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ENVIRONMENTAL RESPONSIBILITY OF CORPORATE MANAGEMENT IN THE VISEGRAD REGION – COMPARATIVE STUDY OF THE CZECH REPUBLIC, POLAND AND SLOVAKIA

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ABSTRACT: The article presents a comprehensive investigation into the prioritisation of environment-oriented Corporate Social Responsibility (CSR) activities among companies within the Visegrad region, encompassing the Czech Republic, Poland and Slovakia. An online questionnaire featuring Likert scale questions was used to collect data from November 2022 to June 2023 on the emphasis placed on 11 distinct environment-oriented CSR activities. Analytical methods covered descriptive and inferential analyses. The study contributes original insights by focusing on the Visegrad region's corporate engagement in environmental CSR activities. The findings reveal significant disparities between countries, particularly in the domains of eco-friendly transportation solutions and investments in green technologies for environmental progress. Statistically significant differences were observed between the Czech Republic and Poland, as well as between Poland and Slovakia, there by shedding light on the diverse CSR orientations and priorities within this geographic context. These findings underscore the importance of tailored CSR strategies within the Visegrad region's corporate landscape to address environmental challenges effectively.

KEYWORDS: CSR, Visegrad region, environmentally-oriented activities, comparative study, Poland, Slovakia and Czech Republic

Introduction

Corporate social responsibility (CSR) has gained traction in recent years as businesses recognise the importance of their environmental impact and accountability. Generally, there are three main parts to corporate responsibility (Księżak & Fischbach, 2017). These are commonly referred to as the social, economic and environmental pillars or dimensions of CSR (Varyash et al., 2020). The environmental dimension of CSR emphasises integrating sustainable practices and environmental stewardship into corporate strategies and operations (Majid & Koe, 2012). In respect of this approach, the article examines selected environmentally friendly activities that companies engage in as part of their CSR initiatives. The research was conducted as a comparative study of businesses in Visegrad countries – Czech Republic, Poland and Slovakia.

Hąbek (2019) states that CSR reporting is not common in the Visegrad region and that the main practices focus on the "*sharing of information and knowledge and the development of reporting guides*". The specificity of the region has also been reported by some other scholars (Rozsa et al., 2022; Przytuła et al., 2019). For example Przytuła et al. (2019) conclude their research in the specific region by reporting, inter alia, a lack of holistic approaches to the realisation of CSR policies. They noticed that practices are limited to some areas of company image building, such as charity or "green reputation". The latter scholars also pointed to the lack of access to official CSR data in the specific region, resulting in an incomplete picture of CSR practices. Likewise, the notable and wide-ranging report by the Alliance for Corporate Transparency (2020) on the EU Non-Financial Reporting Directive emphasised the relatively small samples of companies from post-socialistic countries of the European Union in their research (usually about ten), while countries such as the UK or France were represented by over 100 companies (e.g. 168 companies in the UK and 127 in France); an exception was Poland with 64 companies.

The objective of the study was to determine whether there are statistically significant differences in the implementation of environment-oriented CSR activities across the Czech Republic, Poland and Slovakia. The study contributes to the existing knowledge on CSR and provides insights into the CSR practices specific to the Visegrad region. An online questionnaire with Likert scale questions was used to gather data from a sample of 100 respondents from each monitored country. The research design involved testing specific hypotheses related to 11 environment-oriented CSR activities. The sample selection involved the random inclusion of businesses operating in the Visegrad countries, with data collection conducted through diverse channels. Descriptive and inferential analyses were performed based on non-parametric statistical methods. Of the 11 variables representing the implementation of environment-oriented CSR activities, significant differences were found between the monitored countries with regard to eco-friendly transportation solutions and investments in green technologies. The

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study's findings offer practical insights for companies to benchmark their CSR efforts, support comparative analysis among the Czech Republic, Poland and Slovakia, and inform policy development to promote sustainable business practices in the region.

Literature overview

Corporate Social Responsibility

Beyond what is required by law, corporate social responsibility (CSR) refers to the voluntary effort businesses take to address the social, economic and environmental repercussions of their operations (Dahlsrud, 2008; Berger-Walliser & Scott, 2018; Gatti et al., 2019). Supporting sustainable development entails incorporating social and environmental considerations into company operations and stakeholder relationships (Hamann, 2003; Freudenreich et al., 2020). In general, CSR includes endeavours like philanthropy, environmental sustainability, moral business conduct, employee welfare and involvement in the community (Lin et al., 2009). According to stakeholder theory, which is key for CSR implementation (Brin & Nehme, 2019), corporations have obligations to a wider group of stakeholders beyond shareholders (Wang et al., 2016). These stakeholders include the environment, communities, customers and employees (Andriof et al., 2017). The primary function of CSR is to, therefore strike a balance between effects on people, the environment and profits (Kumar, 2019; Lombardi et al., 2020).

Contributing to sustainable development, which entails addressing current needs without compromising the ability of future generations to address their own, is one of CSR's main goals (Fallah Shayan et al., 2022). It places a strong emphasis on planning for the long term and balancing economic growth with social and environmental concerns (Raco, 2005). According to the idea of corporate citizenship, businesses have obligations and rights as members of society (Pour et al., 2014). This emphasises that enterprises, like individual citizens, have a responsibility to constructively contribute to society (Mena et al., 2010). A significant component of CSR is environmental sustainability (Chen, 2011). It includes actions taken to lessen the negative effects of corporate operations on the environment, including adopting sustainable practices, cutting carbon emissions, preserving resources and encouraging renewable energy (Khan, 2019). The environmental component also acknowledges the ecological influence of an organisation and the significance of resource conservation (Ahmad, 2015; Kim et al., 2019). It encourages resource conservation, biodiversity support, waste minimisation, carbon emissions and pollution reduction and sustainable activities (Sharma et al., 2021). In addition, the research examines the ways in which social and environmental concerns are incorporated into business plans, evaluates the success of sustainability programmes (Walton et al., 1998; Epstein & Buhovac, 2014) and creates frameworks for measuring and analysing the performance of the TBL (triple-bottom-line) (Thabrew et al., 2018).

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Environmental responsibility in business

A company's ecological effect and commitment to environmental sustainability are carefully considered and managed as part of the triple-bottom-line (TBL) approach to corporate social responsibility (CSR). The environmental pillar of CSR covers a very wide range of different activities aimed at improving, maintaining and creating healthy natural conditions. The International Organisation for Standardisation indicates in the standard dedicated to social responsibility (i.e. ISO 26000) four core subjects of responsible practices towards the environment, namely: prevention of pollution (emissions, water discharge, waste management, use and disposal of toxic and hazardous chemicals, other pollutions such as noise, odour and light); sustainable resource use (water conservation, use and access to, efficiency of use of energy and materials, resource-saving); climate change mitigation and adaptation (reducing the effects of greenhouse gas emissions and global warming); and protection of the environment, biodiversity and restoration of natural habitats (valuing and protecting biodiversity, animal welfare, ecosystems, sustainable land use and environmentally sound rural and urban development). Business practices in this regard should be based on the principles of environmental responsibility, the precautionary approach, environmental risk management, and the polluter pays (Gasiorowski-Denis, 2016; International Organization for Standardization, 2018; International Organization for Standardization, 2019). The new regulations of the EU on Corporate Sustainability Reporting (European Union, 2022), together with the EU Taxonomy Regulation (Regulation, 2020), form a mandatory tool for the reporting of sustainable Environment-Social-Governance (ESG) business activities. Consultancy agency Steward Redqeen, describes taxonomy on the basis of three rules (Krzysztofik et al., 2021):

1. Substantially contribute to at least one of the six environmental objectives: climate change mitigation; climate change adaptation; sustainable use and protection of water and marine resources; transition to a circular economy; pollution prevention and control; protection and restoration of biodiversity and ecosystems.
2. Comply with minimum safeguards defined by such documents as *Guidelines for Multinational Enterprises (OECD), Guiding Principles on Business and Human Rights (UN)*, *The International Bill of Human Rights*, or conventions of the *International Labour Organisation*.
3. Do no significant harm to any other objective.

The EU measures define current mandatory and voluntary environmental activities in the Visegrad region, and companies should recognise the principles and issues in their day-to-day activities, reporting and development strategies.

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Environmental responsibility in the Czech Republic, Poland and Slovakia

The distinct socio-economic and environmental circumstances of the Czech Republic, Poland and Slovakia – three of the Visegrad countries – influence environmental responsibility. These Central European nations display complex approaches to environmental sustainability while dealing with different issues. They were united together with Hungary in 1991 after the collapse of the socialist regime. Their aim was to strengthen efforts towards political and economic integration with Europe but at the same taking into account the specificity of their development conditions. They shared historical, cultural, economic and geopolitical links (Nič, 2016). The countries are briefly characterised in Table 1, there by taking into account environmental parameters such as ecological footprint, greenhouse gas (GHG) emissions and the share of renewable energy in final consumption. From the environmental point of view, Slovakia has a relatively low environmental impact in terms of the country's biocapacity (ecological footprint). This is reflected in the lower net emissions of GHG per capita than in Poland, but, at the same time, higher PKB per capita and share of renewables. However, the Czech Republic is the most outstanding member of this group in terms of both economic performance and environmental burdens.

Table 1. Overview of selected economic, environmental and energy indicators across the Czech Republic, Poland and Slovakia

Country	Real PKB per capita in 2022:chain linked volumes (2010)	Population (2022)	Business (2022)				Ecological footprint (2019)	Net GHG emissions per capita in 2021: total, excluding memo items, including international aviation	Share of renewable energy in gross final energy consumption (2021)
			SMEs			Large			
			number	employment share	value added share				
Czech Republic	€18,460	10,687,900	1,082,947	67%	54%	1,639	-3.3 gha	12.2 t	17.7%
Poland	€14,600	37,827,000	2,155,183	67%	50%	3,210	-2.7 gha	10.1 t	15.6%
Slovakia	€16,300	5,500,560	522,575	74%	56%	495	-2.0 gha	6.2 t	17.4%

Source: authors' work based on Global Footprint Network (2023); European Commission (2023); Eurostat (2023).

The latest available research that includes a direct comparison of the three countries from the perspective of the same methodology is based on relatively small samples from the Czech Republic and Slovakia (Alliance for Corporate Transparency, 2023a; Alliance for Corporate Transparency, 2023b; Frank Bold,

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2020). Some other research, such as that by Przytuła et al. (2019), are based on the review of research in particular countries. The study from 2020 shows that, in general, all the environmental issues are addressed in company reporting to a significantly greater extent in Poland than in the other two countries. The activities least indicated are those relating to biodiversity and ecosystem conservation – 45% of companies in Poland, 18% in the Czech Republic and 13% in Slovakia. At the same time, the other dimensions were addressed by 77-86% of Polish companies, while only 25-64% of companies in the Czech Republic and Slovakia. The most popular are problems related to the climate change dimension. These three countries, together with Croatia and Romania, were grouped in the research due to the specific characteristics of their reporting. For example, they differed from the other two groups of analysed countries in that they report less frequently and tend to report only in a general manner.

Research methods

This article focuses on the environment-oriented corporate social responsibility (CSR) activities conducted by companies in the Visegrad region (Czech Republic, Poland and Slovakia). The study utilises a methodology based on an online questionnaire to gather data from 300 respondents (100 from each monitored country).

Research Design: The study sought to determine whether there are statistically significant differences in the emphasis placed by companies across three Visegrad countries on the implementation of selected (11) environment-oriented CSR activities. The findings contribute to the existing body of knowledge on CSR and shed light on the variations in CSR practices among these countries. The aim of this study was to investigate the level of emphasis placed by companies operating in the Czech Republic, Poland and Slovakia on the implementation of selected environment-oriented CSR activities. In line with the aim of the study, the following hypotheses were tested:

- H0: There is no statistically significant difference in the level of emphasis placed by companies operating in the Czech Republic, Poland and Slovakia on the implementation of the selected environment-oriented CSR activities.
- Ha: There is a statistically significant difference in the level of emphasis placed by companies operating in the Czech Republic, Poland and Slovakia on the implementation of selected environment-oriented CSR activities.

The Ha hypothesis is derived from the set of specific hypotheses regarding the monitored environment-oriented CSR activities (see Table 2).

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Table 2. Research design – construction of specific hypotheses

Ha		Country		Environment-oriented CSR activities: Variables (A-K)
H1	There is a statistically significant difference in CSR in terms of the level of emphasis placed by companies operating in the ...	1. Czech Republic	...on the implementation of selected environment-oriented CSR activities...	A. Sustainable production practices
H2				B. Investment in innovative environmental technologies
H3				C. Eco-friendly transportation solutions
H4		2. Poland		D. Waste reduction strategies and sustainable waste management
H5				E. Circular material and resource utilisation
H6				F. Carbon footprint reduction initiatives
H7				G. Resource-efficient consumption
H8		3. Slovakia		H. Environmental awareness and training for workforce
H9				I. Preservation of natural resources through sustainable practices
H10				J. Harnessing renewable natural resources
H11				K. Green technology investments for environmental advancement

It should be noted that variables B and K are not the same. Variable B represents all investments in innovative environmental technologies, with the exception to investments for environmental advancement. Variable K, therefore, represents specific investments, whilst variable B general investments in innovative environmental technologies.

Variables: The questionnaire used for the research included 11 environment-oriented CSR activities. For the purpose of this study, these were used as variables (see Table 2). The questions regarding them were formulated as follows: "To what extent is the monitored company engaged in the following environmentally focused CSR activity?" with an explanation on the CSR activity. The respondents were asked to answer the questions on a Lickert scale with the following structure: 1. Very strongly; 2. Strongly; 3. Average; 4. Negligible; 5. Not at all.

Sample selection: This involved the random inclusion of subjects. The criteria for inclusion were businesses operating in the monitored Visegrad countries: Czech Republic, Poland and Slovakia. The objective was to achieve a balanced sample of 100 companies from each country, with equal representation of companies (20 per size category) according to five size categories based on employee numbers: 1. Microenterprise (0-9 employees); 2. Small enterprise (10-49 employees); 3. Medium enterprise (50-249 employees); 4. Large enterprise (250-499 employees); 5. Extra-large enterprise (500+ employees). These size categories were chosen in line with the European Commission's rules on CSR and

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non-financial reporting (Directive, 2014; Directive, 2022). Initially, random sampling (Acharya et al., 2013) was employed, followed by a shift to stratified randomisation (Suresh, 2011) to ensure equal representation across the categories.

Data collection and questionnaire development: This involved the development of an online questionnaire (Wood et al., 2004; Chang & Vowles, 2013; Roopa & Rani, 2012; Regmi et al., 2016), pre-test validation with the help of a pilot study (Van Teijlingen & Hundley, 2010; Malmqvist et al., 2019) and distribution through diverse channels. The respondents in the Czech Republic, Poland and Slovakia completed the questionnaire using comprised Likert scale questions (Barua, 2013), independently or with the assistance of trained researchers (Leong & Austin, 2006). The data collection process spanned from November 2022 to June 2023. As Roberson & Sundstrom (1990) also found, due to the use of multiple channels (specialised organisations, universities, professional associations, etc.), it was challenging to estimate the number of respondents or calculate the return rate.

Data analysis: This involved descriptive and inferential analyses typically used for this type of research. Cronbach's alpha (Brown, 2002) coefficient was computed to assess test reliability, revealing a substantial level of internal consistency (Cronbach's alpha = 0.934; N = 12; Cronbach's Alpha if item deleted ranges from 0.923 to 0.949). The Shapiro-Wilk normality test (Shapiro & Francia, 1972) indicated that the data deviated significantly from the assumption of normality, necessitating the use of specific statistical methods. In addition, the Durbin-Watson autocorrelation test (Watson & Durbin, 1951) showed no evidence of autocorrelation among the variables (Durbin-Watson for variables A-K ranges from 1.434 to 1.721). Due to the non-normal distribution of data, the non-parametric Kruskal-Wallis test (Kruskal & Wallis, 1952) was employed to examine statistically significant differences in the emphasis placed by companies on the implementation of selected environment-oriented CSR activities among the monitored Visegrad countries. Post hoc analysis based on a Bonferroni correction (Lee & Lee, 2018) was conducted on those variables with identified significant differences.

Results of the research and discussion

Descriptive analysis: The research was conducted on a sample of 300 companies from three Visegrad countries: Czech Republic, Poland and Slovakia. The objective of the sampling was to achieve a balanced number of 100 companies from each country, with equal representation from five company size categories (20 per category) based on employee numbers. By including companies of various sizes, the study aimed to capture a wide range of economic activities and potential variations in operational characteristics and behaviours. Additionally, the inclusion of companies from multiple countries within the Visegrad region aimed to enhance the generalisability of the research findings and enable comparisons across national contexts.

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Table 3. Operationalisation of variables (number of cases is in brackets)

Variable	Conceptual definition	Operational definition	Dimensions and indicators	Measurement scale
Type of company	The company's ownership structure	Whether the company is part of a multinational company or a local company with no connection to a foreign multinational corporation	Multinational company (104), local company (196)	Categorical variable
Legal form	The legal structure of the company	The type of legal entity that the company is registered as	Joint stock company (64), limited liability company (200), limited partnership (9), public company (10), sole proprietorship (17)	Categorical variable
Regional coverage	The geographic area in which the company operates	The number of regions in which the company operates	Only in the region where it is located (101), in multiple regions (81), throughout the whole country (118)	Categorical variable
Primary area of operation	The main sector in which the company operates	The sector in which the company generates the most revenue	Trade (77), services (122), production (101)	Categorical variable

Table 4. Kruskal-Wallis test for variables A-K (grouping variable: country)

Variable	Kruskal-Wallis H	df	Adjusted p-value	Decision
A. Sustainable production practices (certified organic/ bio products, EMAS standards, or ISO 14000)	14.975	2	0.001*	Reject the null hypothesis.
B. Investment in innovative environmental technologies	8.844	2	0.012*	Reject the null hypothesis.
C. Eco-friendly transportation solutions (modal shift to rail and more)	20.153	2	0.000*	Reject the null hypothesis.
D. Waste reduction strategies and sustainable waste management	4.142	2	0.126	Retain the null hypothesis.
E. Circular material and resource utilisation	4.716	2	0.095	Retain the null hypothesis.
F. Carbon footprint reduction initiatives	6.998	2	0.030*	Reject the null hypothesis.
G. Resource-efficient consumption (energy, water, etc.)	3.182	2	0.204	Retain the null hypothesis.
H. Environmental awareness and training for workforce	6.665	2	0.036*	Reject the null hypothesis.
I. Preservation of natural resources (water, soil, etc.) through sustainable practices	5.076	2	0.079	Retain the null hypothesis.
J. Harnessing renewable natural resources	6.234	2	0.044*	Reject the null hypothesis.
K. Green technology investments for environmental advancement	15.918	2	0.000*	Reject the null hypothesis.

Note: Asterisks indicate statistical significance at the 5% level.

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The chosen sample characteristics were carefully designed to provide a comprehensive and representative view of the business landscape in the Visegrad countries. This approach allowed for a robust analysis of various dimensions, including company size, type, legal form, regional coverage and primary areas of operation, ensuring the suitability of the sample for the research objectives and enhancing the reliability and validity of the study findings.

Inferential analysis: For identifying statistically significant differences in the level of emphasis placed by companies operating in the Czech Republic, Poland and Slovakia on the implementation of selected environment-oriented CSR activities, the Kruskal-Wallis non-parametric test (see Table 4) was performed. A p-value below 0.05 indicates that the null hypothesis for the variable can be rejected and the alternative hypotheses accepted on the basis that a significant association between the monitored countries exists.

Table 5. Pairwise comparisons of countries for significant variables

Variable	Sample					
	Slovakia (code 3) – Czech Republic (code 1)		Slovakia (code 3) – Poland (code 2)		Czech Republic (code 1) – Poland (code 2)	
	Test statistic	Adjusted p-valuea	Test statistic	Adjusted p-valuea	Test statistic	Adjusted p-valuea
A. Sustainable production practices (certified organic/bio products, EMAS standards, or ISO 14000)	23.695	0.143	46.325	0.000	-22.630	0.176
B. Investment in innovative environmental technologies	11.445	1.000	-23.385	0.150	34.830	0.011
C. Eco-friendly transportation solutions (modal shift to rail and more)	21.885	0.199	53.220	0.000	-31.335	0.026
F. Carbon footprint reduction initiatives	30.510	0.031	22.110	0.191	8.400	1.000
H. Environmental awareness and training for workforce	30.910	0.029	15.425	0.593	15.485	0.588
J. Harnessing renewable natural resources	29.310	0.043	19.590	0.304	9.720	1.000
K. Green technology investments for environmental advancement	9.525	1.000	45.969	0.000	-35.760	0.008
Each row tests the null hypothesis that Sample 1 and Sample 2 distributions are the same. Asymptotic significances (2-sided tests) are displayed. Shaded cells or add asterisks in the table indicate statistical significance at the 5% level.						
a Significance values adjusted based on Bonferroni correction for multiple tests.						

Bonferroni post hoc correction was used to further investigate specific differences between the countries studied (see Table 5). Pairwise comparisons were made between Slovakia and the Czech Republic, Slovakia and Poland, and

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the Czech Republic and Poland. For each pair, a test statistic was calculated to either confirm or reject a significant difference between the two distributions. A Bonferroni correction was then applied. If the value reached statistical significance after adjustment for multiple tests (adjusted p-value), a significant difference between the two distributions could be inferred.

When comparing Slovakia and the Czech Republic, Variable F – Carbon footprint reduction initiatives (30.510) has a higher test statistic, showing a significant difference between the two distributions. Even after Bonferroni correction (0.031), the adjusted significance remains highly significant. This suggests strong evidence of a significant difference between the distributions in terms of their emphasis on carbon footprint reduction initiatives. The same is true for Variable H – Environmental awareness and training for workforce (test statistic = 30.910; adjusted p-value = 0.029) and Variable J – Harnessing renewable natural resources (test statistic = 29.310; adjusted p-value = 0.043), suggesting that both Slovakia and the Czech Republic place a strong emphasis on these issues.

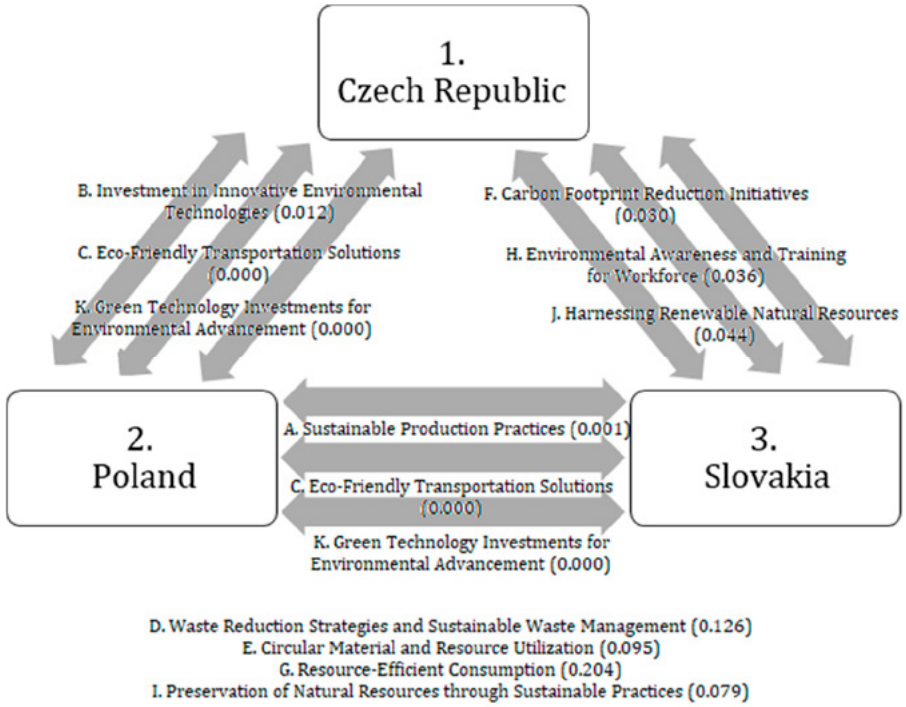

Figure 1. Graphical representation of statistically significant differences between monitored countries regarding environment-oriented CSR activities

The comparison between Slovakia and Poland yields quite different findings, as higher test statistics were found for Variable A (46.325), Variable C (53.220) and Variable K (45.969). Even after Bonferroni corrections, the adjusted signifi-

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cance remains significant for Variable A, C and K (0.000 respectively). From these findings it can be concluded that Slovakia and Poland place great emphasis on sustainable production practices, environmentally friendly forms of transport and the promotion of investment in green technologies.

In the comparison between the Czech Republic and Poland, the higher test statistics for Variable B – Investment in innovative environmental technologies shows the greater emphasis placed on this issue in both countries. The Bonferroni correction confirmed this fact (0.011). In contrast, for Variable C (-31.335) and K (-35.760), the comparison shows a negative test statistic, indicating a significant difference between the distributions. The Bonferroni correction confirms this difference for Variable C (0.026) and Variable K (0.008) (see Figure 1).

Overall, the pairwise comparisons suggest significant differences in the emphasis placed on sustainable production practices (Variable A) between Slovakia and Poland. In the Czech Republic (CZ), 33 companies reported a very strong or strong emphasis placed on Variable A, with a further 28 reporting average emphasis, and 39 negligible or no emphasis. In Poland (PL), 27 companies reported a very strong or strong emphasis placed on Variable A, with a further 20 companies reporting average emphasis, and 53 negligible or no emphasis. In Slovakia (SK), 48 companies reported a very strong or strong emphasis placed on Variable A, with a further 25 companies reporting average emphasis, and only 27 negligible or no emphasis (see Figure 2).

Notably, companies in Slovakia tend to place greater emphasis on sustainable production practices, with a greater number of companies reporting very strong and strong emphasis compared to companies in Poland and the Czech Republic. Conversely, a higher proportion of companies in Poland tend to report placing no emphasis on such practices. Pairwise comparisons show significant differences in the emphasis placed on Variable B – Investment in innovative environmental technologies between the Czech Republic and Poland (Bonferroni correction = 0.011). In the Czech Republic (CZ), 16 companies reported a very strong or strong emphasis, while in Poland (PL) and Slovakia (SK), 41 and 26 companies, respectively. Interestingly, for the answer no emphasis was placed on this practice, the responses for the Czech Republic and Poland were the same: 27 companies. This reflects the conclusions drawn in a number of other studies (Basil et al., 2011; Skrzypek, 2015; El-Kassar & Singh, 2019; Hiswåls et al., 2020; Boubaker et al., 2020; Choudhury et al., 2021), that businesses not only focus on their profit margins, but also consider the impact of their operations on society, the environment and the world as a whole. For Variable C – Environmentally friendly transportation solutions, there is a statistically significant difference between the Czech Republic (CZ) and Poland (PL) (Bonferroni correction = 0.026) and between Poland (PL) and Slovakia (SK) (Bonferroni correction = 0.000). In Poland, the highest number of respondents (35) replied that they do not place emphasis on this issue. In comparison, in the Czech Republic, the highest number of respondents (38) replied that they place average emphasis on this

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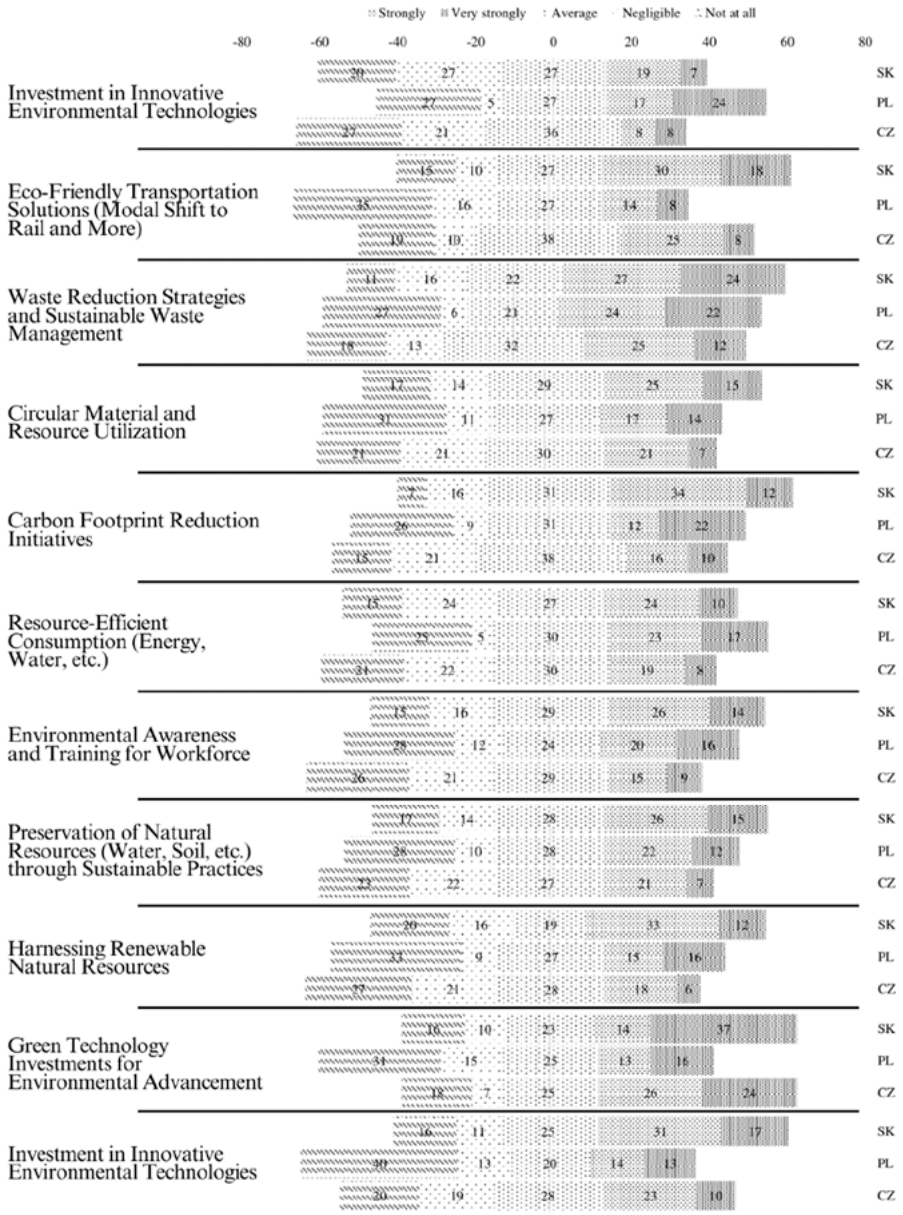

Figure 2. Emphasis placed by companies operating in the Czech Republic, Poland and Slovakia on the implementation of selected environment-oriented CSR activities

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issue, and in Slovakia, the highest number of respondents (30) confirmed they place great emphasis on this issue. Our findings reflect the view of Nidumol et al. (2009), who state that this issue is a priority for companies. The green approach is becoming a factor that distinguishes companies from competitors and, together with the promotion of the principles of sustainable development, can ensure not only a company's short-term survival in a competitive environment, but also its long-term development and the strengthening of its market position. However, the results of a survey by Musova et al. (2018) conducted on a sample of 274 respondents from Slovakia revealed that environmental factors do not dominate the purchase of products among Slovak consumers. The chosen frequency of purchases of products (including organic and bio foodstuffs) does not seem to matter.

Pairwise comparisons also show significant differences in the emphasis placed on Variable F – Carbon footprint reduction initiatives between the Czech Republic and Slovakia (Bonferroni correction = 0.031). Interestingly, while in Slovakia 46 respondents replied that they placed very strong or strong emphasis on this issue, in the other two countries the frequency of responses was almost half (PL: 24, CZ: 26). The time when the sole goal of a business was to make profit is long gone. Today, a company's ability to promote social and environmental responsibility is also considered an indicator of success (Gallardo-Vázquez & Sanchez-Hernandez, 2014). CSR initiatives improve a company's reputation, boosts workers' morale and job satisfaction, promotes cost savings through resource efficiency, fosters innovation and attracts a growing number of customers who value ethical and sustainable business practices (Bauman & Skitka, 2012; Tangngisalu et al., 2020). In addition, CSR can help reduce inequalities by supporting the promotion of inclusive and diverse behaviour (Gond et al., 2012). Companies that engage in CSR are obliged to conduct their activities in a way that takes into account the greater impact of their activities on society and the environment, whereby the focus is not just on profit maximisation (Marín et al., 2012; Gazzola & Mella, 2012).

When comparing the results for Variable H – Environmental awareness and training for the workforce, a significant statistical difference was found between the Czech Republic and Slovakia. While in the Czech Republic and Slovakia respondents most often (29) stated that they placed average emphasis on this issue, in Poland almost the same number of respondents (28) stated that they placed no emphasis on the issue at all. In Poland, this answer was also the most frequently reported answer. The sustainability of the workforce is becoming a big issue not only in the Czech Republic. Many organisations are struggling with environmental issues and learning how to improve the environmental behaviour of their employees. It is important for company managementto recognise the need to achieve environmental sustainability. Involving employees in environmental work may be the best way to proactively set a sustainable waste management strategy (Nguyen et al., 2023). Nisar et al. (2022) also cite the key role of

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green human resource management practices, whereby non-profits contribute to the environmental performance of society through the development of pro-environmental psychological capital and pro-environmental behaviours.

The Bonferroni correction (0.043) also confirmed a significant statistical difference regarding the perception of Variable J – Use of renewable natural resources between the Czech Republic and Slovakia. In the Czech Republic (48) and Poland (42), the majority of respondents place little or no emphasis on the issue. In its study, the Ministry of Industry and Trade (2021) noted a certain stagnation in the use of renewable sources. It states that "gross electricity production from renewable sources accounted for 12.6% of the total domestic gross electricity production in 2021, whereas in 2020 it exceeded 17%; weare therefore observing a downward development trend". In Slovakia, the situation is quite the opposite, with the highest number of respondents (45) stating that they place very strong or strong emphasis on this issue.

A significant statistical difference was also noted for Variable K – Green technology investments for environmental advancement. The Bonferroni correction confirmed a significant statistical difference between the perception of the issue between respondents from the Czech Republic and Poland (0.008) and between Poland and Slovakia (0.000). At the same time, the answers of the respondents show that while in the Czech Republic (50) and Slovakia (51) half of the respondents place very strong or strong emphasis on the given issue, the situation in Poland is quite the opposite, with the largest group of respondents, close to half (46), stating that they place little or no emphasis on the issue. The reason may be, as Bielsky et al. (2021) state, that coal continues to be an essential source for energy production in Poland.

For Variable C – Eco-friendly transportation solutions, a statistically significant difference was found between the Czech Republic and Poland and, at the same time, between Poland and Slovakia. For Variable K – Investments in green technologies for environmental advancement, a statistically significant difference was found between the Czech Republic and Poland and, at the same time, between Poland and Slovakia. In contrast, for Variable E – Circular use of materials and resources, Variable D – Waste reduction strategies and sustainable waste management, Variable G – Resource-friendly consumption (energy, water, etc.) and Variable I – Conservation of natural resources (water, soil, etc.) through sustainable practices, no statistically significant difference was found between any of the monitored countries.

Within the context of the above, companies can invest in marketing that highlights their environmental initiatives and, in communicating with customers, the benefits of their eco-friendly products and services. Investing in employee education and training in sustainability and green technologies can increase employee awareness and engagement in these areas. Companies can set aside funds for the development of new green technologies. This may include the development of environmentally friendly materials, efficient energy systems,

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clean production methods and other innovative solutions. With economic globalisation, sustainable development has become the preferred choice of businesses facing stiff competition. Innovation is a major driver of development (Chen & Jin, 2023). Conserving natural resources, reducing waste, and minimising energy consumption are current topics of innovation in green technologies (Nasanni, 2023). In an effort to set the pace for environmental advancement, they can make major investments in research and development and the deployment and promotion of green technologies. Investing in green technologies can help companies reduce costs, increase their competitiveness and improve customer relationships while reducing their environmental footprint. These investments not only protect the environment but can also bring long-term economic benefits and contribute to sustainable development. Wicki & Hansen (2019) recommend that companies foster a fail-friendly organisational culture, deliberately experiment, and purposefully learn from failure to increase their chances of success in adopting green technologies.

The results of the research presented in this article elucidated significant disparities in the emphasis placed on environment-oriented CSR practices among companies in the Visegrad region. The following are some of the key outcomes which can be applied in business practice and by policymakers:

- **Environmental priorities across the region:** it is evident that companies in the Czech Republic, Poland and Slovakia are facing environmental concerns and are coming to realise the increasing importance of CSR, whereby the differences in emphasis on various environmental initiatives are reflective of the evolving landscape of sustainable practices in these countries.
- **Policy implications**: it is recommended that policymakers consider tailoring environmental regulations and incentives to address the specific strengths and weaknesses of each Visegrad country in terms of CSR activities.
- **Competitive advantage:** the obtained data suggests that companies in Slovakia are creating a competitive advantage for themselves on the basis of emphasising environment-oriented CSR practices. This could potentially lead to economic advantages, improved market positioning and stronger relationships with customers who value sustainable business practices.
- **Role of education and awareness:** differences were found in the emphasis placed on environmental training and awareness for the workforce (Variable H) between the Czech Republic and Poland. This could indicate variations in the perception of the role of education in sustainability, which in turn could be an area for further research.
- **Green technology investments:** the differences in Variable K between the Czech Republic, Poland and Slovakia may indicate varying levels of commitment to innovation and technology adoption in pursuit of environmental goals, which is also an area for further research.

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Limitations and bias: This study's limitations arise from the sample size and the data collection methods. Utilising 100 companies per country within the Visegrad region may not fully encapsulate the entire business landscape, necessitating a larger, more comprehensive sample for a more robust understanding of CSR practices. Additionally, the reliance on self-reported data introduces potential bias, as respondents may inaccurately represent their commitment to CSR, potentially skewing the sample towards companies with stronger CSR interests or practices. Overall, the study's generalisability is constrained by its exclusive focus on three out of the four Visegrad countries (Czech Republic, Poland and Slovakia), limiting the applicability of the findings to regions or countries with diverse cultural, economic and regulatory contexts.

Future directions: To enhance the robustness and applicability of research on environment-oriented CSR activities in the Visegrad region, future endeavours should encompass (1) a larger sample set; (2) longitudinal studies; (3) an exploration of country-specific factors influencing CSR implementation; (4) an evaluation of the efficacy of CSR initiatives in achieving sustainability goals (quantification of environmental, social and economic outcomes and identification of areas for enhancement); (5) an investigation of cross-sector collaboration and industry-specific CSR strategies.

Conclusions

The study aimed to investigate the emphasis placed by companies operating in the Visegrad region (Czech Republic, Poland and Slovakia) on the implementation of selected environment-oriented CSR activities. An online questionnaire with Likert scale questions was used to gather data from a sample of 100 respondents from each country. The research design focused on analysing statistically significant differences in the implementation of CSR activities across the three countries, more specifically, 11 environmental initiatives. The sample selection was based on the inclusion of subjects from a sample of 100 companies from each monitored country, with equal representation across different company size categories.

The Kruskal-Wall is non-parametric test revealed statistically significant differences in the emphasis placed on selected environment-oriented CSR activities among companies in the Czech Republic, Poland and Slovakia. Notably, the null hypothesis was rejected for variables such as sustainable production practices and investment in innovative environmental technologies, indicating significant variations. Post hoc Bonferroni corrections applied to specific inter-country comparisons revealed substantial disparities in the emphasis placed on sustainable production practices, with Slovakia showing a pronounced inclination, followed by Poland and the Czech Republic. However, these differences did not retain statistical significance after adjusting for multiple tests. Among the exam-

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ined environment-oriented activities of businesses, the following differences were found:

- Eco-friendly transportation solutions: statistically significant differences were detected among all three countries (CZ and PL; PL and SK), emphasising the divergent CSR approaches in this domain, with Slovakia placing the greatest emphasis on it and Poland the least.
- Environmental awareness and training for the workforce: a statistically significant difference was found between the Czech Republic and Slovakia, with Poland reporting a higher frequency of no emphasis being placed on this issue.
- Harnessing renewable natural resources: a significant difference was noted between the Czech Republic and Slovakia, with Slovakia placing greater emphasis on this issue.
- Green technology investments: statistically significant differences were confirmed between the Czech Republic and Poland and between Poland and Slovakia. Notably, the Czech Republic and Slovakia place more emphasis on this issue compared to Poland.
- Other differences were identified for sustainable production practices such as certified organic/bio products, EMAS standards, or ISO 14000 (PL and SK), investment in innovative environmental technologies (CZ and PL) and carbon footprint reduction initiatives (CZ and SK).

In summary, this research elucidated significant disparities in the emphasis placed on environment-oriented CSR practices among companies in the Visegrad region. While some issues demonstrated noteworthy distinctions, others exhibited similarities across the surveyed countries. These findings can inform corporate strategies, governmental policy and cross-country knowledge-sharing initiatives aimed at advancing sustainable business practices in the Visegrad region.

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The contribution of the authors

Conceptualisation, J.K.; literature review, J.K. and D.P.; methodology, J.K.; formal analysis, J.K. and R.S.; writing, J.K., R.S. and D.P.; conclusions and discussion, J.K. and R.S.

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ODPOWIEDZIALNOŚĆ ŚRODOWISKOWA KADRY ZARZĄDZAJĄCEJ PRZEDSIĘBIORSTW W REGIONIE WYSZEHRADZKIM – STUDIUM PORÓWNAWCZE REPUBLIKI CZESKIEJ, POLSKI I SŁOWACJI

STRESZCZENIE: Artykuł przedstawia kompleksowe badanie priorytetyzacji działań z zakresu społecznej odpowiedzialności biznesu (CSR) zorientowanych na środowisko wśród firm w regionie wyszehradzkim, obejmującym Republikę Czeską, Polskę i Słowację. Kwestionariusz online zawierający pytania w skali Likerta został wykorzystany do zebrania danych od listopada 2022 r. do czerwca 2023 r. na temat nacisku kładzionego na 11 różnych działań CSR zorientowanych na środowisko. Metody analityczne obejmowały analizy opisowe i inferencyjne. Badanie wnosi oryginalne spostrzeżenia, koncentrując się na zaangażowaniu przedsiębiorstw z regionu wyszehradzkiego w działania CSR na rzecz środowiska. Wyniki badania ujawniają znaczące rozbieżności między krajami, szczególnie w dziedzinie ekologicznych rozwiązań transportowych i inwestycji w zielone technologie na rzecz postępu środowiskowego. Statystycznie istotne różnice zaobserwowano między Republiką Czeską a Polską, a także między Polską a Słowacją, co rzuca światło na różne kierunki i priorytety CSR w tym kontekście geograficznym. Wyniki te podkreślają znaczenie wypracowanych strategii CSR w ramach korporacyjnego krajobrazu regionu wyszehradzkiego w celu skutecznego sprostania wyzwaniom środowiskowym.

SŁOWA KLUCZOWE: CSR, region wyszehradzki, działania proekologiczne, studium porównawcze, Polska, Słowacja i Republika Czeska

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