


# Financial management in the context of sustainable development in Polish and Czech manufacturing SMEs


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## ABSTRACT

**Research background:** The manufacturing sector is one of the most significant business sectors. It contributes significantly to the improvement and sustainable growth of the business environment. Manufacturing enterprises in the small and medium-sized enterprises (SME) segment are primarily determined by the financial performance of business activities in the context of sustainable development.

**Purpose of the article:** The article aims to evaluate the impact of financial management on the sustainability of manufacturing SMEs in the business environments of Poland and the Czech Republic.

**Methods:** The questionnaire was collected in the calendar year 2023 in Poland and the Czech Republic. The respondents were defined as owners or a top managers. The research sample included responses from 251 manufacturing SMEs. The hypotheses of the quantitative research were evaluated using linear regression modeling. IBM SPSS Statistics software was used to assess the hypotheses.

**Findings & Value added:** The results from the attitudes of Czech and Polish respondents indicate that the most significant factor is sufficient profit in the context of understanding the concept of sustainable growth for manufacturing SMEs in the business environment. A common characteristic of both countries is the attitude that if a manufacturing SME has no problem meeting its pay obligations, it is perceived as sustainable. Respondents from Polish manufacturing SMEs believe that sufficient profit has a positive impact on the perception of the social and environmental effects of business. The empirical findings are significant for policymakers in supporting business, in the context of a better understanding the concept of sustainable development in the manufacturing SME segment.

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## INTRODUCTION

The literature often states that small and medium-sized enterprises (SMEs) are the backbone of the economy of the European Union countries and pivotal contributors to the economies of various countries (Liñán et al., 2020; Belás et al., 2021; Journeault et al., 2021; Borah et al., 2022; Dvorsky et al., 2022). They make up the majority of businesses, often exceeding 99% of all enterprises. SMEs have a significant share in GDP and contribute significantly to the gross domestic product and contribute to reducing unemployment. Cicea et al. (2019) name it

precisely that entrepreneurship is considered the engine of economic growth. They play a crucial role in local and regional growth, particularly since they operate within these markets, utilizing local labor resources and supplies (Adamowicz & Machla, 2016). SMEs contribute to product creation, swiftly create jobs, adapt promptly to market changes and demands, and serve as a source of social and economic development for the region (Pellešová & Šýkorová, 2014). They are distinguished by creativity, flexibility, and a proactive approach to taking initiatives. The presence of SMEs fosters a highly competitive

environment, influencing the quality of products and services offered as well as the determination of market prices (Dvorsky et al., 2023b).

SMEs exhibit considerable heterogeneity in terms of sector, size, age, profitability, and they operate within diverse business environments (Blach et al., 2020). Presently, business owners face challenges not only due to the unpredictable nature of the business environment but also due to heightened demands for businesses to operate sustainably. Studies in the field of sustainable development have predominantly focused on large economic entities (Smith et al., 2022). Limited attention, however, has been directed towards small and medium-sized enterprises, despite their status as the backbone of many economies and their collective potential for a significant impact on society (Dvorsky et al., 2023a). Moreover, SMEs face various obstacles, including financial support and development challenges (Pellešová, 2014).

Based on the literature review Dvorsky et al. (2023b) provide a synthetic characteristic of the segment of SMEs. They underline that these enterprises exhibit distinct behavior compared to large firms (Cantele & Zardini, 2020). Notably, they are characterized by the uniqueness of their creations, operations, and development. These businesses operate with flexibility and efficiency, responding swiftly to market changes through immediate decision-making (Liňán et al., 2020). SMEs perceive sustainable development as fulfilling the needs of the local community, according to research by Smith et al. (2022).

The owner, often assuming a managerial role, plays a significant role in influencing the development of SMEs through their knowledge and experience (Bartoš et al., 2015; Dvorsky et al., 2022). SMEs actively seek market niches to engage in, thus constraining competition. Economic independence holds great value for SME owners, typically leading them to fund their businesses predominantly with internal capital. It's crucial to acknowledge, however, that many of these companies encounter challenges in accessing external sources of financing (Belas et al., 2020; Kozubíková et al., 2015; Love & Roper, 2015).

Ślusarczyk & Grondys (2019) pay attention to the fact that a limited capital foundation in the smallest companies increases the likelihood of financial loss and bankruptcy. Achieving systematic development in this sector necessitates favorable internal and external conditions within the business environment. Zayed et al. (2022) point out that effective corporate governance enhances a company's financial performance and sustainability.

## THEORETICAL BACKGROUND

### Manufacturing SME companies in Poland

A detailed description of the SME sector in Poland is presented annually by PARP (2024). The reports include both general data and a presentation of a selected issue, which changes every year. The sector of SMEs in Poland constitutes 99.8% of all businesses. Among these, micro-

enterprises form the most significant group (97.2%, totaling 2.3 million), followed by small companies at 2.1% (48.2 thousand), medium-sized at 0.6% (14.3 thousand), and large at 0.2% (3.8 thousand).

In terms of industry composition, companies from the services sector dominate at 55.1%, followed by entities engaged in trade (20.0%), construction (15.5%), and with the least representation in the industrial sector (9.4%).

Two out of three newly established companies survived their first year of operation (the survival rate was 67.0%). When we take into account the legal form of the enterprise, higher first-year survival was characteristic of natural persons than legal persons (68.5% vs. 58.7%, respectively). Among the enterprises established in 2022, the highest first-year survival rates were recorded in the following sections: Professional, scientific and technical activities (78.1%), Information and communication (75.2%) and Healthcare and social assistance (74.2%). The lowest, on the other hand, were in the following sections: Real estate services (28.2%), Accommodation and catering (56.7%) and Other service activities (59.4%).

The sources of financing for SMEs (excluding microenterprises) are invariably their own funds (67%). The second important source of financing is domestic credits and loans (10.4%) and the third – funds from foreign sources (8.3%). SMEs engage with the business environment, a factor that influences their development, profitability, and overall financial performance as organizations (Zayed, 2022). Unfortunately, Cicea et al. (2019) point out important problems of SMEs which are bad management and unskilled staff. Compared to large business entities, the problem of SMEs is low purchasing power, which prevents effective negotiation of prices and other transaction conditions. On the other hand, their strength is to adapt to the challenges of a continuously changing environment.

### Manufacturing SME companies in the Czech Republic

Manufacturing SMEs in the Czech Republic (CR) also play an important role in the national economy. They contribute to job creation, regional development, and economic stability. They hold a significant share of overall employment, and their production supports exports and innovation, which strengthens the competitiveness of the CR in the global market. Their significance lies particularly in creating jobs, contributing innovative solutions, and the ability to bring innovative solutions to the changing market needs.

However, in addition to these positive impacts on the national economy, manufacturing SMEs also face challenges that affect their financial performance and sustainability within the business environment. These challenges include financial constraints, a shortage of qualified labor, high compliance costs, and strong competition within the sector (Heinzova et al., 2024).

Manufacturing SMEs require significantly higher investments in machinery, equipment, and technology compa-

red to SMEs operating in sectors such as services or trade. Purchasing new machines and their regular maintenance represent substantial capital expenditures. The manufacturing sector is technologically demanding and often requires continuous modernization of production equipment, leading to increased innovation costs compared to other sectors. Manufacturing also requires the implementation of modern technologies, such as automation, digitalization, and robotics (Benešová et al., 2024). For SMEs operating in other sectors, such as services, technological pressure may be less pronounced, whereas in manufacturing it is crucial to maintain competitiveness. Manufacturing SMEs often work with longer production cycles and must manage production processes and inventories, requiring careful planning. This aspect is less present in services, where delivery and execution cycles are often much shorter.

Inventory management, as well as storage of materials and finished goods, represent additional operational costs and challenges for manufacturing SMEs. These aspects are generally less problematic in the services sector, as it often deals with intangible products or services that do not require storage (Zhidebekkyzy et al., 2024).

Manufacturing SMEs must adhere to strict quality standards to remain competitive in international markets and maintain a good reputation within supply chains. This includes the implementation of quality management systems, such as ISO standards, which are less relevant for other sectors of SMEs (Bobkov et al., 2023).

### Financial management in SME segment

Access to finance is commonly seen by SMEs as a major obstacle, hindering their effective operations (Nkwinka & Akinola, 2023). Owners, especially those of the smallest enterprises, strongly prefer using their own capital. Frequently operating their businesses independently, they bear personal responsibility for their obligations, thereby exposing their entire assets to risk. As a result, they exhibit reluctance in making decisions linked to high risk. Additionally, they refrain from seeking external financing, such as from banks, for two reasons: firstly, they wish to avoid dependency on capital providers, and secondly, because they lack the requisite credit history and collateral for loan repayment (Bednarz, 2015; Ślusarczyk & Grondys, 2019). It should not be surprising, therefore, that in Poland 69.30% of SMEs in Poland entities fund their operations using internal financial resources. Other sources include funds directly from overseas (5.19%), loans and credit (7.33%), financial leasing (3.98%), and budgetary funds (8.81%).

Nikolic et al. (2019) and Belas & Rahman (2023) characterize financial risk as the likelihood that a firm's financial performance may deteriorate due to a range of external and internal factors. According to Napp (2011), financial risk manifests in various forms, including external forms associated with fluctuations in financial markets and internal sources originating from the firm's environment, such as financing risk, insolvency risk, and liquidity risk.

Avadi et al. (2021) contend that factors such as company size, profitability, liquidity, and inflation rate positively influence the survival of firms.

The impact of financial risk on the operations and sustainability of SMEs is substantial (Kotaskova et al., 2020). The intricate and diverse aspects of financial stability encompass a firm's capability to generate profit, enhance the value of invested capital, and meet both short- and long-term liabilities simultaneously (Myšková & Hájek, 2017). Zabolotnyy & Wasilewski (2019) underline that financial sustainability, which includes a firm's profitability, solvency, and efficiency, is also crucial.

Drawing from the perspectives of researchers it can be stated that risk management in SMEs is insufficient. Syrova & Špička (2023) underline that in this segment companies exhibit a limited embrace of enterprise risk management methodologies. Moreover, Chakabva et al. (2021) point out that they employ inadequate and ineffective risk management practices. Many micro- and small enterprises do not use the cash flow method, so financial risk is one of the crucial risks to their businesses. A company may experience financial problems when the budget is not well planned and fundraising falls short of forecasts (Ślusarczyk & Grondys, 2019). Krüger & Meyer (2021) stress that SMEs lack formalized and structured risk management guided by standards, thereby increasing their vulnerability in the business environment.

Based on the literature review, Krüger & Meyer (2021) conclude that the conceptual framework surrounding SME failure is marked by challenges including insolvency due to insufficient liquidity, inconsistent and declining performance, revenue deficits, constrained growth, and balance sheets dominated by liabilities. Kaczmarek et al. (2021) conclude that SMEs, as a general trend, may not exhibit high resilience and flexibility during economic downturns. The nature of their business activities becomes a differentiating factor in assessing the level of financial risk. Service-oriented companies, particularly those in construction, are identified as the most vulnerable due to their substantial fixed assets. However, manufacturing SMEs have demonstrated significant improvement in resilience, thereby reducing the level of financial risk, according to the study by Kaczmarek et al. (2021).

Zimon (2020) claims that the development of SMEs depends on two factors: profit (revenue and cost management policy) and financial security (as a result of financial liquidity ratios). The author adds that the companies generating loss, slowly lose financial liquidity. To avoid financial shortages and insolvency problems entrepreneurs must secure funds for their functioning, or create financial reserves.

Nkwinka & Akinola (2023), as well as Nikolic et al. (2019), propose that the failure of SMEs is also impacted by the personal attributes of the entrepreneur. Kusmiati & Cahyani (2022) underline that the interconnection between financial literacy (comprising knowledge, skills, and beliefs that influence attitudes and behavior to enhance decision-making and financial management to achieve



prosperity) and financial management is undeniable. Ravselj & Aristovnik (2018) state that SMEs frequently exhibit inferior performance, as evidenced by diminished profitability, increased employee turnover, and reduced survival rates. The company owners and managers bear a significant responsibility in determining the optimal mix of financial levers, a decision decisive for maximizing shareholder value. They must prioritize effective management of the firm's liquidity, oversee the careful management of assets and liabilities, and diligently address financial risks (Belas & Rahman, 2023). Interestingly, outlined in the findings of Belas & Rahman (2023), there exists a notable disparity in the perceptions of financial risk between owners and managers in the Czech Republic. In the realm of managers, financial risk is perceived more favorably compared to SME owners. Notably, the accurate assessment of financial risk in Slovakia surpasses that in the Czech Republic, although the perceptions of owners and managers exhibit remarkable similarity.

### Sustainable development in SMEs

Sustainable development, functioning as an organizing principle, aims to achieve human development goals while ensuring the continued capacity of natural systems to provide essential resources and ecosystem services that support the economy and society (Zielińska-Chmielewska et al., 2019). Enterprises function within distinct economic, social, and environmental contexts. The outcomes of their operations, traditionally centered on profit generation, cost reduction, and the creation of added value, increasingly extend to dimensions that benefit the broader community and society (Voza, 2022).

Sustainable development in SMEs involves strategies to minimize negative environmental impacts, promote social responsibility, and ensure economic viability. This may include implementing eco-friendly technologies, reducing waste, adopting fair labor practices, and engaging with the local community. SMEs conceptualize sustainable development primarily in the context of addressing the needs of the local community (Smith et al., 2022). The sustainable development of enterprises is influenced by some crucial factors: the financial capacity of purchasers of the enterprise's products and services, the financial stability and positive profitability trends of the company, the adoption of an ecological approach in the business management process, the competencies and skills of the workforce, and the favorable perception of society towards the enterprise (Ciemleja & Lace, 2011). According to Testa et al. (2016), the predominant factor influencing the decision of SMEs to adopt a proactive environmental strategy is the attitude of entrepreneurs.

SMEs encounter both internal (within the company) and external barriers (independent of the company) when attempting to implement initiatives associated with sustainable development, as highlighted by research conducted by Pizzi et al. (2021), Smith et al. (2022), and Álvarez et al. (2019). Based on the research by Cantele & Zardini (2020), small entrepreneurs demonstrated a

positive inclination towards embracing sustainability practices, driven by the anticipated benefits, including enhanced employee motivation, competitive advantage, improved reputation, increased profitability, heightened customer satisfaction, and better compliance with regulations. Conversely, their decision-making was negatively impacted by perceived barriers such as concerns about costs, time constraints, and fears of potential loss of competitiveness. The findings from the literature research conducted by Mikušová (2017) affirm that managers of small businesses exhibit an interest in sustainable development. Although small businesses express a willingness to engage in sustainable development activities, they prioritize short-term benefits, with the expectation of deriving economic gains from these initiatives. Majid et al. (2017), who studied SMEs in Malaysia, reached similar conclusions. Owners and managers showed positive intentions and advocated for sustainable development in their business activities.

Dvorsky et al. (2023a) identified that a heightened awareness of the significance of corporate reputation and the active utilization of social media emerge as notable factors with a positive impact on the sustainable development of SMEs in V4 countries. Furthermore, the recognition of the role played by social networks in business and the value attributed to company reputation contribute positively to the perception that the sustainability of a company is a pivotal aspect of entrepreneurship. Researchers discovered also that owners or top managers who acknowledged the significant influence of the company's reputation on their operations were more inclined to comprehend the concept of sustainable business growth. They deemed it crucial to recognize the social and environmental impact of entrepreneurship. In their perspective, the sustainable development of the company emerged as a fundamental aspect of entrepreneurship, and they also held the belief that their companies were inherently sustainable.

### RESEARCH OBJECTIVE, METHODOLOGY AND DATA

The article aims to evaluate the impact of financial management on the sustainability of manufacturing SMEs in the business environments of Poland and the Czech Republic.

#### Research methodology

The research was conducted during the calendar year 2023. Data collection was carried out individually in two Central European countries - Poland and the Czech Republic. The data collection from respondents was conducted identically. The respondent was defined as the owner or manager of an SME operating in the manufacturing sector and conducting business activities in one or both research countries (PL, CR). The questionnaire was developed in cooperation with the project investigators and based on available literature studies on the research topic. The respondents were selected through random sampling from the database of an external agency that conducted the data collection. The total number of res-

pondents was 251 SMEs, with 107 from the business environment of Poland and 144 from the business environment of the Czech Republic.

### Questionnaire and variable definition

The questionnaire was divided into several sections. In the introduction, the authors explained the importance of conducting the survey and listed the partner universities that participated in the data collection. Next, the questionnaire included a statement regarding the respondent's consent for their answers to be used for evaluation or research purposes (scientific articles, etc.). This was followed by a section with demographic questions about the company and the respondents (see more in section 3.4, structure of respondents). The questionnaire then included statements related to financial management indicators (4 statements) and sustainable business development (3 statements). The respondent had to answer using one of the following response types (based on a 5-point Likert scale): 1 - strongly agree with the statement, ..., 5 - strongly disagree with the statement. The selection of questions in the questionnaire was random. The questionnaire included a control question and was secured against automatic filling by a computer or artificial intelligence tools.

Formulation of independent variables - Financial management of SMEs (FMS):

- FMS1: Our company has sufficient profit.
- FMS2: The indebtedness of the company is adequate (not a high share of debt)
- FMS3: I can adequately manage financial risks in our company.
- FMS4: Our company has no problem with the ability to pay obligations (insolvency).
- Formulation of dependent variables – Sustainable development of SMEs (SDS):
- SDS1: I understand the concept of sustainable business growth.
- SDS2: It is essential to perceive also the social and environmental impact of entrepreneurship.
- SDS3: I perceive our company as sustainable.

### Hypotheses development and statistical methods

Statistical hypotheses were defined as follows:

- **H1:** Financial management indicator (H1A: FMS1; H1B: FMS2; H1C: FMS3; H1D: FMS4) has a statistically significant impact on the understanding of the concept of sustainable business growth (SDS1) in the manufacturing SME segment of Poland (H1A\_PL, ..., H1D\_PL) and the Czech Republic (H1A\_CR, ..., H1D\_CR).
- **H2:** Financial management indicator (H2A: FMS1; H2B: FMS2; H2C: FMS3; H2D: FMS4) has a statistically significant impact on the perception of the social and environmental impact of entrepreneurship (SDS2) in the manufacturing SME segment of Po-

land (H2A\_PL, ..., H2D\_PL) and the Czech Republic (H2A\_CR, ..., H2D\_CR).

- **H3:** Financial management indicator (H3A: FMS1; H3B: FMS2; H3C: FMS3; H3D: FMS4) has a statistically significant impact on the perception our company as sustainable (SDS3) in the manufacturing SME segment of Poland (H3A\_PL, ..., H3D\_PL) and the Czech Republic (H3A\_CR, ..., H3D\_CR).

Linear regression models (LRM) are a key tool for evaluating quantitative questionnaires because they allow for the analysis of relationships between dependent and independent variables. The main advantages of linear regression models in this context include: (1) identification of relationships - they enable the identification of how independent variables (e.g., age, gender, income) affect dependent variables (e.g., attitudes, behavior, satisfaction); (ii) prediction of outcomes - they help predict future values of the dependent variable based on the values of the independent variables; (iii) quantification of impacts - they allow for the quantification of the influence of individual independent variables on the dependent variable, which is useful for identifying key factors; (iv) hypothesis testing - they enable the testing of statistical hypotheses to determine whether independent variables have a significant impact on the dependent variable; iv. control for confounding factors - linear regression models allow for controlling confounding variables (e.g., the effect of age or income), leading to more accurate results. The general form of the linear regression function was as follows:

$$SDSi_c = \beta_0 + \beta_1 \times FMS1 + \beta_1 \times FMS1 + \beta_1 \times FMS1 + \beta_1 \times FMS1 + e$$

where: i – indicator of sustainable development of SMEs (SDS1, ..., SDS3); c – country of doing business (PL, CR);  $\beta_0$  – constant;  $\beta_1, \dots, \beta_4$  – regression coefficients of independent variables; FMS1, ..., FMS4 – indicator of financial management of SMEs.

### Structure of respondents

Total number of respondents is 251 (n = 251) manufacturing SMEs. Structure is as follows:

Demographic structure of manufacturing enterprises: (i) country of doing business: 155 – Czech Republic, 107 – Poland; (ii) size of enterprise (PL/CR): 40/43 – microenterprises (less than or equal to nine employees), 29/46 – small enterprise (between ten to 49 employees), 38/55 – medium enterprise (between 50 to 249 employees); (iii) type of enterprise (PL/CR): 22/34 – sole trader, 68/77 – limited liability company, 15/33 – Joint-stock company, 2/0 – another form of business; (iv) time period in business (PL/CR): 31/24 – less than or equal to 3 years, 46/39 – more than 3 and less than or equal to 10 years, 30/81 – more than 10 years; (v) locality of businesses (PL/CR): 32/49 – capital, 75/95 – others city;

Demographic structure of respondents: (i) gender (PL/CR): 57/48 – woman, 50/96 – man; (ii) age (PL/CR): 41/38 – to or equal 35 years, 42/48 – from 36 to 45 years, 14/48 – from 46 to 55 years, 10/10 – more than 55

years; (iii) highest level of education (PL/CR): 2/22 – elementary school or comprehensive college, 43/82 – high school, 18/10 – bachelor's degree, 41/30 – master's degree, 3/0 – doctoral degree (PhD.); (iv) position in business (PL/CR): 58/55 – I'm the business owner, 49/89 – I'm a manager.

## RESULTS

Table 1 presents the results of the descriptive characteristics of both dependent (SDS1, ..., SDS3) and independent (FMS1, ..., FMS4) variables according to the country in which the manufacturing SME operates.

The results of the descriptive characteristics (see Table 1) show that the attitudes of Czech manufacturing SMEs toward statements on financial management and sustainable development are not perceived as positively in comparison with the attitudes of Polish manufacturing SMEs (the average values of the statements from Czech respondents are higher than the average values from Polish respondents; e.g., PL: FMS1 = 1.561; CR: FMS1 = 2.194).

Table 2 shows the empirical results of the pairwise correlation coefficients between the defined variables in the

correlation matrix, based on the country in which the manufacturing SME operates.

The modified correlation matrices (see Table 2) demonstrated significant dependencies between the dependent variables (SDS1, ..., SDS3) and independent variables (FMS1, ..., FMS4) according to both Polish and Czech respondents. The values of the pairwise correlation coefficients range from 0.139 (the relationship between SDS3 and FMS2) to 0.502 (the relationship between SDS1 and FMS1) according to Czech respondents. The values of the pairwise correlation coefficients range from 0.111 (the relationship between SDS1 and FMS4) to 0.655 (the relationship between SDS3 and FMS4) according to Polish respondents.

Table 3 and Table 4 present the results of the evaluation and verification of the impact of independent variables (FMS1, ..., FMS4) on the dependent variables (SDS1, ..., SDS3) according to the country of business.

Tables 3 and 4 show that all the conducted linear regression models are statistically significant based on the results of ANOVA tests ( $p$ -values are lower than the significance level of 0.05). It was also demonstrated that the FMS indicators explain between 14.5% of the total variability of SDS2 and 42.1% of the total variability of SDS3 in Polish manufacturing SMEs. Similarly, the FMS indica-

Table 1: Descriptive statistics of all variables according to the country of doing business

Descriptive statistics	Poland						
	FMS1	FMS2	FMS3	FMS4	SDS1	SDS2	SDS3
Mean	1.561	1.729	1.832	1.832	1.523	1.664	1.841
Standard Error	0.064	0.067	0.067	0.083	0.071	0.067	0.092
Median	1.000	2.000	2.000	2.000	1.000	1.500	2.000
Mode	1.000	2.000	2.000	2.000	1.000	1.000	1.000
Standard Deviation	0.661	0.695	0.693	0.863	0.731	0.693	0.953
Sample Variance	0.437	0.482	0.481	0.745	0.535	0.480	0.908
Kurtosis	0.702	-0.070	-0.894	1.732	3.732	1.448	0.553
Skewness	0.969	0.594	0.237	1.231	1.614	1.039	1.058
Range	3.000	3.000	2.000	4.000	4.000	3.500	4.000
Minimum	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Maximum	4.000	4.000	3.000	5.000	5.000	4.500	5.000
Count	107	107	107	107	107	107	107
Descriptive statistics	Czech Republic						
	FMS1	FMS2	FMS3	FMS4	SDS1	SDS2	SDS3
Mean	2.194	2.063	1.972	1.826	2.035	1.948	2.063
Standard Error	0.074	0.066	0.058	0.066	0.077	0.062	0.076
Median	2.000	2.000	2.000	2.000	2.000	2.000	2.000
Mode	2.000	2.000	2.000	2.000	2.000	2.000	2.000
Standard Deviation	0.887	0.795	0.699	0.796	0.927	0.747	0.910
Sample Variance	0.787	0.632	0.489	0.634	0.859	0.558	0.828
Kurtosis	0.754	2.148	0.230	0.409	1.294	1.270	0.982
Skewness	0.886	1.072	0.412	0.828	1.106	0.741	0.892
Range	4.000	4.000	3.000	3.000	4.000	4.000	4.000
Minimum	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Maximum	5.000	5.000	4.000	4.000	5.000	5.000	5.000
Count	144	144	144	144	144	144	144

Source: own research data

Table 2: Modification correlation matrixes of all variables according to the country of doing business

Variables	Poland						
	FMS1	FMS2	FMS3	FMS4	SDS1	SDS2	SDS3
FMS1	1.000				0.519	0.313	0.203
FMS2	0.498	1.000			0.208	0.240	0.205
FMS3	0.413	0.590	1.000		0.361	0.352	0.473
FMS4	0.249	0.301	0.598	1.000	0.111	0.322	0.655

Variables	Czech Republic						
	FMS1	FMS2	FMS3	FMS4	SDS1	SDS2	SDS3
FMS1	1.000				0.502	0.295	0.305
FMS2	0.250	1.000			0.196	0.241	0.139
FMS3	0.324	0.280	1.000		0.282	0.225	0.332
FMS4	0.246	0.293	0.544	1.000	0.217	0.284	0.449

Note: All pairwise correlation coefficients are statistically significant at the 0.05 significance level. Source: own research data

Table 3: Verification and quantification of connection between variables in Poland

Characteristics	Regression characteristics of selected LRMs								
	SDS1			SDS2			SDS3		
Multiple R	0.584			0.421			0.666		
R Square	0.341			0.177			0.443		
Adjusted R Square	0.316			0.145			0.421		
Standard Error	0.605			0.641			0.725		
Observations	107			107			107		

ANOVA	SDS1			SDS2			SDS3		
	SS	MS	F	SS	MS	F	SS	MS	F
Regression	19.36	4.84	13.22***	9.02	2.25	5.49***	42.68	10.67	20.30***
Residual	37.34	0.37		41.87	0.41		53.62	0.53	
Total	56.69			50.89			96.30		

Independent variables	SDS1		SDS2		SDS3	
	t-Stat	P-value	t-Stat	P-value	t-Stat	P-value
FMS1	5.472	0.000***	1.962	0.042*	0.365	0.716
FMS2	2.106	0.038*	0.147	0.883	0.816	0.416
FMS3	3.262	0.002**	1.303	0.196	1.489	0.140
FMS4	1.827	0.071	1.527	0.130	6.192	0.000***

Note: SS - Sum of Square; MS - Mean of Square; F - F-ratio; \* $\alpha = 0.05$ ; \*\* $\alpha = 0.01$ ; \*\*\* $\alpha = 0.001$ . Source: own research data

tors explain between 12.6% of the total variability of SDS2 and 25.0% of the total variability of SDS1 in Czech manufacturing SMEs. The significance at different significance levels (0.05, 0.01, 0.001) of the independent variables is marked with an asterisk in Tables 3 and 4.

Table 5 contains the formulation of the linear regression function with the quantification of regression coefficients.

The results (see Table 5) show that the strongest financial management indicator determining SDS1 is FMS1, according to Polish manufacturing SMEs. Also, FMS2 and FMS3 have a significantly positive effect on the SDS1. A significant impact of FMS1 was also found on the sustainability indicators SDS1, SDS2, and SDS3 according to Czech manufacturing SMEs. From this, it follows that the greatest impact was demonstrated by FMS1 in the context of SDS1 for Czech respondents from manufacturing SMEs.

Table 6 contains the formulation of the linear regression function with the quantification of regression coefficients.

Based on the attitudes of the owners and managers of manufacturing enterprises in the business environment of the Czech Republic, it follows that: (i) the financial management indicator FMS1 is a significant factor in the context of the sustainable development of the company; (ii) the financial management indicators FMS2 and FMS3 are not statistically significant in the context of the sustainable development of the company. Based on the attitudes of the owners and managers of manufacturing enterprises in the business environment of Poland, it follows that: (i) the financial management indicators FMS1, FMS2, and FMS3 are significant factors in the context of SDS1 of the company; (ii) the financial management indicator FMS4 is a statistically significant factor in the context of SDS4.



Table 4: Verification and quantification of connection between variables in Czech Republic

Regression characteristics of selected LRMs									
Characteristics	SDS1			SDS2			SDS3		
Multiple R	0.521			0.387			0.497		
R Square	0.271			0.150			0.247		
Adjusted R Square	0.250			0.126			0.226		
Standard Error	0.803			0.699			0.801		
Observations	144			144			144		
ANOVA									
	SDS1			SDS2			SDS3		
	SS	MS	F	SS	MS	F	SS	MS	F
Regression	33.29	8.32	12.92	11.98	2.99	6.13	29.28	7.32	11.41
Residual	89.54	0.64		67.88	0.49		89.15	0.64	
Total	122.83			79.86			118.44		
Verification of regression coefficients									
Independent variables	SDS1			SDS2			SDS3		
	t-Stat	P-value		t-Stat	P-value		t-Stat	P-value	
FMS1	5.752	0.000***		2.507	0.013*		2.516	0.013*	
FMS2	0.569	0.570		1.532	0.128		0.515	0.607	
FMS3	1.169	0.244		0.212	0.832		0.860	0.391	
FMS4	0.417	0.676		1.997	0.048		4.144	0.000***	

Note: SS – Sum of Square; MS – Mean of Square; F – F-ratio; \* $\alpha = 0.05$ ; \*\* $\alpha = 0.01$ ; \*\*\* $\alpha = 0.001$ . Source: own research data

Table 5: Linear regression functions with the quantification of regression coefficients in Poland and Czech Republic

Country	Linear regression function
PL	$SDS1 = 0.573 + 0.569 \times FMS1 + 0.236 \times FMS2 + 0.412 \times FMS3 + 0.156 \times FMS4$
	$SDS2 = 0.784 + 0.216 \times FMS1 + 0.017 \times FMS2 + 0.174 \times FMS3 + 0.138 \times FMS4$
	$SDS3 = 0.387 + 0.045 \times FMS1 + 0.110 \times FMS2 + 0.225 \times FMS3 + 0.633 \times FMS4$
CR	$SDS1 = 0.550 + 0.468 \times FMS1 + 0.051 \times FMS2 + 0.138 \times FMS3 + 0.043 \times FMS4$
	$SDS2 = 0.951 + 0.178 \times FMS1 + 0.121 \times FMS2 + 0.022 \times FMS3 + 0.172 \times FMS4$
	$SDS3 = 0.738 + 0.204 \times FMS1 + 0.047 \times FMS2 + 0.102 \times FMS3 + 0.423 \times FMS4$

Note: Bold – statistically significant regression coefficient.

Source: own research data

Table 6: Evaluation of statistical hypotheses

Country	Linear regression function					
	SDS1		SDS2		SDS3	
PL	H1A_PL	Accepted	H2A_PL	Accepted	H3A_PL	Rejected
	H1B_PL	Accepted	H2B_PL	Rejected	H3B_PL	Rejected
	H1C_PL	Accepted	H2C_PL	Rejected	H3C_PL	Rejected
	H1D_PL	Rejected	H2D_PL	Rejected	H3D_PL	Accepted
CR	H1A_CR	Accepted	H2A_CR	Accepted	H3A_CR	Accepted
	H1B_CR	Rejected	H2B_CR	Rejected	H3B_CR	Rejected
	H1C_CR	Rejected	H2C_CR	Rejected	H3C_CR	Rejected
	H1D_CR	Rejected	H2D_CR	Rejected	H3D_CR	Accepted

Source: own research data

The effect of financial management in the context of sustainable business development is generally significant and positively oriented towards the sustainability of SMEs in the manufacturing sector. This finding corresponds with the results of several authors who also analyzed the effect of finance (Acintya et al., 2022; Krüger & Meyer, 2021; Zhang et al., 2021) and innovation (Borah et al., 2022; Love & Roper, 2015) on the sustainability of

manufacturing SMEs in the business environment in the context of their future development.

## CONCLUSION

The article aims to evaluate the impact of financial management on the sustainability of manufacturing SMEs in the business environments of Poland and the Czech Republic.



The results showed that the perception of profit as sufficient by the owners and managers in manufacturing SMEs positively determines their understanding of the concept of sustainable business growth. This finding was identified for manufacturing SMEs in both the Czech Republic and Poland. In comparison, this relationship is stronger in the Polish business environment within the manufacturing SME segment. It is worth emphasizing that, unlike in the Czech Republic, appropriate debt (not too high debt share) and appropriate financial risk management also positively impact the perception of sustainable business growth in Polish enterprises. Perhaps such a stable way of financial management of the enterprise allows managers to focus on the development of other areas, such as sustainability. Another interesting finding is the fact that if an SME has no issues with insolvency, this aspect positively determines the perception of the company as sustainable. Again, this finding was confirmed in both countries of the study. In comparison, this perception is stronger in the manufacturing SME segment in Poland.

The quantitative research was conducted in only two EU countries - the Czech Republic and Poland. Other limitations include the fact that the research was based solely on the subjective attitudes of SME owners and managers. Another specific characteristic of the research is that it was conducted in only one business sector - manufacturing. Linear regression modeling was the only method used to evaluate the empirical data.

The significance of the findings is multifaceted. The importance of providing empirical results on the perception of selected financial management and sustainable development factors is particularly crucial for manufacturing SMEs themselves, allowing them to compare with other owners/managers in the same business segment. Equally important are the findings for national policymakers, who contribute to the growth of the SME sector through their activities. The findings can also be used by representatives of the nonprofit sector and by academic staff who deal with this issue and can implement the findings into the educational process in the form of presentations, workshops, seminars, and case studies from the SME environment.

The authors analyzed the impact of financial management on the sustainable development of manufacturing SMEs. However, there are other significant factors that were not subject to analysis and evaluation. For this reason, there is a motivation for the researchers to provide empirical findings in the future, evaluating the impact of factors such as corporate social responsibility, the level of digital experience and skills within the company, the implementation of AI in business, and others on the sustainable development of manufacturing SMEs.

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## REFERENCES

1. Acintya, A., Wulansari, D., Ali, S., & Hapsari, F.U. (2022). Sustainable manufacturing practices in micro, small, medium enterprises (MSMEs): evidence from Indonesia. *Journal of Sustainability Science and Management*, 17(10), 98-120. <https://doi.org/10.46754/jssm.2022.10.008>
2. Adamowicz, M., & Machla, A. (2016). Small and Medium Enterprises and the Support Policy of Local Government. *Oeconomia Copernicana*, 7(3), 405-437. <http://dx.doi.org/10.12775/OeC.2016.024>
3. Álvarez, J. J., Sossa, J. W. Z., & Mendoza, G., L. O. (2019). Barriers to sustainability for small and medium enterprises in the framework of sustainable development — Literature review. *Business Strategy and the Environment*, 28(4), 512-524. <https://doi.org/10.1002/bse.2261>
4. Ayadi, R., Abid, I., & Guesmi, K. (2021). Survival of reorganized firms in France. *Finance Research Letters*, 38, 1-16. <https://doi.org/10.1016/j.frl.2020.101434>
5. Bartoš, P., Rahman, A., Horák, J., & Jáčová, H. (2015). Education and Entrepreneurship in the SME Segment in Economic Transformation. *Economics & Sociology*, 8(2), 227-239. <https://doi.org/10.14254/2071-789X.2015/8-2/16>
6. Bednarz J. (2015). Istotne bariery w dostępie mikro, małych i średnich przedsiębiorstw do finansowania zewnętrznego w Polsce. In: *Wpływ integracji europejskiej w obszarze rynków finansowych na dostępność sektora MSP do finansowania zewnętrznego*. Instytut Badań nad Gospodarką Rynkową i Fundacja Konrada Adenauera w Polsce, Gdańsk, 97-110, ISBN 978-83-7615-117-5.

7. Belas, J., & Rahman, A. (2023). Financial management of the company. Are there differences of opinion between owners and managers in the SME segment? *Journal of Business Sectors*, 1 (1), 1-9. <https://doi.org/10.62222/UQAH6943>
8. Belás, J., Amoah, J., Dvorský, J., & Šuleř, P. (2021). The importance of social media for management of SMEs. *Economics & Sociology*, 14(4), 118-132. <https://doi.org/10.14254/2071-789X.2021/14-4/7>
9. Belas, J., Gavurova, B., Cepel, M., & Kubak, M. (2020). Evaluation of economic potential of business environment development by comparing sector differences: perspective of SMEs in the Czech Republic and Slovakia. *Oeconomia Copernicana*, 11(1), 135-159. <https://doi.org/10.24136/oc.2020.006>
10. Benešová, A., Steiner, F., & Tupa, J. (2024). Digital Transformation of Electrical Engineering Companies in the Czech Republic. *Lecture Notes in Mechanical Engineering*, 859-870. [https://doi.org/10.1007/978-3-031-38241-3\\_94](https://doi.org/10.1007/978-3-031-38241-3_94)
11. Błach, J., Wieczorek-Kosmala, M., & Trzęsiok, J. (2020). Innovation in SMEs and Financing Mix. *Journal of Risk and Financial Management*, 13(9), 206. <https://doi.org/10.3390/jrfm13090206>
12. Bobkov, A., Denisov, I., Varyan, I., & Velinov, E. (2023). Development of model for efficiency growth in automotive production enterprises in the Czech Republic. *International Journal of Trade and Global Markets*, 18 (2-3), 117-129. <https://doi.org/10.1504/IJTG.M.2023.135627>
13. Borah, P. S., Iqbal, S., & Akhtar, S. (2022). Linking social media usage and SME's sustainable performance: The role of digital leadership and innovation capabilities. *Technology in Society*, 68, 101900. <https://doi.org/10.1016/J.-TECHSOC.2022.101900>
14. Cantele, S., & Zardini, A. (2020). What drives small and medium enterprises towards sustainability? Role of interactions between pressures, barriers, and benefits. *Corporate Social Responsibility and Environmental Management*, 27(1), 126-136. <https://doi.org/10.1002/csr.1778>
15. Cantele, S., & Zardini, A. (2020). What drives small and medium enterprises towards sustainability? Role of interactions between pressures, barriers, and benefits. *Corporate Social Responsibility and Environmental Management*, 27(1), 126-136. <https://doi.org/10.1002/csr.1778>
16. Chakabva, O., & Tengeh, R. (2023). The relationship between SME owner-manager characteristics and risk management strategies. *Journal of Open Innovation: Technology, Market, and Complexity*, 9(3). <https://doi.org/10.1016/j.joitmc.2023.100112>
17. Cicea, C., Popa, I., Marinescu, C., & Ștefan S. C. (2019). Determinants of SMEs' performance: evidence from European countries. *Economic Research-Ekonomska Istraživanja*, 32(1), 1602-1620, <https://doi.org/10.1080/1331677X.2019.1636699>
18. Ciemleja, G., & Lace, N. (2011). The model of sustainable performance of small and medium-sized enterprise. *Engineering Economics*, 22(5), 501-509. <https://doi.org/10.5755/j01.ee.22.5.968>
19. Dvorský, J., Bednarz, J., & Blajer-Golebiewska, A. (2023a). The impact of corporate reputation and social media engagement on the sustainability of SMEs: Perceptions of top managers and the owners. *Equilibrium. Quarterly Journal of Economics and Economic Policy*, 18(3), 779-811. <https://doi.org/10.24136/eq.2023.025>
20. Dvorsky, J., Kozubikova, L., Kljucnikov, A., & Ivanova, E. (2022). Owners vs. Managers. Disparities of Attitudes on the Business Risk in SME Segment. *Amfiteatru economic*, 24(59), 174. <https://doi.org/10.24818/EA/2022/59/174>
21. Dvorsky, J., Olah, J., Bednarz, J., & Hudakova, M. (2023b). Opinions of owners and managers on the business risks of SMEs sustainability: does gender matter? *Journal of Business Economics and Management*, 24(4), 732-753. <https://doi.org/10.3846/jbem.2023.20232>
22. Heinzova, R., Hoke, E., & Jánová, N. (2024). Lean management methods: evidence from the manufacturing industry in the Czech Republic. *Problems and Perspectives in Management*, 22 (3), 517-527. [https://doi.org/10.21511/ppm.22\(3\).2024.39](https://doi.org/10.21511/ppm.22(3).2024.39)
23. Journeault, M., Perron, A., & Vallières, L. (2021). The collaborative roles of stakeholders in supporting the adoption of sustainability in SMEs. *Journal of Environmental Management*, 287, 112349. <https://doi.org/10.1016/j.jenvman.2021.112349>
24. Kaczmarek, J., Alonso, S. L. N., Sokolowski, A., Fijorek, K., & Denkowska, S. (2021). Financial threat profiles of industrial enterprises in Poland. *Oeconomia Copernicana*, 12(2), 463-498. <https://doi.org/10.24136/oc.2021.016>
25. Kotaskova, A., Lazanyi, K., Amoah, J., & Belas, J. (2020). Financial risk management in the V4 Countries' SMEs segment. *Investment Management and Financial Innovations*, 17(4), 228-240. [https://doi.org/10.21511/imfi.17\(4\).2020.21](https://doi.org/10.21511/imfi.17(4).2020.21)
26. Kozubiková, L., Belás, J., Bilan, Y., & Bartoš, P. (2015). Personal characteristics of entrepreneurs in the context of perception and management of business risk in the SME segment, *Economics and Sociology*, 8(1), 41-54. <https://doi.org/10.14254/2071-789X.2015/8-1/4>
27. Krüger, N. A., & Meyer, N. (2021). The Development of a Small and Medium-Sized Business Risk Management Intervention Tool. *Journal of Risk and Financial Management*, 14: 310. <https://doi.org/10.3390/jrfm14070310>
28. Kusmiati, E., & Cahyan, V. (2022). Analysis of Financial Literacy Factors for SMEs. *Proceedings of International Conference on Sustainable Collaboration in Business, Technology, Information and Innovation (SCBTII)*, Vol. 3., School of Economics and Business, Telkom University.

29. Kuchler, R., Nicolai, B. M., & Herzig, C. (2023). Towards a sustainability management tool for food manufacturing small and medium-sized enterprises—Insights from a Delphi study. *Corporate Social Responsibility and Environmental Management*, 30(2), 589-604. <https://doi.org/10.1002/csr.2376>
30. Liñán, F., Paul, J., & Fayolle, A. (2020). SMEs and entrepreneurship in the era of globalization: advances and theoretical approaches. *Small Business Economics*, 55(3), 695-703. <https://doi.org/10.1007/s11187-019-00180-7>
31. Love, J. H., & Roper, S. (2015). SME innovation, exporting and growth: A review of existing evidence. *International Small Business Journal: Researching Entrepreneurship*, 33(1), 28-48. <https://doi.org/10.1177/0266242614550190>
32. Majid, I. A., Latif, A., & Koe, W. (2017). SMEs' Intention towards Sustainable Entrepreneurship. *European Journal of Multidisciplinary Studies*, 2(3), 24-32. <https://doi.org/10.26417/EJMS.V4I3.P24-32>
33. Mikušová, M. (2017) To be or not to be a business responsible for sustainable development? Survey from small Czech businesses. *Economic Research-Ekonomska Istraživanja*, 30(1), 1318-1338. <https://doi.org/10.1080/1331677X.2017.1355257>
34. Myšková, R., & Hájek, P. (2017). Comprehensive assessment of firm financial performance using financial ratios and linguistic analysis of annual reports. *Journal of International Studies*, 10(4), 96-108. <https://doi.org/10.14254/2071-8330.2017/10-4/7>
35. Nikolic, N., Jovanovic, I., Nikolic, D., Mihajlovic, I., & Schulte, P. (2019). Investigation of the Factors Influencing SME Failure as a Function of Its Prevention and Fast Recovery after Failure. *Entrepreneurship Research Journal*, 1-21. <https://doi.org/10.1515/erj-2017-0030>
36. Nkwini, E. & Akinola, S. (2023). The importance of financial management in small and medium-sized enterprises (SMEs): an analysis of challenges and best practices. *Technology Audit and Production Reserves*, 5(4(73)), 12-20. <https://doi.org/10.15587/2706-5448.2023.285749>
37. PARP (2024). Raport o stanie sektora małych i średnich przedsiębiorstw w Polsce, red. A. Skowrońska, A. Tarnawa, Warszawa, 15-18.
38. Pellešová, P., & Sýkorová, P. (2014). Position of Small and Medium Companies in Poland and Results of Research in Selected Areas. *Procedia - Social and Behavioral Sciences*, 110, 932-941. <https://doi.org/10.1016/j.sbspro.2013.12.939>
39. Pizzi, S., Rosati, F., & Venturell, A. (2021). The determinants of business contribution to the 2030 agenda: Introducing the SDG reporting score. *Business Strategy and the Environment*, 30(1), 404-421. <https://doi.org/10.1002/bse.2628>
40. Ravselj, D., & Aristovnik, A. (2018). Administrative Barriers for SMEs in the Field of Tax Compliance and Financial and Accounting Reporting: Evidence from Slovenia. *Management Issues – Problemy Zarzedzania*, 16(1(73)) part 2, 75-90. <https://doi.org/10.7172/1644-9584.73.5>
41. Ślusarczyk, B., & Grondys, K. (2019). Parametric Conditions of High Financial Risk in the SME Sector. *Risks*. 7(3), 84. <https://doi.org/10.3390/risks7030084>
42. Smith, H., Discetti, R., Bellucci, M., & Acuti, D. (2022). SMEs engagement with the Sustainable Development Goals: A power perspective. *Journal of Business Research*, 149, 112-122. <https://doi.org/10.1016/j.jbusres.2022.05.021>
43. Smith, H., Discetti, R., Bellucci, M., & Acuti, D. (2022). SMEs engagement with the sustainable development goals: A power perspective. *Journal of Business Research*, 149, 112-122. <https://doi.org/10.1016/j.jbusres.2022.05.021>
44. Syrová, L., & Špička, J. (2023). Exploring the indirect links between enterprise risk management and the financial performance of SMEs. *Risk Management*, 25, 1-27. <https://doi.org/10.1057/s41283-022-00107-9>
45. Testa, F., Gusmerottia, N. M., Corsini, F., Passetti, E., & Iraldo, F. (2016). Factors affecting environmental management by small and micro firms: The importance of entrepreneurs' attitudes and environmental investment. *Corporate Social Responsibility and Environmental Management*, 23(6), 373-385. <https://doi.org/10.1002/csr.1382>
46. Voza, D., Szewieczek, A., & Grabara, D. (2022). Environmental sustainability in digitalized SMEs. Comparative study from Poland and Serbia. *Serbian Journal of Management*, 17, 15-31. <https://doi.org/10.5937/sjm17-36447>
47. Zabolotnyy, S., & Wasilewski, M. (2019). The Concept of Financial Sustainability Measurement: A Case of Food Companies from Northern Europe. *Sustainability*, 11(18), 5139. <https://doi.org/10.3390/su11185139>
48. Zayed, N. M., Mohamed, I. S., Islam, K. M. A., Perevozova, I., Nitsenko, V., & Morozova, O. (2022). Factors Influencing the Financial Situation and Management of Small and Medium Enterprises. *Journal of Risk and Financial Management*, 15(12), 554. <https://doi.org/10.3390/jrfm15120554>
49. Zhidebekkyzy, A., Temerbulatova, Z., Kotaskova, A., Németh, P. (2024). Catalysing responsible production: Evaluating the impact of EPR system on manufacturing enterprises. *Journal of International Studies*, 17 (2), 178-190. <https://doi.org/10.14254/2071-8330.2024/17-2/9>
50. Zielińska-Chmielewska, A., Kaźmierczyk J., & Jaźwiński I. (2022). Quantitative Research on Profitability Measures in the Polish Meat and Poultry Industries. *Agronomy*. 12(1), 92. <https://doi.org/10.3390/agronomy12010092>
51. Zimon, G. (2020). Issues of financial liquidity of small and medium-sized trading companies: a case study from Poland. *Entrepreneurship and Sustainability Issues*, 8(1), 363-372. [https://doi.org/10.9770/jesi.2020.8.1\(25\)](https://doi.org/10.9770/jesi.2020.8.1(25))
52. Zhang, H., Veltri, A., Calvo-Amodio, J., & Haapala, K. R. (2021). Making the business case for sustainable manufacturing in small and medium-sized manufacturing enterprises: A systems decision making approach. *Journal of Cleaner Production*, 287, 125038. <http://dx.doi.org/10.1016/j.jclepro.2020.125038>