JEL: M14, Q01, Q56, L21

Jana Kozáková

Slovak University of Agriculture in Nitra
Slovak Republic

SECTORAL DIFFERENCES IN CSR PRACTICES: INSIGHTS FROM SLOVAK FOOD AND NON-FOOD INDUSTRIES

Purpose. *This study explores the implementation of Corporate Social Responsibility (CSR) in Slovak companies, with a comparative focus on food and non-food sectors. The research investigates CSR integration into business strategies in specific environment of the transitioning economy, identifies the main components of CSR activities, and reveals sector-specific patterns. By analysing differences in CSR priorities and execution across industries, the study provides insights for developing tailored and effective CSR strategies based on the Slovak context.*

Methodology / approach. *The study uses a quantitative research design based on a structured online questionnaire, which collected data from 284 Slovak companies. Responses were analysed separately for the food and non-food sectors using factor and cluster analysis, where CSR activities were grouped according to the Triple Bottom Line (TBL) framework. Then, they were evaluated to uncover underlying components and classify companies into clusters with similar CSR behaviours.*

Results. *The factor analysis identified five CSR components in both sectors, though their composition and emphasis differed. Food sector companies prioritised environmental and ethical practices, driven by stricter regulations and public scrutiny. In contrast, non-food companies emphasised quality, customer loyalty, and community engagement. Four distinct CSR clusters were identified in the food sector and three in non-food industries. While some clusters exhibited comprehensive CSR engagement, others showed minimal activity and required development, highlighting that CSR implementation in Slovakia extends beyond traditional TBL categories, which reflects nuanced, sector-specific approaches.*

Originality / scientific novelty. *This research offers one of the first in-depth comparative analyses of CSR practices across sectors in Slovakia, a transitioning economy with unique regulatory and cultural conditions. The study advances existing literature by integrating CSR components with statistical clustering to capture the diversity of CSR strategies. It also extends the TBL framework by identifying context-specific dimensions such as economic ethics and community engagement.*

Practical value / implications. *The results provide insights for various stakeholders. Policymakers can use the findings to design targeted CSR support mechanisms, while companies can benchmark their performance and refine their CSR strategies based on the sector in which they operate. The study emphasises the importance of sector-specific corporate social responsibility planning and provides a foundation for enhancing transparency, fostering stakeholder trust, and promoting sustainable development within Slovakia's evolving business environment.*

Key words: *corporate social responsibility, sectoral analysis, food industry, non-food industry, Slovakia, cluster analysis, factor analysis.*

1. INTRODUCTION

Corporate Social Responsibility (CSR) has emerged as a cornerstone of modern business strategies, integrating environmental, social, and economic dimensions to address stakeholder expectations and contribute to sustainable development. Globally,

CSR is gaining traction across industries as businesses recognise their responsibility beyond profit generation. This is particularly evident in sectors where societal and environmental impact is closely scrutinised, such as the food industry, which directly influences consumer health and environmental sustainability. In Slovakia, CSR adoption is shaped by the country's economic structure, regulatory environment, and cultural context, presenting unique opportunities and challenges for businesses operating in this transitioning economy. Slovakia's food industry plays a pivotal role in the economy, characterised by strict regulatory oversight due to its direct impact on consumer health and environmental conservation.

Despite the global emphasis on CSR, limited research has focused on its implementation in Slovak companies, particularly comparing food and non-food sectors. Understanding these differences is essential to developing tailored CSR strategies that address the needs of local stakeholders while aligning with global sustainability goals.

Theoretical approaches such as the Triple Bottom Line (TBL) and Stakeholder Theory provide a foundation for understanding CSR by emphasising the integration of economic, social, and environmental aspects. However, the application of these theories in smaller economies, such as Slovakia, remains underexplored. Existing literature primarily focuses on large multinational corporations or developed economies, leaving gaps in understanding how CSR is implemented in transitioning markets or industries with varying regulatory and market conditions. Moreover, sectoral differences in CSR adoption, particularly between the food sector with its stringent regulatory framework and other industries, have not been sufficiently analysed. This study aims to fill these gaps by exploring the unique CSR practices of Slovak companies and uncovering the underlying components that drive CSR implementation. Examining their variability, the study seeks to compare CSR practices across industries and classify companies into clusters based on their approach to CSR. Regarding this, the study addresses the following research questions:

- Does the distribution of CSR activities in Slovak enterprises related to the food industry and other types of business comply with the Triple Bottom Line approach?

- What are the typical approaches of Slovak businesses related to the food industry and other businesses in implementing CSR activities, and what are the characteristics of these clusters?

This study contributes to the understanding of CSR in transitioning economies, providing valuable insights into the practices and challenges faced by Slovak companies. By comparing the food sector with other industries, it highlights sector-specific drivers and barriers to CSR implementation, offering usable insights for policymakers, business leaders, and researchers. The findings of this study can guide the development of tailored CSR strategies that enhance the sustainability and competitiveness of Slovak companies while addressing stakeholder needs. Furthermore, the study advances the academic discourse by introducing a nuanced approach to CSR analysis, integrating sectoral differences and local context into the broader framework of sustainable business practices.

The paper is structured as follows: the literature review section captures the literature as a baseline of the research; next, the methodology section outlines the data collection process and analytical methods; the results section presents the findings, including CSR components and clusters; the discussion section interprets the results considering existing literature and provides practical implications; and the conclusion summarises the key findings. Finally, the section on limitations and future research discusses limitations and suggests directions for future research. The methodology was chosen to align with the study's aim of analysing CSR practices across Slovak businesses. Factor analysis was applied to identify underlying patterns in CSR activities, while cluster analysis revealed distinct groups of companies based on their approach to CSR. The use of IBM SPSS, Jamovi, and R ensured comprehensive statistical analysis, leveraging the strengths of each tool for specific tasks.

2. LITERATURE REVIEW

Corporate Social Responsibility in business, defined as an approach where companies voluntarily integrate social and environmental considerations into their business operations and interactions with stakeholders, is particularly important in the food industry. Food production has a direct impact on the environment, consumer health, and social conditions within communities (Waltner-Toews & Lang, 2000; Neff et al., 2009). Implementing CSR in the food sector involves responsibly managing the entire value chain, from sourcing raw materials to distributing finished products (Toussaint et al., 2021). In businesses linked to the food industry, various theoretical approaches are applied, including Stakeholder Theory (Jamali, 2008), Corporate Citizenship Theory, and the Triple Bottom Line approach (Farooq et al., 2021; Laosirihongthong et al., 2020; Mohsin, 2021). Attention in this specific sector focuses on several key areas that differentiate it from other sectors. As they are under stronger pressure from various stakeholders (such as government, control institutions, customers), food processors should prioritise sourcing raw materials from responsible and sustainable sources, promoting ecological and sustainable agricultural practices, and requiring suppliers (primary agricultural producers) to eliminate chemical use, enhance biodiversity, and protect natural resources (Auerbach, 2020; Adams et al., 2021; Mastos & Gotzamani, 2022). A second critical area for attention is responsible production and distribution. In manufacturing processes, efforts should aim to minimise environmental impact by reducing energy and water consumption, recycling waste, and lowering emissions. Responsible distribution should include optimising logistics chains to reduce the carbon footprint and improve transportation efficiency (Rodriguez Guevara, 2018; Toussaint et al., 2021; Crippa et al., 2021). The third key area should be food quality and safety, which entails adhering to strict hygiene standards, ensuring transparency in product labelling, and traceability of raw materials (Bendeković et al., 2015; Freeman, 2015; Okpala & Korzeniowska, 2023). Other CSR areas in the food industry include social responsibility and ethics. Like other businesses, food companies should promote fair working conditions, ensure fair wages, and uphold human rights. Ethical business practices also involve combating corruption and adopting responsible marketing strategies that do not

mislead consumers. These are areas where some food companies have long-standing issues, as evidenced by numerous public cases documenting unethical practices in the sector (Maloni & Brown, 2006; Woods et al., 2013; Baumann-Pauly & Nolan, 2016; Liu et al., 2018; Teh et al., 2019). Furthermore, they should engage in community support and social programs, such as investing in education and health initiatives, supporting local economies, and participating in volunteer activities. Specifically, food companies often engage in programs addressing hunger and food insecurity (Alaimo, 2013; Fisher, 2017), which can also help these companies to prevent food waste.

On the other hand, implementing CSR in the food industry faces various challenges and obstacles. Key challenges include high initial costs of adopting sustainable practices, the complexity of tracking and verifying the origin of raw materials, and the need to educate employees and suppliers on the importance of CSR (Ghadge et al., 2020). Food companies worldwide also face competition and pressure to maintain product affordability (Clapp, 2021). However, implementing CSR provides numerous advantages. Beyond traditional brand visibility, enhanced customer loyalty, better relationships with suppliers and communities, and increased attractiveness to investors, CSR significantly improves a company's reputation, which is also noticeable in the case of small and medium-sized enterprises (Marakova et al., 2021; Scuotto et al., 2022; Kim & Bhalla, 2022). Many food (and other) companies also use CSR as a tool to "repair" public opinion and reputation following ethical scandals, which, in the case of food producers, often involve harm to consumer health, product recalls, and subsequent destruction of products (Griffin, 2008; Haigh & Brubaker; 2010; Hengboriboon et al., 2022).

Globally, CSR adoption has been influenced by various factors, including regulatory frameworks, market conditions, and consumer expectations. In the food industry, CSR practices have been shown to vary significantly based on regional and sectoral contexts. For instance, Sgroi et al. (2020) highlight that competitive advantages can be achieved through effective CSR strategies, particularly in the agri-food sector, where consumer demand increasingly favours socially responsible practices. Similarly, Lim et al. (2017) emphasise the importance of CSR actions in shaping consumer perceptions, particularly among younger demographics in the food industry. These findings underscore the necessity for companies to align their CSR initiatives with consumer expectations to enhance brand value and market position.

The food and non-food industries exhibit distinct CSR practices, influenced by their unique regulatory environments and stakeholder pressures. Topić et al. (2020) note that the food industry is generally more proactive in implementing CSR policies compared to non-food sectors, which may reflect the heightened scrutiny and consumer expectations surrounding food safety and sustainability (Topić et al., 2020). Furthermore, some authors (Maloni & Brown 2006; Forsman-Hugg et al., 2013; Usmani et al., 2022) argue that defining CSR within the food chain is complex due to the diverse stakeholder interests involved, which necessitates a tailored approach to CSR that considers industry-specific challenges. Moreover, the influence of institutional forces, as discussed by Zuo et al. (2015) plays a crucial role in shaping CSR behaviours in emerging markets, where local norms and regulations can significantly impact corporate practices Kádeková et al.

(2020) further emphasise the importance of CSR in the Slovak food industry, noting its critical role in linking corporate activities to broader economic and social outcomes. This highlights the need for Slovak companies to navigate both local and global CSR expectations, balancing compliance with innovative practices that resonate with stakeholders. Here, the methodological approaches such as factor analysis and cluster analysis can be instrumental in examining CSR practices across different sectors. For instance, the use of cluster analysis allows for the categorisation of companies based on their CSR engagement levels, revealing significant variability in adoption strategies (Saridakis et al., 2020). This methodological rigor is essential for identifying patterns and trends in CSR practices, enabling researchers to draw meaningful conclusions about the effectiveness and impact of various CSR initiatives. However, when critically reviewing the existing literature, we must highlight some unresolved issues pointing to a knowledge gap in understanding how CSR practices differ across sectors within transitioning economies, particularly in light of localised regulatory, cultural, and stakeholder dynamics. Most comparative studies of CSR practices tend to focus on large multinational corporations in developed economies, while insights from transitioning economies (like Slovakia) remain scarce. Also, it must be mentioned that despite the Triple Bottom Line framework is widely used, just a few studies examine how its components may diverge or evolve in sector-specific contexts. Addressing these gaps, this study offers an in-depth comparative analysis of CSR practices in Slovak food and non-food companies, using factor and cluster analysis to identify distinct behavioural patterns and provide evidence-based insights for policy and strategy.

3. METHODOLOGY

Research analysing corporate social responsibility practices among Slovak companies using quantitative research methods (Boachie & Amoako, 2017) with the aim of identifying groups of companies with a similar approach to CSR implementation. This study is grounded in the TBL framework and Stakeholder theory, which provide the theoretical foundation for evaluating CSR practices. The TBL divides CSR into three main dimensions (social, environmental, and economic), which guide the design of the questionnaire and the selection of CSR indicators. Stakeholder theory further supports this framework by emphasising the diverse expectations of internal and external stakeholder groups. This conceptual framework assumes that companies operationalise CSR through activities that align with TBL dimensions, but that actual practices may vary by sector due to regulatory pressures, market expectations, and organisational culture. For empirical research of these industry differences, a two-stage statistical analysis was integrated into the framework: factor analysis (used to identify latent structures among 27 CSR variables, revealing how CSR is internally structured within different business groups) and cluster analysis (groups companies into distinct profiles based on their CSR engagement patterns, allowing for the identification of sector-specific CSR strategies) providing both theoretical and empirical clarity and enabling the identification of typical CSR behaviours within Slovak food and non-food industries and their alignment (or

divergence) from standard CSR models.

The research was conducted using an online questionnaire survey (Ball, 2019) designed on the Google Forms platform (Vasantha Raju & Harinarayana, 2016) to map various aspects of CSR among businesses in Slovakia. The questionnaire was developed using a structured series of questions, including demographic questions and Likert scales (Taherdoost, 2019), multiple-choice questions (Aydin et al., 2014) related to the application of CSR. Emphasis was placed on obtaining responses from a variety of business entities (Snijkers et al., 2013), using a random sampling method (Olken, 1993). Data collection began in November 2021, when the questionnaire was tested in a pilot study (Van Teijlingen & Hundley, 2001) with a sample of 10 companies to identify ambiguities or issues and adapt it for broader groups using skip-logic and branching (Suhayda & Dave, 2017). Data collection concluded in June 2023, followed by data processing and the preparation of the final database. Data collection adhered to ethical principles protecting participants' privacy (Vitak et al., 2016; Nayak & Narayan, 2019). As the goal was to reach as many potential respondents as possible through various channels (both direct and indirect), it was not feasible to estimate the number of contacted entities or calculate the questionnaire response rate (Petroni et al., 2004).

The analysed sample consisted of 284 Slovak business entities divided into two main groups, each consisting of three subcategories. The first group, "businesses connected to the food industry" (33.8%), includes (1) food production (13.0%), (2) food trade (14.1%), and (3) food-related services (6.7%). The second group, "other businesses / non-food business" (66.2%), is divided into (1) other production (30.3%), (2) other services (17.6%), and (3) other trade (18.3%) highlighting the study's focus on understanding the distribution and characteristics of these two overarching groups and their respective subcategories. From the general point of view, the majority of monitored companies (57%) were part of multinational corporations, with a legal form of Limited Liability Companies (67.6%). Most were established between 1990 and 1995 (26.8%) and were not family businesses (67.3%). A total of 41.2% of companies had foreign ownership, and the same percentage operated only in the region of their headquarters. The most common areas of activity were manufacturing (43.3%) and trade (32.4%). Most companies employed more than 500 workers (33.5%). Regarding ownership structure, 37.7% were entirely local businesses, and 28.9% were exclusively foreign owned. Most CEOs (55.6%) were local, and 90.5% were men. The majority of surveyed companies (74.6%) have not yet encountered ethical issues. Sample characteristics were monitored by following set of characteristics: CH_1 Multinationality; CH_2 Legal Form; CH_3 Year of Establishment; CH_4 Family Business Status; CH_5 Foreign Ownership; CH_6 Geographic Reach; CH_7 Area of Operation; CH_8 Industry; CH_9 Company Size by Employees; CH_10 Ownership Structure; CH_11 CEO Nationality; CH_12 CEO Gender; CH_15 Ethical Scandals.

The second group of questions pertained to specific CSR activities, categorised under the TBL concept (Norman & MacDonald, 2004; Żak, 2015; Księżak & Fischbach, 2017) framed on a Likert scale (1: very weak to 5: very strong).

The research applies factor analysis on 27 variables categorised into social

(SOC_1–9), environmental (ENV_1–9), and economic (EKN_1–9) groups, following the TBL to identify clusters of variables that could distinctly describe typical activity groups performed by the studied types of businesses. In this context, research question 1 (RQ1) was posed: Does the distribution of CSR activities in Slovak enterprises (1) related to the food industry and (2) other enterprises comply with the Triple Bottom Line approach?

The analysis is based on "Exploratory Analysis," encompassing activities selected and categorised based on prior research (Kozáková, 2021; Kozáková et al., 2023; Skýpalová et al., 2023; Kozáková et al., 2024). The analysis was conducted separately for businesses connected to the food industry and for others, as summarised in Table 1:

- Reliability testing: Cronbach's alpha was used to measure the internal consistency of the selected variable groups (Tavakol & Dennick, 2011; Bujang et al., 2018) and indicated for both business group's high reliability and consistency.
- Normality testing: the One-Sample Kolmogorov-Smirnov test verified data normality (Siegel, 1957; Berger & Zhou, 2014) and showed significant deviations from normal distribution (p-value 0.000) in both groups.
- Correlation analysis: Kendall's tau and Spearman's rho tests (Sözeyatarlar et al., 2021; Shaqiri et al., 2023) revealed strong positive correlations between CSR activities, indicating their interconnectedness.
- Factor analysis (Hung Chen, 2011; Hornungová, 2014; Silva et al., 2014; Watkins, 2018; Beavers et al., 2019; Cheung et al., 2021):
  - (i) KMO and Bartlett's Test: The Kaiser-Meyer-Olkin Measure of Sampling Adequacy and Bartlett's test of sphericity confirmed data suitability for factor analysis (Hadi et al., 2016);
  - (ii) PCA (Principal Component Analysis): Factors were extracted using PCA with an Eigenvalue threshold of ≥1 (Loewen & Gonulal, 2015);
  - (iii) Rotation: Direct Oblimin rotation was used to simplify factor interpretation, considering the Component Correlation Matrix. A compromise suppression threshold of 0.35 was chosen for meaningful balance.
- Interpretation: the identified components (Li et al., 2012) explained most of the total variability.
- Cluster analysis (Landau & Ster 2010; Dawar et al., 2023): CA was applied to identify clusters of businesses with similar CSR activity approaches, in regards, the Research Question 2 was posed: RQ2: What are the typical approaches of Slovak enterprises (1) related to the food industry and (2) other enterprises to implementing CSR measures, and what are the characteristics of these clusters?
- The number of clusters was determined using Ward's method (since it yielded the most significant coefficient >0.9), supported by hierarchical clustering coefficients and dendrogram analysis (Giordani et al., 2020; Feng et al., 2024).
- Cluster classification (Arabie et al., 1996): the clusters were named and characterised based on their connection to PCA-identified components.
- Conclusion: the implications for effective CSR strategy planning and implementation were explained, considering the specific needs and priorities of the

identified business types.

Table 1

Results of factor and cluster analysis for companies by sector

Step / Parameter	Food industry companies	Other companies
0. Data collection and preparation	96 companies, 27 CSR activities	188 companies, 27 CSR activities
1. Cronbach's Alpha	0.959	0.942
2. One-Sample Kolmogo-rov-Smirnov test	All p-values 0.000 (non-normal distribution)	All p-values 0.000 (non-normal distribution)
3. Correlation analysis	High positive correlations (Kendall's tau, Spearman's rho)	High positive correlations (Kendall's tau, Spearman's rho)
4. Factor analysis	-	-
KMO test	0.902	0.912
Bartlett's test of sphericity	Approx. Chi-Square 2037.562, p-value 0.000	Approx. Chi-Square 2825.151, p-value 0.000
Extraction	PCA, Scree plot, 5 main components	PCA, Scree plot, 5 main components
Rotation	Direct Oblimin	Direct Oblimin
5. Main components	-	-
Component 1	Environmental activities (49.00% variability)	Environmental activities (40.66% variability)
Component 2	Economic ethics (7.47% variability)	Social and ethical activities (7.75% variability)
Component 3	Employee support (5.85% variability)	Community and philanthropic activities (5.03% variability)
Component 4	Social responsibility (5.22% variability)	Employee and ecological activities (4.52% variability)
Component 5	Quality and transparency (4.34% variability)	Quality and loyalty (3.99% variability)
5. Interpretation of results	CSR activities are strongly interconnected and mutually reinforcing	CSR activities are coordinated and integrated
6. Cluster analysis	4 main clusters (Ward's method, hierarchical clustering coefficients, dendrogram)	3 main clusters (Ward's method, hierarchical clustering coefficients, dendrogram)
7. Cluster classification	-	-
Cluster 1	Comprehensive engagement companies (23 companies)	Companies needing CSR development (63 companies)
Cluster 2	Economically focused companies (24 companies)	Quality and loyalty paradox (27 companies)
Cluster 3	Companies requiring CSR development (39 companies)	Comprehensive sustainability-focused entities (98 companies)
Cluster 4	Community and environmentally focused companies (10 companies)	-

Source: own processing.

For statistical analysis and frequency calculations, IBM SPSS Statistics Subscription was used (George & Mallery, 2019; Wagner, 2019). Control calculations

were conducted using the Jamovi software (Thatkar & Desale, 2019). Division components for determining the number of clusters and subsequent AGNES and DIANA dendrograms, as well as "clusterplot" and "tanglegram," were generated using the R software (Bivand et al., 2021), as these functions are not available in the other two tools.

This study focuses on Slovak businesses, and while it provides valuable insights, its findings may be limited in generalisability to other countries due to the unique socio-economic and regulatory environment of Slovakia. Self-reported data introduce potential response bias and statistical constraints, which were mitigated through robust analytical methods but remain considerations. Additionally, sample selection may exclude businesses less engaged in CSR that were not interested in being included in the study, underscoring the need for cautious interpretation of results. Despite these limitations, the study offers a foundation for understanding CSR practices in a post-communist European context and serves as a basis for future research in broader settings.

4. RESULTS

This section examines CSR implementation in Slovak companies, highlighting differences between the food sector and other industries. Here, it explains that food companies prioritise environmental and ethical practices due to stricter regulations, while non-food companies focus more on quality and community engagement. Also, key CSR components are identified through statistical and cluster analyses, emphasising tailored strategies for sustainability and competitiveness.

4.1. CSR implementation in the Slovak food industry: a focus on environmental and ethical practices. Methodical analysis starts with the Cronbach's Alpha test, which revealed very high internal consistency in measuring the practical implementation of CSR activities of food industry companies, with a value of 0.959. The results of the Kolmogorov-Smirnov test showed that none of the variables followed a normal distribution, with asymptotic significance at 0.000. Further, Kendall's tau and Spearman's rho tests revealed strong positive correlations among various aspects of social, environmental, and economic CSR indicators. Next, the Kaiser-Meyer-Olkin (KMO) test demonstrated a high level of sampling adequacy for factor analysis, with a value of 0.902. The scree plot helped identify the number of significant components, pinpointing five key components through the elbow method. These five components (Table 2), sufficiently explain most of the variability (71.86%). Components 6 through 27 contributed minimally to the overall variability, with values below 3%. Therefore, it can be said that Slovak companies connected to the food industry implement CSR activities in a systematic and integrated manner, with the different aspects of CSR being strongly interlinked. The results support the reliability and quality of the factor analysis and suggest that the examined variables can form clearly defined groups.

Table 2

Total explained variability of variables SOC, ENV, EKN for food industry companies (First 7 Components)

Component	Initial Eigenvalues			The sum of Squared Loadings (Extraction)			The sum of Squared Loadings (Rotation)
	Total	% variance	Cumulative %	Total	% variance	Cumulative %	Total
1	13.229	49.00	49.00	13.229	49.00	49.00	9.949
2	2.016	7.47	56.46	2.016	7.47	56.47	7.690
3	1.578	5.85	62.31	1.578	5.85	62.31	4.678
4	1.408	5.22	67.53	1.408	5.22	67.53	7.202
5	1.171	4.34	71.86	1.171	4.34	71.86	2.879
6	0.798	2.96	74.82	-	-	-	-
7	0.795	2.95	77.76	-	-	-	-
Extraction method: Principal Component Analysis							

Source: own elaboration.

Subsequently conducted factor analysis revealed 5 main components. To simplify the interpretation of the results, a suppression threshold of 0.35 was applied. This threshold provided a balance between eliminating insignificant loadings and retaining essential data. The five-component solution was supported by dendrogram analysis and grouped the variables into clusters with similar characteristics (Table 3).

The factor analysis revealed that environmental activities (Component 1) dominated the variability, reflecting the systematic implementation of ecological CSR activities among Slovak food industry companies. Social and economic dimensions were also strongly represented, highlighting the interconnection of CSR variables. Components identified by PCA align with CSR principles, forming distinct groups that reflect the systematic approach of the food industry to CSR implementation. Based on the composition and focus of the identified components, the following names and descriptions were assigned:

Component 1 (49.00% of variability): *Environmental activities* include activities focused on environmental protection, such as reducing CO_2 emissions (ENV_6), minimising energy and water consumption (ENV_7), using recycled materials (ENV_5), limiting waste production (ENV_4), investing in eco-technologies (ENV_2), protecting natural resources (ENV_8), using renewable resources (ENV_9), and certified production (ENV_1). The presence of this component indicates that Slovak food industry companies place significant emphasis on environmental aspects of their operations and implement diverse initiatives to protect the environment.

Component 2 (7.47% of variability): *Economic ethics* covers aspects of ethical behaviour in business, including intellectual property protection (EKN_2), anti-corruption practices (EKN_1), ensuring workplace equality (SOC_1), public rejection of child labour (SOC_9), adherence to business ethics principles (EKN_8), and supporting employee volunteerism (SOC_2). It suggests that Slovak food industry companies focus on maintaining high ethical standards in their business practices,

emphasising fair and transparent operations while holistically integrating social and economic activities.

Table 3

Factor analysis for the 5 main components (threshold 0.35) for food industry companies

Variable	Component				
	1	2	3	4	5
ENV_6: Reducing CO_2 emissions	0.867	-	-	-	-
ENV_7: Reducing resource consumption (energy, water, etc.)	0.815	-	-	-	-
ENV_5: Using recycled materials and raw inputs	0.790	-	-	-	-
ENV_4: Limiting waste production and ecological waste management	0.741	-	-	-	-
ENV_2: Investing in eco-technologies	0.681	-	-	-	-
ENV_8: Protecting natural resources	0.663	-	-	-	-
ENV_9: Using renewable resources	0.625	-	-	-	-
ENV_1: Certified production	0.578	-	-	0.355	-
EKN_2: Intellectual property protection	-	0.767	-	-	0.428
EKN_1: Anti-corruption practices	-	0.746	-	-	0.399
SOC_1: Ensuring workplace equality	-	0.732	-	-	-
SOC_9: Public rejection of child labour	-	0.671	-	-	-
EKN_8: Business ethics principles	-	0.589	-	-	-
SOC_2: Supporting employee volunteerism	-	0.510	-	-	-
SOC_7: Support for laid-off employees	-	-	0.808	-	-
SOC_6: Providing advanced employee education	-	-	0.558	-	-
SOC_8: Ensuring work-life balance	-	0.465	0.542	-	-
SOC_5: Employee care beyond legal requirements	-	-	0.520	-	-
SOC_3: Philanthropy and sponsorship	-	-	-	-	-
EKN_5: Creating job opportunities for people with special needs	-	-	-	0.867	-
EKN_9: Eliminating “greenwashing”	-	-	-	0.659	-
EKN_6: Maintaining superior loyalty in supplier-customer relationships	-	0.363	-	0.649	-
EKN_7: Ensuring superior quality and safety of goods and services	-	0.413	-	0.562	-
SOC_4: Supporting the local community	-	-	-	0.507	-
ENV_3: More environmentally friendly transportation methods	0.531	-	-	-	0.547
EKN_3: Post-sale and warranty service for customers	-	-	-	-	0.494
EKN_4: Transparency and disclosure of business results	-	-	-	-	0.407
Extraction method: Principal Component Analysis. Rotation method: Oblimin with Kaiser normalisation					

Source: own elaboration.

Component 3 (5.85% of variability): *Employee support* encompasses initiatives supporting employees, such as assistance for laid-off employees (SOC_7), advanced

employee education (SOC_6), ensuring work-life balance (SOC_8), and providing employee care beyond legal requirements (SOC_5). The formation of this component highlights that food industry companies in Slovakia prioritise favourable working conditions and support the professional and personal development of their employees.

Component 4 (5.22% of variability): *Social responsibility* includes activities related to creating job opportunities for people with special needs (EKN_5), eliminating greenwashing (EKN_9), maintaining superior loyalty in supplier-customer relationships (EKN_6), ensuring superior quality and safety of goods and services (EKN_7), and supporting the local community (SOC_4). Its presence indicates that Slovak food industry companies actively engage in social responsibility and strive to adopt inclusive and ethical business practices toward broader stakeholder groups.

Component 5 (4.34% of variability): *Quality and transparency* focus on environmentally friendly transportation methods (ENV_3), post-sale and warranty service for customers (EKN_3), and transparency in business practices (EKN_4). It demonstrates that food industry companies in Slovakia emphasise high-quality products and services, as well as transparent and responsible business operations.

The TBL theory assumes that CSR activities are categorised into three pillars: economic, social, and environmental. However, our analysis of Slovak food industry companies identified five distinct components. Environmental activities (Component 1) and Economic ethics (Component 2) align with the environmental and economic pillars of the TBL but incorporate an additional ethical dimension. Employee support (Component 3) and Social responsibility (Component 4) emerge as separate components, despite being traditionally grouped under the social pillar in the TBL framework. These components reflect a nuanced distinction between responsibilities toward internal and external stakeholders, addressing the specific needs of Slovak food industry companies. Quality and transparency (Component 5) emphasise support for local communities and transparent business practices, blending social (external stakeholders) and economic dimensions. This approach highlights a broader and more integrated understanding of CSR in the Slovak context. These results suggest that Slovak food industry companies systematically and holistically implement CSR, addressing local needs and challenges, providing a more comprehensive perspective on corporate responsibility than the traditional TBL model.

The subsequent cluster analysis grouped the identified components into clusters, enabling the characterisation of Slovak food industry companies with similar approaches to CSR activities. The number of clusters was determined using Ward's method, as solutions derived from the multimethod analysis (Nearest Neighbor: 0.7539992; Farthest Neighbor: 0.8457339; Average Distance: 0.796349; Ward's Method: 0.9267936). Following the results of Ward's method, the analysis identified four clusters, a conclusion supported by dendrograms from DIANA (Divisive Analysis) with a divisive coefficient of 0.837897 and AGNES (Agglomerative Nesting), which provided graphical representations of hierarchical clustering. Table 4 presents the average factor scores for each cluster, revealing distinct characteristics and strengths of selected clusters named based on their defining traits. The number of cases

within each cluster varies: Cluster 3 is the largest, encompassing 39 companies; Cluster 1 consists of 23 companies; Cluster 2 includes 24 companies; Cluster 4 is the smallest, with only 10 companies.

Table 4

Final cluster centres for Slovak food industry companies

Component	Cluster 1: "Comprehensively engaged companies"	Cluster 2: "Economically focused companies"	Cluster 3: "Companies needing CSR development"	Cluster 4: "Socially and environmentally focused companies"
Component 1: Environmental activities	0.56867	-0.34205	-1.4407	1.09281
Component 2: Economic ethics	0.32749	0.33058	-1.60773	-0.92117
Component 3: Employee support	0.27734	0.11515	-0.91468	-1.82407
Component 4: Social responsibility	0.50496	-0.44292	-1.06636	1.32202
Component 5: Quality and transparency	0.52431	-0.55202	-0.25241	-3.74862

Source: own elaboration.

Cluster analysis revealed that Slovak food industry companies have a strong orientation toward environmental, economic, and social aspects of business. However, their approaches differ to some extent, allowing them to be divided into four groups.

Cluster 1 (23 companies), referred to as *"Comprehensively engaged companies,"* includes companies that show positive scores across all components of corporate social responsibility, indicating a balanced and comprehensive approach to CSR. Environmental activities are a strength of this cluster, with an average score of +0.56867, suggesting active involvement in reducing emissions, protecting natural resources, and adopting ecological technologies. Economic ethics is also strong (+0.32749), meaning these companies focus on protecting intellectual property, rejecting corruption, and promoting equality. Companies in this cluster also show positive results in employee support (+0.27734), including initiatives for education and improving working conditions. Social responsibility (+0.50496) and quality and transparency (+0.52431) are also among their strengths, reflecting their commitment to high transparency and accountability levels toward the community. This cluster comprises 23 companies, 65% of which are multinational corporations, and 35% are local entities. In terms of legal form, 61% are limited liability companies, and 22% are joint-stock companies. Most of these companies were established between 1990–1995 (43%) and 1996–2000 (17%). Family businesses constitute 17%, while 13% are no longer family owned. Regarding their scope of operation, 17% are active in only one region, 39% operate in multiple regions, and 43% have nationwide operations. In terms of their areas of activity, 61% are in manufacturing, and 30% are in trade. In the food industry, 61% operate in this sector, while others are involved in hospitality and catering (9%) and trade (30%). Furthermore, 39% are extra-large companies with over

500 employees and nearing the obligation to report their CSR activities. In 30%, the ownership structure is entirely local. CEOs are predominantly local (57%), and leadership is male-dominated (57%), although 48% have a balanced ratio of men and women among employees. Most companies in this cluster (57%) have not yet faced an ethical scandal. Based on these characteristics, it can be said that "Comprehensively engaged companies" are businesses with a balanced and comprehensive approach to CSR, with a strong focus on environmental activities, economic ethics, and transparency, and are primarily multinational corporations or large local companies in the food industry.

Cluster 2 (24 companies), referred to as *"Economically Focused Companies,"* is characterised by a relatively strong focus on economic ethics, with an average score of +0.33058. This indicates an emphasis on intellectual property protection, rejecting corruption, and promoting workplace equality. In environmental activities, they achieve lower scores (-0.34205), reflecting less active engagement in reducing emissions and protecting natural resources. Employee support is also less pronounced (+0.11515) but remains positive. Social responsibility (-0.44292) and quality and transparency (-0.55202) are clear areas for improvement, suggesting a need for greater emphasis on community engagement and information disclosure. This cluster comprises 24 companies, 42% of which are multinational corporations, and 58% are local companies. In terms of legal form, 79% are limited liability companies, and 13% are joint-stock companies. Most of these companies were established between 1990–1995 (29%) and 1996–2000 (25%). Family businesses constitute 38%. Their scope of operation shows that 54% are active in only one region, and 29% have nationwide operations. Regarding their areas of activity, 38% are in manufacturing, 46% – in services, and 17% – in trade. In the food industry, 33% operate in this sector, while others are involved in trade (17%) and hospitality and catering (17%). Furthermore, 29% are extra-large companies with over 500 employees. CEOs in these companies are predominantly local (67%), and leadership is male-dominated (79%). Concerning the mentioned, it can be said that these companies emphasise economic ethics while paying less attention to environmental activities and transparency.

Cluster 3 (39 companies), referred to as *"Companies needing CSR development,"* demonstrates negative scores across all main components of corporate social responsibility, indicating a significant need for improvement in all areas. Economic ethics (-1.60773) and environmental activities (-1.4407) are the most affected areas, indicating a lack of measures to protect intellectual property, reject corruption, and reduce the ecological footprint. Employee support (-0.91468) and social responsibility (-1.06636) are also weak, pointing to a lack of initiatives to improve working conditions and support communities. Quality and transparency (-0.25241) also require attention, as low transparency can negatively impact public trust. This cluster comprises 39 companies, 72% of which are multinational corporations, and 28% are local companies. In terms of legal form, 36% are limited liability companies, 26% are joint-stock companies, and 33% are sole proprietorships. Most of these companies were established between 1996–2000 (44%). Family businesses constitute 15%, while

10% are no longer family owned. Their scope of operation is diverse, with 23% active in only one region and 64% operating nationwide. Regarding their areas of activity, 18% are in manufacturing, and 69% are in trade. In the food industry, 18% operate in this sector, while others are mainly involved in trade (69%) and hospitality and catering (18%). Furthermore, 59% are extra-large enterprises with over 500 employees. CEOs are predominantly foreign (51%), and leadership is male dominated (87%). In this cluster, 44% have foreign ownership, and an interesting point is that 49% have experienced ethical scandals in the past. Therefore, this cluster shows low scores across all CSR areas, indicating a strong need for comprehensive improvements in all dimensions.

Cluster 4 (10 companies), referred to as *"Socially and environmentally focused companies,"* is characterised by strong engagement in environmental activities, with an average score of +1.09281. This indicates active involvement in reducing emissions, protecting natural resources, and adopting ecological technologies. Social responsibility is also a strength, with an average score of +1.32202, highlighting significant support for inclusive business practices and community activities. However, the area of quality and transparency (-3.74862) scores very low, indicating a need for improvement in transparent communication and disclosure of business activities. Economic ethics (-0.92117) and employee support (-1.82407) are also areas with potential for improvement, suggesting the need to balance social, environmental, and economic aspects of CSR. This cluster comprises 10 companies, 20% of which are multinational corporations, and 80% are local companies. In terms of legal form, 90% are limited liability companies. Most companies were established between 2006–2010 (30%) and 2016–2020 (40%). Family businesses constitute 60%. Their scope of operation is mostly limited to one region (70%). Regarding their areas of activity, 70% are in manufacturing, predominantly in the food industry. Other companies are involved in hospitality and catering (10%) and trade (20%). Furthermore, 50% are micro-enterprises with fewer than 9 employees, and 70% have an entirely local ownership structure. CEOs are predominantly local (90%), and leadership shows a strong male dominance (50%). This cluster is characterised by a focus on social and environmental activities, with a prevalence of family businesses and micro-enterprises, but significant room for improvement in transparency and quality management.

The results of the factor analysis show that Slovak food industry companies implement CSR activities in a systematic and integrated manner. The KMO test demonstrated a high level of sampling adequacy for the factor analysis, which identified five significant components explaining 71.86% of the total variability, indicating that CSR activities in Slovakia are perceived more broadly than the traditional TBL approach, considering the specific needs and challenges of the local environment. Subsequently, four clusters were identified, reflecting differences in the focus and orientation of Slovak food industry companies.

4.2. CSR strategies in non-food Slovak companies: quality, loyalty, and community engagement. The results of the Cronbach's Alpha test, applied to the sample of Slovak companies outside the food sector, demonstrated excellent internal

consistency (0.942) in measuring the implementation of CSR activities. The results of the Kolmogorov-Smirnov test showed that none of the variables followed a normal distribution, with asymptotic significance at 0.000. Kendall's tau and Spearman's rho tests revealed significant positive correlations among the indicators, suggesting strong interconnections between CSR activities of Slovak non-food companies realised in a coordinated and integrated manner. The results of the KMO and Bartlett's test confirm that the data are highly suitable for factor analysis, with a sample adequacy measure of 0.912. The scree plot suggested five significant components, which explain up to 61.94% of the total variation in the data (Table 5).

Table 5

Total explained variability of SOC, ENV, and EKN for non-food companies (First 7 Components)

Component	Initial Eigenvalues			The sum of Squared Loadings (Extraction)			The sum of Squared Loadings (Rotation)
	Total	% variance	Cumulative %	Total	% variance	Cumulative %	Total
1	10.979	40.66	40.66	10.979	40.66	40.66	8.219
2	2.093	7.75	48.41	2.093	7.75	48.41	4.656
3	1.357	5.03	53.44	1.357	5.03	53.44	6.206
4	1.220	4.52	57.96	1.220	4.52	57.96	5.623
5	1.076	3.99	61.94	1.076	3.99	61.94	4.433
6	0.950	3.52	65.46	-	-	-	-
7	0.861	3.19	68.65	-	-	-	-
Extraction method: Principal Component Analysis							

Source: own elaboration.

Like the analysis of food industry companies, various thresholds were applied to suppress small coefficients in the factor structure analysis for non-food companies. The traditionally used thresholds of 0.3 and 0.4 also did not give satisfactory results in this case. Therefore, the same compromise threshold of 0.35 was applied, which provided clear assignments of variables to specific components (Table 6).

The results of the factor analysis for variables SOC, ENV, and EKN in non-food Slovak companies identified five main components extracted using PCA and rotated using the Oblimin method with Kaiser normalisation:

Component 1 (40.66% of variability): *"Environmental activities"* encompasses activities aimed at environmental protection, such as certified production (ENV_1), the use of recycled materials and raw inputs (ENV_5), investment in ecological technologies (ENV_2), reducing CO_2 emissions (ENV_6), protecting natural resources (ENV_8), using renewable resources (ENV_9), minimising energy and water consumption (ENV_7), and limiting waste production (ENV_4). These findings suggest that Slovak companies outside the food sector also place significant emphasis on environmental aspects of their operations and implement various initiatives to protect the environment.

Table 6

Factor analysis for the 5 main components (threshold 0.35) for non-food Slovak companies

Variable	Component				
	1	2	3	4	5
ENV_1: Certified production	0.813	-	-	-	-
ENV_5: Use of recycled materials and raw inputs	0.767	-	-	-	-
ENV_2: Investment in ecological technologies	0.765	-	-	-	-
ENV_6: Reducing CO_2 emissions	0.757	-	-	-	-
ENV_8: Protection of natural resources	0.734	-	-	-	-
ENV_9: Use of renewable natural resources	0.711	-	-	-	-
ENV_7: Reducing resource consumption (energy, water, etc.)	0.664	-	-	-	-
ENV_4: Limiting waste production and ecological waste management	0.648	-	-	-	-
SOC_9: Public rejection of child labour	-	0.758	-	-	-
EKN_1: Anti-corruption practices	-	0.685	-	-	-
EKN_2: Intellectual property protection	-	0.623	-	-	-
SOC_1: Ensuring workplace equality	-	0.476	-	-	-
EKN_4: Transparency and disclosure of business results	-	0.446	-	-	-
SOC_6: Advanced employee education	-	0.353	-	-	-
SOC_4: Support for the local community	-	-	0.838	-	-
SOC_3: Philanthropy and sponsorship	-	-	0.688	-	-
SOC_2: Employee volunteerism support	-	-	0.671	-	-
EKN_8: Business ethics principles	-	-	0.613	-	-
SOC_5: Employee care beyond legal requirements	-	-	0.358	-	-
SOC_7: Assistance for laid-off employees	-	-	-	0.818	-
SOC_8: Ensuring work-life balance	-	-	-	0.600	-
EKN_9: Eliminating greenwashing	-	-	-	0.565	-
ENV_3: Environmentally friendly transportation methods	0.397	-	-	0.470	-
EKN_5: Job creation for people with special needs	-	-	-	0.452	-
EKN_7: Ensuring superior quality and safety of goods and services	-	-	-	-	0.786
EKN_6: Maintaining superior loyalty in supplier-customer relationships	-	-	-	-	0.782
EKN_3: Post-sale and warranty service for customers	-	-	-	-	0.351
Extraction method: Main components. Rotation method: Oblimin with Kaiser normalisation. The rotation converged in 9 iterations					

Source: own elaboration.

Component 2 (7.75% of variability): *"Social and ethical activities"* combines social and ethical activities, including public rejection of child labour both within the company and among its suppliers (SOC_9), anti-corruption practices (EKN_1), intellectual property protection (EKN_2), ensuring workplace equality (SOC_1), transparency and disclosure of business results (EKN_4), and advanced employee

education beyond necessary requirements (SOC_6). These findings highlight the commitment of non-food companies to uphold ethical standards and promote social justice in the workplace.

Component 3 (5.03% of variability): *"Community and philanthropic activities"* includes activities focused on supporting the local community, such as collaboration with schools, non-profit organisations, and local governments (SOC_4), philanthropy and sponsorship (SOC_3), support for employee volunteer activities (SOC_2), adherence to business ethics principles (EKN_8), and employee care beyond legal requirements (SOC_5). The presence of this component indicates that the analysed companies actively engage in community and philanthropic initiatives, enhancing their social responsibility.

Component 4 (4.52% of variability): *"Employee and ecological activities"* combines activities aimed at supporting employees and environmental efforts, such as assistance for laid-off employees through retraining or outplacement (SOC_7), ensuring a work-life balance (SOC_8), eliminating greenwashing (EKN_9), utilising more environmentally friendly transportation methods (ENV_3), and creating job opportunities for people with special needs (EKN_5). The existence of this component suggests that Slovak companies outside the food sector also emphasise employee support and environmental activities.

Component 5 (3.99% of variability): *"Quality and Loyalty"* focuses on activities aimed at ensuring quality and loyalty, including providing superior quality and safety of goods and services (EKN_7), maintaining superior loyalty in supplier-customer relationships (EKN_6), and offering post-sale and warranty service for customers (EKN_3). These findings indicate that companies prioritise the quality of their products and services while fostering loyal relationships with customers and suppliers.

The existence of five components in the analysis of Slovak companies outside the food sector suggests that these companies perceive and implement CSR in diverse ways, extending beyond the traditional TBL approach. Environmental activities (Component 1) align with the environmental pillar of TBL but emphasise specific activities such as certified production, the use of recycled materials, and technologies for reducing emissions. Social and ethical activities (Component 2) combine social and ethical aspects, such as the public rejection of child labour, intellectual property protection, and transparency. The inclusion of these aspects into a single component suggests that companies place a strong emphasis on ethics and fairness, thereby strengthening the social dimension of TBL with an added ethical perspective. Community and philanthropic activities (Component 3) encompass support for local communities and philanthropic initiatives, indicating that companies view their role as active members of society, surpassing typical economic and social responsibilities of TBL. This approach is a critical element for building a positive image and strong community relationships. Employee and ecological activities (Component 4) include initiatives supporting employees and environmental efforts, distinguishing internal and external responsibilities in the environmental and social dimensions of TBL. This differentiation reflects companies' recognition of the need to care for their employees,

which is crucial for sustainability and long-term success. Finally, Quality and loyalty (Component 5) focuses on the quality of products and services while fostering loyalty among customers and suppliers. This component bridges the social and economic aspects of TBL, as quality and trust are essential for maintaining competitiveness and establishing long-term positive market relationships. This breakdown demonstrates that Slovak companies outside the food sector implement CSR activities that are more extensive and detailed than the traditional economic, social, and environmental dimensions. Their integrated approach enables them to respond better to specific local needs and challenges.

The number of clusters into which the observed companies can be divided was again determined using Ward's method (Nearest Neighbor: 0.63199; Farthest Neighbor: 0.88777; Average Distance: 0.76462; Ward's Method: 0.95862). Alternative solutions were deemed unsuitable based on the dendrogram analysis. This conclusion was further supported by the hierarchical clustering coefficients shown in Table 7, where Ward's method achieved the highest coefficient. Further steps in the analysis followed the results of Ward's method, which identified three clusters. This was confirmed by the dendrograms DIANA (Divisive Analysis) with a divisional coefficient of 0.8719752 and AGNES (Agglomerative Nesting) as graphical representations of hierarchical clustering. It is worth noting that solutions with 4 and 5 clusters were also tested. However, the 4-cluster solution included one component with only two (outlier) companies, and the 5-cluster solution was rejected after a deeper analysis of frequencies based on various characteristics of the examined companies.

Table 7

Final cluster centres for Slovak non-food industry companies

Component	Cluster 1: "Companies Needing CSR Development"	Cluster 2: "The Paradox of Quality and Loyalty"	Cluster 3: "Comprehensively Sustainable Entities"
Component 1: Environmental activities	-0.23528	-1.39192	0.53474
Component 2: Social and ethical activities	-0.42284	-0.88092	0.51453
Component 3: Community and philanthropic activities	-0.43717	-1.1587	0.60028
Component 4: Employee and ecological activities	-0.30088	-1.04763	0.48206
Component 5: Quality and loyalty	-0.19680	1.45998	-0.27572

Source: own elaboration.

Based on the analysis, Slovak companies not engaged in the food industry can be divided into three groups with distinct approaches to CSR activities:

Cluster 1 (63 Companies): *"Companies Needing CSR Development"* comprises companies with overall negative scores across all components of corporate social responsibility, indicating a comprehensive need for improvement in CSR. Environmental activities (-0.23528) and social and ethical activities (-0.42284) are areas requiring heightened attention. Similarly, community and philanthropic activities

(-0.43717) and employee and ecological activities (-0.30088) are below average, highlighting insufficient engagement in supporting local communities and employees. Quality and loyalty (-0.1968) also present opportunities for improvement. This cluster includes 63 companies, of which 51% are multinational corporations, and 49% are local businesses. The majority, 76%, are limited liability companies, while 14% are joint-stock companies. Companies in this cluster are predominantly "young," with most founded between 2006–2010 (24%). Additionally, 32% are family businesses. Among these companies, 44% operate only in one region, 33% in multiple regions, and 22% nationwide. Manufacturing dominates this cluster (51%), with 68% active in industries such as automotive, chemical, textile, and apparel. CEOs are predominantly local (59%), and leadership is overwhelmingly male (92%). This cluster also shows a surprisingly high level of ethical issues, with 21% having experienced ethical scandals in the past.

Cluster 2 (27 Companies): *"The Paradox of Quality and Loyalty"* demonstrate the lowest scores in environmental activities (-1.39192) and social and ethical activities (-0.88092), indicating minimal engagement in these areas. However, companies here achieve high positive scores in quality and loyalty (1.45998), emphasising a strong focus on maintaining high product quality and fostering loyal relationships with customers and suppliers. This cluster comprises 27 companies, of which 26% are multinational corporations, and 74% are local businesses. The majority, 70%, are limited liability companies, and 15% are joint-stock companies. Most companies in this cluster were founded between 1990–1995 (37%). Family businesses account for 26%, with an additional 11% no longer family owned. Companies predominantly operate in one region (59%), with 41% engaged in services. The automotive and other engineering industries dominate this cluster (63%). Furthermore, 29% are large companies with 250 to 499 employees. CEOs are predominantly local (70%), with leadership strongly male-dominated (89%). Companies in this cluster exhibit minimal ethical problems, with 75% having no history of ethical issues.

Cluster 3 (98 Companies): *"Comprehensively Sustainable Entities"* consists of companies with positive scores across nearly all CSR components, indicating a comprehensive approach to CSR. Environmental activities score 0.53474, social and ethical activities 0.51453, and community and philanthropic activities are even higher at 0.60028. Employee and ecological activities (0.48206) also receive positive evaluations, showing strong support for employees and ecological initiatives. The only exception is a slightly negative score in quality and loyalty (-0.27572), suggesting room for improvement. This cluster includes 98 companies, of which 69% are multinational corporations, and 31% are local businesses. A significant 70% are limited liability companies, with most founded between 2006–2010 (26%) and 1990–1995 (24%). Most are non-family businesses. Among these companies, 41% operate only in one region, 29% in multiple regions, and 29% nationwide. Manufacturing dominates (44 companies), with 78% active in sectors such as automotive, other engineering, and services. A substantial 63% are large or extra-large enterprises with more than 250 employees. Of these, 53% have foreign ownership registered in the commercial

register. CEOs are predominantly local (48%), and leadership is overwhelmingly male (96%). This cluster is characterised by high levels of social responsibility, although 11 companies have experienced ethical scandals in the past.

4.3. Comparative analysis of CSR approaches: food sector vs. other industries in Slovakia. A comparison of the results of the factor analysis of CSR activities between Slovak companies in the food sector and those outside the sector revealed significant differences in approaches and emphasis on various CSR aspects (Table 8). Food sector companies place a higher emphasis on environmental activities (49.00% variability), likely due to stricter regulations in this sector. In contrast, non-food companies show slightly lower scores in this area (40.66% variability) but focus more strongly on social and ethical activities (7.75% variability), emphasising transparency and fairness in management. In the area of economic ethics, food sector companies are more focused on intellectual property protection and anti-corruption practices (7.47% variability). However, non-food companies exhibit a more varied approach, with some placing greater emphasis on quality and loyalty (3.99% variability), which is crucial for customer retention and trust-building.

Table 8

Comparison of factor analysis results for Slovak companies in the food sector and other industries

Component	Food sector companies	Other companies
1. Environ-mental activities	49.00% variability	40.66% variability
	Focus on reducing emissions, recycling, and protecting resources	Focus on certified production, resource protection, and consumption reduction
	Balanced approach to environmental sustainability	Significant component even outside the food sector
2. Economic ethics / Social and ethical activities	7.47% variability	7.75% variability
	Emphasis on intellectual property protection, anti-corruption	Emphasis on ethical business practices, transparency, and equality
	Combination of economic and ethical actions	Strong focus on ethics and fairness
3. Employee support / Community and philanthropic activities	5.84% variability	5.03% variability
	Initiatives to support employees	Support for local communities, philanthropy
	Focus on creating favourable working conditions	Active engagement in community initiatives
4. Social responsibility / Employee and ecological activities	5.22% variability	4.52% variability
	Focus on inclusive business practices	Support for employees and ecological activities
	Combination of social and environmental initiatives	Similar scope to the food sector
5. Quality and transparency / Quality and loyalty	4.34% variability	3.99% variability
	Focus on product quality and transparency	Focus on product quality and customer loyalty
	Emphasis on consumer trust	Important area for competitiveness

Source: own elaboration.

Community and philanthropic activities form a significant part of CSR in non-food

companies (5.03% variability), possibly reflecting a response to local community needs and expectations. Employee support and ecological activities are also important, with food sector companies (5.84% variability) placing greater emphasis on these aspects.

The results demonstrate that CSR implementation in Slovak companies varies significantly, influenced by industry and local context. The CSR activities do not strictly follow the traditional TBL division. Food sector companies adopt slightly more integrated CSR approach, while other companies exhibit diverse approaches, primarily targeting environmental activities, quality, ethics, and community engagement. This distinction between food and non-food industries is probably due to different market conditions and regulatory requirements. Food sector companies are generally under stricter public and regulatory scrutiny due to their direct impact on consumer health, explaining their stronger focus on environmental and ethical practices. In contrast, other companies may prioritise efficiency and product quality, reflected in their CSR activities. These findings highlight the need to tailor CSR strategies to specific industry conditions and expectations to enhance effectiveness and relevance.

Companies connected to the food sector can be divided into four clusters, while other companies are grouped into three. Among food sector companies, "Comprehensively engaged companies" exhibit a balanced approach to CSR, which is comparable to the "Comprehensively sustainable entities" cluster in other industries. These entities display positive scores across all components, except for the economic dimension represented by quality and loyalty. The "Companies needing CSR development" cluster, present in both groups, highlights significant room for improvement in CSR implementation. Meanwhile, the "Paradox of quality and loyalty" cluster in non-food companies indicates a mismatch between high quality and low engagement in other CSR components. This is somewhat similar to the cluster "Economically focused entities" among food sector companies, which shows weak engagement across all components except economic ethics. An additional cluster in the food sector group, "Socially and environmentally focused companies," has no equivalent in the non-food group (Table 9). These differences may stem from varying industrial needs, company sizes, and market orientations, which underscores the need for enhancing CSR strategies, particularly in transparency and environmental activities, which can boost the competitiveness and positive impact of Slovak companies on their communities.

It should be noted here that food sector companies are generally subject to greater public and regulatory scrutiny due to their direct impact on consumer health, which may explain their stronger focus on environmental and ethical practices. In contrast, other companies may prioritise efficiency and product quality, which is reflected in their CSR activities. The identified differences highlight the necessity of tailoring CSR strategies to specific sectoral conditions and expectations. Companies must identify areas with the greatest impact and focus on improvement, such as transparency, social responsibility, or environmental activities. At the same time, the results can serve as a benchmark for evaluating and enhancing CSR performance, which is crucial for building trust, increasing competitiveness, and achieving sustainable development.

Table 9

Summary of cluster analysis results for Slovak companies

Cluster	Food sector companies	Other companies
Cluster 1	Comprehensively engaged companies	Companies needing CSR development
Number of companies	23	63
Key characteristics	Balanced approach to CSR, focus on environmental activities	Negative scores in all components
Cluster 2	Economically focused companies	The paradox of quality and loyalty
Number of companies	24	27
Key characteristics	Focus on economic ethics, with less emphasis on environmental activities	High scores in quality and loyalty, negative in all other components
Cluster 3	Companies needing CSR development	Comprehensively sustainable entities
Number of companies	39	98
Key characteristics	Negative scores in all components	Balanced and positive scores in all components except quality and loyalty
Cluster 4	Socially and environmentally focused companies	-
Number of companies	10	-
Key characteristics	Strong engagement in social and environmental activities	-

Source: own elaboration.

5. DISCUSSION

The study examined CSR practices among Slovak companies within and outside the food sector, highlighting how the identified components and clusters reveal industry-specific CSR priorities, challenges, and approaches (Radu & Smaili, 2021; Mashayekhi et al., 2024) that can be analysed in the context of existing literature on CSR implementation in different industries and regions. For example, the emphasis on environmental and ethical practices in the food sector is consistent with the literature, which suggests that companies in industries with higher public scrutiny and regulatory pressures tend to focus more on environmental and social responsibility. But there are also studies indicating that there is no difference (Matakanye et al., 2021). In contrast, non-food sector companies may prioritise quality, community engagement, and customer loyalty, as observed in this study. Moreover, the studies of Jansen & Vellema (2004) or Kotsanopoulos & Arvanitoyannis (2017) suggest that food sector companies, which often face heightened public scrutiny and regulatory oversight, tend to prioritise environmental and ethical practices to maintain their social license to operate and address stakeholder concerns. In contrast, non-food sector companies may have more

flexibility to focus on other aspects of CSR, such as quality and community engagement, depending on their specific market conditions and stakeholder expectations (Muslim & AR Pelu, 2023). Nuanced CSR frameworks were also confirmed by Jamali & Karam (2018), who argue that CSR strategies often reflect hybrid models shaped by local institutional and cultural dynamics, rather than following universal templates. The identification of distinct clusters in the study is supported by Lund-Thomsen et al. (2016) and Dawar et al. (2023), who highlighted that distinct clusters could inform targeted interventions, capacity-building initiatives, and collaborative efforts to address industry-specific CSR challenges and opportunities. Our outcomes also identify several challenges faced by companies in implementing CSR, particularly regarding transparency, employee support, and quality management. Addressing these issues is of great importance, according to and Barnett (2020), who add that this requires a multifaceted approach that includes industry recommendations and broader initiatives such as education and capacity-building programmes to improve CSR effectiveness.

From a theoretical perspective, this study extends the Triple Bottom Line framework. It demonstrates that CSR practices in transitioning economies like Slovakia do not always clearly correspond to traditional economic, social and environmental categories. Instead, additional dimensions (such as economic ethics, community engagement, or transparency) become critically important in these specific environments. The differentiation of internal (employee-focused) and external (community or customer-focused) CSR components adds granularity to stakeholder theory, suggesting that stakeholder expectations in post-communist economies may require more localised interpretation than previously assumed. Practically, our findings offer recommendations for both sectors. Food companies should continue leveraging their regulatory awareness and public accountability to further institutionalise environmental and ethical CSR practices. Non-food companies, on the other hand, may benefit from expanding their focus beyond customer loyalty and product quality by investing in internal CSR, such as employee development and ecological responsibility. Policymakers in Slovakia can use the identified CSR clusters to create differentiated support programs (e.g., targeted tax incentives, awareness campaigns, or benchmarking schemes) tailored to the maturity levels of CSR adoption in the country. Business associations may also use the described clustering model as a diagnostic tool for members to assess their CSR positioning and development needs.

These findings contribute to the understanding of CSR in transitional economies like Slovakia, where the implementation of CSR practices may face unique challenges and opportunities. Here, we can agree with the approach of Choongo et al. (2017) and Almashayekhi (2024) that future research could explore longitudinal studies to track CSR progress or comparative analyses across other countries and regions to further enhance the generalisability of the results. Moreover, future research could explore alternative methodological approaches, such as in-depth case studies or mixed-method designs, to enhance the robustness and generalisability of the results.

6. CONCLUSIONS

This study examined CSR practices in Slovak companies, comparing food and non-food industries, and provided critical insights into their implementation and focus. Food sector companies demonstrated a stronger emphasis on environmental activities, driven by stricter regulations and public health considerations, while non-food companies demonstrated a variety of CSR approaches with a focus on quality and community engagement. Five main CSR components were identified in both sectors. For food companies, "Environmental activities" accounted for the largest variability (49.00%), reflecting a systematic and balanced CSR integration. Non-food companies, while emphasising environmental activities (40.66% variability), highlighted "Environmental activities" as common priorities. Ongoing cluster analyses revealed key patterns. Food companies formed four clusters, including "Comprehensively engaged companies," which exhibited balanced CSR practices, and "Socially and environmentally focused companies," which had no equivalent in non-food companies. Non-food companies formed three clusters, including "The paradox of quality and loyalty," indicating a focus on quality while neglecting other CSR dimensions. Both sectors shared a cluster of "Companies needing CSR development," highlighting significant room for improvement, particularly in transparency, environmental activities, and employee engagement. Ethical concerns were prevalent in these clusters, signalling the need for better governance and accountability.

The study confirmed that CSR in Slovak companies aligns with the TBL framework, but extends it with sector-specific nuances. Food companies adopt a more systematic CSR approach, while non-food companies focus on dimensions such as community and quality. These findings emphasise the need for tailored CSR strategies, reflecting industry demands and local contexts. Food companies should sustain their environmental and ethical focus, while non-food companies should expand their engagement in environmental and social areas. Based on our outcomes, we recommend that policymakers and leaders develop interventions, such as incentives for sustainable practices, educational programs, and CSR benchmarks to improve and stabilise the situation in the region. Therefore, companies can enhance their CSR performance by addressing gaps in employee support, transparency, and sustainability, fostering stakeholder trust, and aligning with broader sustainability goals.

7. LIMITATIONS AND FUTURE RESEARCH

This study has several limitations, including potential response bias due to self-reported data and the exclusion of less CSR-active companies, which may affect representativeness. The findings are specific to Slovakia and may not be generalisable to other contexts without further comparative research. Methodologically, the study relied on quantitative tools, suggesting that future research could benefit from mixed-methods or longitudinal designs. Exploring additional theoretical frameworks and broader regional analyses could offer deeper insights into CSR practices across sectors. The inability to calculate a response rate due to the open-access online distribution of the survey also limits the assessment of response validity. Furthermore, some CSR

activities may be subject to social desirability bias, particularly in the context of ethical or legal compliance, potentially skewing self-reported responses. Therefore, future research could explore sector-specific CSR drivers in greater depth or investigate causal links between CSR cluster profiles and business performance outcomes. Studies could also examine the role of institutional and cultural factors in shaping CSR adoption in other post-communist or emerging-market economies. In addition, applying advanced statistical techniques such as structural equation modelling (SEM) or integrating qualitative case studies could enrich the theoretical and empirical understanding of CSR behaviour as described in this study.

In general, this research provides a robust framework for understanding CSR in Slovak companies, offering insights for improvement. By addressing unveiled challenges and leveraging strengths, Slovak companies can enhance competitiveness, support societal goals, and achieve sustainable development.

Funding: this study was funded by the EU NextGenerationEU through the Recovery and Resilience Plan for Slovakia under the project No. 09I04-03-V02-00054 – Decarbonized Future: Tracking Carbon Footprint in Agri-Food Enterprises to Support Local Producers.

Conflicts of interest: the author declares no conflict of interest.

Use of artificial intelligence: artificial intelligence (AI) tools were not used in the generation of the scientific content of this article. AI-based tools were applied solely for language editing and grammar correction purposes.

REFERENCES

1. Adams, D., Donovan, J., & Topple, C. (2021). Achieving sustainability in food manufacturing operations and their supply chains: key insights from a systematic literature review. *Sustainable Production and Consumption*, 28, 1491–1499. https://doi.org/10.1016/j.spc.2021.08.019.

2. Alaimo, K. (2013). Community responses to food insecurity and hunger. In *Research Opportunities Concerning the Causes and Consequences of Child Food Insecurity and Hunger: A Workshop Summary*. National Academies Press (US), Washington (DC). Available at: https://www.ncbi.nlm.nih.gov/books/NBK201387.

3. Almashayekhi, A. (2024). A cross-cultural longitudinal analysis of the effect of corporate social performance on corporate financial performance: an Asian perspective. *Journal of Asia Business Studies*. https://doi.org/10.1108/JABS-03-2024-0143.

4. Arabie, P., Hubert, L., & De Soete, G. (Eds.) (1996). *Clustering and classification*. Singapore; River Edge, NJ, World Scientific.

5. Auerbach, R. (Ed.) (2020). *Organic food systems: meeting the needs of Southern Africa*. https://doi.org/10.1079/9781786399601.0000.

6. Aydin, B., Yilmaz, Y. S., Li, Y., Li, Q., Gao, J., & Demirbas, M. (2014). Crowdsourcing for multiple-choice question answering. *Proceedings of the AAAI Conference on Artificial Intelligence*, 28(2), 2946–2953. https://doi.org/10.1609/aaai.v28i2.19016.

7. Ball, H. L. (2019). Conducting online surveys. *Journal of Human Lactation*, 35(3), 413–417. https://doi.org/10.1177/0890334419848734.

8. Barnett, M. L., Henriques, I., & Husted, B. W. (2020). Beyond good intentions: designing CSR initiatives for greater social impact. *Journal of Management*, 46(6), 937–964. https://doi.org/10.1177/0149206319900539.

9. Baumann-Pauly, D., & Nolan, J. (2016). *Business and human rights: from principles to practice*. London, Routledge. https://doi.org/10.4324/9781315735429.

10. Beavers, A. S., Lounsbury, J. W., Richards, J. K., Huck, S. W., Skolits, G. J., & Esquivel, S. L. (2019). Practical considerations for using exploratory factor analysis in educational research. *Practical Assessment, Research, and Evaluation*, 18(1), 6. https://doi.org/10.7275/qv2q-rk76.

11. Bendeković, J., Naletina, D., & Nola, I. (2015). Food safety and food quality in the supply chain. In N. Knego, S. Renko, B. Knežević (Eds.), *Trade Perspectives 2015: Innovations in Food Retailing* (pp. 151–163). Zagreb. Available at: https://www.researchgate.net/publication/284698828.

12. Berger, V. W., & Zhou, Y. (2014). Kolmogorov–Smirnov test: overview. *Wiley StatsRef: Statistics Reference Online*. https://doi.org/10.1002/9781118445112.stat06558.

13. Bivand, R. S., Pebesma, E., & Gómez-Rubio, V. (2021). *Applied spatial data analysis with R*, 3rd ed. New York, Springer. https://doi.org/10.1007/978-1-4614-7618-4.

14. Boachie, C., & Amoako, G. K. (2017). The application of statistical methods in CSR research. In D. Crowther, L. Lauesen (Eds.), *Handbook of Research Methods in Corporate Social Responsibility* (pp. 177–204). Edward Elgar Publishing Limited. https://doi.org/10.4337/9781784710927.00018.

15. Bujang, M. A., Omar, E. D., & Baharum, N. A. (2018). A review on sample size determination for Cronbach's alpha test: a simple guide for researchers. *The Malaysian Journal of Medical Sciences*, 25(6), 85. https://doi.org/10.21315/mjms2018.25.6.9.

16. Choongo, P. (2017). A longitudinal study of the impact of corporate social responsibility on firm performance in SMEs in Zambia. *Sustainability*, 9(8), 1300. https://doi.org/10.3390/su9081300.

17. Clapp, J. (2021). The problem with growing corporate concentration and power in the global food system. *Nature Food*, 2(6), 404–408. https://doi.org/10.1038/s43016-021-00297-7.

18. Crippa, M., Solazzo, E., Guizzardi, D., Monforti-Ferrario, F., Tubiello, F. N., & Leip, A. (2021). Food systems are responsible for a third of global anthropogenic GHG emissions. *Nature Food*, 2(3), 198–209. https://doi.org/10.1038/s43016-021-00225-9.

19. Dawar, G., Polonsky, M. J., & Bhatia, S. (2023). Corporate social responsibility: a cluster analysis of manufacturing firms in India. *Social Responsibility Journal*, 19(9), 1707–1727. https://doi.org/10.1108/SRJ-09-2022-0370.

20. Farooq, Q., Fu, P., Liu, X., & Hao, Y. (2021). Basics of macro to microlevel

corporate social responsibility and advancement in triple bottom line theory. *Corporate Social Responsibility and Environmental Management*, 28(3), 969–979. https://doi.org/10.1002/csr.2069.

21. Feng, F., Duan, Q., Jiang, X., Kao, X., & Zhang, D. (2024). DendroX: multi-level multi-cluster selection in dendrograms. *BMC Genomics*, 25(1), 134. https://doi.org/10.1186/s12864-024-10048-0.

22. Fisher, A. (2017). *Big hunger: the unholy alliance between corporate America and anti-hunger groups*. MIT Press. https://doi.org/10.7551/mitpress/10987.001.0001.

23. Forsman-Hugg, S., Katajajuuri, J. M., Riipi, I., Mäkelä, J., Järvelä, K., & Timonen, P. (2013). Key CSR dimensions for the food chain. *British Food Journal*, 115(1), 30–47. https://doi.org/10.1108/00070701311289867.

24. Freeman, A. (2015). Transparency for food consumers: Nutrition labeling and food oppression. *American Journal of Law & Medicine*, 41(2–3), 315–330. https://doi.org/10.1177/0098858815591520.

25. George, D., & Mallery, P. (2019). *IBM SPSS Statistics 26 step by step: a simple guide and reference*, 16th ed. New York, Routledge. https://doi.org/10.4324/9780429056765.

26. Giordani, P., Ferraro, M. B., & Martella, F. (2020). Hierarchical clustering. In *An Introduction to Clustering with R. Behaviormetrics: Quantitative Approaches to Human Behavior* (pp. 9–73), vol. 1. Singapore, Springer. https://doi.org/10.1007/978-981-13-0553-5_2.

27. Ghadge, A., Er Kara, M., Mogale, D. G., Choudhary, S., & Dani, S. (2020). Sustainability implementation challenges in food supply chains: a case of UK artisan cheese producers. *Production Planning & Control*, 32(14), 1191–1206. https://doi.org/10.1080/09537287.2020.1796140.

28. Cheung, G. W., Cooper-Thomas, H. D., Lau, R. S., & Wang, L. C. (2021). Testing moderation in business and psychological studies with latent moderated structural equations. *Journal of Business and Psychology*, 36, 1009–1033. https://doi.org/10.1007/s10869-020-09717-0.

29. Griffin, A. (2008). *New strategies for reputation management: gaining control of issues, crises & corporate social responsibility*. London, Philadelphia, Kogan Page Limited. Available at: http://ndl.ethernet.edu.et/handle/123456789/32047.

30. Hadi, N. U., Abdullah, N., & Sentosa, I. (2016). An easy approach to exploratory factor analysis: marketing perspective. *Journal of Educational and Social Research*, 6(1), 215–223. https://doi.org/10.5901/jesr.2016.v6n1p215.

31. Haigh, M. M., & Brubaker, P. (2010). Examining how image restoration strategy impacts perceptions of corporate social responsibility, organization-public relationships, and source credibility. *Corporate Communications: An International Journal*, 15(4), 453–468. https://doi.org/10.1108/13563281011085538.

32. Hengboriboon, L., Naruetharadol, P., Ketkeaw, C., & Gebsombut, N. (2022). The impact of product image, CSR and green marketing in organic food

purchase intention: mediation roles of corporate reputation. *Cogent Business & Management*, 9(1), 2140744. https://doi.org/10.1080/23311975.2022.2140744.

33. Hornungová, J. (2014). Factor analysis: an instrument for selection of social performance factors. *Journal of Quantitative Methods for Economics and Business Administration*, 17, 121–136. https://doi.org/10.46661/revmetodoscuanteconempresa.2197.

34. Hung Chen, C. (2011). The major components of corporate social responsibility. *Journal of Global Responsibility*, 2(1), 85–99. https://doi.org/10.1108/20412561111128546.

35. Jamali, D. (2008). A stakeholder approach to corporate social responsibility: a fresh perspective into theory and practice. *Journal of Business Ethics*, 82, 213–231. https://doi.org/10.1007/s10551-007-9572-4.

36. Jamali, D., & Karam, C. (2018). Corporate social responsibility in developing countries as an emerging field of study. *International Journal of Management Reviews*, 20(1), 32–61. https://doi.org/10.1111/ijmr.12112.

37. Jansen, K., & Vellema, S. (Eds.) (2004). *Agribusiness and society: corporate responses to environmentalism, market opportunities and public regulation*. London–New York, Zed Books. Available at: https://www.keesjansen.eu/wp-content/uploads/2022/01/Agribusiness-and-Society-Jansen-Vellema.pdf.

38. Kádeková, Z., Savov, R., Košičiarová, I., & Valášková, K. (2020). CSR activities and their impact on brand value in food enterprises in Slovakia based on foreign participation. *Sustainability*, 12(12), 4856. https://doi.org/10.3390/su12124856.

39. Kim, Y., & Bhalla, N. (2022). Can SMEs in the food industry expect competitive advantages from proactive CSR when CSR trade-offs exist? *Corporate Communications: An International Journal*, 27(2), 304–328. https://doi.org/10.1108/CCIJ-02-2021-0019.

40. Kotsanopoulos, K. V., & Arvanitoyannis, I. S. (2017). The role of auditing, food safety, and food quality standards in the food industry: a review. *Comprehensive Reviews in Food Science and Food Safety*, 16(5), 760–775. https://doi.org/10.1111/1541-4337.12293.

41. Kozáková, J. (2021). *Spoločenská zodpovednosť v podnikaní nadnárodných spoločností na Slovensku*, 1st ed. Nitra, Slovenská Poľnohospodárska Univerzita.

42. Kozáková, J., Skýpalová, R., Nowotarska, A., Bauma, R., Urbánová, M., Janšto, E., & Pieńkowski, D. (2023). *Corporate social responsibility in business practice of the Visegrad region (Czechia, Poland, Slovakia)*. Pilsen, University of West Bohemia in Pilsen. Available at: https://naos-be.zcu.cz/server/api/core/bitstreams/b6595e46-2c94-4155-8f33-36d4415688e5/content.

43. Kozáková, J., Urbánová, M., & Skýpalová, R. (2024). Differences in corporate social responsibility implementation between Slovak and Czech companies. *Problems and Perspectives in Management*, 22(1), 353–365.

https://doi.org/10.21511/ppm.22(1).2024.29.

44. Księżak, P., & Fischbach, B. (2017). Triple bottom line: the pillars of CSR. *Business Horizons*, 4(3), 96–110. https://doi.org/10.12775/JCRL.2017.018.

45. Laosirihongthong, T., Adebanjo, D., & Choon Tan, K. (2020). Green supply chain management practices and performance. *Industrial Management & Data Systems*, 120(1), 166–182. https://doi.org/10.1108/IMDS-04-2013-0164.

46. Landau, S., & Ster, I. C. (2010). Cluster analysis: overview. In P. Peterson, E. Baker, B. McGaw (Eds.), *International Encyclopedia of Education*, 3rd ed. (pp. 72–83). Elsevier. https://doi.org/10.1016/B978-0-08-044894-7.01315-4.

47. Li, T., Zhang, H., Yuan, C., Liu, Z., & Fan, C. (2012). A PCA-based method for construction of composite sustainability indicators. *The International Journal of Life Cycle Assessment*, 17, 593–603. https://doi.org/10.1007/s11367-012-0394-y.

48. Lim, M., Kang, Y., & Kim, Y. (2017). Effects of corporate social responsibility actions on South Korean adolescents' perceptions in the food industry. *Sustainability*, 9(2), 176. https://doi.org/10.3390/su9020176.

49. Liu, C. Y., Lee, C. Y., & Tsai, H. J. S. (2018). Corporate governance and food firms' unethical production practices? *British Food Journal*, 120(10), 2222–2235. https://doi.org/10.1108/BFJ-03-2018-0133.

50. Loewen, S., & Gonulal, T. (2015). Exploratory factor analysis and principal components analysis. In L. Plonsky (Ed.), *Advancing Quantitative Methods in Second Language Research* (pp. 182–212). New York, Routledge. https://doi.org/10.4324/9781315870908-9.

51. Lund-Thomsen, P., Lindgreen, A., & Vanhamme, J. (2016). Industrial clusters and corporate social responsibility in developing countries: what we know, what we do not know, and what we need to know. *Journal of Business Ethics*, 133, 9–24. https://doi.org/10.1007/s10551-014-2372-8.

52. Maloni, M. J., & Brown, M. E. (2006). Corporate social responsibility in the supply chain: an application in the food industry. *Journal of Business Ethics*, 68(1), 35–52. https://doi.org/10.1007/s10551-006-9038-0.

53. Marakova, V., Wolak-Tuzimek, A., & Tuckova, Z. (2021). Corporate social responsibility as a source of competitive advantage in large enterprises. *Journal of Competitiveness*, 13(1), 113–128. https://doi.org/10.7441/joc.2021.01.07.

54. Mashayekhi, B., Asiaei, K., Rezaee, Z., Jahangard, A., Samavat, M., & Homayoun, S. (2024). The relative importance of ESG pillars: a two-step machine learning and analytical framework. *Sustainable Development*, 32(5), 5404–5420. https://doi.org/10.1002/sd.2979.

55. Mastos, T., & Gotzamani, K. (2022). Sustainable supply chain management in the food industry: a conceptual model from a literature review and a case study. *Foods*, 11(15), 2295. https://doi.org/10.3390/foods11152295.

56. Matakanye, R. M., van der Poll, H. M., & Muchara, B. (2021). Do companies in different industries respond differently to stakeholders' pressures when prioritising environmental, social and governance sustainability performance? *Sustainability*, 13(21), 12022. https://doi.org/10.3390/su132112022.

57. Mohsin, K. (2021). Ethical issues in food and beverage management: corporate social responsibility and stakeholder engagement. In *Handbook of Food and Beverage Management* (pp. 71–78). New Delhi, Wisdom Press. Available at: https://wisdompress.co.in/wp-content/uploads/2023/10/Handbook-of-Food-Beverage-Management.pdf#page=77.

58. Muslim, M., & AR Pelu, M. F. (2023). Corporate social responsibility: best practices and industry comparisons. *The Journal of Business and Management Research*, 6(1), 27–42. Available at: https://www.researchgate.net/publication/383517045.

59. Nayak, M. S. D. P., & Narayan, K. A. (2019). Strengths and weaknesses of online surveys. *IOSR Journal of Humanities and Social Sciences*, 24(5), 31–38. Available at: https://www.researchgate.net/publication/333207786.

60. Neff, R. A., Palmer, A. M., McKenzie, S. E., & Lawrence, R. S. (2009). Food systems and public health disparities. *Journal of Hunger & Environmental Nutrition*, 4(3–4), 282–314. https://doi.org/10.1080/19320240903337041.

61. Norman, W., & MacDonald, C. (2004). Getting to the bottom of the "Triple Bottom Line". *Business Ethics Quarterly*, 14(2), 243–262. https://doi.org/10.5840/beq200414211.

62. Okpala, C. O. R., & Korzeniowska, M. (2023). Understanding the relevance of quality management in the agro-food product industry: from ethical considerations to assuring food hygiene quality safety standards and its associated processes. *Food Reviews International*, 39(4), 1879–1952. https://doi.org/10.1080/87559129.2021.1938600.

63. Olken, F. (1993). Random sampling from databases *(PhD Thesis)*. University of California, Berkeley. Available at: https://dsf.berkeley.edu/papers/UCB-PhD-olken.pdf.

64. Petroni, R., Sigman, R., Willimack, D., Cohen, S., & Tucker, C. (2004). Response rates and nonresponse in establishment surveys: BLS and census bureau. Federal Economic Statistics Advisory Committee. Available at: http://www.asasrms.org/Proceedings/y2004/files/Jsm2004-000405.pdf.

65. Radu, C., & Smaili, N. (2021). Corporate performance patterns of Canadian listed firms: balancing financial and corporate social responsibility outcomes. *Business Strategy and the Environment*, 30(7), 3344–3359. https://doi.org/10.1002/bse.2806.

66. Rodriguez Guevara, E. G. (2018). Sustainable supply chain management in the food industry. *AD-minister*, 33, 113–134. https://doi.org/10.17230/ad-minister.33.6.

67. Saridakis, C., Angelidou, S., & Woodside, A. G. (2020). What type of CSR engagement suits my firm best? Evidence from an abductively-derived typology. *Journal of Business Research*, 108, 174–187. https://doi.org/10.1016/j.jbusres.2019.11.032.

68. Sgroi, F., Donia, E., Franco, M., & Mineo, A. M. (2020). Marketing strategy, social responsibility, and value chain in the agri-food system. *HortScience*,

55(2), 208–215. https://doi.org/10.21273/HORTSCI14692-19.

69. Scuotto, V., Chin, T., Pezzi, A., & Pironti, M. (2022). CSR best practices for global multi-tier sustainable supply chain integration of Chinese MNEs. *Corporate Social Responsibility and Environmental Management*, 29(6), 2038–2052. https://doi.org/10.1002/csr.2300.

70. Siegel, S. (1957). Nonparametric statistics. *The American Statistician*, 11(3), 13–19. https://doi.org/10.1080/00031305.1957.10501091.

71. Silva, D. L., Sabino, L. D., Lanuza, D. M., Adina, E. M., Villaverde, B. S., & Pena, E. G. (2014). Silva's management competency theory: a factor-item analytic approach utilizing oblique rotation direct oblimin method under Kaiser-Bartlett's test of sphericity. *Proceedings of the World Congress on Engineering and Computer Science* (pp. 303–305), vol. 1. 22–24 October, 2014, San Francisco. Available at: https://www.iaeng.org/publication/WCECS2014/WCECS2014_pp300-305.pdf.

72. Shaqiri, M., Iljazi, T., Kamberi, L., & Ramani-Halili, R. (2023). Differences between the correlation coefficients Pearson, Kendall, and Spearman. *Journal of Natural Sciences and Mathematics of UT*, 8(15–16), 392–397. Available at: https://eprints.unite.edu.mk/1557/1/JNSM%202023-392-397.pdf.

73. Skýpalová, R., Kozáková, J., Urbánová, M., & Di Sabato, V. (2023). Corporate social responsibility in business practices of multinational companies: a study of differences between Czech and Slovak companies. *Business, Management and Economics Engineering*, 21(1), 106–123. https://doi.org/10.3846/bmee.2023.18942.

74. Snijkers, G., Haraldsen, G., Jones, J., & Willimack, D. (2013). *Designing and conducting business surveys*. John Wiley & Sons. Available at: https://www.wiley.com/en-ie/Designing+and+Conducting+Business+Surveys-p-9780470903049.

75. Sözeyatarlar, M., Şahin, M., & Yavuz, E. (2021). Statistical relations measures. *Journal of Universal Mathematics*, 4(2), 283–295. https://doi.org/10.33773/jum.970331.

76. Suhayda, R., & Dave, U. A. (2017). Designing questionnaires and data collection forms. In *Research for Advanced Practice Nurses*, 3rd ed. https://doi.org/10.1891/9780826118394.0011.

77. Taherdoost, H. (2019). What is the best response scale for survey and questionnaire design; Review of different lengths of rating scale / Attitude scale / Likert scale. *International Journal of Academic Research in Management*, 8(1), 1–10. Available at: https://elvedit.com/journals/IJARM/wp-content/uploads/What-is-the-Best-Response-Scale-for-Survey-and-Questionnaire-Design_-Review-of-Different-Lengths-of-Rating-Scale-Attitude-Scale-Likert-Scale-1.pdf.

78. Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education*, 2, 53–55. https://doi.org10.5116/ijme.4dfb.8dfd.

79. Teh, L. C. L., Caddell, R., Allison, E. H., Finkbeiner, E. M., Kittinger, J. N., Nakamura, K., Ota, Y. (2019). The role of human rights in implementing socially

responsible seafood. *PLoS ONE*, 14(1), e0210241. https://doi.org/10.1371/journal.pone.0210241.

80. Thatkar, P. V., & Desale, A. V. (2019). Simplifying statistics and data analysis in social science research using Jamovi: a free and open-source software. In M. A. Raffey (Ed.), *Digital Transformations: Integrating Technology in Multidisciplinary Research* (pp. 5–12), vol. 1. London, Infinity Publications LLC. Available at: https://www.researchgate.net/publication/391217271.

81. Topić, M., Bridge, G., & Tench, R. (2020). Mirroring the zeitgeist: an analysis of CSR policies in the UK's food, soft drink and packaging industries. *Journal of Global Responsibility*, 12(1), 62–75. https://doi.org/10.1108/JGR-04-2020-0047.

82. Toussaint, M., Cabanelas, P., & Blanco-González, A. (2021). Social sustainability in the food value chain: an integrative approach beyond corporate social responsibility. *Corporate Social Responsibility and Environmental Management*, 28(1), 103–115. https://doi.org/10.1002/csr.2035.

83. Usmani, M. S., Wang, J., Ahmad, N., Ullah, Z., Iqbal, M., & Ismail, M. (2022). Establishing a corporate social responsibility implementation model for promoting sustainability in the food sector: a hybrid approach of expert mining and ISM–MICMAC. *Environmental Science and Pollution Research*, 29, 8851–8872. https://doi.org/10.1007/s11356-021-16111-7.

84. Van Teijlingen, E., & Hundley, V. (2002). The importance of pilot studies. *Nursing Standard*, 16(40), 33–36. https://doi.org/10.7748/ns2002.06.16.40.33.c3214.

85. Vasantha Raju, N., & Harinarayana, N. S. (2016). Online survey tools: a case study of Google Forms. *Paper presented at the National Conference on Scientific, Computational & Information Research Trends in Engineering*, *GSSS-IETW*, Mysore. https://www.researchgate.net/publication/326831738.

86. Vitak, J., Shilton, K., & Ashktorab, Z. (2016). Beyond the Belmont principles: ethical challenges, practices, and beliefs in the online data research community. In *Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing* (pp. 941–953). https://doi.org/10.1145/2818048.2820078.

87. Wagner, W. E. (2019). *Using IBM SPSS statistics for research methods and social science statistics*, 7th ed. SAGE Publications.

88. Waltner-Toews, D., Lang, T. (2000). A new conceptual base for food and agricultural policy: the emerging model of links between agriculture, food, health, environment and society. *Global Change & Human Health*, 1, 116–130. https://doi.org/10.1023/A:1010025021186.

89. Watkins, M. W. (2018). Exploratory factor analysis: a guide to best practice. *Journal of Black Psychology*, 44(3), 219–246. https://doi.org/10.1177/0095798418771807.

90. Woods, M., Christodoulidou, N., Yavas, B., & Vardiabasis, D. (2013). Unethical business practices in the foodservice industry. *Journal of Foodservice Business Research*, 16(4), 407–419. https://doi.org/10.1080/15378020.2013.824284.

91. Żak, A. (2015). Triple bottom line concept in theory and practice. *Research papers of Wrocław University of Economics*, 387, 251–264. Available at: https://www.dbc.wroc.pl/dlibra/publication/32171/edition/28934/content.

92. Zuo, W., Schwartz, M., & Wu, Y. (2015). Institutional forces affecting corporate social responsibility behavior of the Chinese food industry. *Business & Society*, 56(5), 705–737. https://doi.org/10.1177/0007650315615855.

Citation:

Стиль – ДСТУ:

Kozáková J. Sectoral differences in CSR practices: insights from Slovak food and non-food industries. *Agricultural and Resource Economics*. 2025. Vol. 11. No. 2. Pp. 218–251. https://doi.org/10.51599/are.2025.11.02.08.

Style – APA:

Kozáková, J. (2025). Sectoral differences in CSR practices: insights from Slovak food and non-food industries. *Agricultural and Resource Economics*, 11(2), 218–251. https://doi.org/10.51599/are.2025.11.02.08.