DETERMINANTS OF CHANGES IN REVENUES IN POLISH COMPANIES DURING THE PANDEMIC

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Purpose: The article aims to identify factors that influence changes in revenues in Polish companies during the COVID-19 pandemic and to improve the efficiency of the allocation of state aid.

Design/methodology/approach: The paper uses a logit model to analyze data from a survey of 10950 medium-sized Polish non-financial enterprises, reviews the relevant literature, and focuses on the Polish market. For the purposes of the survey, in addition to the sector breakdown, we proposed measures based on financial data to qualify companies according to their business profile.

Findings: The revenues of companies responding to the lockdown are driven by the sector and the company profile. Service companies were more vulnerable to the negative effects of the pandemic, while manufacturing companies and those selling to final retail customers were more resilient.

Research limitations/implications: Future research could focus on developing more accurate models to predict the decline in revenues during a pandemic. The study focused on medium-sized enterprises in Poland.

Practical implications: The paper suggests that state aid policies should consider not only the sector but also the company profile. It also implies that companies must adapt to market changes and consumer preferences due to the pandemic.

Originality/value: This article provides new information on factors that affect changes in revenues in Polish companies during the pandemic. It is valuable for policy makers, researchers, and companies seeking to improve their pandemic response strategies.

Keywords: pandemic, state aid, economic policy.

Category of the paper: Research paper.

Introduction

The outbreak of the COVID-19 pandemic significantly affected the financial situation of companies. This forced a response from the government, which became involved in providing pandemic state aid. A key problem in the provision of state aid is the selection of companies requiring support. Improperly provided support can be a source of distortions such as deadweight loss and substitution effects (Santarelli, Vivarelli, 2002). Previous research indicates that, in the case of Poland, even 40% of COVID-19 state aid funds went to companies that did not need it. At the same time, more than a third of the companies that experienced a sales drop during the pandemic period did not receive this aid (Franek et al., 2023). In view of this, the key issue is to correctly define the criteria for granting aid. In Poland, the decisive criterion was a decrease in sales. Our intention is to identify other financial criteria that could improve the efficiency of state aid allocation. On the basis of the literature review, we considered that the sales response of companies to the lockdown caused by COVID-19 is explained not only by the sector in which the company operates, but above all by the company profile characterized by: type of business (production or services), type of business relationship with customers (B2B or B2C), position in relation to suppliers (ease of financing the business with liabilities to suppliers), type of product (mass or luxury), stability of sales. We used variables based on financial indicators to quantify these characteristics. We surveyed 10 950 medium-sized enterprises in Poland. We built a logit model in which the explained variable takes the value 1 if sales in 2020 were higher than or equal to sales in 2019 and 0 if there was a decrease in sales, and the independent variables are the financial ratios describing the indicated characteristics. The aim of our study is to identify such characteristics of companies that allow for the identification of companies vulnerable to the negative effects of a pandemic. We formulate the following research hypotheses. H1: asset turnover ratios are positively related to the direction of sales volume changes during a pandemic; H2: companies with higher revenue volatility are more sensitive to the negative effects of a pandemic; H3: companies selling to ultimate retail customers (B2C) performed relatively better during a pandemic; H4: the gross margin ratio is positively related to the direction of sales volume changes during a pandemic.

Literature review

The outbreak of the COVID-19 crisis required swift action from the EU authorities to implement extraordinary state aid regulations in response to the potential threat of mass unemployment and partial or complete shutdown of various sectors. Bloom et al. (2021) emphasize that the impact of the pandemic varied across different sectors, with some requiring

little or no support, while others faced urgent and substantial challenges. Sectors such as the food industry, food trade, and certain segments of the medical sector involved in COVID-19 protection were relatively unaffected. E-Commerce and IT companies, particularly those providing remote working tools, also experienced benefits from the pandemic.

Certain entities encountered short-term repercussions, with their operations swiftly returning to prepandemic levels once lockdown restrictions were lifted. These entities experienced a significant decline in revenue and liquidity problems. However, there were also businesses, such as hotels, airlines, and cinemas that faced persistent shock throughout the pandemic. Analysis of data from five EU countries (Croatia, Finland, the Netherlands, Slovakia, Slovenia) reveals a notable short-term decline in productivity, as measured by the ratio of value added to employment (Bighelli et al., 2023).

In the Asian context, (Liu et al., 2020; Qiu et al., 2021) focused on the decline in firm value of companies operating in the hospitality, transportation, lodging, and catering industries. Research conducted by del Rio-Chanona et al. (2020) highlights that the negative impact of the pandemic on the economic condition of entities stems from both the demand and the supply sides. On the one hand, the lockdown measures and restrictions imposed to mitigate the spread of COVID-19 resulted in temporary closures, production reduction, and supply chain disruptions, leading to supply shocks that affect firm performance. On the other hand, numerous sectors experienced a sharp reduction or complete disappearance of demand. The service sectors, including airlines, restaurants and tourism, saw a decrease in customer numbers and the risk to workers' income became a driving force for reduced consumption.

In such a situation, the state intervention aimed at supporting companies that have suffered the negative consequences of the pandemic is justified. Government support for private businesses is legitimized when their condition would have been worse without these interventions (Harberger, 1971). Therefore, the selection of entities to which state aid should be granted plays a key role, and a detailed analysis of their economic and financial situation should play an important role in assessing the potential effects of aid and its impact on the competitiveness of firms (Robins et al., 2020).

The effectiveness of state aid is most pronounced when implemented simultaneously and coordinated, with the backing of government subsidies (Durst, Henschel, 2022). As part of efforts to mitigate the adverse effects of COVID-19, many countries provided financial support to companies through various instruments such as targeted subsidies for the sectors most affected by the pandemic, loans, tax relief, deferrals, and even temporary regulations suspending the possibility of company bankruptcies. These measures played a crucial role in saving numerous businesses and preserving jobs in the short term. The assistance was particularly directed at small and medium companies (SMEs) due to their smaller cash reserves compared to larger companies, their limited adoption of digital tools and technologies, and their higher representation in industries heavily impacted by the pandemic.

Employment subsidies or short-term work schemes (including part- and full-time) were the most widespread and substantial measures implemented in EU countries (Bighelli et al., 2023). Lalinsky & Pál, 2022) note that government support in the form of wage subsidies has a positive and statistically significant impact, albeit relatively mild compared to the magnitude of the economic shock. These measures alleviated firms' liquidity needs amidst a sudden decline in sales while enabling them to resume operations more quickly by maintaining employment levels. Such actions are justified as corporate liquidity management policies undergo changes during times of crisis (Campello et al., 2010), and companies with weaker financial capacities tend to face greater challenges as banks and financial institutions are inclined to reduce funding to them (Ivashina, Scharfstein, 2010). Hence, it becomes essential to design liquidity support and employment subsidies specifically targeted at firms negatively affected by the shock (Motta, Peitz, 2020). This implies that companies not affected by the pandemic shock should not benefit from liquidity support schemes or state aid intended to cover labor costs.

A systematic literature review conducted by (Dvouletý et al., 2021) reveals that government support for companies in EU countries has a positive effect on firm survival, employment, sales volume, labor productivity, and overall productivity of production factors. However, the authors highlight variations due to differences in the time horizon of the analyzes (including short-term and long-term effects) and the influence of factors such as firm size, lifespan, geographical region, sector, and the extent of support provided.

Bennedsen et al. (2020) find evidence that government support policies announced in Denmark - like those in several European countries - were effective in reducing unemployment during the pandemic. These authors also showed that firms that experienced the largest revenue declines were the most likely to benefit from support measures. An assessment of the first months of public aid directed to Portuguese firms shows that those entities that benefited from public aid were in a relatively more precarious situation, both in terms of business status (closures) and turnover losses during the period analyzed, and in terms of liquidity conditions. In July 2000, the liquidity situation improved significantly, with the improvement being more pronounced in firms that benefited from aid (Van Hove, 2020; Manteu et al., 2020).

This review indicates that the provision of government support to businesses during the COVID-19 period was necessary. However, it is questionable whether it was properly targeted. This is evidenced by the significant geographical variation in the amount of state aid provided across EU countries. The scale of state aid provided in France in 2020 was several times higher in relation to GDP compared to Italy and Spain. There were similarly large differences between Belgium and Greece, or Austria and Bulgaria. Finally, in the first year of the pandemic, Germany and France represent 66 per cent of total aid among all EU countries (Agnolucci, 2022). The geographic unevenness of the aid entails the risk of unequal support for companies similarly affected by the pandemic but operating in different countries. In view of this, it is crucial to define the aid criteria in such a way that it is not a source of distortion of competition for the EU internal market (Motta, Peitz, 2020). To avoid this risk, aid has been

targeted in most EU countries at all those affected by the pandemic. This approach is assessed as more neutral and less market-distorting (Van Hove, 2020). This approach can be accompanied by two well-known problems: deadweight loss and substitution effects. These factors should be taken into consideration when implementing business support measures. Deadweight loss may occur when taxpayer funds are allocated to firms that would have survived the crisis even without government support (Santarelli, Vivarelli, 2002). This implies that resources are being allocated inefficiently, leading to a loss of economic welfare. In the long run, there is a risk of substitution effects. If public assistance is not selectively provided to firms with a higher chance of survival, it allows less viable firms to continue operating at the expense of more viable ones. This lack of selection hampers the reallocation of production factors, which is crucial for economic efficiency (Barrero et al., 2021). Additionally, the persistence of non-viable firms can result in a loss of organizational capital. Organizational capital refers to the accumulated knowledge, skills, and structures within a firm that are lost when the firm ceases to exist. Therefore, it is essential to examine to what extent state aid related to COVID-19 is reaching the companies that truly need it to avoid deadweight loss. In addition, consideration should be given to whether such an aid contributes to long-term productivity and avoids substitution effects. Providing state aid to entities that are unlikely to survive, especially in declining sectors, raises questions about its effectiveness and efficiency. There are studies that indicate what factors determine the effectiveness of public assistance in times of pandemic.

Groenewegen et al. (2021) indicate that misdirection of state aid was avoided in the Netherlands, as it went to companies with low turnover expectations and high turnover uncertainty. However, in Poland, it was observed that more than one third of the companies that experienced a sales drop in 2020 did not receive COVID-19 state aid (Franek et al., 2023), although at the same time, entities with a low probability of survival, i.e., those whose financial situation was already bad before the pandemic crisis, also did not receive aid (Wiśniewski et al., 2022). Data for the world's most admired companies provide valuable insights into the impact of the economic shutdown on corporations (Mooney, 2021). It reveals that businesses with lower returns were primarily concerned with credit losses, restructuring efforts, and maintaining cash reserves. The sectors most heavily affected by COVID-19 were those relying on face-to-face consumer interactions and those dependent on business-to-business demand for profitability. Additionally, businesses that complemented each other, such as hospitality and airlines, experienced significant impacts. On the other hand, companies that fared well were those that had already implemented online services and focused more on business-to-consumer transactions to generate profits. A study conducted by Fairlie and Fossen (2022) provides evidence on the impact of the COVID-19 pandemic on sales across detailed business types in California. The study found that businesses directly affected by mandatory lockdowns, such as accommodations, experienced the largest sales losses, reaching 91%. These sectors were severely affected by restrictions and reduced consumer mobility.

On the contrary, certain types of business made substantial gains during this period. Online sales, for instance, saw a remarkable growth rate of 180%, as consumers switched their purchasing behavior away from in-store transactions to online platforms. This substitution effect contributed to the surge in online sales.

Bloom et al. (2021) reached similar conclusions, who found a significant negative impact of COVID 19 on small business sales. These authors further noted significant variation in the impact of the pandemic on business performance depending on the type of business (offline and online) and also the socioeconomic characteristics of the owners (gender, race, education).

OECD studies indicate that crises such as the COVID-19 pandemic affect various sectors of the economy differently, with some being more vulnerable and others more resilient (OECD, 2021). These variations can be attributed, in part, to the structural characteristics inherent in each sector. These characteristics encompass the methods of production, procurement, and supply of goods and services, as well as the interconnectedness of firms and industries, including their relationships with other sectors such as the financial industry. Furthermore, the demand structure for their products also plays a significant role. It is crucial to note that the impact of different restrictions and support measures can vary depending on these characteristics, which is important to consider when formulating policy responses. Therefore, when conducting research on the effects of COVID-19 on businesses, it is crucial to incorporate an analysis of economic activity and differences between industries among the companies studied (García-Pérez-de-Lema et al., 2022; Sarkodie, Owusu, 2021). In this vein, crises and unforeseen disasters have asymmetric impacts on companies, which can vary depending on factors such as the sector, size and age of the companies involved. According to Saleh (Saleh, 2020), the impact of COVID-19 varied between different economic sectors. The author conducted a comparison between the food and entertainment sectors, revealing the distinct effects of the pandemic on sales and profits within these industries. Similarly, Sarkodie and Owusu (Sarkodie, Owusu, 2021) provided examples of the differential impact of the global crisis caused by the pandemic across economic sectors. They identified a decline in logistic activities, such as transportation, aviation, and related industries, while primary and health-related sectors experienced a rebound, contributing to the sustenance of the economy. Furthermore, in the context of the European Union, Juergensen et al. (2020) confirmed similar findings to those in other countries around the world, as most of the companies in various economic sectors have been affected by the pandemic to varying degrees. In particular, companies operating in the agro-food and medical equipment industries have seen an increase in revenues. Similarly, Goodell & Huynh (2020), find abnormal returns in several industries. Specifically, the medical and pharmaceutical industries demonstrated positive abnormal returns, indicating a relatively positive impact. On the other hand, the service sector, which includes restaurants, hotels, and motels, experienced negative abnormal returns, suggesting a more adverse effect of the pandemic on these industries.

The varying impact of the pandemic is observed in retail. Essential goods retailers, including groceries, food and healthcare products, witnessed a surge in demand as consumers engaged in stockpiling behavior (Pantano et al., 2020). This presented both opportunities and challenges for these retailers in catering to customers at home (Naeem, 2020). In contrast, retailers of non-essential goods, such as clothing and homeware, experienced a substantial decline in sales and had to explore innovative approaches to reach and engage housebound customers (Roggeveen, Sethuraman, 2020). The textile and apparel industry, in particular, experienced a significant decline in firm performance (Cho, Saki, 2022). This decline can be attributed to two primary factors. First, concerns about COVID-19 led to a decrease in investor confidence, resulting in reduced investments and a negative impact on the financial performance of companies in the industry. Second, global supply chain disruptions caused by the pandemic affected textile and apparel production and distribution, leading to delays and increased costs as concerns about COVID-19 continued to decrease investor confidence.

In practice, the response strategies of companies to the COVID-19 pandemic exhibited significant variation. While some enterprises chose a retreat strategy, such as selling assets or acquiring additional debt, others embraced agile approaches by leveraging digital technologies (Papadopoulos et al., 2020) and transitioning to online sales channels (Papadopoulos et al., 2020; Thukral, 2021). Choi & Sethi (2021) explored two strategies 'Bring service to your home' and 'WhatsApp shopping' as a panacea for restrictions on direct sales during the pandemic. These agile responses are considered a demonstration of organizational resilience that has allowed companies to take advantage of the opportunities that digital transformation presents (Klein, Todesco, 2021).

Forson et al. (2022) conducted a study that investigated the impact of the expansion of online sales on the financial resilience of enterprises in sub-Saharan Africa during an economic downturn. The primary focus of the research was to assess the level of financial resilience by examining the magnitude of sales and cash flow reduction experienced by these enterprises throughout the pandemic period. They indicate that increasing the share of online sales to at least 40% has a diminishing effect on sales declines and cash flow reductions, thus improving financial resilience. In such a situation, the direct result of the pandemic was a change in the activities of businesses to an e-Commerce model (Mishrif, Khan, 2022; Shahzad et al., 2020), although the business-to-consumer (B2C) e-Commerce model has become more developed and widely used than the business-to-business (B2B) model (Hayakawa et al., 2023).

In the case of certain goods, shifting sales to online channels did not prove to be a panacea for the limitations associated with the pandemic. The findings of the study by Pang et al. (2021) indicate that there has been a decrease (increase) in offline (online) clothing consumption in mass markets since the onset of the pandemic. However, sales of luxury fashion brands in offline department stores have shown growth. Furthermore, a detailed analysis revealed a notable decrease (increase) in sales for luxury brands with a focus on clothing (leather goods). These conclusions confirm general observations that the period of isolation caused by

COVID-19 has increased consumer interest in luxury brands (Thapa et al., 2022). Bahl et al. (2022) highlight the percentage increase in sales for Amazon and Sephora US during the pandemic, specifically in the beauty and personal care categories, and contrasting it with their respective sales performance prior to the pandemic.

Data and methods

We conducted the survey on an original sample of 12,081 medium-sized Polish nonfinancial enterprises. We took into account only capital companies. The source of the data was the BvD Orbis database. Due to data gaps, the final survey sample was 10,950 companies, that is, 75% of all medium-sized companies in Poland.

We built a logit model in which the explained variable takes a value of 1 if sales in 2020 were greater than or equal to sales in 2019 and 0 if there was a decrease in sales. We considered that the sales response of companies to the lockdown caused by COVID-19 is explained not only by the sector in which the company operates, but also, above all, by the company profile taking into account characteristics such as: type of business (production or services), type of business relationship with customers (B2B or B2C), position in relation to suppliers (ease of financing the business with liabilities to suppliers), type of product (mass or luxury), and stability of sales. To quantify these characteristics, we used variables based on financial indicators.

The first of the explanatory variables is the stock turnover in days, whose value reflects the profile of the companies' operations. A turnover value close to or equal to zero may indicate that a company is engaged in service operations. The higher the value of this indicator, the more likely it is that the company has manufacturing operations. We realize that the value of the inventory turnover ratio will not always indicate the business profile, so we have also included other variables in the model, such as asset turnover and the ratio of fixed assets to total assets. Both indicators should be higher for companies with a manufacturing profile. We expect both inventory turnover, asset turnover, and the ratio of fixed assets to total assets to be positively related to the explained variable. This is because manufacturing companies were likely to have lower lockdown losses than service companies, as their business does not require much personal contact with customers, as is the case with service companies.

The second explanatory variable, receivables turnover, largely reflects the business model. Companies with B2C operations generally have a short or zero receivables cycle, while companies selling to other companies generally have higher levels of receivables. As a result, we expect that mainly companies selling to final retail customers have lost less on lockdown due to greater opportunities to shift sales to the Internet. Therefore, we expect the receivables cycle to be negatively related to the explained variable. Another explanatory variable is the

payables turnover in days. In this case, we expect the relationship with the explained variable to be positive, as companies with a longer payables turnover generally have a stronger position towards their suppliers and may therefore be more resilient to the disruption of supply chains. Another variable, the gross margin, characterizes the level of sales margins. We assume that the value of this indicator is higher in industries selling luxury goods and lower for companies supplying basic goods. Assuming, based on the literature review, that consumers did not reduce their consumption of luxury goods during the pandemic but reduced their consumption of many other goods, this indicator should be positively related to the explained variable. In addition, we expected that companies that have higher revenue volatility (and therefore higher business risk) should be more sensitive to a lockdown-induced economic downturn, so we predicted a negative association of this variable with the explained variable. We also included binary variables (dummies) representing 19 sections of the economy in our model. In the model specifications presented, we included only those sectors whose membership had a statistically significant impact on changes in sales revenue during the pandemic period.

Results

We have prepared four model specifications so that we can assess the stability of the results. For each of these specifications, the values of the model coefficients have similar values. We observe a statistically significant positive effect of inventory turnover and receivables turnover on changes in sales (H1). Similarly, the relationship between revenue variability in the years preceding the pandemic (2015-2019) and changes in revenue as a result of the pandemic (H2) is significant. We also saw that a specific industry affiliation of a company significantly influenced revenue changes as a result of COVID-19. In the case of enterprises in Section E (water supply, sewerage, waste management, and remediation activities), the positive impact of lockdown on the revenues of enterprises in this section is evident. There is a statistically significant negative impact of lockdown on revenue for companies in sections I (accommodation and food service activities) and H (transport and storage).

Table 1.
Determinants of change in revenues

VARIABLES	(1) c1 Ldsale	(2) c2 Ldsale	(3) c3 Ldsale	(4) c4 Ldsale
stock_rot	0.00376*** (0.00114)	0.00347*** (0.00117)	0.00371*** (0.00126)	0.00348*** (0.00128)
receiv_rot	0.00398*** (0.00139)	0.00379*** (0.00140)	0.00357** (0.00152)	0.00343** (0.00153)
credit_rot	0.000801 (0.00184)	0.000980 (0.00188)	0.000758 (0.00190)	0.000833 (0.00191)

Cont. table 1.

gross_margin		0.00168	0.00176	0.00143
		(0.00342)	(0.00346)	(0.00348)
assets_rot		0.0648	0.0657	0.00762
		(0.0517)	(0.191)	(0.194)
fix_ass_ratio			0.00813	0.0722
			(0.214)	(0.218)
rev_var			0.562***	0.572***
			(0.200)	(0.201)
total_assets	1.44e-08	1.20e-08	1.38e-08	1.38e-08
	(1.35e-08)	(1.34e-08)	(1.35e-08)	(1.36e-08)
Section E				1.789***
				(0.638)
Section I				-1.219*
				(0.644)
Section H				-0.617**
				(0.253)
Constant	-0.535***	-0.611***	-0.763***	-0.710***
	(0.104)	(0.128)	(0.139)	(0.141)
Observations	2,398	2,398	2,373	2,373
Adj R^2	0.0164	0.0164	0.0164	0.0164

Standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Variables: stock_rot – stock rotation in days, receiv_rot – receivables rotation in days, credit_rot – creditors rotation in days, gross_margin – gross profit / operating revenues, assets_rot – operating revenue / (shareholder funds + non current liabilities), fix_ass_ratio – fixed assets / total assets, rev_var – variability of revenues = standard deviation of operating revenues / mean of operating revenues, total_assets – natural logarithm of total assets, Section E – dummy variable indicating section "water supply, sewerage, waste management, and remediation activities", Section I – dummy variable indicating section "accommodation and food service activities", Section H – dummy variable indicating section "transport and storage".

Source: Own elaboration.

The results of our model confirm that service companies were exposed to a higher risk of revenue loss. For all models' specifications, companies with a higher stock rotation ratio have a higher probability of revenue growth. This relation is statistically significant. We interpret that high stock rotation ratios are typical for service companies. However, the negative impact was particularly strong and statistically significant in accommodation and food service activities and transportation. We divided the companies into sectors based on NACE codes. In the results, we present only those model specifications in which the companies' sector affiliation had a significant impact on the likelihood of revenue growth. Furthermore, it was not possible to confirm that companies operating in the B2C model experienced an increase in sales; therefore, our hypothesis H3 cannot be confirmed. In the study, we assumed that a short receivables turnover period denotes the company's operations in the B2C model. The results of the verification of the H4 hypothesis indicate that there is a positive relationship between the profit margin ratio and the growth of revenue. Anyhow, this relationship is not statistically significant.

Discussion

The COVID-19 epidemic significantly impacted the capacity of enterprises to sustain financial stability. Based on existing scholarly research, it is evident that a company's reaction to the lockdown measures imposed due to the COVID-19 pandemic is predominantly shaped by many dimensions of the company's profile, rather than solely being determined by the industry in which it operates. Several factors influence a company's operations, such as the type of industry it operates in (manufacturing or services), the nature of its customer relationships (business-to-business or business-to-consumer), its position in relation to suppliers (including its ability to finance operations through supplier liabilities), the type of products it offers (mass-market or luxury), and the stability of its sales. Consequently, our research endeavors to consider these issues in the context of Polish medium-sized enterprises.

The findings of our study indicate that service-oriented organizations had a higher likelihood to experience a decline in revenue compared to manufacturing-oriented companies. This implies that the service sectors experienced a greater impact due to the implementation of lockdown measures and the subsequent decrease in customer mobility. Hence, the outcomes of our model are consistent with the extant body of research, so supporting the notion that service-oriented enterprises exhibited greater vulnerability to revenue decline amidst the COVID-19 pandemic (Goodell, Huynh, 2020; Fairlie, Fossen, 2022). The observed pattern was not exclusive to Poland, as it was also seen in other countries.

The impact of the pandemic varied across sectors, with accommodation and food service activities and transportation being particularly affected (Saleh, 2020; Sarkodie, Owusu, 2021; Liu et al., 2020; Qiu et al., 2021). These sectors faced both supply and demand shocks due to restrictions and reduced travel activities of customers. The findings of our study indicate a comparable response among aforementioned sectors within the context of Poland.

Contrary to the literature that highlights the advantage of the B2C model during the pandemic (Hayakawa et al., 2023), this article did not find strong evidence that Polish companies operating in the B2C model experienced an increase in sales. This may suggest that Polish companies have benefited less from the shift to online sales compared to their counterparts in more developed markets.

The article also did not find support for the hypothesis that the lockdown period contributed to the increase in sales of luxury goods, as indicated by studies from other markets (Bahl et al., 2022; Thapa et al., 2022). Although there was a positive relationship between the profit margin ratio and revenue growth, it was not statistically significant. This observation suggests that Polish consumers refrained from participating in compensating consumption or engaging in trading up behavior within the pandemic.

Conclusions

The analysis carried out made it possible to identify the factors that determined the drop in sales during the pandemic period, which were, on the one hand, the result of sector specificity and, on the other, reflected the company's profile based on the type of business relationship with customers, position towards suppliers, type of products offered, and sales stability. In doing so, we should pay attention to the low fit of our model. This means that the sole identification of risk factors, while useful in determining the impact of a pandemic shock on companies' sales, is not sufficient to accurately forecast a decline in sales. Our study attempts to verify 4 hypotheses: H1: asset turnover ratios are positively related to the direction of sales volume during a pandemic; H2: companies with higher revenue volatility are more sensitive to the negative effects of a pandemic; H3: companies selling to ultimate retail customers (B2C) performed relatively better during a pandemic; H4: the gross margin ratio is positively related to the direction of sales volume changes during a pandemic.

Although we were able to unambiguously verify hypotheses H1 and H2, we were unable to confirm that Polish companies operating in the B2C model experienced an increase in sales during the pandemic period (H3), despite the literature pointing out the advantage of the B2C model. Such results indicate that, unlike in developed markets, Polish companies benefited less from the shift of sales to the online environment. Similarly, our research does not provide clear evidence that the COVID-19 pandemic period contributed to an increase in luxury goods sales (H4), as studies in other markets have indicated.

We are aware of some limitations in our study. Research relies on financial indicators to quantify characteristics of the company profile, such as type of business, type of business relationship with customers, position in relation to suppliers, type of product, and stability of sales. These indicators may not fully reflect the complexity and diversity of these characteristics. Future research could use more qualitative or multidimensional measures to capture the nuances and variations of the company profile. The research is based on a survey of medium-sized Polish nonfinancial enterprises, which may not be representative of other types of enterprise or other countries. Future study has the potential to broaden the sample by incorporating both small and large organizations, as well as companies from other industries and geographies, such as Central and Eastern Europe. It is hypothesized that the implementation of the lockdown measures may have exerted a disproportionately significant influence on smaller enterprises, owing to their inherent susceptibility to fluctuations in demand and limited financial reserves or creditworthiness. The study lacks control over other external variables that could potentially influence fluctuations in sales within the pandemic, including but not limited to governmental regulations, consumer behavior, market competition, and innovations in technology. Potential areas for future research may involve the incorporation of additional explanatory variables or the adoption of other methodological approaches to effectively address and accommodate these aspects.

This study adds to the existing body of research on the effects of COVID-19 on company performance by presenting findings from the Polish market, which has received limited attention in previous studies. The paper provides recommendations for policymakers and managers regarding the design and implementation of support measures and strategies for businesses during and after the pandemic. This study benefitted from a substantial sample size of 10,950 medium-sized enterprises in Poland, enabling broader conclusions to be drawn regarding the behavior of this particular type of enterprise and its reaction to lockdown measures.

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