

Impact of the environmental ESG pillar on firm sustainability: Empirical research in the V4 countries

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Abstract The research aimed to define the impact of the environmental pillar of ESG principles on the sustainability of firms in the V4 region and quantify the impact of certain factors on the perception of firms' sustainability. To this end, a questionnaire survey on the attitudes of managers and business owners was conducted in February 2024 in the Czech Republic, Slovakia, Poland and Hungary. Data were collected using the Computer Assisted Web Interviewing (CAWI) research method. The distribution of respondents by country was as follows: there were 338 respondents from the Czech Republic, 349 from Poland, 312 from Slovakia and 321 from Hungary. Correlation analysis and linear regression analysis were used to test the scientific hypotheses. The results suggest that firms that focus on the environmental education of employees, use green practices, provide truthful information about environmental impacts, and spend adequate costs on environmental protection are more likely to achieve sustainable growth. On the other hand, there appears to be no affect on corporate sustainability from policies pertaining to managing the company in accordance with specific regulations, minimising the environmental impacts of business activities, intensively addressing the energy efficiency of company buildings, and using renewable energy sources. In conclusion, firms in the V4 countries focus

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on that aspects of Pillar E that affect sustainable growth but do not significantly increase costs or increase the overall complexity of processes.

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JEL Classification: F64, P28, P48, Q56

1. INTRODUCTION

ESG is currently a highly discussed topic across a wide range of fields. The European Commission defines ESG as a framework or criteria for measuring an investment or company's sustainability and ethical impact, focusing on 3 areas: environmental, social and corporate governance (Corporate Sustainability and Responsibility). According to Khan et al. (2024), the ESG consists of the following:

- Environmental impact of the company on the environment, which takes into account factors such as greenhouse gas emissions, the use of renewable energy, waste management, and environmental sustainability.
- Social impact of the business and its relations with its various stakeholders. Factors assessed include issues with working conditions, diversity and inclusion, customer relations, employees, and communities.
- Governance, which includes corporate governance, ethical standards, transparency, anti-corruption measures, and shareholder rights.

Thus, ESG performance is a comprehensive assessment of a company's environmental responsibility, social responsibility and internal governance. Improving corporate ESG performance is one of the key drivers to achieving the goal of economic and social green development (Wang & Hou, 2024; Tancke et al., 2023). As the rapid development of the economy has brought serious environmental problems, the society aims to enhance the capacity for sustainable development while maintaining the stable operation status of the economy (Zhou et al., 2020).

ESG is closely linked to Corporate Social Responsibility (CSR). Both ESG and CSR focus on the social and environmental performance of companies. However, ESG encompasses governance explicitly, while CSR includes governance issues implicitly based on their impact on environmental and social factors (Gillan et al., 2021). Other attributes pertinent to the notion of CSR are outlined by the European Commission. The notions of CSR and sustainable development are intrinsically linked; the former refers to how businesses incorporate social, economic, and environmental aspects into their routine operations; the latter is a management strategy rather than an add-on that is optional to the core company activity (European Commission, 2020; Metzker et al., 2023). CSR initiatives are often voluntary and depend on the firm's decision to engage in specific social and environmental activities. Charitable activities and philanthropic contributions are also part of CSR. ESG, on the other hand, focuses on specific factors that affect the long-term sustainability and performance of the firm. ESG provides a concrete framework for assessing, monitoring and managing these factors in investment and business decisions. It is often used in an investment context to assess the risks and opportunities associated with sustainability and corporate responsibility. Therefore, ESG can be considered as a broader concept than CSR. Furthermore, CSR aims to hold companies accountable for their environmental and societal impact, whereas ESG criteria offer quantifiable indicators to measure accountability (Bifulco et al., 2023).

The ESG approach helps companies consider financial performance and its impact on the environment, social equity and the management effect. Firms that focus on these three aspects can create long-term value not only for their shareholders but also for their wider stakeholders (employees, the company's environment, suppliers, the communities in which they operate, etc.) (Bax et al., 2024; Dicuonzo et al., 2024).

Improving business ESG performance creates a win-win situation for companies, their owners and stakeholders, and the economy as a whole. Conceptually, this can be supported by both legitimacy theory and stakeholder theory, where increasing the number of social contacts between firms and their stakeholder community is beneficial (Betakova et al., 2023; Heal, 2005; Khan et al., 2023; Vartiak, 2016).

This research is original and excellent in that it examines the attitudes of top managers of Pillar E firms in V4 countries. The original data defines valuable information about companies' views in this important and currently topical area. This data can be a valuable inspiration for economic policymakers and businesses.

The theoretical part analyses the essential areas that shape Pillar E. Based on the sources presented, scientific hypotheses are formulated. The next chapter presents the research methodology and a description of the empirical research data. The research results and a brief discussion follow. The final chapter presents the main conclusions of the research, the limitations, and the focus of future research activities.

The introduction should briefly place the study in a broad context and highlight why it is important. It should define the purpose of the work and its significance. The current state of the research field should be reviewed carefully and key publications cited. Please highlight controversial and diverging hypotheses when necessary. Finally, briefly mention the main aim of the work and highlight the principal conclusions. As far as possible, please keep the introduction comprehensible to scientists outside your particular field of research.

2. LITERATURE REVIEW

ESG factors are becoming increasingly important in the business sphere. Between 2004 and 2008, forums were held to discuss ESG issues with institutional asset owners, businesses and other private and public stakeholders. The programme aimed to integrate ESG into investment decision-making better and to raise industry awareness of the risks and opportunities associated with ESG. For example, the relationship between investors and companies or the specific function of ESG issues when investing in emerging markets were addressed. Subsequently, recommendations on proceeding with ESG integration are provided (Dicuonzo et al., 2024; European Commission, 2020; Soberón Bravo, 2023). The authors also state that the different components of ESG and their integration are of fundamental importance to firms at multiple levels.

In financial and risk management, actively considering an ESG approach can help improve overall firm performance (Hussain et al., 2024; Singhania et al., 2024; Soberón Bravo, 2023; Yen-Yen, 2019). Investors increasingly turn to ESG criteria when making investment decisions, which can increase investor appeal and provide access to additional capital. Equally important is managing environmental, social and governance risks, which increases a firm's resilience to internal and external challenges.

In employee relations and engagement, an ESG approach promotes a better working environment, improves employee satisfaction and increases employee engagement (Dicuonzo et al., 2024; Truant et al., 2024; Wu, 2023). From an HRM perspective, ESG implementation has improved employee satisfaction and engagement. For firms focused on the social aspects of ESG, these efforts can lead to higher employee satisfaction and engagement for employees motivated to work for an organisation that shows an interest in social responsibility (Skousen & Sun, 2019). This can lead to longer-term loyal staff.

At the same time, customers prefer companies that show an interest in sustainable and ethical business, which can foster trust, increase customer loyalty and strengthen competitiveness in the marketplace.

Regarding stakeholder support, companies that are proactive about environmentally and socially responsible practices gain the trust of regulators, partners and local communities. Ultimately, ESG is about adhering to ethical and sustainable standards and creating value for firms by developing a sustainable and responsible business environment (Li & Li, 2023; Mishra et al., 2023; Narula et al., 2023). In this context,

e.g. (Zumente & Bistrova, 2021) highlight that integrating ESG factors into investment decision-making is increasingly important in medium to long-term value creation.

Along with other indicators that primarily focus on economic effect, the ESG measure is used to express a holistic view of the overall health of an organisation (Narula et al., 2023). The authors further note that there is a lack of clear consensus on the different components of ESG, as the significance of ESG risks varies across firms and major ESG databases.

According to Cardillo et al. (2022), the following elements of ESG pillars are defined: environment: climate change and carbon emissions, air and water pollution, biodiversity, deforestation, energy efficiency, waste management and water scarcity. Social pillar: customer satisfaction, data protection & privacy, gender and diversity, employee engagement, community relations, human rights, and labour standards. Governance: board composition, audit committee structure, bribery and corruption, executive compensation, lobbying, political contributions and whistle-blower schemes.

The approach to ESG differs significantly when examining large enterprises and SMEs (Zhu & Huang, 2023). The first difference aspect depends on the general rule that SMEs have limited resources and capacity, including different perceptions of ESG impacts. Large firms often have more significant financial and personnel resources, which they can use effectively to implement large-scale ESG programs. They have a more complex organisational structure with dedicated sustainability and ethics departments. Their approach may be subject to greater transparency, information governance and investor requirements. Conversely, small firms have more limited resources, and their approach to ESG may often focus on efficiently using these limited resources (Shalhoob & Hussainey, 2023a). They have greater flexibility and can respond quickly to new ESG trend issues. Their organisational structure may be less formal, with less emphasis on bureaucracy (Yip & Yu, 2023).

The environmental pillar of ESG plays a key role in sustainability by minimising their ecological impact and improving their eco-efficiency (Naomi & Akbar, 2021; Ozkan et al., 2023). This pillar emphasises the importance of sustainable management of natural resources and environmental protection, which also brings economic benefits (in addition to the environmental benefits themselves) to SMEs (Bak et al., 2022).

The first key aspect of Pillar E is reducing emissions and optimising resource use (Dzomonda, 2022). SMEs that implement environmentally friendly technologies or improve their processes to reduce water, energy and raw material consumption can significantly reduce their operating costs. Energy-efficient operations can reduce their dependence on fossil fuels and mitigate their exposure to energy price fluctuations (Dicuonzo et al., 2024; Mukhtarov et al., 2023; Ronalter et al., 2022; Vannoni & Ciotti, 2020).

The second important factor is waste management. Firms that process their waste efficiently, recycle and reduce waste production not only reduce their environmental impact but may also gain financial opportunities from selling recyclable materials or reducing waste management costs (Yoo et al., 2024).

The third factor is environmental sustainability and social responsibility. Companies that actively commit to protecting the environment and improving their impact on the community can improve their image and increase customer loyalty. These businesses are often perceived as more responsible and ethical, with a competitive advantage in the marketplace (Bifulco et al., 2023; Metzker et al., 2023; Oliinyk et al., 2023; Patil et al., 2021).

Finally, investing in green technologies and practices can help SMEs access green finance or government incentives that support sustainable business initiatives. It is the innovation that significantly supports the building of long-term relationships with customers, and the innovation process can result in a new product, a new technology, a new approach to the market, and so on (Machova et al., 2023). Also, strict adherence to environmental regulations can protect these businesses from heavy fines and legal complications (Zhang & Jin, 2022). In addition, a strong commitment to the environmental aspects of ESG can lead to innovation and new business opportunities. Businesses that focus on green solutions and

products can discover new markets or expand their existing ones through green technologies and services, increasing their competitiveness (Hazbi & Mounir, 2023; Zumente & Bistrova, 2021).

In this way, the environmental pillar of ESG becomes an integral part of the strategic planning and management of companies seeking a path to sustainability and success in a competitive business environment. Zeng & Jiang (2023) suggest that compared to the performance of pillar E, the performance of pillars S and G is more significant in promoting business performance growth.

Regarding the consideration of the ESG pillar, buildings and their energy intensity are of particular interest. In this context, the Energy Information Administration (EIA) documents that the real estate sector is responsible for 38% of total annual energy consumption in the US, half of which is consumed by commercial real estate. Importantly, the EIA predicts that energy consumption in commercial real estate will increase by 19.5% by 2050 despite improvements in energy efficiency. In contrast, the projected growth in energy consumption by 2050 in the residential real estate sector is only 5.7% (Chungath, 2023; Holtermans & Kok, 2019).

Several studies highlight the exaggerated initiative of firms, where companies try to portray their products or services as "green" or environmentally friendly, without a substantial basis or realistic steps to achieve these claims. This can include misleading advertising, eco-labels, or exaggerated claims about a product's environmental benefits that are not backed up by actual results. This unfair practice is called greenwashing (Baldi & Pandimiglio, 2022; Yu et al., 2020). The authors point out that the relationship between ESG and greenwashing is often conflicting because greenwashing can damage the credibility of genuine ESG initiatives. When companies practice greenwashing, it can lead to scepticism and distrust from investors, customers, and the general public towards all sustainability-related claims (Todaro & Torelli, 2024). This cynicism can diminish the value of genuine ESG efforts and make it impossible to differentiate between companies that are genuinely committed to positive environmental and social change and those that are just trying to score marketing points without real change (Dumitrescu et al., 2022).

Introducing greener technologies or processes often requires significant upfront investment (Doni & Fiameni, 2024). In addition, green practices can increase supply chain costs, as some green raw materials or services may be more expensive than conventional alternatives. In addition, implementing these initiatives may initially reduce operational efficiency as new materials or processes take time to optimise (Khalil & Nimmanunta, 2023). On the other hand, these increased costs may be offset by long-term savings, such as lower energy or raw material costs and improved competitiveness. Many customers today prefer companies with clear environmental goals, which can improve a company's reputation and open up new business opportunities (Yang et al., 2024).

3. METHODOLOGY

The aim of this research is to define the impact of ESG environmental pillar attributes on the sustainability of firms in the V4 region and quantify the impact of selected factors on the perception of sustainability of firms.

The questionnaire survey on the attitudes of managers and business owners was conducted in February 2024 in the Czech Republic, Slovakia, Poland and Hungary. Data were collected using the Computer Assisted Web Interviewing (CAWI Research Method). The questionnaire was protected against automatic completion by computers. The questionnaire was prepared in each country in their national languages. Control questions for each study area were used to check the consistency of responses. Respondents expressed their attitude to the following statements using a 5-point Likert scale with the following wording: 1 - strongly agree, 2 - agree, 3 - disinterested (N/A), 4 - disagree, 5 - strongly disagree.

The research defined the dependent variable (y) and independent variables (x).

Dependent variable (y)

y – Sustainable growth is very important for the company. We have good strategic plans in the firm to ensure sustainable growth).

Independent variables (x1 - x8):

- x1 – Our firm is managed by specific environmental regulations that concern us.
- x2 – Our firm is intensive in addressing and minimising environmental impacts (has developed procedures to control greenhouse gas emissions, product recycling, renewable energy sources, and wastewater recycling).
- x3 – We intensively address energy efficiency in our buildings and use renewable energy sources.
- x4 – We recognise the importance of climate change in the company, minimise corporate climate impacts and educate employees on climate change.
- x5 – In the company, we apply environmentally friendly practices (green policy) in the handling and storing of goods, waste disposal, and promote green thinking among our employees.
- x6 – Environmental business gives us competitive advantages.
- x7 – Our information about the environmental impact of our business is truthful. We do not engage in unfair practices such as greenwashing (creating a false impression).
- x8 – Environmental responsibility increases our costs within a reasonable range.

The following hypotheses were constructed for the above statements:

- H1: Corporate governance in compliance with specific environmental regulations significantly influences the perceived importance of sustainable growth, including implementing sound strategic plans to ensure it.
- H2: Intensive management and minimisation of the firm's environmental impacts significantly influence perceptions of the importance of sustainable growth, including implementing quality strategic plans to ensure it.
- H3: Intensive addressing of the energy performance of buildings and the use of renewable energy sources significantly influences the perception of the importance of sustainable growth, including implementing quality strategic plans to ensure it.
- H4: Awareness of the importance of climate change, minimising corporate climate impacts and educating employees in this area significantly influences perceptions of the importance of sustainable growth, including implementing quality strategic plans to ensure it.
- H5: Applying green policies in goods handling and storage, waste disposal and encouraging employees to think green significantly influences perceptions of the importance of sustainable growth, including implementing quality strategic plans to ensure it.
- H6: The perception of environmental entrepreneurship as a competitive advantage significantly influences the perception of the importance of sustainable growth, including implementing quality strategic plans to ensure it.
- H7: The non-adoption of greenwashing significantly affects perceptions of the importance of sustainable growth, including the implementation of quality strategic plans to ensure it.
- H8: Environmental responsibility as a cost-increasing factor, to a reasonable extent, significantly influences perceptions of the importance of sustainable growth, including the implementation of quality strategic plans to ensure it.

Correlation analysis was used to establish the relationships between variables. In order to verify the significance and determine the magnitude of Pillar E's effect on the company's sustainability perception, the

linear regression modelling (LRM) method was applied. The scientific hypotheses were tested at the significance level $\alpha = 5\%$. In the quantitative research, the responses were scaled linearly using linear regression modelling (LRM) (Likert scale with a rating of 1-5). Positive responses to the independent variables ($x_1 - x_8$) should lead to a positive perception of the dependent variable (y), confirming that business owners and top managers in each of the V4 countries rely on the statements ($x_1 - x_8$) in determining the value of y . Multicollinearity was assessed using the VIF value.

4. EMPIRICAL RESULTS AND DISCUSSION

An analysis of the number of respondents in the sample showed that the number of participating firms ($n = 1,320$) in the V4 regions is more than twice the minimum required number ($n = 684$). This ensures the representativeness of the sample. The selection of respondents was done using a random sampling method.

The distribution of respondents by country was as follows: there were 338 (25.61%) respondents from the Czech Republic, 349 (26.44%) from Poland, 312 (23.64%) from Slovakia and 321 (24.32%) from Hungary. In terms of firm size, 560 (42.42%) micro-enterprises, 312 (23.64%) small enterprises, 253 (19.17%) medium enterprises and 195 (14.77%) large enterprises were represented in the respondents' structure. Most firms were in the service (462, 35.00%) and trade (260, 19.70%) sectors. This was followed by manufacturing with 215 (16.29%), tourism with 34 (2.58%), construction with 143 (10.83%), transport with 52 (3.94%), agriculture with 21 (1.59%) and other sectors were reported by 133 (10.08%) respondents. Of the total V4 respondents, 629 (47.65%) were male, and 691 (52.35%) were female. Table 1 shows the results of descriptive statistics.

Table 1

Descriptive statistics

	y	x1	x2	x3	x4	x5	x6	x7	x8
Valid	1320	1320	1320	1320	1320	1320	1320	1320	1320
Mean	1.993	1.975	2.219	2.280	2.159	2.071	2.411	2.081	2.260
Std. Error of Mean	0.026	0.027	0.029	0.030	0.029	0.027	0.030	0.027	0.028
Std. Deviation	0.932	0.984	1.051	1.083	1.039	0.972	1.080	0.963	1.018
Skewness	0.901	1.003	0.752	0.697	0.831	0.893	0.505	0.810	0.693
Std. Error of Skewness	0.067	0.067	0.067	0.067	0.067	0.067	0.067	0.067	0.067
Kurtosis	0.713	0.796	0.149	-0.059	0.317	0.598	-0.280	0.514	0.157
Std. Error of Kurtosis	0.135	0.135	0.135	0.135	0.135	0.135	0.135	0.135	0.135
Shapiro-Wilk	0.835	0.824	0.865	0.872	0.855	0.843	0.890	0.849	0.871
P-value of Shapiro-Wilk	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001

Source: Authors' results

Based on the results of the Shapiro-Wilk test, Skewness and Kurtosis, it can be concluded that the data are normally distributed, which is a prerequisite for conducting a linear regression analysis ($\alpha = 0.05$). Table 2 shows the results of the correlation analysis.

Table 2

Pearson's correlation

Variable	y	x1	x2	x3	x4	x5	x6	x7	x8
1. y	—								
2. x1	0.475	—							
3. x2	0.504	0.750	—						
4. x3	0.490	0.679	0.749	—					
5. x4	0.505	0.663	0.731	0.751	—				
6. x5	0.521	0.666	0.660	0.607	0.632	—			
7. x6	0.479	0.554	0.653	0.633	0.586	0.631	—		
8. x7	0.467	0.585	0.580	0.595	0.621	0.641	0.565	—	
9. x8	0.470	0.568	0.591	0.590	0.591	0.579	0.653	0.618	—

Source: Authors' results

The results of the correlation analysis at the significance level $\alpha = 0.05$ confirmed that the dependent variable is moderately positively correlated with the independent variables x1 to x8 (Pearson's correlation coefficient $c = <0.467; 0.521>$). In Table 3, we report the calculations of the relevant variables that demonstrate the statistical significance of the model.

Table 3

Model summary – y RM1

					Durbin-Watson		
Model	R	R ²	Adjusted R ²	RMSE	Autocorrelation	Statistic	p
H ₁	0.597	0.357	0.353	0.750	-0.011	2.022	0.691
ANOVA							
Model		Sum of Squares	df	Mean Square	F	p	
H ₁	Regression	408.955	8	51.119	90.811	< .001	
	Residual	737.984	1311	0.563			
	Total	1146.939	1319				

Source: Authors' results

Table 3 shows that the regression model RM1 is statistically significant (p-value <0.001). Table 4 shows the results of the calculation of the regression coefficients. Based on the results of the VIF calculation to identify multicollinearity (Variance inflation factor), it can be concluded that the individual independent variables (x) are moderately correlated (in the interval $1 < VIF < 5$).

Table 4

Coefficients for RM1

							Collinearity	
Model		Unstandardized	Standard Error	Standardized	t	p	Tolerance	VIF
	Intercept	0.555	0.058		9.549	< .001		
	x1	0.038	0.035	0.041	1.097	0.273	0.358	2.789
	x2	0.061	0.037	0.069	1.661	0.097	0.283	3.534
	x3	0.050	0.034	0.058	1.476	0.140	0.320	3.120
	x4	0.104	0.034	0.116	3.037	0.002	0.335	2.982
	x5	0.175	0.034	0.183	5.202	< .001	0.398	2.510
	x6	0.077	0.030	0.089	2.601	0.009	0.419	2.384
	x7	0.068	0.032	0.070	2.146	0.032	0.455	2.198
	x8	0.088	0.030	0.096	2.900	0.004	0.452	2.212

Source: Authors' results

The independent variables x1 to x3 are not statistically significant (see Table 4) and therefore is calculated second regression model RM2 (with only 4 independent variables x4–x8 (where independent variables from the RM1 were discarded), see in table 5 and 6).

Table 5

Model summary – y RM2

Model	R	R ²	Adjusted R ²	RMSE	Durbin-Watson		
					Autocorrelation	Statistic	p
H ₁	0.592	0.351	0.348	0.753	-0.013	2.026	0.64
ANOVA							
	Sum of Squares	df	Mean Square	F	p		
Regression	402.068	5	80.414	141.855	< .001		
Residual	744.871	1314	0.567				
Total	1146.939	1319					

Source: Authors' results

Table 5 shows that the regression model RM2 is statistically significant (p-value <0.001) and we can predict 35.1% (Adjusted R²) of the effect of the independent variables (x4-x8) on the dependent variable through the model RM2.

Table 6 shows the results of the calculation of the regression coefficients. The independent variables x1 to x3 are not statistically significant (see Table 4) and therefore is calculated second regression model RM2 (with only 4 independent variables x4–x8 (where independent variables from the RM1 were discarded), see in table 5 and 6). Based on the results of the VIF calculation to identify multicollinearity (Variance inflation factor), it can be concluded that the individual independent variables (x) are moderately correlated (in the interval $1 < VIF < 5$).

Table 6

Coefficients for RM2

Model		Unstandardized	Standard Error	Standardized	t	p	Collinearity Statistics	
							Tolerance	VIF
	Intercept	0.575	0.058		9.904	< .001		
	x4	0.167	0.029	0.186	5.788	< .001	0.477	2.096
	x5	0.204	0.032	0.213	6.379	< .001	0.442	2.261
	x6	0.102	0.028	0.118	3.605	< .001	0.460	2.175
	x7	0.078	0.032	0.081	2.469	0.014	0.462	2.165
	x8	0.100	0.030	0.109	3.320	< .001	0.460	2.176

Source: Authors' results

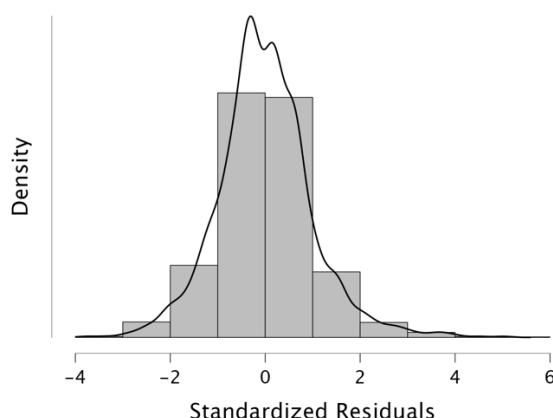


Figure 1. Standardized residuals histogram – y RM2

Source: Authors' results

Figure 1 shows the Standardized Residuals Histogram for RM2. Table 7 presents the results of the verification of the defined scientific hypotheses.

Table 7

Hypothesis overview & regression model

	H1	H2	H3	H4	H5	H6	H7	H8
V4	R	R	R	C	C	C	C	C
$RM2 y = 0.575 + 0.167 x4 + 0.204 x5 + 0.102 x6 + 0.078 x7 + 0.100 x8$								

Source: Authors' results C = confirmed R = rejected

Based on the results in Table 7, we confirm the validity of hypotheses H4, H5, H6, H7 and H8. H1, H2 and H3 were not confirmed.

5. DISCUSSION

According to Nielsen et al. (2023), ESG is considered one of the main tools to achieve the Sustainable Development Goals (SDGs) set by the UN General Assembly in 2015. The development of ESG is closely linked to sustainability, which forms its fundamental pillar.

This study investigated the impact of several environmental factors on a company's attitude towards sustainable growth. The researchers found that in the V4 countries, the perception of the importance of sustainable growth is moderately positively related to the perception of selected environmental aspects (Pillar E). The perception of sustainable growth by entrepreneurs in V4 countries is 35% influenced by their attitude towards the issues of the importance of climate change, minimising corporate climate impacts and educating employees in this area [x4], the application of green policies [x5], the perception of environmental entrepreneurship as a competitive advantage [x6], the non-application of greenwashing [x7], and the perception of environmental responsibility as a cost-increasing factor [x8].

Thus, entrepreneurs perceive sustainable growth positively depending on specific environmental aspects. Studies examining ESG factors highlight the increasing importance of these criteria in business (Dicuonzo et al., 2024; Soberón Bravo, 2023). Firms incorporating ESG criteria into their strategies achieve better performance and greater investor confidence. They also improve employee satisfaction and strengthen their competitiveness in the market (Singhania et al., 2024; Truant et al., 2024; Wu, 2023). In this context, e.g. (Oprean-Stan et al., 2020) state that sustainability reporting is not important for financial

performance indicators - they suggest that a firm that discloses information on sustainability aspects may even reduce its market performance. On the other hand, they point to the influence of environmental and social aspects of sustainability on sustainable growth - better social ESG management promotes sustainable growth of companies.

Firms that are fully aware of the implications of climate change, perceive its urgency and understand how their own actions can contribute to these changes are beginning to feel a responsibility to reduce their negative impact (Patil et al., 2021). Our findings confirm that entrepreneurs in the V4 countries know this fact, and their perception of it contributes significantly to their perception of the importance of sustainable firm growth. Many research studies confirm that firms aware of these needs start to see sustainable growth as an integral part of their long-term strategy. This motivates them to develop and implement sound strategic plans that include reducing environmental impacts, promoting sustainable production and consumption, and adapting to new trends and regulations. This enables them to secure long-term competitiveness, customer trust and stable growth in the market (Kassinis et al., 2016; Shalhoob & Hussainey, 2023b; Zhu & Huang, 2023).

A study (Lei & Yu, 2024) states that applying green policies can positively affect the ESG performance of enterprises and contribute to sustainability - business continuity. Several studies support this impact; however, e.g. Doni & Fiameni (2024) caution that the implementation of green policy and the subsequent adoption of green practices and firm orientation requires significant upfront investment and thus may "jeopardise" the firm's SME health (Khalil & Nimmanunta, 2023). Greenwashing is in a similar context. Research by Todaro & Torelli (2024) clarified that companies with high E, S and G scores also tend to be the most controversial companies - i.e. they overly draw attention to all the activities they undertake in an attempt to influence stakeholders - high ESG scores are related to various forms of greenwashing. In our case, however, the negative attitude towards greenwashing plays a positive role in the V4 countries - when companies refuse to use greenwashing - unethical practices that present misleading or false information about environmental responsibility - they become more committed to true environmental principles.

The perception of environmental business as a competitive advantage fundamentally influences how companies perceive sustainable growth's importance. When companies perceive environmentally focused business as a key factor for their success in a competitive environment, it becomes a priority for them to focus on a sustainability strategy (Bak et al., 2022). In this way, the perceived value of green business also supports the drive to implement quality strategic plans to prepare the firm better to manage the competitive struggle (Ronalter et al., 2022).

However, the attitudes of entrepreneurs in the V4 countries towards corporate sustainability are not influenced by the management of the firm in compliance with specific environmental regulations that concern us; addressing and minimising the environmental impacts of business activities and intensively addressing the energy efficiency of corporate buildings and the use of renewable energy sources. All of the aspects listed are related to specific measures that are head for many SMEs currently not up to date, mainly due to the absence of a certain across-the-board legal obligation (Ayuso & Navarrete-Báez, 2018; Zhang & Jin, 2022).

This phenomenon may be due to a lack of clarity or information about legal requirements or limited resources and capacity to implement them. In addition, some SMEs may find compliance with environmental regulations too costly or complex, leading them to ignore them (Oprean-Stan et al., 2020; Zhang & Jin, 2022). Similarly, other studies highlight challenges for SMEs in complying with sustainability practices, including limited resources and complexity in understanding legal requirements. Das et al. (2020) identified that collaborative efforts and government support are critical in promoting sustainability. Yet, challenges such as inadequate financial resources and lack of strategic guidance prevent many firms from fully adopting these practices. In addition, the findings from the study by Rahi et al. (2024) highlight the

importance of government support and strategic policy initiatives to promote environmental initiatives in SMEs. These findings are consistent with the challenges in the V4 region, where the lack of clear regulations and government incentives remains a barrier (Kulhanek et al., 2022).

On the contrary, the implementation of these aspects would require significant capital expenditures, which could significantly reduce the firm's available resources; on the other hand, many SMEs in the V4 countries do not have sufficient resources, and some are not able to implement these requirements at all (Gholami et al., 2022). In the case of not addressing energy efficiency in corporate buildings, access to this aspect may be affected by the initial costs of improving infrastructure or procuring renewable energy sources (Chungath, 2023). Smaller businesses are often concerned that retrofit investments will not yield sufficient savings or returns (Chang et al., 2022). There is also sometimes a lack of government support or financial incentives to make it easier for firms to switch to more sustainable energy sources or measures to conserve existing energy use.

6. CONCLUSION

The paper examined the impact of various environmental factors on firms' attitudes towards sustainable growth in the V4 countries, where the perception of the importance of sustainable growth depends on the perception of selected environmental aspects. The attitudes towards sustainable growth by entrepreneurs in V4 countries are influenced by their attitude towards the issues of the importance of climate change, minimising corporate impacts on climate, applying green policies, perceiving environmental entrepreneurship as an advantage in the competitive environment, not applying greenwashing, and perceiving environmental responsibility as a cost-increasing factor.

However, the attitudes of entrepreneurs in the V4 countries towards corporate sustainability are not influenced by managing the company following specific regulations that concern us in the environmental field, addressing and minimising the environmental impacts of business activities and intensively addressing the energy efficiency of corporate buildings and the use of renewable energy sources.

The research results indicate that firms focus on aspects affecting sustainable growth that do not significantly increase costs or the overall complexity of processes.

This study was conducted on a sample of 1,320 firms in the Czech Republic, Slovakia, Hungary and Poland – thus, the research has a regional limitation. The results of this study are not transferable to other regions in Europe or elsewhere in the world, but they contribute to the ESG debate with their scientific value. The research team's next research focuses on comparing ESG approaches by firm size, owner/manager gender, firm age, and entrepreneur education. These criteria may provide a more detailed insight into the key factors that influence the perception of ESG in the Central European region (specifically in the V4 countries).

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