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The Interconnections Between CSR, Financial Management, and Sustainability in Service Sector SMEs

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Abstract
This study investigates the relationship between financial management, corporate social responsibility (CSR), and sustainability within small and medium-sized enterprises (SMEs) in the service sector across the Visegrad Four (V4) countries: Poland, Hungary, the Czech Republic, and Slovakia. The research aims to quantify the impact of financial management and CSR on SME sustainability, addressing a critical gap in understanding sustainability dynamics in this sector. The data was collected through a comprehensive survey of 339 SME owners or top managers across the V4 countries, employing a structured questionnaire. The hypotheses were tested using Structural Equation Modeling (SEM) to evaluate the causal relationships between the factors. The results reveal that financial management plays a more significant role in determining SMEs' sustainability level than CSR. Nevertheless, CSR also positively affects both sustainability and financial management, though the intensity of its impact on financial management is weaker. These findings are crucial for SME owners and managers, as they highlight the importance of integrating both financial discipline and socially responsible practices to achieve long-term sustainability. The study's implications extend to policymakers, educational institutions, and support organizations, providing a framework for developing strategies that promote sustainable business practices. This research offers a valuable contribution to the body of knowledge on sustainability in SMEs, especially in the context of post-pandemic recovery in the V4 region and provides practical recommendations for enhancing the resilience and competitiveness of SMEs through improved financial management and CSR integration.

Key Words: SMEs, quantitative research, CSR, financial management, service, sustainability

JEL Classification: L21, L26, M14.

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1. Introduction

In today's dynamic business landscape, the pursuit of sustainable practices has emerged as a cornerstone for organizations striving for longevity and success. This pursuit is particularly pronounced in the service sector, where small and medium-sized enterprises (SMEs) play a vital role in driving economic growth and fostering innovation. Understanding the interplay between corporate social responsibility (CSR), financial management, and sustainability within the SME segment is essential for elucidating the mechanisms that underpin their resilience and competitive advantage (Kraus, Rehman & García, 2020; Morvai et al., 2022; Gomes et al.,2023; Kozová et al., 2024).

Globally, businesses operate within a multifaceted environment influenced by various factors that significantly impact their ability to thrive and deliver better quality services (Veronica et al., 2020; Kozubikova et al., 2023; Zhu et al., 2023). Whereas Tyler et al. (2023) emphasized that economic, social, environmental, and regulatory forces shape this business environment, necessitating organizations to adapt and innovate continuously. Within this context, the quality of services offered by businesses becomes pivotal, as it directly influences customer satisfaction, brand reputation, and ultimately, financial performance. A fundamental distinction exists between SMEs and large corporations operating in the service sector. SMEs, characterized by their limited resources, distinctive organizational structures, and localized operations, face unique challenges and opportunities compared to their larger counterparts. Unlike large enterprises, SMEs often operate with constrained budgets and manpower, making efficient resource allocation and strategic decision-making imperative for their sustainability and growth.

Furthermore, the significance of corporate social responsibility (CSR), financial management, and sustainability as drivers of economic growth cannot be overstated (e.g. Dvorský et al., 2023a; Belas et al., 2023; Petraková et al., 2024). CSR initiatives enable businesses to align their operations with ethical, social, and environmental considerations, thereby enhancing their reputation, fostering stakeholder trust, and mitigating risks (Abdelazim et al., 2022; Rózsa et al., 2022; Pinuer et al., 2022; Dvorský et al., 2023a). Effective financial management practices, including budgeting, investment decisions, and financial risk management, are crucial for SMEs to optimize resource utilization, maintain liquidity, and ensure long-term viability (Ortiz-Martínez et al., 2023). Moreover, embedding sustainability principles into business strategies enables SMEs to minimize their environmental footprint, enhance operational efficiency, and capitalize on emerging market opportunities (Grijalvo & García-Wang, 2023; Koval et al., 2023; Yenidogan et al., 2021).

While the relationships between corporate social responsibility (CSR), financial management, and sustainability have been explored in various sectors, there is a lack of comprehensive research focused specifically on how these dynamics play out in small and medium-sized enterprises (SMEs) within the service sector, particularly in the Visegrad (V4) countries (Poland, Czech Republic, Hungary, Slovakia; see Belas et al., 2024). Given the unique challenges SMEs face, such as limited resources and differing regulatory environments compared to larger firms, a deeper understanding of how CSR and financial management influence sustainability in this context is needed. Furthermore, existing studies do not sufficiently quantify these relationships, leaving a gap in empirical data that can guide SMEs in improving their sustainability strategies through effective financial management and CSR practices (Basana et al., 2024). In doing so, the current study formulated these research questions to gauge the study: How does financial management impact the sustainability of SMEs in the service sector within the V4 countries? What is the relationship between CSR and financial management in SMEs, and how does this relationship affect sustainability?

The study context of this research encompasses Poland, Czech Republic, Hungary, and Slovakia, representing diverse economies within the Central and Eastern European region. Despite their distinct socio-economic landscapes, these countries share commonalities in their SME sectors, including challenges related to market competitiveness, regulatory compliance, and access to finance. In the quest of examining the relationships between CSR, financial management, and sustainability in the service SME segment across these countries, this research aims to provide valuable insights into the mechanisms driving economic resilience and sustainability in a rapidly evolving business environment (Amin et al., 2024; Skare et al., 2023).

In light of the foregoing, this study seeks to explore the nuance relationship between CSR, financial management, and the level of sustainability within the Services SME segment, with a particular focus on the aforementioned countries. By delving into this nexus, we aim to contribute to the existing body of knowledge on sustainable business practices and provide actionable recommendations for policymakers, business leaders, and practitioners seeking to enhance the resilience and competitiveness of SMEs in the service sector.

The originality of the quantitative research is in the defined of causal relationships between financial management, CSR and level of sustainability in the services SME segment on the base of the subjective opinions of owners and top managers in V4 countries.

The scientific article has the following structure. Firstly, on the base of the critical literature background were formulated items for the defined factors, as is financial management, CSR, and level of sustainability. Secondly, the quantitative research was realised in business environment V4 countries in the service SME segment. This section contains other important part, as is methodology of data collection, questionnaire and variables, statistical methods, structure of SMEs. The next section presents the significant empirical results with using statistical test, tables, and pictures. The research findings were compared with the existing studies. The last section presents the limitation of the research and the future research areas direction.

2. Literature review

2.1 Service SME segment as a key business sector in the business environment

The service sector, encompassing a wide array of industries such as hospitality, retail, healthcare, and professional services, holds significant importance in the contemporary business environment. Within this expansive landscape, small and medium-sized enterprises (SMEs) play a pivotal role as key contributors to economic growth, job creation, and innovation. This literature review explores the unique characteristics of the service SME segment and its critical role within the broader business environment. SMEs constitute a substantial portion of the service sector, representing a diverse array of businesses ranging from family-owned restaurants to niche consulting firms. Despite their size, SMEs in the service sector exhibit remarkable agility, adaptability, and responsiveness to market demands, enabling them to effectively compete with larger enterprises (Geroski, 2018). Moreover, service SMEs often serve as incubators for innovation, driving entrepreneurship and fostering creativity within local communities (Birley & Westhead, 2019).

Service SMEs are characterized by several unique attributes that differentiate them from their larger counterparts. Firstly, these enterprises typically have fewer resources and limited access to capital, necessitating frugal and innovative approaches to business operations (Geroski, 2018; Modrak et al., 2024). Additionally, service SMEs often exhibit a high degree of owner-manager involvement, with decision-making processes centralized around entrepreneurial leadership (Birley & Westhead, 2019). This hands-on management style enables service SMEs to swiftly respond to customer needs and market trends, fostering a culture of customer-centricity and flexibility. Despite their resilience and adaptability, service SMEs encounter various challenges within the business environment. Access to finance remains a significant barrier for many SMEs, with limited collateral and risk profiles hindering their ability to secure loans from traditional financial institutions (Beck & Demirgüç-Kunt, 2020). Moreover, regulatory burdens, compliance costs, and administrative complexities disproportionately impact small businesses, constraining their growth potential and inhibiting market entry (Storey, 2023).

Service SMEs are vital engines of economic development, contributing to job creation, wealth generation, and regional prosperity. These enterprises serve as catalysts for local economic growth, driving demand for ancillary goods and services while fostering entrepreneurship and social mobility (Wennekers & Thurik, 2021). Furthermore, service SMEs play a crucial role in enhancing the competitiveness and vibrancy of urban centers and rural communities alike, providing essential amenities and fostering social cohesion (Audretsch & Thurik, 2018).

2.2 Service SME segment in the business environment in V4 countries

This literature review explores the distinctive characteristics, challenges, and contributions of service SMEs within the business landscapes of these four nations.

Service SMEs are vital drivers of economic development and regional prosperity in Visegrad Group (V4) (Poland, Czech Republic, Hungary, and Slovakia). These enterprises contribute to job creation, wealth generation, and innovation, fostering entrepreneurship and social mobility (Nagy et al., 2021). Moreover, service SMEs play a crucial role in enhancing the competitiveness and attractiveness of these countries as investment destinations, particularly in emerging sectors such as e-commerce, digital services, and tourism (Karaszewska & Januszewicz, 2022). The service SME segment in the business environment of Poland, Czech Republic, Hungary, and Slovakia holds significant importance for the economic development and regional competitiveness of these countries. Service SMEs play a critical role in the economic ecosystems of these countries, contributing to job creation, innovation, and sustainable development (Belas et al., 2020). These enterprises operate in various sectors, including tourism, hospitality, retail, and professional services, driving economic growth and fostering entrepreneurship (Gubik & Farkas, 2020). Service SMEs serve as engines of regional development, particularly in rural areas, where they provide essential services and support local economies (Doktor et al., 2021).

Service SMEs in Poland, Czech Republic, Hungary, and Slovakia exhibit unique characteristics shaped by the socio-economic contexts of each nation. Despite variations in industry focus and market dynamics, these enterprises share common traits such as adaptability, customer-centricity, and entrepreneurial spirit (Hudea, 2018). Moreover, service SMEs in these countries often face similar challenges related to access to finance, regulatory compliance, and talent acquisition, which impact their growth and competitiveness (Dincer & Hacioglu, 2019; Kurowska-Pysz et al., 2024). Again, service SMEs in these countries encounter a range of challenges within the business environment, including limited access to finance, bureaucratic hurdles, and skills shortages. Despite efforts by policymakers to improve the business climate for SMEs, regulatory complexities and administrative burdens persist, hindering the growth and expansion of these enterprises (Cseres-Gergely & Czegledi, 2023; Piekut & Rybaltowicz, 2024). Moreover, fluctuations in consumer demand, technological disruptions, and global economic uncertainties pose additional challenges for service SMEs operating in these countries (Niemiec & Puźniak-Białek, 2020).

Similary, service SMEs are vital drivers of economic development and regional prosperity in these countries. These enterprises contribute to job creation, wealth generation, and innovation, fostering entrepreneurship and social mobility (Nagy et al., 2021). Moreover, service SMEs play a crucial role in enhancing the competitiveness and attractiveness of these countries as investment destinations, particularly in emerging sectors such as e-commerce, digital services, and tourism (Karaszewska & Januszewicz, 2022). In the light of this review, the service SME segment in Visegrad Group (V4) occupies a central position within the broader business environment, serving as a key driver of economic growth, innovation, and regional development. Despite facing numerous challenges, service SMEs demonstrate resilience, adaptability, and entrepreneurial spirit, underscoring their significance as engines of economic prosperity and social progress in these four countries.

2.3 Relationship between Financial management and sustainable development of company

The relationship between financial management and sustainable development is a critical area of research, particularly concerning the long-term viability and success of companies. Financial management encompasses a range of activities, including budgeting, investment decisions, capital structure management, and financial risk mitigation (Iwara, 2024). These practices are essential for ensuring the efficient allocation of resources, optimizing profitability, and enhancing shareholder value. However, the role of financial management extends beyond traditional profit-seeking objectives to encompass broader sustainability considerations (Bennett & James, 2018). By integrating sustainability principles into financial decision-making processes, companies can create long-term value while minimizing negative impacts on the environment and society.

Financial management plays a critical role in fostering the economic sustainability of small and medium-sized enterprises (SMEs) by enabling growth, innovation, and resilience. Effective financial strategies, such as maintaining adequate liquidity, managing debt levels, and diversifying revenue streams, allow companies to not only survive economic fluctuations but also seize emerging opportunities. Sound financial management is essential for driving sustainable development, as it ensures that SMEs can invest in initiatives that support long-term environmental, social, and economic goals (Choi & Wang, 2021). For instance, investments in research and development, technology adoption, and market expansion initiatives not only fuel innovation and competitiveness but also align business operations with sustainable practices (Moliterni & Buccoliero, 2020; Zhang et al., 2023). By integrating financial objectives with sustainability strategies, SMEs can create value for shareholders while contributing to broader economic development and reducing their environmental footprint. This alignment between financial management and sustainability strengthens the long-term viability of SMEs, positioning them to meet both business and societal demands effectively. Hence, the present study hypothesize that; *the financial management has a positive effect on the sustainable development of Service SMEs (H1).*

2.4 Relationship between Corporate Social Responsibility and sustainable development of company

Corporate Social Responsibility (CSR) has become increasingly intertwined with the concept of sustainable development within the business landscape. Corporate Social Responsibility (CSR) encompasses a range of initiatives undertaken by businesses to address social, environmental, and ethical concerns while balancing economic objectives (Carroll & Shabana, 2010; Rodrigues et al., 2023; Semenikhina et al., 2023). Embracing CSR not only enhances a company's reputation and brand value but also contributes to societal well-being and environmental stewardship (Dahlsrud, 2008). Moreover, CSR initiatives enable companies to mitigate risks, attract and retain talent, and foster stakeholder trust and loyalty (Matten & Moon, 2008).

The integration of CSR into business strategies is paramount for achieving sustainable development objectives. By incorporating environmental, social, and governance (ESG) criteria into decision-making processes, companies can align their operations with sustainable development goals (Orlitzky et al., 2011). CSR initiatives contribute to sustainable development by promoting responsible business practices, reducing environmental impacts, and addressing societal challenges such as poverty alleviation and gender equality (Kolk & Perego, 2014). The connection between CSR and the sustainable development of companies is evident in the myriad ways businesses integrate social and environmental considerations into their operations.

Hence, we hypothesize that; *the level of implementation of CSR has a positive effect on the sustainable development of Service SMEs (H2).*

2.5 Relationship between Corporate Social Responsibility and financial management

CSR has evolved from a philanthropic activity to a strategic imperative for businesses seeking to balance profit generation with social and environmental impact (Carroll & Shabana, 2010). Embracing CSR enables companies to enhance their reputation, mitigate risks, and foster stakeholder trust and loyalty, ultimately contributing to long-term financial performance and value creation (Khan et al., 2016). The integration of CSR into financial management practices is essential for aligning business strategies with sustainability goals. By incorporating environmental, social, and governance (ESG) criteria into investment decisions, companies can manage risks, identify growth opportunities, and enhance financial resilience (Khan et al., 2016). Moreover, CSR initiatives such as energy efficiency programs, supply chain management, and diversity and inclusion efforts can yield cost savings and operational efficiencies, positively impacting financial performance (Ioannou & Serafeim, 2015).

While the integration of CSR into financial management offers numerous benefits, companies face challenges in effectively measuring and disclosing the financial impact of CSR initiatives. The lack of standardized reporting frameworks, inconsistent metrics, and difficulty in quantifying intangible benefits pose hurdles for companies seeking to demonstrate the link between CSR and financial performance (Epstein & Roy, 2016). However, overcoming these challenges presents opportunities for companies to enhance their competitive advantage, attract investors, and access capital from socially responsible investment funds (Porter & Kramer, 2011).

Hence, the present study hypothesize that; *the level of implementation of CSR has a positive effect on the financial management of Service SMEs (H3).*

2. Aim, methodology and methods

The aim of the article is to quantify the relationships between financial management, corporate social responsibility, and the level of sustainability of small and medium-sized service enterprises in the V4 countries.

2.1 Methodology of data collection

The research sample was drawn from the business environment of the V4 region (Poland, Hungary, Czech Republic, and Slovak Republic). Data collection took place at the end of 2022 (December) and the beginning of 2023 (January). The research sample was based on 339 completed questionnaires from owners and top managers. Respondents were defined as owners or top managers of SMEs (less than 249 employees) operating in one or more countries in the V4 region. The questionnaire was distributed using an external agency employing the CAWI research methodology (Computer-Assisted Web Interviewing). The criterion for data collection was a minimum number of respondents (MIN = 280), determined from the sample size analysis with the following characteristics: estimated proportion = 50%, confidence level = 95%.

2.2 Questionnaire and variables

The questionnaire consisted of 51 questions. The separate sections of the questionnaire were as follows: demographic characteristics of respondents – 7 questions; demographic characteristics of SMEs – 6 questions; reputation and social media – 4 statements; market, personnel, legislative, and operational risk – 16 statements; corporate social responsibility – 4 statements; level of sustainability – 4 statements; financial management – 4 statements; crisis events in business – 5 statements; behavioral characteristics of the decision-maker – 4 statements. The respondent had to express their position on each question and statement. A Likert scale (5-point scale) was implemented to examine the respondent's perceptions towards the selected statements (types of answers: strongly agree (1), ..., strongly disagree (5)).

The questionnaire contains the following statements (items) related to the factors (variables):

Level of sustainability (LS) – LS1: I understand the concept of sustainable business growth. LS2: It is essential to perceive also the social and environmental impact of entrepreneurship. LS3: The sustainable development of our company is a key aspect of entrepreneurship. LS4: I perceive our company as sustainable.

Corporate Social Responsibility (CSR) – CSR1: The concept of corporate social responsibility (CSR) plays an important role in our company. CSR2: The implementation of the CSR concept has a positive effect on the future of SMEs. CSR3: CSR helps us to gain new business partners. CSR4: CSR has a positive impact on a firm's financial performance.

Financial management (FM) – FM1: Our company has s sufficient profit. FM2: The indebtedness of the company is adequate (not a high share of debt). FM3: I can adequately manage financial risks in our company. FM4: Our company has no problem with an ability to pay obligations (insolvency).

Descriptive statistics, as is mean (ME), standard error (SE), standard deviation (SD), skewness (SK), and kurtosis (KU) were evaluated separately for each item (see table 1).

Table 1. **Descriptive statistics of defined items**

DS	**Corporate social responsibility (CSR)**				**Financial management (FM)**				**Level of sustainability (LS)**			
	CSR1	**CSR2**	**CSR3**	**CSR4**	**FM1**	**FM2**	**FM3**	**FM4**	**LS1**	**LS2**	**LS3**	**LS4**
ME	2.392	2.442	2.631	2.696	2.469	2.227	2.000	1.941	2.065	2.003	2.156	2.077
SE	0.049	0.043	0.054	0.052	0.057	0.053	0.041	0.046	0.039	0.037	0.045	0.044
SD	0.902	0.795	0.995	0.966	1.055	0.972	0.761	0.844	0.710	0.686	0.826	0.818
KU	0.179	0.325	-0.390	-0.193	-0.567	-0.026	0.448	0.526	0.349	-0.051	0.538	1.140
SK	0.459	0.172	0.176	0.205	0.492	0.581	0.566	0.795	0.454	0.273	0.620	0.805

Note: DS – Descriptive statistics. Source: results from the research data.

Source: own research

The results (see Table 1) show that the statement FM4 ("Our company has no problem with the ability to pay obligations") is evaluated most positively by the respondents (ME = 1.941). The results (see Table 1) also show that the statement FM1 ("Our company has sufficient profit") has the greatest internal variability in answers (SD = 1.055). The skewness and kurtosis results range between -2 and 2. These results confirm the assumption of a normal distribution.

3. Statistical methods

The statistical hypotheses (see section literature review) were evaluated using several statistical methods. Firstly, descriptive statistics were used. Secondly, the reliability and validity of the questionnaire and statements were evaluated (confirmation factor analysis - CFA; see Table 2). The critical values of the reliability and validity characteristics (e.g., Cronbach & Meehl, 1955) are as follows: Cronbach's Alpha (CA) – critical value = 0.700; corrected item-total correlation (CI-TC) – critical value = 0.500; composite reliability (CR) – critical value = 0.700; average variance extracted (AVE) – critical value = 0.500; communalities (CO) – critical value = 0.500; factor loading (FL) – critical value = 0.500; Bartlett's test of sphericity (BT) – critical value = level of significance; Kaiser-Meyer-Olkin test (KMO) – critical value = 0.500.

The structural equation modeling (SEM) approach was used because this statistical method evaluates (quantifies and visualizes) the causal relationships between factors (Dvorský et al., 2023a). This statistical approach is modern in several quantitative case studies (e.g., Dabija et al., 2022; Rollnik-Sadowska et al., 2023; Zvariková et al., 2024). The quantification and verification (relationships between factors) and visualization (connections between items and factors, and between factors) of variables are the main benefits of creating the final SEM model. The SEM model was verified with FIT model characteristics, such as the Goodness-of-Fit (GFI); CMIN / DF – The minimum discrepancy; Comparative Fit Index (CFI); Root Mean Square Error of Approximation (RMSEA); and Normed Fit Index (NFI).

The empirical results were calculated using the analytical software IBM SPSS Statistics version 27. The visualization of the final SEM model was realized with IBM SPSS AMOS version 27.

3.1 Structure of respondents

Structure of 100% (n = 339) service SMEs is follows (see table 2).

Table 2. **Demographic structure of SMEs**

Country of business			**Type of enterprise**			**Size of enterprise**		
Poland	29.8%	101	Sole trader	58.1%	197	Micro-ent.	73.7 %	250
Czech Republic	39.5%	134	Limited liability ent.	33.9%	115	Small ent.	17.7 %	60
Slovak Republic	20.1%	68	Another form	8.0%	27	Medium-sized ent.	8.6%	29
Hungary	10.6%	36	**Locality of enterprise**			**Age of respondent**		
Age of enterprise			Capital	33.0%	112	Less than or equal 35	35.7 %	121
Less than or equal 3	22.7%	77	Another city	67.00 %	227	From 36 to 45 years	26.0 %	88
More than 3 and less 5	21.2%	72	**Gender**			From 46 to 55 years	23.0 %	78
More than 5 and less 10	19.8%	67	Women	41.9%	142	More than 55 years	15.3 %	52
More than 10	36.3%	123	Man	58.1%	197	**Position in enterprise**		
Level of education						Owner	84.1%	285
Elementary school	9.1%	21	Bachelor's degree	14.5%	49	Top manager	15.9%	54
High school	38.1%	129	Master's degree, PhD.	38.3%	130			

Note: Ent. - Enterprise. Source: results from the research data.

Source: own research

3.2 Empirical results

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The reliability and validity of questionnaire's statements was verified and the results are shows in table 3.

Table 3. **Verification of the reliability and validity of statements**

Corporate social responsibility (CSR)				Financial management (FM)				Level of sustainability (LS)			
CSR: CA = 0.897; **CR** = 0.954; **AVE** = 0.804, **KMO** = 0.779 BTS: Sig.< 0.001***				**FM: CA** = 0.752; **CR** = 0.845; **AVE** = 0.698; **KMO** = 0.739 BTS: Sig. < 0.001***				**LS: CA** = 0.776; **CR** = 0.771; **AVE** = 0.507; **KMO** = 0.753 BTS: Sig. < 0.001***			
I	**CI-TC**	**FL**	**COM**	**I**	**CI-TC**	**FL**	**COM**	**I**	**CI-TC**	**FL**	**COM**
CSR1	0.739	0.859	0.738	**FM1**	0.441	0.647	0.418	**LS1**	0.560	0.760	0.578
CSR2	0.789	0.887	0.786	**FM2**	0.570	0.774	0.600	**LS2**	0.577	0.773	0.598
CSR3	0.792	0.884	0.781	**FM3**	0.670	0.854	0.729	**LS3**	0.610	0.795	0.633
CSR4	0.781	0.876	0.768	**FM4**	0.562	0.791	0.626	**LS4**	0.581	0.771	0.594

Note: I – Items; Sig. – Significance; *** α = 0.001. Source: results from the research data.
Source: own research

The results (see Table 3) show that the internal consistency between the items and the factors is acceptable for the factors Corporate Social Responsibility (CSR) and Level of Sustainability (LS). On the other hand, the empirical results of verification of reliability and validity for the Financial Management (FM) factor are not acceptable. The values of the characteristics for item FM1 (see CI-TC, FL, and COM) do not meet the required minimum values. From the proposed FM factor with items (FM1, ..., FM4), an FM factor was created with the following characteristics: FM (items: FM2, FM3, FM4): CA = 0.767, CR = 0.915, AVE = 0.728; KMO = 0.677; BTS: Sig. < 0.001 (FM2: COM = 0.611, FL = 0.782, CI-TC = 0.543; FM3: COM = 0.706, FL = 0.873, CI-TC = 0.674; FM4: COM = 0.719, FL = 0.840, CI-TC = 0.608).

Empirical results of the final model (SEM model) with three defined factors (CSR, FM, LS): KMO = 0.822; BTS = 1714.5, Degrees of freedom (DF) = 55; Sig. = 0.000. Table 4 and Table 5 present the results of the rotation component matrix (FL > 0.30) and total variance explained (TVE).

Table 4. **Rotated component matrix and factor transformation matrix**

Item/Factor	CSR	LS	FM
FM2			0.747
FM3			0.849
FM4			0.826
CSR1	0.825		

CSR2	0.847		
CSR3	0.878		
CSR4	0.879		
LS1		0.747	
LS2		0.742	
LS3		0.833	
LS4		0.708	
Factor	**CSR**	**LS**	**FM**
CSR	0.904		
LS	0.258	0.924	
FM	0.461	0.354	0.947

Note: Extraction Method – Principal Component analysis; Rotation: Varimax with Kaiser Normalization; Rotation converged in 6 iterations. Source: Source: results from the research data.

Source: own research

Table 5. **Total variance explained of final model**

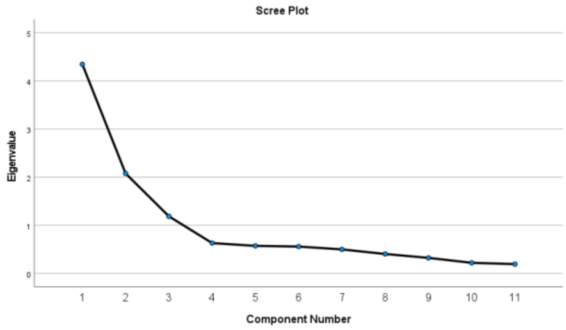
F	**Initial Eigenvalues**			**Extraction Sums of Squared Loadings**			**Rotation Sums of Squared Loadings**		
	Total	**% Var.**	**Cum. %**	**Total**	**% Var.**	**Cum. %**	**Total**	**% Var.**	**Cum. %**
CSR	4.345	39.495	39.495	4.345	39.495	39.495	3.079	27.987	27.987
LS	2.076	18.874	58.370	2.076	18.874	58.370	2.386	21.691	49.679
FM	1.186	10.782	69.152	1.186	10.782	69.152	2.142	19.473	69.152

Note: Var. – Variance; Cum. – Cumulative; SL – Squared Loading; F – Factor; Extraction Method – Principal Component analysis; Rotation: Varimax; Rotation converged in 6 iterations. Source: results from the research data.

Source: own research

The empirical results (see Table 4) and the communalities results (COM > 0.5 for each item) confirmed the relationships (consistency) between the items and the factors. Table 5 showed that the factors identified above explained 69.15% of the total variability of the final model. This partial conclusion (number of factors – no. 3) was confirmed in Figure 1 (eigenvalue – minimum value = 1).

Figure 1. **Scree plot – number of factors according to the eigenvalue**



Source: own research

The validation of the significance of the final model is presented in Table 6. The basic fit model summary includes the following characteristics: number of distinct sample moments = 66; number of distinct parameters to be estimated = 23; DF = 43; Chi-square = 85.18; Sig. = 0.000.

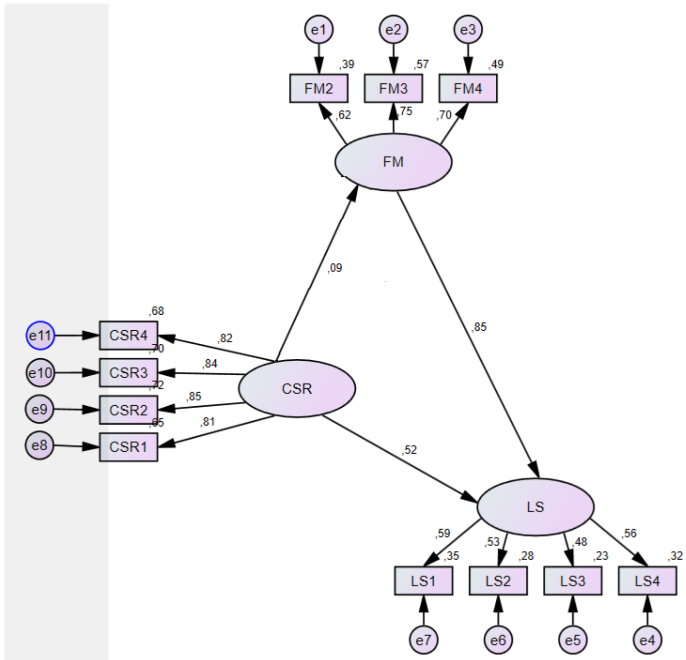
Table 6. **Verification of final SEM model**

Summary Fit Characteristics	DF	CMIN	CMIN/DF	RMSEA	CFI	NFI	GFI
Final model	43	85.18	1.980	0.071	0.968	0.921	0.972
Accepted value of the			<-2.0;2.0>	<0;0.08>	>0.95	>0.90	>0.95

Note: SFCH – Summary Fit Characteristics. Source: results from the research data.
Source: own research

The summery fit characteristics confirmed that the final model is a statistically significant (SFCH; see table 6). The values of the RMSEA, CFI, NFI, GFI are higher that the minimal value. The final model is acceptable and statistically significant. Graphical visualization of the final model shows figure 2.

Figure 2. **Final model – causal relationships between CSR, FM, and LS**



Source: own research

The graphical visualization (see figure 2) showed the quantification of causal relationships between factors (FM, CSR, and LS). Table 7 presents the empirical results of path coefficients (PC) of factors (estimation method - Maximum Likelihood), verification of path coefficients between factors and evaluation of defined hypotheses.

Table 7. **Verification of research hypotheses**

Hyp.	Causal relationship	Path coefficient (PC)		Standard Error	Critical ratio	Sig. p-value	E. Hyp.
		Unstandardised	Standardised				
H1	FM >> LS	0.635	0.853	0.078	8.099	$< 0.001^{***}$	A
H2	CSR >> LS	0.323	0.523	0.042	7.699	$< 0.001^{***}$	A
H3	CSR >> FM	0.086	0.089	0.026	3.325	$< 0.001^{***}$	A

Note: Hyp. – Hypotheses; E. Hyp. – Evaluation of hypotheses; α = 0.001; A – Accepted. Source: results from the research data.

Source: own research

Empirical results (see table 7) confirmed the statistical significance of the research hypotheses because the p-values of the causal relationships between FM, CSR, and LS are lower than the significance level. The factors, as is a financial management and corporate social responsibility have a positive effect on the level of sustainability. All the calculated PCs (Unstandardized, Standardized; see table 6) are positive values. Hypotheses H1, H2, and H3 were accepted.

4. Discussion and Implication

The empirical results from the quantitative research conducted on SMEs in the V4 countries provide significant insights into the relationships between financial management, corporate social responsibility (CSR), and sustainability in the service sector. This study not only confirms these relationships but also adds valuable theoretical and practical contributions to the existing body of knowledge.

The relationship between financial management and level of sustainability was confirmed. Financial management has a positive direct effect on the level of sustainability of small and medium-sized enterprises in the business sector services.

The relationship between financial management and business sustainability in the segment of small and medium-sized enterprises is crucial for the long-term success and stability of these companies (e.g. Ferber Pineyrua et al., 2021; Zsigmond & Mura, (2023). Financial management directly influences a company's ability to implement and maintain sustainable practices, while sustainable business practices can contribute to improved financial performance (Ključnikov et al., 2022). Financial management and sustainability in the SME segment are closely interconnected (e.g. Quartey & Kotey, 2019). Effective financial management enables a company to invest in sustainable initiatives that can enhance its long-term financial performance and stability. Conversely, the implementation of sustainable practices can help reduce costs, increase revenues, and improve the overall attractiveness of the company to investors and employees (Skare et al., 2024; Svobodova et al., 2024; Kömüves et al., 2024).

Again, the relationship between corporate social responsibility and level of sustainability was confirmed. Corporate social responsibility has a positive direct effect (PC = 0.523) on the level of sustainability of small and medium-sized enterprises in the business sector services.

The relationship between corporate social responsibility (CSR) and business sustainability is very close and synergistic. CSR and sustainability are two key concepts that mutually support and strengthen each other in the business environment at both national and international levels (Ahmad et al., 2024). Several authors (e.g. Belas et al., 2024; Lopez at al., 2024; Zsigmond et al., 2021) have found a direct impact between the implementation of CSR in a company and its sustainability. Naudé (2012) state on one hand that the implementation of CSR initiatives is costly, especially in the SME segment. On the other hand, they emphasize that it is important for SME owners and managers to view these costs as an investment in the future. Metzker et al. (2023) argue that for effective implementation of CSR, it is necessary to quantify its impact. Evaluating and measuring the impact of CSR on business sustainability requires clear measurable metrics and reporting.

Similarly, the relationship between corporate social responsibility and financial management was confirmed. Corporate social responsibility has a significant effect on the financial management of small and medium-sized enterprises in the business sector services. This effect is positive (PC = 0.089) with low intensity.

CSR and financial performance often influence each other in companies classified under the SME segment. This causal relationship is positive, but in depending on the context and method of implementing CSR initiatives (Dvorský et al., 2023a). According to Lütjen et al. (2019), the implementation of ecological and energy-efficient practices reduces operational costs. Anna et al. assert that CSR can open doors to new markets and customer segments that prefer products and services from responsible companies. In this context, Madi Odeh et al. (2023) believes that implementing CSR supports innovation by stimulating the development of new products and services that are environmentally and socially sustainable. Several authors also agree on the positive consequences of CSR's impact on a company's financial performance, such as improved reputation and trust from customers, suppliers, and investors (Dvorský et al., 2023b; Blajer-Golebiewska & Vasa, 2024), increased market value of the company (Campos et al., 2023), and effective risk management (Belas et al., 2023). In this context of financial performance, the implementation of artificial intelligence to support selected business activities is increasingly coming to the forefront (Lobacz & Tylzanowski, 2022; Krajčík et al., 2023).

4.1 Theoretical Implications

The findings extend current theoretical frameworks on the intersection of financial management, CSR, and sustainability within SMEs. The positive effect of financial management on sustainability underscores the critical role of sound financial practices in promoting sustainable business growth. This result aligns with prior studies that emphasize the centrality of financial management in enabling organizations to navigate risks, optimize resources, and invest in sustainable innovations (Ključnikov et al., 2022). It also corroborates the resource-based view (RBV) theory, which suggests that firms with superior internal resources, including financial capabilities, are better positioned to achieve long-term sustainability (Ferber Pineyrua et al., 2021).

The research also contributes to CSR theory by highlighting the direct and positive impact of CSR on both financial management and sustainability in SMEs. This relationship suggests that CSR is not merely a peripheral activity but an integral component of a firm's strategic framework, capable of influencing financial health and long-term viability. This supports stakeholder theory, which posits that businesses that engage in responsible and ethical practices can enhance their financial performance by building trust with stakeholders, including customers, employees, and investors (Kraus et al., 2020; Khan et al., 2016).

Moreover, the results confirm that CSR positively influences financial management, albeit with lower intensity. This nuanced relationship suggests that while CSR initiatives contribute to improved financial outcomes, their effects may depend on the specific CSR activities and their alignment with the firm’s overall business strategy (Madi Odeh et al., 2023). This finding enriches the discussion around the "virtuous circle" of CSR and financial performance, providing empirical evidence from the SME context, particularly within the service sector.

4.2 Practical Implications

From a practical standpoint, the results offer actionable insights for SME managers, policymakers, and business consultants. For SME managers, the study emphasizes the importance of integrating both financial management and CSR into their strategic plans to enhance sustainability. Effective financial management enables SMEs to invest in sustainability initiatives, which in turn, contribute to long-term cost savings, revenue generation, and enhanced market competitiveness (Svobodova et al., 2024). Managers should consider adopting financial practices that prioritize sustainable growth, such as budgeting for environmental initiatives or investing in energy-efficient technologies.

Additionally, CSR presents an opportunity for SMEs to differentiate themselves in the market, particularly as consumers and investors become more socially and environmentally conscious. By embedding CSR into their operations, SMEs can not only enhance their corporate reputation but also attract new customers and investors who value sustainability (Blajer-Golebiewska & Vasa, 2024). The study suggests that SME managers should view CSR as an investment rather than a cost, especially in a business environment increasingly shaped by sustainability standards and regulations (Metzker et al., 2023).

For policymakers, the findings highlight the need for support mechanisms that encourage SMEs to adopt CSR and financial management practices conducive to sustainability. This could include financial incentives, such as tax breaks or grants for businesses that invest in sustainable technologies or CSR programs. Moreover, national institutions and educational organizations can use the research as a case study to promote best practices in sustainable business management and CSR implementation, particularly in the V4 countries.

5. Conclusion

The aim of the article was quantified the relationships between financial management, corporate social responsibility and level of sustainability of small and medium-sized service enterprises in the V4 countries.

Both factors (financial management, corporate social responsibility) are significant factors, which positive determining the level of sustainability. Financial management has a more positive effect on the level of sustainable of service SME segment than corporate social responsibility according to the owner or top manager. Corporate social responsibility as a factor has a direct effect on the financial management. This effect is a statistically significant, but with low intensity.

Findings are important for many types of readers. Firstly, managers and owners of small and medium sized enterprises in the business sector "service" can use this information: i. for better strategic management, ii. for the development of strategic documents in firms, iii. improving knowledge on the topic of business sustainability. Also, the nation institution support in SME segment is important. Our research can be as a material for creating strategic documents for grow of SME segment, special services. Education organisations can use our findings as a case study from V4 countries or implement the findings into materials for workshops, presentation or courses on the topic of firm sustainable development.

The quantitative research, which was realised in services SME segment, has some specific characteristics. Firstly, research was realised in one business sector – services. Secondly, research evaluated subjective perception of owners and top manager. Thirdly, time of data collection was a short time after pandemic COVID-19. Fourthly, data collection was concluded only 4 middle European countries. Fifth, statistical approach with using questionnaire has some limit (e.g. Likert scale with five points of evaluation).

Development of SME segment is very dynamic process. There are exist other factors which can have effect on the level of sustainability of SME segment, as is implementation of artificial intelligence in firm, the level of digitalisation of firm, business risks management and so on. Comparison with the business environment of west European countries can have effect on the deepening of knowledge and better understanding of differences. Service as a business sector is only one of important segment, but exist other significant sectors for V4 countries, as is a production, retailing, construction or tourism.

6. Limitations and Future Research Directions

While the study provides valuable insights, it is important to acknowledge its limitations. The research focuses exclusively on the service sector within the V4 countries, limiting the generalizability of the findings to other sectors or regions. Additionally, the data collection occurred shortly after the COVID-19 pandemic, a period that may have influenced respondents' perspectives on financial management, CSR, and sustainability. Future research could expand the scope by including other sectors, such as manufacturing or retail, and by comparing the findings with those from other regions, such as Western Europe or Asia, to gain a broader understanding of the role of financial management and CSR in sustainability.

Another potential area for future research is exploring the role of emerging technologies, such as artificial intelligence (AI) and digitalization, in enhancing financial management and CSR practices. The rapid adoption of these technologies offers new opportunities for SMEs to optimize their operations and strengthen their commitment to sustainability. Studies could investigate how AI can be integrated into financial decision-making processes or used to develop more effective CSR strategies.

Finally, the implementation of more comprehensive metrics to measure the impact of CSR on financial performance and sustainability would help address some of the challenges identified in this study. Standardized reporting frameworks could facilitate more consistent and reliable assessments of CSR's contribution to business success, thereby encouraging more SMEs to embrace socially responsible practices.

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