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MODEL OF SUSTAINABILITY OF SMEs IN V4 COUNTRIES

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Abstract. The research's objective was to develop a thorough model of the viability of SMEs in the V4 countries based on predetermined variables. The following factors were defined: human resources management, business ethics, corporate social responsibility, company digitalisation, environmental considerations, financial management, and sustainability of SMEs. The model was developed on the solid empirical research carried out in the Visegrad Four countries in June 2022 by the renowned external agency MNFORCE using a sample of 1,398 respondents and the "Computer Assisted Web Interviewing" technique. According to the research, the developed complex model of SMEs' sustainability depending on the listed criteria is statistically significant. Each investigated factor has a favourable impact on SMEs' sustainability. The study's findings supported the notion that the environmental aspects of the business have the strongest positive impact on the long-term sustainability of SMEs. The study's findings indicate that the management of human resources, finances, and the degree of digitalisation of SMEs significantly influence the viability of businesses. The findings provide an important platform for managers responsible for the sustainability of the SME segment at the worldwide level (International council for small business), national level (particularly for V4 nations), as well as institutions supporting SMEs and SME owners.

Keywords: small and medium enterprises, SME sustainability model, human resources management, ethics in business, CSR, digitisation of companies, environmental aspects, financial management.

JEL Classification: L26.

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1. Introduction

If companies want to increase the efficiency of their operation and be competitive, they must change their focus from profit-only to sustainability (El-Kassar & Singh, 2019; Abdul-Rashid et al., 2017; Okręglicka & Pichugina, 2021; Khan et al., 2023), which also helps to shape the quality of the business environment (Cepel, 2019).

Due to the significant contribution that small and medium-sized businesses (SMEs) make to the global economic system (Metzker & Zvarikova, 2021), this topic is now the subject of theoretical study and practical solutions. Sustainability represents a complex and multi-dimensional concept (Kiba-Janiak et al., 2022). Economic, social, and environmental considerations are all integrated into one concept (Elkington, 1994) and these variables should be in a dynamic equilibrium with a multiplier impact. However, many studies look at the problem of sustainability through the lens of separate responsibilities or are not addressed in detail (Abdul-Rashid et al., 2017; Wijethilake & Lama, 2019). De-

spite the growing interest of managers in implementing sustainability in practice, many companies cannot define sustainability in the context of their business (Lu et al., 2022; Silvestre et al., 2022).

Problems with proper implementation in SMEs are most often related to the fact that they try to apply procedures characteristic of large companies without considering their capital, resource or personnel limits (Belas Jr. et al., 2021), and have insufficient conviction and knowledge about sustainability (Jansson et al., 2017). Even though SMEs face a lot of challenges nowadays, there are still fewer studies on SMEs' sustainability than there are on large corporations (Yumei et al., 2021; Suoto, 2022). Due to this, the uniqueness of this study resides in the fact that it is concentrated on building a thorough model of SMEs' sustainability based on business viewpoints. The research identifies and quantifies the aspects that affect a company's sustainability based on previous literature research and own author's expertise (e. g. Zvarikova et al., 2023; Rozsa et al., 2022; Belas et al., 2021; etc.). The originality of the study lies in the subjective attitudes of entrepreneurs from the countries of Central Europe (The Visegrad group) regarding the significance of the selected factors on the SMEs' sustainability. The model is based on a questionnaire survey, which provides subjective opinions of entrepreneurs about the influence of individual factors on the sustainability of their business. According to the authors' best knowledge, most studies are oriented on the perception of sustainability from the customers, employees, or other stakeholders' point of view, not entrepreneurs and if the entrepreneurs' attitudes are incorporated in the study, they represent only one factor of sustainability (e.g. Magrizos et al. (2021), who made qualitative research on CSR of 10 SMEs). However, in the case of SMEs, entrepreneurs are the bearers of managerial and decision-making functions (Alonso-Almeida et al., 2018; Amoah et al., 2021). They set the business direction and are often the role models for their employees (Zvarikova et al., 2023; Cheng et al., 2022). Based on this knowledge, we consider their approach to sustainability as crucial. Finally, we must not forget that although SMEs are relatively heterogeneous (e.g., national context, sector or company size), in many respects, they are still homogeneous (e.g., the influence of the entrepreneur's personal characteristics on business management, informal relationships, etc.) (Vivier, 2013).

The literature research of previous studies reveals that sustainability issues do not provide a thorough evaluation, which constitutes a significant theoretical issue. Thus, the creation of a theoretical model and its subsequent validation may contribute not just to the larger discourse on the problem of SME sustainability. It can also have substantial effects on economic policymakers inside the Visegrad Group.

The structure of the article is as follows: The important discoveries that characterise the scientific gap are described in the theoretical part, which analyses and summarises existing case studies in the research using a critical lens. The research methodology and objective are explained in the next section. It includes the technique for constructing a questionnaire (Table 1), the methodology for collecting data, as well as the creation of statistical hypotheses and methods for verifying them. The study's findings are presented in the third chapter. The sections that follow contain the discussion of the research, which includes a summary of major findings and a comparison with other significant studies aimed at solving the problem. Key empirical findings, theoretical and practical consequences, and future research goals are included in the conclusion.

2. Literature review

Sustainability should not be considered an impediment to the SMEs´ competitiveness, moreover, the findings of Lopez-Torrez (2022) prove that the sustainability of SMEs has a considerable beneficial influence on their competitiveness in many ways. Based on this knowledge, we must be aware of the factors which are relevant to this topic and their significance.

Environmental and social initiatives have historically been seen as marginal in sustainability. However, today they are implemented in corporate strategies with a direct impact on the level of profit (Grewal et al., 2021), customer satisfaction and loyalty (Souto, 2022; Dabija et al., 2022), business partners (Kliestik et al., 2023; Shafiq et al., 2017), risk of bankruptcy (Michalkova et al., 2022), or employees themselves (Mitchell & Walinga, 2017; Van Buren III, 2022). Furthermore, in particular, social performance is largely neglected in the professional literature (Buyukozkan & Karabulut, 2018; Yasin et al., 2022), although according to Yasin et al. (2022), whether Alonso-Almeida et al. (2018), it is considered the cornerstone of every business. On the contrary, environmental responsibility has the most connotations in the professional literature related to its more obvious impact on sustainability (Cheng et al., 2022).

Within the framework of social responsibility in the context of SMEs, publications mainly focus on employees (Alonso-Almeida et al., 2018), as the most important capital of any company. Nowadays, companies have difficulty finding an adequate workforce with the necessary competencies and experiences (Souto, 2022; Belas & Rahman, 2023), especially with the growing migration of the workforce (Privarova et al., 2022). From the above, we can conclude that retaining experienced employees is a key management task (Van Buren III, 2022; El-Kassar & Singh, 2019). Companies implementing social responsibility practices are characterised by satisfied and loyal employees, low turnover (Schroder et al., 2022), and a higher level of innovation (Flammer, 2015; León-Gómez et al., 2022) as the key drivers to sustainable entrepreneurship. According to this knowledge hypothesis 1 was stated as follows:

H1: *Human resource management has a positive effect on the sustainability of SMEs.*

As mentioned above, experts are most often concerned with sustainability in environmental protection, and it is SMEs that are mainly oriented towards environmental responsibility (Jayarathna et al., 2022). However, El-Kasar and Singh (2019) argue that improving environmental performance is usually achieved at the expense of economic growth, at least in the short term. This is also supported by Abdul-Rashid et al. (2017), which claim that products produced sustainably have a positive effect on environmental performance but a negative effect on economic and social performance. Nevertheless, many studies confirm that the environmental responsible activities of companies have a positive impact on business sustainability (Cheng et al., 2022; Ahmed et al., 2021; Moisecu et al., 2020).

H2: *Environmental aspects of the business have a positive effect on the sustainability of SMEs.*

Many studies prove a positive relationship between financial performance and sustainability resulting directly from cost savings (Alonso-Almeida et al., 2018; Valls Martínez et al., 2022) but also from non-economic indicators such as employee satisfaction (Van Buren III, 2022; Sorribes et al., 2021), maintaining or improving market position (Yasin et al., 2022), image support (Ahmed et al., 2021) and customer satisfaction (Moisescu & Gica, 2020), sustainable consumers (Alhouti et al., 2021), improvement of ethics (Silvestre et al., 2018), or higher credibility (Gaio et al., 2022). Also, investors are orientated towards companies that

carry out their activities in a sustainable manner (Flammer, 2015), which is evidenced by their growing interest in non-financial statements (Carvajal & Nadeem, 2022) to incorporate this information into the evaluation of their investments (Du et al., 2017) to identify future business performance, business opportunities as well as risks (Didenko et al., 2022). But as Chatzistamoulou and Tyllianakis (2022) emphasise, financial barriers represent the key obstacle for SMEs to implement sustainability. Companies' social and environmental policies cannot be separated from profit focus. According to Przychodzen et al. (2016), successful SMEs' transition to sustainability depends on leadership and clear profit orientation and management.

H3: *Financial management of the company positively affects the sustainability of SMEs.*

Silvestre et al. (2018) claim that companies are socially and environmentally responsible with the aim to increase their financial performance and only their commitment to business ethics differentiates them. Ethics represent a code of values and principles that guide the actions of a person or group of people regarding what is right and what is wrong (Zvarikova et al., 2023; Prochazkova & Micak, 2023). In a business environment, being ethical means applying the principles of honesty and justice in relationships with stakeholders (Pizzi et al., 2020) with a direct impact on SMEs' sustainability (Huang et al., 2022).

Hockerts and Searcy (2023) published article with the aim of better understanding of relationships between corporate sustainability and business ethics fore researchers. Authors presented keys aspects of outputs from empirical research – to spur innovative thinking and constructive discussion to the relationships between business ethics and corporate sustainability.

Khattak et al. (2023) showed research results from business environment of SME segment of Pakistan (research sample is 611 SMEs). The manager age and firm age do not moderate the nexus between financial resources and sustainability performance. In this context, authors also found, that connection between financial resources and sustainability performance is significant. Authors recommends SMEs to focus on experienced and educated managers as compared to older ones to utilize their financial resources efficiently in sustainable activities.

H4: *Applying ethics in business has a positive effect on the sustainability of SMEs.*

In their empirical research from the business environment of V4 nations, Belas et al. (2021) discovered that awareness of the CSR concept and its application in business play a crucial role in the business sustainability of SMEs. Skypalova et al. (2016) examined that engagement of organizations in the CSR activities growths with the size of the organization. Authors also found that only 30% of micro and small enterprises in the Czech Republic know and make use of the CSR concept comprehensively and are active in all three pillars of CSR. But as Magrizos et al. (2021) pointed out, there is still little evidence about the impact of CSR on SMEs. At this point, we consider important to emphasise that CSR and sustainability are not synonymous. According to Ortiz-Martinez et al. (2023), we might define CSR as the microeconomic part of the larger macroeconomic idea of sustainability, so CSR is perceived as a tool of sustainability. Betakova et al. (2023) found that demographics characteristics as ia age, level of education or business sectors play kay role in CSR implementation.

Skypalova et al. (2023) realised empirical research on the 360 Slovak and Czech enterprises. Their findings indicate that exist differences among the two countries in the implementation of CSR. Authors also found that CSR implementation had stronger effect on the sustainability of SMEs in Czech enterprises than Slovak enterprises.

Dvorský et al. (2023a) on the base of case study of 1,090 SMEs from the business environment Visegrad group countries showed that did not confirm the negative effects of crisis events in business on the financial management, but level of implementation CSR is significant in the context of corporate sustainability.

H5: *Corporate social responsibility has a positive effect on the sustainability of SMEs.*

The present time is characterized by a large amount of data that provides information supporting decision-making processes (El-Kassar & Singh, 2019) with adequate digital competencies (Orrensalo et al., 2022). The Federal Ministry for Economic Affairs and Energy (2018) defines digitalisation as "the transformation of business models due to fundamental changes in basic internal processes, interfaces with customers, products and services, as well as the use of information and communication technologies." On the other hand, some researchers, e.g., van der Velden (2018), point out the contradiction with the positive effects of digitalising businesses on environmental sustainability. The adverse effects of widespread usage of digital technology necessitate a sustainable digitalisation process since they include, e.g., greenhouse gas emissions, high flow of electronic waste, etc.

Avelar et al. (2024) realised study with the data from the Flash Eurobarometer 486 gathered through interviews with 16.365 SMEs in the EU27 and 12 non-EU countries. The findings show that most entrepreneurs do not express interest in a pro-growth agenda, which limits the reach of pro-entrepreneurship and pro-innovation discourse. Furthermore, firms' youth affect sustainability, not innovation and digitalization dynamics.

Broccardo et al. (2023) realised questionnaire survey from Italian business environment with research sample of 353 Italian firms. Their findings reveal a significant relationship between digitalization, sustainability, and profitability performance and that when positive results are achieved under the environmental and social lens, economic performance also improves.

H6: *Digitization of companies has a positive effect on the sustainability of SMEs.*

3. Methodology

The research aimed to create a comprehensive model of the sustainability of SMEs in the V4 countries based on defined factors.

3.1. Research design

The comprehensive SME sustainability model was built based on robust empirical research conducted in the Visegrad Four countries (Czech Republic (CR), Slovak Republic (SR), Poland (PL), and Hungary (HU)) in June 2022.

The data collection was carried out by the renowned external company MNFORCE using "Computer Assisted Web Interviewing" (CAWI Research Method). Market research agency MNFORCE is specialist for empirical data collection from V4 countries. They pay great attention to the quality control of data and outputs, while complying with ESOMAR quality standards.

The data collection criteria given to the external company before the actual data collection were as follows: i. the number of micro-enterprises in the sample set was twice the range of small and medium-sized enterprises; ii. according to selected demographic criteria, selected

groups of respondents were represented proportionally to the proportional representation in the primary set of respondents in the selected country. Only the owner or top manager of an SME participated in the research.

The final sample set of SMEs (n = 1398 respondents) did not show significant deviations from the data collection criteria defined by the article's authors. The questionnaire contained 52 questions. The questionnaire consisted of the following parts: demographic questions, selected factors and statements formulated about them. The respondent could answer the statements with only one of the following answers: I completely agree with the statement (value = 1), ..., I completely disagree with the statement (value = 5). All statements examined were identically scaled. The analysis of the size of the sample set confirmed that the range of SMEs in the number of 1398 respondents more than doubled the minimum number of SMEs (n = 684), which is imposed on the size of the sample set in V4 and the application of the SEM method.

3.2. Questionnaire – factors and items definition

The following factors (latent variables) were defined in the research: human resource management (HRM), business ethics (BE), corporate social responsibility (CSR), digitalisation of companies (DG), environmental aspects (EA), financial management (FM), sustainability of SMEs (S). Table 1 contains defined statements (manifest variables) for selected factors.

Table 1. Claims to defined factors and to the sustainability of SMEs

HRM	Human Resources Management
HRM1	People are the most important organization assets.
HRM2	Human resources management is the most important area of corporate management.
HRM3	I regularly evaluate the performance of my subordinates and motivate them to innovate their work procedures.
HRM4	I apply a participative management style (I encourage employee participation in decision-making).
HRM5	I devote a lot of time to personnel management in my management work.
HRM6	I heavily invest in improving the qualifications of our employees.
HRM7	I have developed a system of material involvement of employees.
BE	Business ethics
BE1	I consider business ethics to be necessary.
BE2	In managing a company, I consider the ethical implications of my decisions.
BE3	Ethical behaviour has a positive effect on the company's performance.
BE4	I feel good when I behave ethically in business.
BE5	Our company enforces the rules of ethical behaviour in business.
CSR	Corporate Social Responsibility
CSR1	I know the concept of corporate social responsibility (CSR).
CSR2	When managing a company, I consider the concept of CSR.
CSR3	Implementation of the CSR concept enables our company to gain competitive advantages (better company image, higher customer loyalty, new business opportunities, etc.).
CSR4	The implementation of the CSR concept has a positive effect on the long-term relationship with business partners.
CSR5	CSR helps us to gain new customers.

End of Table 1

CSR6	CSR helps us to gain great employees.
CSR7	CSR helps us to gain loyal and motivated employees.
CSR8	CSR has a positive effect on a company's performance.
EA	Environment aspect
EA1	Environmental responsibility is an important part of corporate governance.
EA2	When managing a company, I consider responsibility for the environment.
EA3	Environmental responsibility brings higher costs for the company.
EA4	Our company is actively involved in environmental protection.
FM	Financial management
FM1	I understand the most critical aspect of a company's financial management.
FM2	I consider the financial risk to be a part of the daily life of a company.
FM3	I can adequately manage financial risks in our company.
FM4	I evaluate the financial performance of our company positively.
FM5	Our company will survive on the market in the next five years.
DG	Digitalization
DG1	I positively evaluate our company's digitization level (use of digital technologies).
DG2	Digitalization improves customer perception of our company.
DG3	Digitization allows us to innovate our business models.
DG4	Digitization allows us to gain knowledge from new sources and thus mitigate the risks.
S	Sustainability
S1	I understand the concept of sustainable business growth.
S2	Sustainable growth should pursue not only the economic interests of the companies but also the positive impact on the social system and environmental aspects.
S3	It is essential to perceive also the social impact of entrepreneurship.
S4	It is essential to perceive also the environmental impacts of entrepreneurship.
S5	I evaluate our company as sustainable.

3.3. Statistical hypotheses and estimation techniques

To fulfil the main goal of the article, statistical hypotheses (H1, ..., H6) were verified using statistical methods through factor analysis (FA) and structural equation modelling (SEM). FA is a multivariate method that is not primarily intended to find relationships between variables but to classify claims to a factor (Zhang & Browne, 2012). FA aims to determine whether variables are similar in the selected manifest variables. The similarity in the sample data set means the similarity of the choice of attitudes of entrepreneurs to the selected statements. If the answers to the selected statements are similar, then we can combine them and try to name the given group of variables (call them a factor). Applying the FA exploratory technique can be logically organised into three steps. The first step: verifying the suitability of the data – to see if the variables are sufficiently correlated so that it makes sense to look for more general factors behind their structure (Kaiser-Meyer-Olkin test, Bartlett's test). If the value of KMO is lower than 0.5, it makes no sense to perform factor analysis (Hair et al., 2012). Second step: factor extraction – Principal component analysis, matrix of components; BIC – Schwarz's Bayesian information criterion; Scree plot) (Rose et al., 1991). Third step: rotation of factors – choice of method, interpretation of factor loadings (Varimax – orthogonal rotation) (Nevels, 1986).

The SEM method is suitable for constructing, identifying and quantifying relationships between latent variables and their graphical representation using a structural (final) model. The final model is a combination of regression and factor analysis, the result of which is the regression of latent variables (e.g., Jann, 2014). The SEM method is a method of multivariate statistics suitable for evaluating research aimed at examining respondents' attitudes in the economic and psychological spheres (Sarstedt et al., 2022; Borisov & Vinogradov, 2022). The suitability of the final model can be verified by selected measures (processed according to Hair et al., 2012): Goodness of Fit (GFI); CMIN/DF – The minimum discrepancy; Comparative Fit Index (CFI); Root Mean Square Error of Approximation (RMSEA); Normed fit index (NFI). The results were outputted from the IBM SPSS Statistics software. Graphical visualisation of relationships was created in IBM SPSS Amos.

3.4. Structure of respondents

Structure of SMEs (n = 1398) according to: country of operation of the company: 347 (24.8%) SMEs from Czech republic (CR); 322 (23.0%) SMEs from Slovak republic; 381 (28.1%) SMEs from Poland (PL) and 348 (24.9%) SMEs from Hungary (H); size of the enterprise (number of employees): 678 (48.5%) – microenterprise (0–9 employees), 347 (28.4%) – small enterprise (10–49 employees), 323 (23.1%) – medium-sized enterprise (more than 49 employees); business sector: 368 (26.3%) – services, 264 (18.9%) – trade, 226 (16.2%) – production, 112 (8.0%) – construction, 46 (3.3%) – agriculture, 54 (3.9%) – transport, 226 (16.2%) – tourism, 102 (7.3%) – other field of business; time of operation of the enterprise in business: 370 (26.5%) – enterprise up to 3 years, 550 (39.3%) – enterprises more than 3 and up to 10 years, 478 (34.2%) enterprises more than 10 years; location of business: 410 (29.3%) – capital of the country, 988 (70.9%) – other region of business.

4. Results

Basic descriptive characteristics (M – Mean; SD – Standard Deviation; Skw. – Skewness; K – Kurtosis) of the investigated independent factors (HRM, CSR, BE, FM, EA, DG) and the dependent factor (S) together with the results of the links between the statement and of the factor (CI-TC – Corrected Item –Total Correlation) are the subject of Table 2.

Results (see Table 2) show that the respondents' most significant degree of agreement is with the importance and implementation of business ethics (BE (M: BE1+…+BE5)/5; M = 1.643). On the contrary, the smallest degree of agreement of the respondents in the assessment of application and understanding of social responsibility (M: CSR (CSR1+...+CSR8)/8; M = 2.114). Also, the most significant internal consistency of the respondents' evaluations of the indicators is for the BE factor (SD = 0.957), and the smallest internal consistency of the respondents' evaluations of the indicators is for the CSR factor (SD = 0.720). Correlations between indicators and defined factors showed good links (CI-TC ≥ 0.5; Hair et al., 2012). The values of skewness and kurtosis (Skw., K ≤ 2.0; except for BE5: S = 2.099) indicate multiple normal distributions, which confirms the assumption for applying SEM modelling.

The results of the KMO test and Bartlett's sphericity test are the subjects of Table 3.

The KMO test (see Table 3) confirmed that the defined factors explain the share of the total variance distribution of individual variables in the background (KMO test = 0.965; a value close to 1.000). Bartlett's test confirmed that the factors are orthogonal to each other (i.e., they are not correlated).

Table 2. Results of descriptive statistics (DSs) and CI-TCs

DS	Human Resources Management (HRM)						
	HRM1	HRM2	HRM3	HRM4	HRM5	HRM6	HRM7
CI-TC	0.567	0.682	0.752	0.708	0.790	0.734	0.752
M	1.562	1.835	1.877	1.923	2.054	2.129	2.187
SD	0.790	0.804	0.903	0.892	0.957	1.024	1.017
Skw.	3.792	1.802	1.248	1.262	0.540	0.214	0.210
K	1.732	1.068	1.086	1.030	0.845	0.788	0.739

DS	Corporate Social Responsibility (CSR)							
	CSR1	CSR2	CSR3	CSR4	CSR5	CSR6	CSR7	CSR8
CI-TC	0.768	0.838	0.854	0.834	0.820	0.821	0.837	0.823
M	2.062	2.131	2.170	2.131	2.057	2.139	2.111	2.112
SD	1.005	0.955	0.983	0.988	0.931	0.923	0.926	0.945
Skw.	0.545	0.403	0.227	0.360	0.160	0.116	0.176	0.258
K	0.915	0.735	0.680	0.755	0.669	0.574	0.602	0.669

DS	Business ethics (BE)					Environment aspect (EA)			
	BE1	BE2	BE3	BE4	BE5	EA1	EA2	EA3	EA4
CI-TC	0.697	0.765	0.753	0.791	0.760	0.743	0.764	0.525	0.745
M	1.526	1.685	1.713	1.647	1.737	1.761	1.832	1.925	2.021
SD	0.676	0.688	0.767	0.748	0.814	0.823	0.843	0.909	0.916
Skw.	1.819	1.315	1.234	1.968	2.099	1.416	1.147	0.427	0.538
K	1.249	0.873	1.025	1.212	1.241	1.115	1.014	0.865	0.821

DS	Financial management (FM)					Digitalization (DG)			
	FM1	FM2	FM3	FM4	FM5	DG1	DG2	DG3	DG4
CI-TC	0.632	0.628	0.746	0.706	0.659	0.680	0.752	0.801	0.749
M	1.697	1.807	1.876	1.928	1.866	1.801	1.845	1.858	1.855
SD	0.749	0.768	0.779	0.838	0.863	0.819	0.828	0.844	0.850
Skw.	1.240	1.142	0.923	0.859	0.801	1.328	0.898	0.802	1.089
K	1.009	0.904	0.801	0.881	0.930	1.023	0.917	0.897	0.988

DS	Sustainability (S)				
	S1	S2	S3	S4	S5
CI-TC	0.656	0.744	0.771	0.781	0.689
M	1.726	1.781	1.842	1.855	1.916
SD	0.754	0.754	0.811	0.810	0.833
Skw.	1.361	1.518	1.349	0.999	0.891
K	0.991	0.946	0.974	0.893	0.857

Table 3. Results of Kaiser-Meyer-Olkin test and Bartlett's test

Kaiser-Meyer-Olkin test (KMO- test)		0.965
Bartlett's test of sphericity	Approx. Chi-square	41 293.928
	Df (no. of degrees of freedom)	0.703
	P-value (Sig.)	0.000***

Note: *α = 0.05; **α = 0.01; ***α = 0.001.

The technique of orthogonal rotation (Varimax) was used to create and subsequently interpret the matrix of factors. The results of communality of the variables (HRM1, ..., S5) showed (values more than 0.900) that factors can explain the variances. Table 4 shows not only the results of loading indicators for the given factor but also shows the reliability and validity of the questionnaire.

Table 4. Results of validity, reliability and factors loadings

Factors	Items and Factor loadings					CA	CR	AVE
HRM	HRM1 0.670	HRM2 0.770	HRM3 0.823	HRM7 0.825		0.902	0.923	0.623
	HRM4 0.793	HRM5 0.856	HRM6 0.811					
BE	BE1 0.806	BE2 0.856	BE3 0.846	BE4 0.872	BE5 0.851	0.901	0.927	0.716
CSR	CSR1 0.820	CSR2 0.875	CSR3 0.890	CSR4 0.875		0.953	0.961	0.754
	CSR5 0.866	CSR6 0.868	CSR7 0.880	CSR8 0.869				
EA	EA1 0.875	EA2 0.890	EA3 0.692	EA4 0.871		0.852	0.902	0.698
FM	FM1 0.770	FM2 0.765	FM3 0.854	FM4 0.820	FM5 0.786	0.858	0.898	0.639
DG	DG1 0.814	DG2 0.865	DG3 0.896	DG4 0.864		0.883	0.919	0.740
S	S1 0.775	S2 0.844	S3 0.863	S4 0.870	S5 0.801	0.888	0.918	0.691

Note: CA – Cronbach´s Alpha; CR – Composite Reliability; AVE – Average Variance Extracted.

The values of reliability and validity (see Table 4) pointed to the fact that there are very good internal relationships between indicators and factors. The extraction method Principal Component Analysis achieved these results: 7 factors; a maximum number in the range of 6–9 factors. The best solution is model with 7 factors according to the Scree plot (eigenvalue more than 1) and BIC method. The achieved results are very satisfactory regarding the number of defined latent variables (6 independent factors) and 1 endogenous variable (respondent's perception of SME sustainability).

Table 5 shows the percentage of the total variance individually explained by the defined factors.

The results of the total variance explained (see Table 5) show that the selected factors explain up to 70.487% of the variability of the total variance. On the other hand, only 29.513%

of the variability of the total variance is not explained by the indicators (or factors) defined in Table 1. All factors (see Tables 4 and Table 5) are identified (the scree graph also confirmed these results with the application of Kaiser's rule).

Table 5. Results of the total variance explained (TVE)

Latent variables	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative (%)	Total	% of Variance	Cumulative (%)
CSR	17.173	45.192	45.192	6.338	16.679	16.679
HRM	2.400	6.316	51.508	4.727	12.439	29.118
BE	2.064	5.432	56.941	3.825	10.065	39.183
FM	1.664	4.379	61.320	3.301	8.687	47.870
S	1.306	3.436	64.756	3.141	8.267	56.137
DG	1.220	3.212	67.968	2.983	7.851	63.988
EA	1.110	2.520	70.487	2.470	6.500	70.487

The structural SEM model (see Figure 1) points to the causal relationships between the identified factors (6 factors: HRM, BE, CSR, FM, EA and DG), which determine the sustainability of SMEs in the business environment (using the arrow – power of influence). Also, the SEM model demonstrates the relationships between latent variables (factors) and manifest variables (indicators).

SEM model characteristics: Sample size = 1398; fixed parameters (weights) – 45; unlabelled parameters (weights) – 37; total parameters (weights) – 82; number of distinct sample moments – 741; number of distinct parameters to be estimated – 81; Degree of freedom – 660.

Verification of the SEM model is presented using summary fit characteristics (see Table 6).

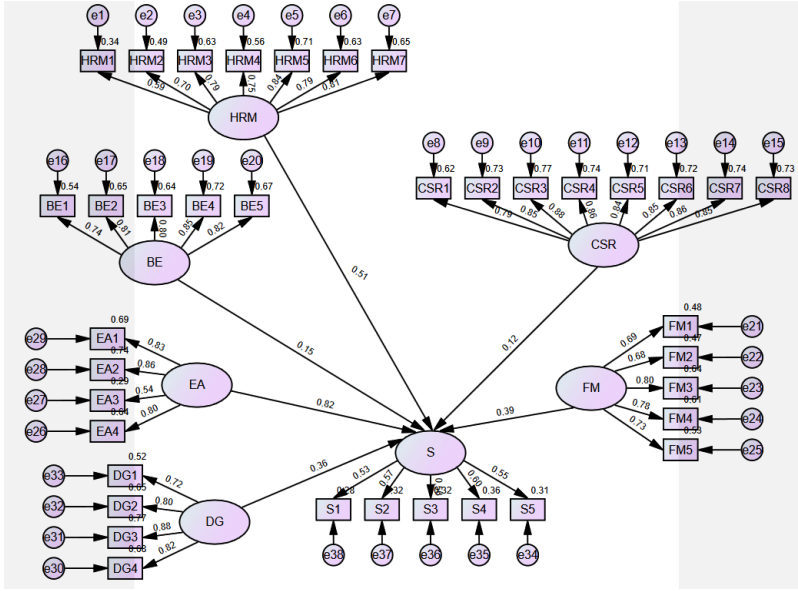

Figure 1. SEM model with standardised estimates

Table 6. Final Model – Summary Fit characteristics

Fit test	Chi-square p-value	CMIN/Df	RMSEA	CFI	NFI
SEM model results	0.054	1.738	0.098	0.983	0.972
Accepted value of the fit test	<0.05	<–2.0;2.0>	<0;0.5>	<0.95	<0.90

The SEM model (Figure 1) is the best solution for the proposed model and empirical data, confirmed by the Summary Fit Model (see Table 6). The results confirmed that the model is statistically significant. Summary Fit model characteristics are acceptable, even with some concerns (SEM model values close to the level of acceptability (SEM model: CFI = 0.983)).

Estimates of regression coefficients, verification of the significance of relationships between factors, and evaluation of formulated hypotheses of empirical research are presented in Table 7.

Table 7. Results of validity, reliability and factors loadings

TH	Path	RC	SRC	S.E.	C.R.	Sig. (p-value)	Conclusion
H1	HRM -> S	0.405	0.510	0.035	11.571	0.000***	Supported
H2	EA -> S	0.441	0.824	0.022	19.970	0.000***	Supported
H3	FM -> S	0.296	0.391	0.022	13.954	0.000***	Supported
H4	BE -> S	0.116	0.147	0.017	5.735	0.000***	Supported
H5	CSR -> S	0.060	0.121	0.10	13.741	0.000***	Supported
H6	DG -> S	0.204	0.364	0.015	6.703	0.000***	Supported

Note: TH – Type of hypothesis; Path – the causal relationship between two factors; RC – Regression coefficient; SRC – Standardized regression coefficient; S.E. – Standard error; Sig. – Significance; * α = 0.05; ** α = 0.01; *** α = 0.001.

Verification of the defined hypotheses (see Table 7) using PLS-SEM confirmed statistically significant relationships between the independent factors and the dependent factor. The formulated research hypotheses were confirmed based on the stated results.

5. Discussion

Empirical research has yielded interesting findings. All investigated factors positively affect the sustainability of SMEs in business. These conclusions correspond with the results of research, e.g., Dadhich and Kant Hiran (2022). The results confirmed that the environmental aspects of the business (EA; SRC = 0.824) have the strongest positive influence on the sustainability of SMEs among the examined factors. The managers confirmed that they positively perceive the environmental aspect of sustainability. Companies are increasingly aware of waste reduction and resource reuse (Kalinova & Kosteckova, 2022). Even if it is associated with higher costs (El-Kasar & Singh, 2019).

According to the results of the study, human resource management (HRM; SRC = 0.510), financial management (FM; SRC = 0.391) and the level of digitisation (DG; SRC = 0.364) have a strong positive impact on business sustainability. Zhang (2008) claims that one of the key drivers for SMEs to embrace environmental policies is the participation of all employees in these initiatives. This statement is also agreed by Cheng et al. (2022), who claim that employ-

ees are the primary bearers of green practices. Based on their behaviour, customers judge the credibility of the company's environmental orientation. Managers must consider human resources as the key factor for achieving environmental sustainability (Franco & Rodrigues, 2022). At the same time, demonstrating responsible business is a significant motivating factor for employee loyalty and increased work performance (Ahmad et al., 2022; Brieger et al., 2020; Flammer & Luo, 2017; Yumei et al., 2021), which is one of the crucial areas of maintaining continuous growth (Kozubikova et al., 2015), or sustainability of the company (Mitchell & Walinga, 2017). All these studies are in line with our findings, that managers of SMEs consider their employees as key factor to company's sustainability so they try to provide them adequate support and motivation. Our findings also support a positive relationship between sustainability and financial performance whereby managers are aware of financial risks and their impact on the sustainability of their business. This is consistent with the results of various studies (such as Flammer, 2015; Lu et al., 2022; Wong et al., 2021; Amoah et al., 2021). In the context of digitalisation, Isensee et al. (2020) claim that managers should raise awareness and shape employees' positive attitudes towards digitization and emphasise the need to consider the importance of digitization in the context of sustainability. It is in line with Maslak et al. (2022) or Trunina et al. (2022) who claim that digitalization is currently associated with the sustainable competitiveness of business. Due to transformative power of digitalisation, it is referred to as a factor enabling environmentally sustainable development. Studies confirmed our findings that the relationship between digitisation tools and business sustainability was reciprocal, suggesting that the level of environmental sustainability also affects the level of digitisation (Isensee et al., 2020). Pfister and Lehmann (2022) stress out, that there is an urgent need to develop digital solutions and give SMEs with trustworthy counsel. The authors emphasise that SMEs employ digital technology for a variety of commercial procedures, which provides the organisation with several benefits as better customer perception or innovating business models.

Our calculations showed that the application of ethics in business (BE; SRC = 0.147) and social responsibility (CSR; SRC = 0.121) have a significant effect with a weak impact on SME sustainability in business. Many studies, e.g., Belas et al. (2021), Metzker et al. (2021), Rozsa et al. (2022) and others, confirmed the significant impact of social responsibility on business aspects. In our case, we can also generalise by saying that the concept of sustainability is analogous to social responsibility. Therefore, some sustainability aspects are the same as CSR (Habek, 2017; Nagypal, 2014). According to Adda et al. (2016), business ethics and social responsibility are essential for the growth and success of an organisation. Corporate social responsibility and sustainable business belong to a larger category, including ecological management, socially responsible business, and sustainable development. At the same time, Carroll (2016) states 4 pillars of CSR (ethical, legislative, economic and philanthropic). Since ethics is closely viewed as an analogy to CSR, it is evident that the resulting correlation is the same. One of the potential reasons why, in our case, ethics has a weak impact on the sustainability of the business is the very interpretation of business ethics as anchoring of norms and principles, e.g., through a code of ethics (Lashley, 2016). This means that more significant aspects determine the relationship to business sustainability than implementing moral and ethical principles (Palacios-Manzano et al., 2021).

The issues of sustainable development of SMEs is very complicated, because exist other factors which can be also evaluated e.g. corporate reputation and social network (Dvorský et al., 2023b) and so on.

6. Conclusions

The research aimed to create a comprehensive model of the sustainability of SMEs in the V4 countries based on defined factors.

Based on the research results, it can be concluded that the complex model of the sustainability of SMEs created by us, depending on the defined factors, is statistically significant, and all the investigated factors have a positive effect on the sustainability of SMEs in Visegrad Four countries.

The results confirmed that the environmental aspects of the business have the strongest positive influence on the sustainability of companies in the SME segment among the examined factors. Business owners and top managers confirmed in the study that they positively perceive the environmental aspects of business, which can be seen as an encouraging trend in this segment. In this model, the following factors showed a strong positive impact on the sustainability of SMEs: human resources management, financial management of companies and the level of digitisation. The fact that companies perceive these factors as mutually supportive and not mutually exclusive can be seen as a positive fact. A surprising result in our model is that the business's ethical attributes and the CSR concept showed only a weak influence on shaping companies' sustainability in the SME segment.

The presented study has both theoretical and practical implications. The theoretical contribution of the authors is in the model provided, which contributes to the enrichment of the theory of the sustainability of SMEs (see also Ortiz-Martinez et al., 2023; Lopez-Torres, 2022). The model can also play a vital part in the scientific discourse on the sustainability of SME's since it demonstrates the uniqueness of the factors that substantially influence their sustainable growth, not only economic, social, and environmental responsibility as the main pillars of sustainability according to many authors. The discussion can be broadened about the question why ethics and CSR should be address to sustainability and if these factors are significant to perceiving of sustainability from the entrepreneurs' point of view. And what the place of digitalization is in the transition of SME to sustainability.

The most major practical result is the opportunity to alter attitudes, views, and economic policy tools about the SME sector, therefore supporting this incredibly vital part of the economy. These findings can serve as a foundation for business-supporting institutions and organisations to develop courses, conferences, and seminars on the notion of SME sustainability. The findings are intended to contribute to the creation of attitudes, opinions, and business strategies among small and medium-sized business owners. Particularly in the knowledge of the intricacy and significance of the direct consequences of the identified issues on the sustainability of their SME businesses.

It is understandable that the results of this research have certain limits and limitations (the research was conducted only in the V4 region, the current political and economic situation in the world, high inflation, and threatened high energy prices certainly had an impact on the formation of respondents' attitudes, etc.) and cannot be perceived as absolutely valid. However, they can serve as a basis for further discussion on the sustainability of SMEs in the researched countries which are common in their economic and historical background. Our future research will investigate partial factors' impact on SMEs' sustainability in more detail as well as the person of entrepreneur as the role model for perceiving of individual factors´ significance for sustainability.

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Informed consent statement

Informed consent was obtained from all subjects involved in the study.

Data availability

Data sharing not applicable.

Conflict of interest

The authors declare no conflict of interest.

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