortage of packaging input materials, search for new distribution channels

*Measures implemented:*

- Optimisation of distribution channels (closure of selected retail outlets),
- Transition to new market segments - from wholesale customers to end consumers
- Product and offer innovation - introduction of a new product: disinfectants
- Adoption of State aid to maintain jobs
- Use of reserves and stocks
- Stabilisation of prices, achieved by offsetting the reduction in gross margin to 19 % at the expense of increases in input and energy prices

*Results achieved:*

- Positive impact on financial indicators: after a slight decline in sales in 2020, an annual increase in sales of 25.65% (2021-2022) was recorded, and there was a doubling of profits compared to those achieved before the pandemic.
- Acquisition of new customers and distribution channels.

### 3.2 Bad Practices

We have identified companies (5 in total) in each industry sector that have not only worsened their financial performance, but have put their future performance at risk through their approach to dealing with the coronacrisis and the actions they have taken. We present the case studies of these companies as examples of bad practice in the following text.

**1. A large, foreign-owned enterprise with 150 years of tradition in the automotive sector.**

*Obstacles and challenges addressed (specific):* decline in orders, interruption in supply of input materials, production uncertainty

*Measures implemented:*

- Layoff 50% of employees with generous financial severance.
- Postponement of investments and reduction of profit margin in order to maintain contracted prices.
- In particular, attention was paid to simplifying and speeding up administrative processes by moving to online communication and home office

*Results achieved:*

- Negative impact on financial indicators: in 2020, a 17.5% drop in sales and a 66% drop in profit; in 2021 and 2022, despite an average increase in sales of 10% per year, the company reported a loss in 2021 and a deterioration in the economic result of 761%; in 2022, the loss continues to persist, although it is being mitigated by 42%, an increase in debt and a decrease in the profit margin.
- Due to redundancy of skilled workers, there was a problem in securing production volumes after the recovery of orders and demand in 2022, this problem persists to date.

**2. Engineering company with 13 years of business experience, medium-sized enterprise, in bankruptcy.**

*Obstacles and challenges addressed (specific):* significant drop in orders, interruption in supply of input materials, production uncertainty

*Measures implemented:*

- Adoption of state aid for employee retention
- Temporary interruption of production and reduction of production volumes



- Increase in sold prices due to cost increases

*Results achieved:*

- Negative impact on financial ratios: 20.90% average drop in sales in 2022 compared to pre-pandemic 2019, doubling of losses
- increase in inventories of approx. € 5.2 million
- The company has gone into bankruptcy due to the financial indicators
- Disruption of distribution channels, loss of customers

**3. Textile enterprise with 28 years of existence, medium-sized enterprise.**

*Obstacles and challenges addressed (specific):* significant drop in orders and loss of customers, interruption of input supplies, opportunity to meet new demand (health protection)

*Measures implemented:*

- Innovation and expansion of the manufactured range and creation of a range of protective textile drapes, return to retro range

- Adoption of all possible forms of State aid to maintain all jobs
- Increase in material stocks in year 1 and use of reserves and stocks in year 2 of the pandemic
- Temporary cessation of production
- Selling off stocks of original products at low prices

*Results achieved:*

- Increase in sales due to new product range (drapes) - short term only
- Negative impact on financial indicators: decrease in sales by 21.77% on average, transition from profit to loss and increase in loss to approx. €0.27 million in 2022, increase in inventories to approx. €0.85 million in 2022
- Failure to retain original customers, loss of new customers after loss of interest in the new product
- Inappropriately timed investment for modernisation of machinery

**4. Furniture company with 32 years of tradition, medium-sized enterprise.**

*Barriers and challenges addressed (specific):* finding new markets

*Measures implemented:*

- Operational solution to staff shortages - replacement by less competent staff
- Acquiring a new market and expanding sales
- Acceptance of state aid - only 1 month
- Investment in technology financed 90% by subsidy
- Investment in the construction of a new production hall - financed by a loan

*Results achieved:*

- Negative impact on financial ratios: debt increased to 75%, gross margin decreased to 34.6%, transition from profit to loss in 2022 despite gradual increase in sales of 43%.
- Lack of funding for salary increases resulted in key staff leaving

**5. Food company, 29 year old, medium sized.**

*Barriers and challenges addressed (specific):* significant increase in demand and shortage of qualified staff

*Measures implemented:*

- Recruitment of new employees from other sectors (unqualified) without the necessary training.
- Increase in robotization and automation of production.
- Optimisation of production processes in order to increase productivity in production.

*Results achieved:*

- Negative impact on financial ratios: sales decreased by an average of 22.40% between 2021 and 2022, annual losses averaged €1.05 million, debt increased to 38.40%, gross margin decreased to 10.20%.
- Inability to meet increased demand for both fixed and innovative products.
- Due to increased energy prices, the company was forced to reduce production.

## 4 DISCUSSION

Each sector and each enterprise faced its own challenges due to the COVID-19 pandemic. Our purpose was to examine how manufacturing, industrial enterprises coped with the coronacrisis period and how they achieved significant improvement or deterioration in their financial performance.

Through guided interviews with managers of enterprises in various industries, we found that some enterprises adapted quickly to the new conditions and began producing products that were needed and in demand as a result of the pandemic.

The **best practices** of the interviewed companies can be considered as:

- **Product mix innovation and new product development:** reorientation of production towards new products for which demand has increased or demand for completely new products has arisen due to the pandemic, which were in short supply. These were mostly health protection products, disinfectants and hygiene supplies and products. Businesses thus used the new market opportunity - the emergence of new demand - to their advantage.
- **Entering new markets and market segments:** in the event of disruption of customer relationships and loss of customers, companies focused on finding new customers, new markets whose needs they were able to meet with their offerings. This has most often involved moving from wholesale customers to end customers, entering markets where there was still sufficient demand, introducing online trading (e-shops)
- **Flexibility in terms of trade and delivery conditions:** in order to retain customers, firms reduced the delivery time of products, took measures to comply with agreed terms of delivery time, price and quality, strengthened online communication.
- **Keeping prices affordable for customers:** avoiding cost increases by entering into longer-term contracts for energy and materials, increased costs partly offset by reduced profit margins
- **Digitisation and automation:** the digitisation of processes, the move to online forms of communication and trading and the increase in the robotization of production processes have made it possible to speed up all processes and the reliability of information transfer, and to attract new suppliers and customers via the online space.
- **Optimisation of production:** the introduction of methods to eliminate waste, increase the efficiency of production facilities and labour productivity, and the introduction of flexible planning has enabled companies to reduce production costs, which has been reflected in improved profitability.
- **Stabilisation of able-bodied workers:** ensuring their safety and health by disinfecting premises, providing protective and disinfectant equipment, ensuring on-site testing of employees, introducing automated, robotic production, moving to home-office, thereby reducing virus transmission and reducing staff downtime,
- **Retaining key and skilled employees:** regular communication, transparent information, removing administrative burden, providing protective equipment, increasing benefits, work appreciation and motivation in crisis situations.
- **Use of inventories and financial reserves to ensure liquidity and continuity of production:** interruptions in the supply of input materials, decreases in orders and liquidity problems are solved by the company as a priority by using its financial and material reserves, by selling unnecessary assets and inventories, thereby reducing or eliminating the need to obtain financial resources for operations from external sources and avoiding an increase in indebtedness and a further increase in the cost of financing the company.
- **Rapid response and implementation of unplanned changes:** the success of the measures taken depended to a large extent on their correctness and timeliness, sufficient information and training of staff, strengthening of teamwork. By reacting quickly, companies were able to take advantage of the market opportunities created by the pandemic over a longer period.

The above measures had a significant positive impact in the analysed companies in the form of increased revenues, profits, improved production flexibility and process efficiency. During the pandemic period, the enterprises were in better financial and operational condition than they were before the pandemic.

On the other hand, manufacturing companies that were not flexible enough and focused only on cost-cutting did not cope with the corona crisis.

The main **bad practices** are:

• ***Inability to take advantage of changes in demand and lack of innovation in the product range:*** striving primarily to maintain production, not responding to changed market needs and not seeking ways to meet them, or not being flexible in production.

• ***Production curtailment and closure:*** failure to deal with staff shortages, inadequate health and safety measures led to a reduction in production and interruption of deliveries, which, in addition to having a negative impact on financial results, also resulted in a loss of customers.

• ***Redundancies:*** a fall or complete failure of orders meant that production had to be cut back, reducing the need for staff. Redundancies or reductions in hours were not only associated with higher personnel costs, but also caused problems in getting the necessary staff back after the pandemic had passed.

• ***Slow and late reactions and actions:*** unpreparedness for the security measures resulting from the COVID-19 pandemic, delayed search for alternative suppliers after a supply failure, slow response to changed customer requirements, implementation of only necessary measures with no process adjustments, minimal change in communication methods,

• ***Loss of original customers*** - failure to maintain relationships with original customers during temporary transition to pandemic-related production of new products; failure to communicate with customers, failure to keep up with orders

• ***Making costly investments:*** the emergence of new unexpected health expenditures and increases in input prices were compounded by investment spending, resulting in the search for savings in other costs or leading to corporate insolvency.

• ***Full pass-through of cost increases to sales price increases:*** significant input price increases passed on to customers in a period of uncertainty led to a reduction in demand and even a complete loss of customers.

• ***Poor communication with customers and employees during a crisis situation:*** underestimating the need for increased and open communication in a period when government regulations and a pandemic situation changed the situation from day to day weakened trust, the willingness to cooperate and the will to maintain the relationship in the future.

The above reactions by businesses have resulted in deteriorating financial results, increased business continuity problems, bankruptcy, disintegration of customer markets, and difficulty in recruiting skilled employees once the pandemic is over and economic activity has recovered.

A review of examples of good and bad practice suggests that agility as the ability to respond quickly and effectively to change was a key influence on the behaviour of businesses during the coronacrisis and on its successful management. Late or inappropriate responses to change were identified by business representatives as reasons for failure to meet customer demands, maintain market position and financial stability. The worst impacts were seen in companies that were almost completely unresponsive and took no action.

## CONCLUSION

The situation after the COVID-19 pandemic has changed. Many businesses are struggling to adapt to the new conditions and are looking for ways to recover and grow. Negative factors related to increased unemployment, reduced GDP, the liquidation of businesses that were not prepared for the pandemic, the shift to online forms of communication and commerce, the freezing of tourism, culture, retail and some services, have combined to create a complex picture of the impact of the COVID-19 pandemic on businesses and the economy. Ensuring agility in the enterprise encompasses various aspects that enable faster and more flexible responses to changes in the business environment.

The pandemic period, which brought unexpected changes, forced companies to adapt quickly and find new ways of staying in business. Some businesses were able to react early to the new conditions and use the crisis to their advantage, while others are still struggling to recover from the effects of the pandemic.

This study highlighted cases of good and bad practices of Slovak manufacturing enterprises identified by comparing the reactions, implemented changes and measures taken in the enterprises with the change in financial indicators. The results showed that enterprises that reacted quickly to the changed market conditions, took advantage of the newly emerging demand for scarce health care goods and changed the production programme to

produce them, as well as enterprises that digitised and optimised processes, achieved significantly better results in sales and profit and profitability and were in a better financial position than in the period before the pandemic. The most inappropriate responses of enterprises can be considered as slow or no changes implemented, downsizing, not fulfilling orders by interrupting production, focusing on cost containment without implementing rationalisation measures, as well as not taking care of regular customers when temporarily changing the production programme to meet the temporary demand of new customers during the crisis period.

The main contribution of the paper is to extend the empirical findings by examining the effects of pandemics on the entrepreneurship of manufacturing firms in the context of firm agility. The corona crisis tested the level of flexibility and the ability to apply agile principles also in manufacturing firms. It can be concluded that the agile approach helped manufacturing firms to successfully cope with the unexpected crisis period and even improve their financial situation.

Future research will be focused on building agile management models that help companies to overcome unexpected changes, suggestion of methods for assessing the level of agility in the enterprise and comparison of the success of agility application in different industries.

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