

Stakeholder Focus in Sustainability Management – Statistical Analysis of the Hungarian Micro-Enterprises

Vivien Surman¹ | *Budapest University of Technology and Economics, Budapest, Hungary*
Elvira Böcskei² | *Budapest University of Technology and Economics, Budapest, Hungary*
Imre Dobos³ | *Budapest University of Technology and Economics, Budapest, Hungary*

Received 12.10.2024 (revision received 3.12.2025), Accepted (reviewed) 28.12.2024, Published 12.12.2025

Abstract

The pursuit of sustainable development has emerged as a pivotal concern in contemporary business discourse. Sustainable development is increasingly important for businesses, including micro-enterprises, which must address sustainability challenges to stay competitive and viable. A key aspect of corporate sustainability is understanding stakeholder dynamics and translating their needs into business practices. Our research, using a questionnaire, examined the relationship between sustainability pressures from six key stakeholders on Hungarian micro-enterprises. We also explored whether distinct groups of variables could be identified based on the perceived directions of these sustainability pressures. Our findings, grounded on optimal scaling and multidimensional scaling analyses, reveal a clear link between how micro-enterprises monitor stakeholder activities and the focal points of these stakeholders' impact concerning sustainability. Managers must prioritize stakeholders based on their influence, whether through legal regulations, social values, or financial factors. This prioritization helps micro-enterprises effectively target their sustainability efforts, enhancing performance and long-term success.

Keywords

Sustainability, stakeholders, optimal scaling, micro enterprises, sustainable business

DOI

<https://doi.org/10.54694/stat.2024.65>

JEL code

C38, C83, Q01, Q56

¹ Department of Management and Business Economics, Faculty of Economic and Social Sciences, Budapest University of Technology and Economics, Műegyetem rakpart 3, Budapest 1111, Hungary. E-mail: surman.vivien@gtk.bme.hu. ORCID: <https://orcid.org/0000-0001-6105-9485>.

² Department of Finance, Faculty of Economic and Social Sciences, Budapest University of Technology and Economics, Műegyetem rakpart 3, Budapest 1111, Hungary. E-mail: bocskei.elvira@gtk.bme.hu. ORCID: <https://orcid.org/0000-0002-8312-3908>.

³ Department of Economics, Faculty of Economic and Social Sciences, Budapest University of Technology and Economics, Műegyetem rakpart 3, Budapest 1111, Hungary. E-mail: dobos.imre@gtk.bme.hu. ORCID: <https://orcid.org/0000-0001-6248-2920>.

INTRODUCTION

Nowadays, sustainability has become a central theme in both economic and social discourse, posing challenges not only for large corporations but also for micro, small, and medium-sized enterprises (SMEs) (Dembicka-Niemiec et al., 2023). In Hungary, SMEs are the backbone of the economy, playing a pivotal role in job creation and significantly contributing to national economic metrics and goals, such as GDP growth (Nouar and Popovics, 2022). Consequently, the imperative for sustainability is increasingly pressing for these businesses. This pressure is reflected not only in their efforts to remain competitive in the market but also in their compliance with environmental regulations, adherence to social responsibility standards, and support for sustainable development objectives.

For Hungarian SMEs, the commitment to sustainability goes beyond ethical or environmental considerations; it is crucial for maintaining long-term competitiveness. In the global marketplace, sustainable business practices are becoming increasingly important, driven by expectations from both consumers and business partners (Bajkó et al., 2022). Furthermore, both EU and domestic regulations are becoming more stringent, mandating companies to integrate sustainability into their core operations. Those companies that successfully embed these sustainability principles into their everyday practices not only contribute positively to the environment and society but also secure their own growth and long-term stability.

The role of micro-enterprises within the SME sector is particularly vital to the development of national economies and the advancement of sustainability principles, as these micro-entities form the foundation of the economic ecosystem. Although their individual contributions may appear modest, collectively they play a crucial role in job creation, the revitalization of local economies, and the promotion of innovation (Varga and Csiszárík-Kocsir, 2024). Micro-enterprises often utilize local resources and maintain strong ties with their communities, thereby facilitating the integration of sustainability practices at the local level. When these businesses successfully implement sustainable operational practices, they can serve as an example for other economic actors, creating a ripple effect that influences the broader economic and social environment.

In our research, we investigate the perspectives of Hungarian micro-enterprise CEOs, specifically focusing on the sources of sustainability pressure they experience – essentially, which stakeholders are influencing them to initiate sustainability efforts and whether correlation could be determined between the pressure directions. Our questionnaire-based survey concentrates on stakeholders commonly identified in the literature, including government and regulatory bodies, customers and consumers, competitors, society, employees, banks and investors.

The structure of our study is organized as follows. The next chapter provides an overview of the significance of various corporate stakeholders, particularly in relation to sustainability initiatives. Section 2 outlines the research methodology, detailing the main characteristics of the data collection process, the database, and the specific research questions addressed. Section 3 presents the findings related to our research questions, while the final chapter summarizes the study's results and discusses its limitations.

1 LITERATURE REVIEW

To effectively implement corporate sustainability initiatives, several key management aspects must be prioritized. Foremost, company leadership must demonstrate a firm commitment to sustainability and integrate this commitment into the company's overall strategy (Nagy et al., 2021; Surman and Böcskei, 2023a). As highlighted by Nagyné Halász et al. (2023), sustainability challenges can disrupt and reshape managerial decision-making processes. When managers perceive sustainability initiatives as business opportunities, they are more capable of balancing these efforts, thereby minimizing the risk of compromising economic performance (Das and Rangarajan, 2020).

Beyond commitment, it is crucial for companies to establish clear, measurable sustainability goals aligned with both national and international regulations, as well as broader sustainable development objectives. Defining sustainability targets specific to the company's context (Kantabutra, 2024) and aligning them with the expectations of all stakeholders is essential. These objectives should be seamlessly integrated into all aspects of corporate operations, including production, procurement, logistics, and marketing. In managing sustainability within an organization, companies must carefully consider which stakeholder needs to prioritize, accurately understand these needs, and determine how they can be effectively translated into actionable strategies.

Implementing sustainability practices within corporate settings presents a complex challenge, however, much of the existing research predominantly focuses on large corporations and their sustainability initiatives (Delgado-Ceballos et al., 2023). Das and Rangarajan (2020) provide a comprehensive analysis, demonstrating that sustainability practices positively impact organizational excellence in large firms, as evidenced by sustainability reports. Numerous studies have highlighted the correlation between sustainability actions and financial performance of large companies (e.g., Mirgen and Tepeli, 2024), whereas research addressing SMEs remains limited (e.g., Surman and Böcskei, 2023b). Therefore, focusing solely on large corporations may result in overlooking the significant role which SMEs play in promoting sustainability. Due to their number, diversity, and job creation capacity, SMEs serve as the backbone of the economy (Csutora and Kerekes, 2004; Luchsinger, 2024).

Obi et al. (2018) emphasize that the dynamism and flexibility of the SME sector, stemming from their smaller size, enhance national competitiveness and foster economic growth. Studies have also underscored that, in addition to their agility, SMEs are frequently a source of innovation (Gray and Jones, 2016; Langwell et al., 2023; Nwokocha and Nwankwo, 2019). The role of SMEs is particularly crucial in bolstering local economies and bridging social disparities, as they often operate in regions where the presence of large corporations is minimal. Furthermore, as suppliers to larger companies and key players within the supply chain, SMEs have a significant influence on broader economic ecosystem. Xu et al. (2020) illustrate that sustainability efforts by even a single actor within the supply chain can have a cascading effect, influencing other participants. Das et al. (2020) provide a detailed compilation of international studies on sustainability practices across various countries, discussing the driving forces behind sustainability as well as regulatory and ownership-related considerations.

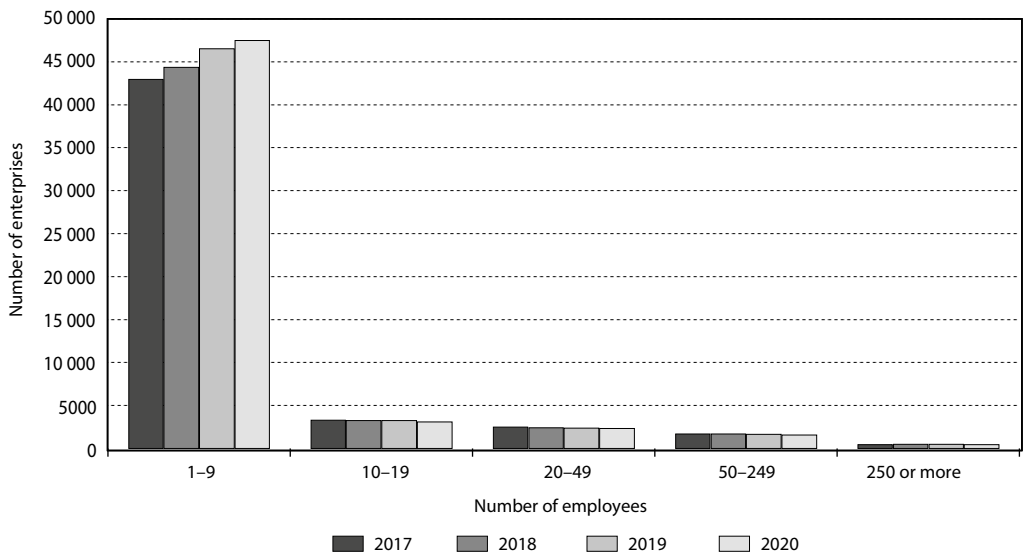
Beyond the aforementioned challenges, SMEs may encounter additional difficulties when integrating sustainability principles into their corporate operations. Jiang et al. (2023) underscore that efficient integration of these principles is crucial for the long-term survival of SMEs. Despite this, many SMEs, particularly those in developing countries, are slow to adopt sustainability practices. According to Nagypál (2014), Buhr (2017), and Jiang et al. (2023), this hesitation is often due to a lack of necessary tools, knowledge, and motivation to implement effective environmental, social, and governance (ESG) processes and natural resource management plans. Consequently, poor sustainability performance can lead to reputational damage and regulatory compliance issues, which erode the trust and credibility of SMEs. Therefore, it is an imperative for SMEs to initiate sustainability efforts that align closely with their corporate culture and unique characteristics, as the failure of such initiatives could jeopardize the entire business.

Most research focusing on SMEs tends to concentrate on small and medium-sized enterprises, often neglecting the unique challenges faced by micro-enterprises (Thaker, 2018). Micro-enterprises, typically defined as having fewer than 10 employees and an annual turnover of no more than 2 million euros, contribute significantly to the national economic development, despite their lower gross added value per company compared to medium-sized enterprises. These micro-enterprises play a vital role in integrating

local resources into the supply chain, alleviating poverty, and creating new social opportunities, including community engagement, income generation, and stable wealth accumulation (Thaker, 2018; Thaker et al., 2021).

According to Thaker et al. (2021), micro-enterprises constitute approximately 70% of businesses in most countries, contributing around 60% of total employment. OECD data (Figure 1) indicate that in Hungary, the proportion of micro-enterprises is even higher, ranging from 85–86% (OECD, 2023). However, it is crucial to acknowledge that ensuring and sustaining the operational stability of micro-enterprises remains a significant challenge globally (Thaker, 2018; Thaker et al., 2021). These challenges encompass high transaction costs, information asymmetries, insufficient legal protection (Dhingra and Sardana, 2024), inadequate financial resources and expertise, subpar corporate training frameworks, and inflexible financing structures. Collectively, these factors can impede the long-term success of micro-enterprises.

Figure 1 The change of the number of Hungarian micro-enterprises between 2017 and 2020



Source: OECD (2023)

The economic and social significance of micro-enterprises, as well as the challenges surrounding their operation, underscores that their success is contingent not merely on internal dynamics but also on fostering close and effective collaboration with stakeholders. To meet sustainability objectives, it is imperative that stakeholders – including employees, customers, and others – are recognized for their pivotal roles and integrated into the corporate decision-making processes. Engaging stakeholders in sustainability management is crucial not only for enhancing the competitiveness and stability of micro-enterprises but also for advancing sustainable economic development and bolstering social responsibility.

1.1 Role of stakeholders in corporate sustainability management

In the contemporary corporate landscape, stakeholder relations are becoming increasingly complex, with stakeholders exerting growing influence over companies. This trend is further intensified by society's heightened demand for transparency and access to relevant information. The proliferation of diverse communication channels has facilitated a faster and more efficient flow of information, enabling

stakeholders to stay informed in real time about current trends and challenges, including companies' sustainability initiatives and decisions (Marimbaldo-Callejo, 2020).

Recently, the focus on sustainability has surged, not only within society but also among market participants (Figure 2). This escalating attention is anticipated to place an increasing pressure on companies, particularly on the managers and owners of micro, small, and medium-sized enterprises. Recent research underscores that the identification of stakeholders and acknowledgment of their influence significantly impact corporate sustainability management (Schaltegger et al., 2019; Freudenreich et al., 2020; Wang et al., 2022; Valentinov, 2023). Failure to adequately monitor the broad spectrum of stakeholder needs raises the risk of management neglecting sustainability considerations. Valentinov (2023) highlights that examining corporate sustainability necessitates an understanding of stakeholder theories, especially concerning their relationship to corporate commitment. Sustainability strategies developed in collaboration with stakeholders can foster innovative processes that might not otherwise emerge. Costanza (2020) emphasizes that the successful development and implementation of sustainability strategies require the integration of three key elements: corporate vision, methodologies and analyses, and implementation. The latter includes formulating a sustainability-oriented corporate strategy, revising partnership selection and collaboration processes as needed, and continuously monitoring and responding to stakeholder feedback.

Rasche et al. (2023), Freudenreich et al. (2020), and Hörisch et al. (2014) concur that successful sustainability initiatives hinge on the accurate identification and comprehensive understanding of stakeholders, along with a precise definition of sustainability. While it is not necessary for the company and its stakeholders to interpret sustainability identically, for effective sustainability initiatives, companies must be acutely aware of stakeholders' perspectives on sustainability.

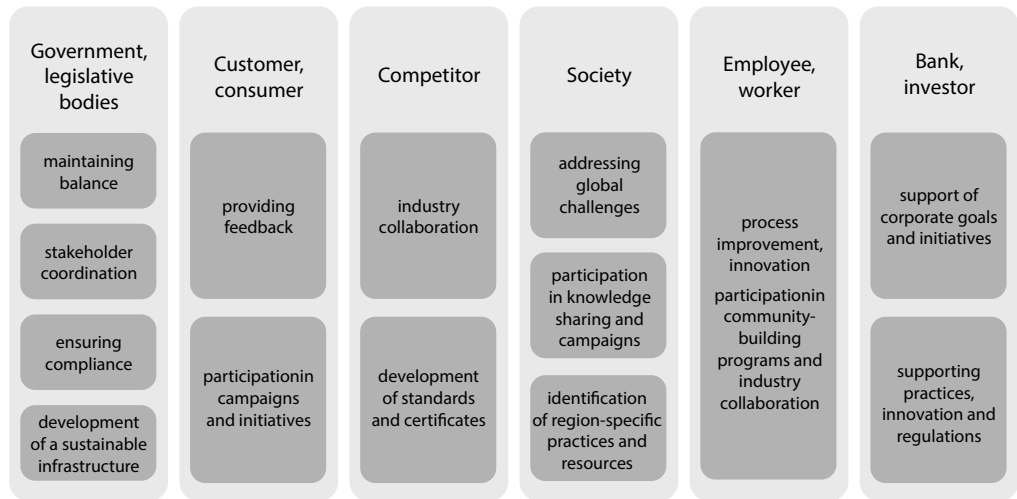
Rasche et al. (2023) underscore that corporate sustainability management revolves around balancing a company's integration within environmental, social, and economic systems to secure long-term positive outcomes, such as ecological equilibrium, social welfare, and stakeholder value creation. Costanza (2020) argues that sustainability cannot be effectively managed through conventional tools and best practices alone; instead, it demands a shift toward reorientation and systemic thinking (Roth, 2019; Jackson, 2019). Both theoretical and practical approaches must extend beyond the traditional economic and stakeholder paradigms, recognizing that each stakeholder perceives and values sustainability in a unique, individualized manner (Nelson, 2013; Nagyné Halász et al., 2023). According to Freeman et al. (2018), primary and secondary stakeholder groups exhibit distinct attitudes toward various operational domains of a company, including sustainability initiatives, which may be either company-centric or extend beyond the company's immediate interests. Valentinov (2023) highlights that primary stakeholders offer highly valuable contributions to company-oriented sustainability processes, while secondary stakeholders are pivotal in driving initiatives that are not directly related to the company's core operations. Das and Rangarajan (2020) note that, although regulatory pressures, transparency requirements, and stakeholder demands often serve as catalysts, the predominant driving force behind SMEs' commitment to responsible, sustainability-focused business practices frequently stems from intrinsic motivations.

Based on the work of Valentinov (2023) and Giniea et al. (2018), Figure 2 outlines the primary categories of corporate stakeholders and the nature of sustainability pressures they exert on organizations.

Cultivating strong relationships with stakeholders serves as a powerful mechanism for the decentralized dissemination of sustainability-related knowledge (Van Assche et al., 2020). Freudenreich et al. (2020) and Schaltegger et al. (2019) argue that stakeholders' attitudes and their capacity to create value are pivotal in shaping organizational strategies, directly influencing the sustainability initiatives companies pursue, both in terms of direction and intensity. Valentinov (2023) asserts that achieving corporate sustainability hinges on effective collaboration between stakeholders and the company, with managers

playing a crucial role. These managers are tasked with ensuring that the company's activities do not adversely impact stakeholders. Such managerial diligence necessitates the continuous monitoring of stakeholder perspectives and well-being, the careful collection and balancing of pertinent information, and the alignment of structural features with diverse objectives (Payán-Sánchez et al., 2022). Accordingly, our research focuses on the sustainability pressures exerted by stakeholders, with special emphasis on the perspectives of managers within micro-enterprises.

Figure 2 Sustainability pressure exerted by organizational stakeholders



Source: Own construction

2 RESEARCH METHODOLOGY

Our research focused on the micro-enterprises operating in Hungary. We targeted senior managers with a questionnaire, as decisions regarding improvement opportunities, corporate objectives, and sustainability initiatives are typically made at this level. For these objectives to be effectively integrated into a company's mission, vision, and strategy, the active involvement and commitment of top management is crucial (Miklian and Barkemeyer, 2020; Akadiri and Fadiya, 2013; Burawat, 2019; Ónodi and Répácki, 2022).

Data collection was conducted in the spring of 2022 using an online questionnaire focusing on one main area that is from which stakeholders the participating company leaders feel sustainability pressure on the organization. To compile the dataset, we distributed the questionnaire to 70 000 SMEs, randomly selected from the Hungarian organization OPTEN's company database. The dataset was subsequently refined and limited to micro-enterprises.

Based on the responses, we aimed to explore the following research questions:

1. Is there an interrelationship among the sustainability pressures exerted by the six key stakeholders on micro-enterprises?

To address this question, we sought to determine whether identifiable relationships exist between the sustainability pressures exerted by these six stakeholder groups on micro-enterprises. We employed cross-tabulation analysis, utilizing the chi-square test and Cramer's V. Through the chi-square analysis, we examined the significant nature of the relationships by considering the values of the Cramer's V to assess its strength. Cramer's V ranges from 0 to 1, where values close to 0 indicate no association.

2. Can distinct variable groups be identified based on the sustainability pressures perceived by micro-enterprises?

In examining the second research question, our objective was to ascertain whether stakeholder groups could be effectively categorized based on the sustainability pressures experienced by micro-enterprises.

Given the predominantly categorical (nominal, so far binary, i.e. 0 and 1 values) nature of the dataset, we employed a specialized form of principal component analysis (PCA) with optimal scaling and multidimensional scaling (MDS) (Meulman, 1998; Tapasco-Alzate et al., 2022). According to Madan and Madan (2019), this approach facilitates the reduction of observed variables into a smaller set of principal components or dimensions that capture the majority of the variance within the data. A key advantage of this method is its ability to accommodate both nominal (categorizable) and ordinal data (ranked), elucidate non-linear relationships among variables, and serve exploratory research purposes effectively. The application process demonstrated by Van der Geer (1993) and Andersen (2012) was followed in our analyses. For the calculations, we used the Microsoft SPSS 29 software, which allows for detailed analysis of categorical data.

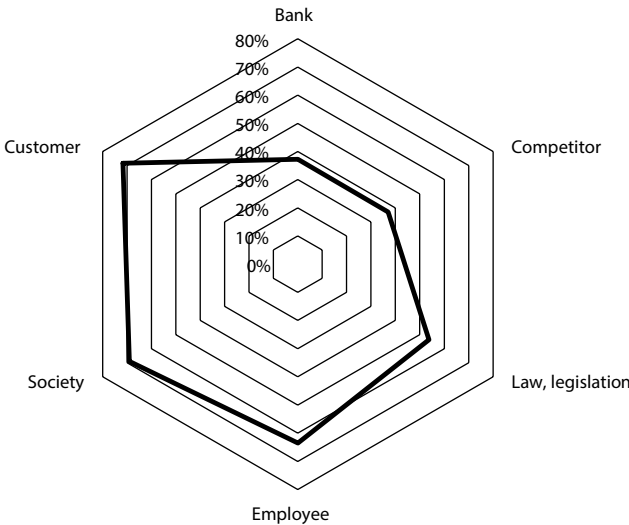
3 RESULTS

After the completion of data collection and subsequent data cleaning, we processed responses from 587 micro-enterprises. This sample size is considered adequate for surveys in the corporate sector and facilitates the formulation of robust research findings (see, e.g., Ónodi and Répácki, 2022; Vörösmarty and Dobos, 2020; Chikán et al., 2019).

80% of the top managers who participated in the survey were aged 43 years or older, from which we assume that they are managers with extensive experience. Additionally, 52.8% of the surveyed companies were founded within the past 16 years, and 98.5% are entirely Hungarian-owned. While all industry sectors were represented in the sample, the distribution is uneven, which precludes the sample from being considered fully representative; consequently, no sector-specific analyses were performed.

Figure 3 illustrates the proportion of Hungarian company managers who perceive pressure from various stakeholders to initiate sustainability efforts. The data reveals that managers primarily feel this influence from customers, society, and employees. There is also substantial pressure from regulatory bodies, particularly concerning the expansion of sustainability reporting requirements.

Figure 3 Micro-enterprises’ perception of sustainability pressure from the surveyed stakeholders

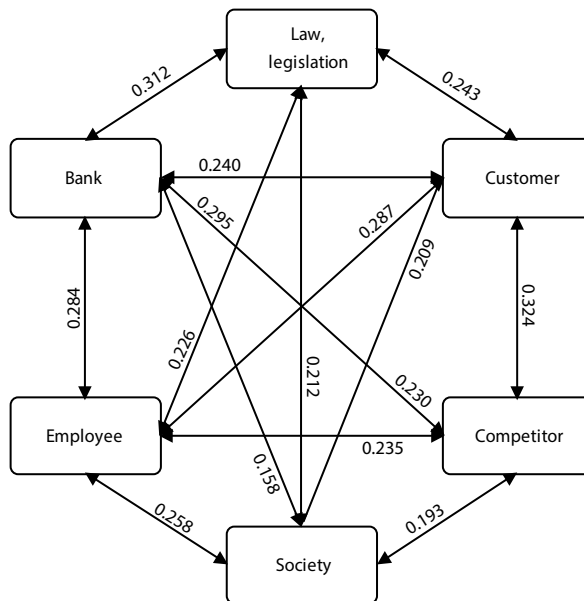


Source: Own construction

3.1. The interrelationship among the sustainability pressures exerted by six key stakeholders on micro-enterprises

To investigate the 1st research question, we conducted a cross-tabulation analysis to identify potential relationships between the sustainability pressures perceived from the six stakeholder groups. The results of the cross-tabulation analyses are presented in Figure 4. In all instances, the observed significance levels, p-values were below 0.05, indicating a statistically significant relationship in the perceived sustainability pressures emanating from the six stakeholder groups.

Figure 4 Results of cross-tabulation analysis with Cramer's V values based on the pressure exerted by the various stakeholders



Source: Own construction

According to the Cramer's V values, a moderately strong association can be identified in all cases, except for the relationship between society and banking. The relationship between the society and the competitor side can be considered approximately medium. The strongest relationship appears between the competitor and customer, as well as the legal and banking stakeholder sides.

3.2. The distinct variable groups based on the sustainability pressures perceived by micro-enterprises

For the 2nd research question, we explored potential groupings of variables using optimal scaling and MDS. Through optimal scaling, data are condensed, enabling the creation of fewer than the original six dimensions. The values presented in Table 1 indicate the degree of association between the categorical components derived from optimal scaling and the binary variables, reflecting the extent of discrimination. These findings suggest that it is advantageous to categorize the variables into three distinct groups:

- The first group encompasses pressures exerted by customers, competitors, employees, and banks.
- The second group is characterized by societal pressure.
- The third group pertains to legal and legislative pressure.

This classification provides a structured understanding of how different stakeholders influence sustainability efforts within micro-enterprises.

Table 1 Components of the optimal scaling algorithm			
Pressure	Component 1	Component 2	Component 3
Law, legislation	0.366	0.033	0.323
Customer	0.408	0.001	0.223
Competitor	0.397	0.062	0.172
Society	0.270	0.555	0.022
Employee	0.397	0.060	0.002
Bank	0.403	0.165	0.074
% of variance	37.359	14.584	13.611

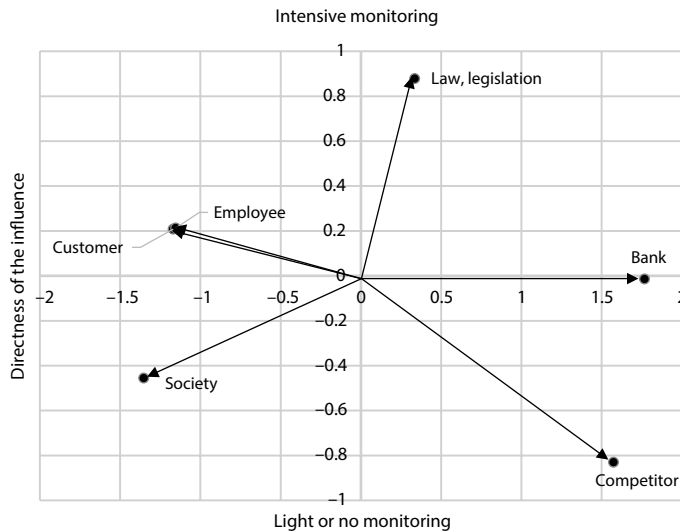
Source: Own construction

The first group consists of stakeholders who primarily exert influence through demand-related factors. The sustainability pressures from these stakeholders are largely shaped by the ongoing evolution of market demands and expectations, which encompass customer requirements, competitive forces, employee aspirations, and financial performance metrics. The second group is dedicated to social impact and corporate responsibility. The distinction of this group from the others lies in its representation of a more advanced concern that transcends market-driven dynamics, focusing instead on broader societal responsibilities. The third group is primarily concerned with ensuring compliance with regulatory and legal standards. Although the degree of association of “law and legislation” with the first group is slightly higher than with the third group (as shown in Table 1), the decision to assign it to the third group is conceptually justified. Laws and legislation are fundamentally distinct from the pressures exerted by customers, competitors, employees, and banks (Component 1), which are more immediate and business-driven influences. Instead, “law and legislation” aligns more closely with external regulatory forces, which define the nature of Component 3.

To further explore the 2nd research question, we conducted a MDS analysis. This method involves projecting our data from a six-dimensional space into a two-dimensional space, wherein the relative proximity of the variables is represented by a set of distances in the reduced-dimensional space. Our objective is to maintain the fidelity of the original distances as accurately as possible within the lower-dimensional representation. This means that the spatial arrangement of the points in the two-dimensional plot should closely mirror the actual relationships present in the original six-dimensional data. The analysis yielded a high coefficient of determination (R^2) value (0.99887), indicating a robust correlation between the distances in the six-dimensional and two-dimensional spaces. Additionally, after 20 iterations, the stress level – a measure of the goodness of fit – was 0.01524, as calculated using Kruskal’s stress Formula 1, proposing an excellent fit of the model to the data.

The MDS analysis suggests that sustainability pressures on companies can be interpreted along two principal dimensions (Figure 5). The first dimension represents the directness of the influence, while the second dimension reflects the intensity of monitoring required.

Figure 5 Results of MDS analysis demonstrating the stakeholders based on the directness of the influence and the monitoring aspects



Source: Own construction

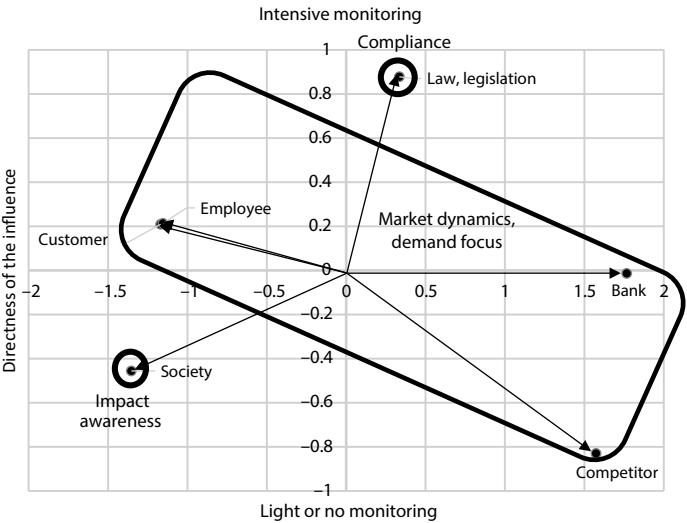
The first dimension (vertical axis) highlights the extent to which micro-enterprises need to, or are able to, consistently monitor the sustainability practices and impacts of various stakeholder groups. Given their typically limited resources, time, and capabilities, micro-enterprises must prioritize monitoring areas that have immediate implications for their day-to-day operations, such as resource constraints, prioritization of daily tasks, and risk management. For these companies, keeping up-to-date with legislative changes (e.g., tax regulations, sustainability standards) is critical, as non-compliance could result in substantial fines. Micro-enterprises must maintain vigilant oversight of customer and employee satisfaction, as even minor shifts can have outsized impacts due to their small scale. For instance, losing just one or two customers can lead to severe financial strain, and any discontent among employees can disrupt business continuity given their typically small workforce. In contrast, engagement with banks, while significant due to financial obligations, credit terms, and financing conditions, tends to be periodic rather than continuous. Interactions are generally linked to specific financing periods rather than daily operations. Similarly, while tracking societal expectations, norms, and trends is beneficial, micro-enterprises often lack the capacity for continuous monitoring in these areas, as such changes tend to exert a more indirect and long-term influence on their business activities. Competitor analysis, although strategically important, is not typically a daily priority for micro-enterprises. Such analysis is often conducted at specific intervals, such as during the launch of new products or shifts in market trends, rather than as part of everyday operational focus (if they deal with it at all).

The second dimension illustrates the degree of directness and structure in stakeholder influence on a company's operations. In this context, stakeholders such as society, customers, and employees exert a more direct impact, whereas competitors and banks exert a relatively indirect influence. Although societal pressure may initially seem less direct, it plays a critical role in shaping the corporate image, which is of paramount importance to organizations. This suggests that a company's perceived social standing can significantly drive its behavior beyond mere corporate "vanity." Legal and regulatory pressures, meanwhile, can operate on both direct and indirect levels. The horizontal sustainability supply chain also partially manifests within this dimension.

By integrating the results of optimal scaling with the findings from the MDS analysis (Figure 6), it becomes evident that legal sustainability pressures are immediately apparent to micro-enterprises, as it has the highest value on the vertical axis. However, the process of interpreting and incorporating these regulations into daily operations often presents challenges (shown on the horizontal axis), as these legal frameworks are not typically designed with the nuances of micro-enterprises in mind. While societal expectations exert a direct influence (horizontal axis), micro-enterprises often lack the capacity and resources to continuously track and adapt to evolving societal trends (vertical axis).

On the demand side, the interplay between customers, employees, banks, and competitors is highlighted. Micro-enterprises closely monitor customer and employee needs (vertical axis), recognizing that the organization must be agile enough to respond to shifts in their expectations. Although the influence of banks and competitors may be more indirect (horizontal axis), their impact reverberates through the organization, ultimately affecting both employees and customers. Thus, even indirect pressures can translate into significant operational adjustments, underscoring the interconnectedness of stakeholder influences within the company's ecosystem.

Figure 6 Relationship between MDS and optimal scaling results



Source: Own construction

CONCLUSION

In this study, we have identified the key stakeholders influencing Hungarian micro-enterprises and explored the dynamics of sustainability pressures exerted by these groups. Our research sought to determine which stakeholders apply sustainability pressures on micro-companies and how these pressures are interrelated. We found that government, through legal regulations, act as significant drivers of sustainability efforts, while societal values also play a crucial role. Other stakeholders, such as customers, employees, competitors, and banks, either amplify or moderate these sustainability efforts, further shaping the sustainability landscape of these companies.

We categorized stakeholders into three main groups based on the nature and intensity of sustainability pressure. The first group includes customers, employees, competitors, and banks, which exert direct or interconnected influences on companies. The second group comprises societal pressures, reflecting broader social values and expectations. The third group is characterized by legal and regulatory

pressures imposed by governmental bodies. Each group presents distinct strategic challenges for micro-enterprises, such as prioritizing stakeholder expectations, monitoring trends, and ensuring compliance with evolving standards.

Our findings underscore the importance of a collaborative approach between stakeholders and micro-enterprises. Effective strategic decision-making, which aligns with stakeholder interests, can create mutually beneficial outcomes, supporting both sustainability and competitiveness (Valentinov, 2023). Sustainable corporate strategies must be deeply integrated across all levels of the organization, guided by management's commitment to harmonizing profit generation with environmental and societal values (Baumgartner, 2014; Bon and Fisher, 2011). The role of management is crucial in not only formulating but also in implementing such strategies, ensuring that the company's sustainability efforts are coherent and impactful.

The results also highlight that stakeholder pressures vary significantly in their nature and intensity. It is imperative for managers to recognize these differences and adopt tailored responses to each type of pressure. For instance, the response required for employee and customer expectations may differ substantially from that required for legal compliance or financial considerations. Drawing on insights from optimal scaling and MDS analysis, managers must strategically prioritize among stakeholders who influence the company through legal frameworks, societal values, or competitive and financial dynamics. This prioritization enables companies to focus their sustainability initiatives on areas that yield the most substantial social and economic benefits, while also maintaining the flexibility to adapt to shifting stakeholder demands.

Continuous and proactive engagement with stakeholders is essential, as changes in stakeholder expectations can significantly influence a company's strategic direction and sustainability efforts (Freudenreich et al., 2020; Schaltegger et al., 2019; Payán-Sánchez et al., 2022), and as the results show, opposite direction is also true. In the case of micro-enterprises, their organization strategy and their connected monitoring processes fundamentally influences which stakeholder has the most direct effect on them. By fostering an ongoing dialogue and collaboration with stakeholders, companies can better navigate these complexities, ensuring that they remain resilient and responsive in a rapidly changing environment. This collaborative approach not only enhances the company's capacity to meet diverse stakeholder expectations but also strengthens its overall sustainability performance and social responsibility.

However, the limitations of our research should be acknowledged. The findings are based on a specific set of data collected from Hungarian micro-enterprises, and further studies could broaden the scope to include diverse industries and geographical contexts. Future research should also consider longitudinal analyses to capture the evolving nature of stakeholder pressure and their long-term impact on micro-enterprise sustainability strategies.

References

- AKADIRI, P. O., FADIYA, O. O. (2013). Empirical analysis of the determinants of environmentally sustainable practices in the UK construction industry [online]. *Construction Innovation*, 13(4): 352–373. <<https://doi.org/10.1108/CI-05-2012-0025>>.
- ANDERSEN, E. B. (2012). *The statistical analysis of categorical data*. Springer Science & Business Media.
- BAJKÓ, N., FÜLÖP, ZS., NAGYNÉ PÉRCSEI, K. (2022). Changes in the Innovation- and Marketing-Habits of Family SMEs in the Foodstuffs Industry, Caused by the Coronavirus Pandemic in Hungary [online]. *Sustainability*, 14(5): 2914. <<https://doi.org/10.3390/su14052914>>.
- BAUMGARTNER, R. J. (2014). Managing corporate sustainability and CSR: a conceptual framework combining values, strategies and instruments contributing to sustainable development [online]. *Corporate Social Responsibility and Environmental Management*, 21(5): 258–271. <<https://doi.org/10.1002/csr.1336>>.
- BONN, I., FISHER, J. (2011). Sustainability: The missing ingredient in strategy [online]. *Journal of Business Strategy*, 32(1): 5–14. <<https://doi.org/10.1108/02756661111100274>>.

- BUHR, B. (2017). Assessing the sources of stranded asset risk: a proposed framework [online]. *Journal of Sustainable Finance & Investment*, 7(1): 37–53. <<https://doi.org/10.1080/20430795.2016.1194686>>.
- BURAWAT, P. (2019). The relationships among transformational leadership, sustainable leadership, lean manufacturing and sustainability performance in Thai SMEs manufacturing industry [online]. *International Journal of Quality & Reliability Management*, 36(6): 1014–1036. <<https://doi.org/10.1108/IJQRM-09-2017-0178>>.
- CHIKÁN, A., CZAKÓ, E., LOSONCI, D., KISS-DOBRONYI, B. (2019). (eds.) *A 4. ipari forradalom küszöbén. Gyorsjelentés a 2019. évi kérdőíves felmérés eredményeiről* [online]. Budapest: Versenyképesség Kutatóközpont. <https://unipub.lib.uni-corvinus.hu/4328/1/Gyorsjelen-tes_2019_Versenykepessseg.pdf>.
- CONSTANZA, R. (2020). Ecological economics in 2049: getting beyond the argument culture to the world we all want [online]. *Ecological Economics*, 168: 106484. <<https://doi.org/10.1016/j.ecolecon.2019.106484>>.
- CSUTORA M., KERKES S. (2004). *A környezetbarát vállalatirányítás eszközei* [online]. Budapest: KJK. <<https://unipub.lib.uni-corvinus.hu/4111/csutkeregyben.pdf> at 13.08.2024>.
- DAS, M., RANGARAJAN, K. (2020). Impact of policy initiatives and collaborative synergy on sustainability and business growth of Indian SMEs [online]. *Indian Growth and Development Review*, 13(3): 607–627. <<https://doi.org/10.1108/IGDR-09-2019-0095>>.
- DAS, M., RANGARAJAN, K., DUTTA, G. (2020). Corporate sustainability in SMEs: an Asian perspective [online]. *Journal of Asia Business Studies*, 14(1): 109–138. <<https://doi.org/10.1108/JABS-10-2017-0176>>.
- DELGADO-CEBALLOS, J., ORTIZ-DE-MANDOJANA, N., ANTOLÍN-LÓPEZ, R., MONTIEL, I. (2023). Connecting the Sustainable Development Goals to firm-level sustainability and ESG factors: the need for double materiality [online]. *Business Research Quarterly*, 26(1): 2–10. <<https://doi.org/10.1177/23409444221140919>>.
- DEMBICKA-NIEMIEC, A. BUCZYŃSKI, M., MOŁODOWICZ, M. (2023). Consumption and Sustainable Development of Polish Metropolitan Cities [online]. *Statistika: Statistics and Economy Journal*, 103(1): 30–45. <<https://doi.org/10.54694/stat.2022.39>>.
- DHINGRA, K., SARDANA, K. D. (2024). Deterrents to Digital Sustainability in MSMEs [online]. In: SHARMA, R., BHARDWAJ, I., GRIMA, S., SACHDEVA, T., SOOD, K., ÖZEN, E. (eds.) *Sustainable Development Goals: the Impact of Sustainability Measures on Wellbeing*. Contemporary Studies in Economic and Financial Analysis, 113B, Leeds, Emerald Publishing Limited, pp. 43–56. <<https://doi.org/10.1108/S1569-37592024000113B004>>.
- FREEMAN, R. E., HARRISON, J. S., ZYGLIDOPOULOS, S. (2018). *Stakeholder Theory: Concepts and Strategies*. Cambridge: Cambridge University Press.
- FREUDENREICH, B., LÜDEKE-FREUND, F., SCHALTEGGER, S. (2020). A stakeholder theory perspective on business models: value creation for sustainability [online]. *Journal of Business Ethics*, 166(1): 3–18. <<https://doi.org/10.1007/s10551-019-04112-z>>.
- GINIGEA, K., AMARATUNGAB, D., HAIGH, R. (2018). Mapping stakeholders associated with societal challenges: a Methodological Framework [online]. *Procedia Engineering*, 212: 1195–1202. In: *7th International Conference on Building Resilience; Using scientific knowledge to inform policy and practice in disaster risk reduction*, ICBR2017, 27.–29.11.2017, Bangkok, Thailand. <<https://doi.org/10.1016/j.proeng.2018.01.154>>.
- GRAY, D., JONES, K. F. (2016). Using organisational development and learning methods to develop resilience for sustainable futures with SMEs and micro businesses: the case of the “business alliance” [online]. *Journal of Small Business and Enterprise Development*, 23(2): 474–494. <<https://doi.org/10.1108/JSBED-03-2015-0031>>.
- HÖRISCH, J., FREEMAN, R. E., SCHALTEGGER, S. (2014). Applying stakeholder theory in sustainability management: links, similarities, dissimilarities, and a conceptual framework [online]. *Organization and Environment*, 27(4): 328–346. <<https://doi.org/10.1177/1086026614535786>>.
- JACKSON, M. C. (2019). *Critical Systems Thinking and the Management of Complexity: Responsible Leadership for a Complex World*. Oxford: Wiley.
- JIANG, Y., NI, H., GUO, X., NI, Y. (2023). Integrating ESG practices and natural resources management for sustainable economic development in SMEs under the double-carbon target of China [online]. *Resources Policy*, 87(Part A): 104348. <<https://doi.org/10.1016/j.resourpol.2023.104348>>.
- KANTABUTRA, S. (2024). Toward a sustainability performance management framework [online]. *Heliyon*, 10(13): e33729. <<https://doi.org/10.1016/j.heliyon.2024.e33729>>.
- LANGWELL, C., HEATON, D. (2016). Using human resource activities to implement sustainability in SMEs [online]. *Journal of Small Business and Enterprise Development*, 23(3): 652–670. <<https://doi.org/10.1108/JSBED-07-2015-0096>>.
- LUCHSINGER, G. (2024). (eds.) *The Sustainable Development Goals Report. 2024 United Nations* [online]. ISBN 978-92-1-358976-2, ISSN 251-3958. <<https://unstats.un.org/sdgs/report/2024/The-Sustainable-Development-Goals-Report-2024.pdf>>.
- MADAN, A. O., MADAN, S. (2019). Attracting millennial talent: a signal theory perspective [online]. *Evidence-based HRM*, 7(1): 8–23. <<https://doi.org/10.1108/EBHRM-01-2018-0009>>.
- MARIMBALDO, F.-J. M., CALLEJO, A.-M. M. (2020). Methodological Approach to Incorporate the Involve of Stakeholders in the Geodesign Workflow of Transmission Line Projects [online]. *International Journal of Geo-Information*, 9(3): 178. <<https://doi.org/10.3390/ijgi9030178>>.

- MEULMAN, J. J. (1998). *Optimal scaling methods for multivariate categorical data analysis*. Chicago: SPSS White Paper.
- MIKLIAN, J. BARKEMEYER, R. (2020). Business, peacebuilding, violent conflict and sustainable development in Myanmar: presenting evidence from a new survey dataset [online]. *Journal of Asia Business Studies*, 16(4): 600–617. <<https://doi.org/10.1108/JABS-11-2020-0428>>.
- MIRGEN, Ç., TEPELI, Y. (2024). Effect of Energy Consumption on Green Bond Issuance [online]. *Statistika: Statistics and Economy Journal*, 104(2): 203–211. <<https://doi.org/10.54694/stat.2023.18>>.
- NAGY, M. A., TASNER, D., KOVÁCS, Z. (2021). Ipar 4.0 a gazdaságtudományokban – a nemzetközi és hazai szakirodalom bibliometriai elemzése [online]. *Vezetéstudomány – Budapest Management Review*, 52(4): 63–79. <<https://doi.org/10.14267/VEZTUD.2021.04.06>>.
- NAGYNÉ HALÁSZ, ZS., JÁMBOR, B. R., KATITS, E. (2023). Az ágazati és vállalati értéktérítőkhöz azonosítása és alkalmazása – az üzleti tevékenységek és a fenntartható gyakorlatok összehangolása a tulajdonosi értékalkotásban. Multidiszciplináris kihívások sokszínű válaszok Gazdálkodás- és Szervezéstudományi Folyóirat, 2: 88–118. ISSN 2630-886X.
- NAGYPÁL, N. C. (2014). Corporate social responsibility of Hungarian SMEs with good environmental practices. *Journal of East European Management Studies*, 19(3): 327–347.
- NELSON, J. A. (2013). Ethics and the economist: what climate change demands of us [online]. *Ecological Economics*, 85: 145–154. <<https://doi.org/10.1016/j.ecolecon.2011.07.029>>.
- NOUAR, D., POPOVIC, P. (2022). Use of methods and tools for an effective small and medium-sized enterprise in Szabolcs-Szatmár-Bereg county in Hungary [online]. *Applied Studies in Agribusiness and Commerce*, 16(2): 5–10. <<https://doi.org/10.19041/APSTRACT/2022/2/1>>.
- NWOKOCHA, V. C., NWANKWO, C. (2019). The effects of subcontracting forms on the sustenance of SMEs A panacea for sustainable development goals (SDGs) in Enugu State Nigeria [online]. *World Journal of Entrepreneurship, Management and Sustainable Development*, 15(4): 293–307. <<https://doi.org/10.1108/WJEMSD-01-2019-0006>>.
- OBI, J., IBIDUNNI, A. S., TOLULOPE, A., OLOKUNDUN, M. A., AMAIHIAN, A. B., BORISHADE, T. T., FRED, P. (2018). Contribution of small and medium enterprises to economic development: Evidence from a transiting economy [online]. *Data in Brief*, 18: 835–839. <<https://doi.org/10.1016/j.dib.2018.03.126>>.
- OECD. (2023). Paris. [online]. <<https://www.oecd.org/en/data/indicators.html?orderBy=mostRelevant&page=0>>.
- ÓNODI, A., RÉPÁCKI, R. (2022). A menedzsment szerepe az innovatív vállalatok sikerében [online]. *Vezetéstudomány – Budapest Management Review*, 53(10): 2–14. <<https://doi.org/10.14267/VEZTUD.2022.10.01>>.
- PAYÁN-SÁNCHEZ, B., PÉREZ-VALLS, M., PLAZA-ÚBEDA, J. A., VÁZQUEZ-BRUST, D. (2022). Network ambidexterity and environmental performance: Code-sharing in the airline industry [online]. *Business Strategy and the Environment*, 31(3): 1169–1183. <<https://doi.org/10.1002/bse.2948>>.
- RASCHE, A., MORSING, M., MOON, J., KOURULA, A. (2023). Corporate sustainability – what it is and why it matters. In: RASCHE, A., MORSING, M., MOON, J., KORURULA, A. (eds): *Corporate Sustainability: Managing Responsible Business in a Globalised World*. Cambridge, MA: Cambridge University Press, pp. 1–26.
- ROTH, S. (2019). Heal the world. A solution-focused systems therapy approach to environmental problems [online]. *Journal of Cleaner Production*, 216: 504–510. <<https://doi.org/10.1016/j.jclepro.2018.12.132>>.
- SCHALTEGGER, S. HÖRSCH, J., FREEMAN, R. E. (2019). Business cases for sustainability: a stakeholder theory perspective [online]. *Organization and Environment*, 32(3): 191–212. <<https://doi.org/10.1177/1086026617722882>>.
- SURMAN, V., BÖCSKEI, E. (2023a). Fenntarthatóság a magyar kis- és középvállalati szektorban [online]. *Vezetéstudomány – Budapest Management Review*, 54(10): 15–28. <<https://doi.org/10.14267/VEZTUD.2023.10.02>>.
- SURMAN, V., BÖCSKEI, E. (2023b). The SDG relevance-presence map of Hungarian SMEs – the relationship between the SDGs and the three pillar model [online]. *Cleaner Environmental Systems*, 11: 100144. <<https://doi.org/10.1016/j.cesys.2023.100144>>.
- TAPASCO-ALZATE, O. A., GIRALDO-GARCÍA, J., RAMÍREZ-RAMÍREZ, D. (2022). Productivity metrics in the context of knowledge work: literature vs practice [online]. *International Journal of Productivity and Performance Management*, 71(7): 3030–3055. <<https://doi.org/10.1108/IJPPM-05-2020-0219>>.
- THAKER, M. A. B. M. T. (2018). A qualitative inquiry into cash waqf model as a source of financing for micro enterprises [online]. *ISRA International Journal of Islamic Finance*, 10(1): 19–35. <<https://doi.org/10.1108/IJIF-07-2017-0013>>.
- THAKER, M. A. B. M. T., AMIN, M. F., THAKER, H. M. T., KHALIQ, A., PITCHAY, A. A. (2021). Cash waqf model for micro enterprises' human capital development [online]. *ISRA International Journal of Islamic Finance*, 13(1): 66–83. <<https://doi.org/10.1108/IJIF-08-2018-0091>>.
- VALENTINOV, V. (2023). Sustainability and stakeholder theory: a processual perspective. *Kybernetes*, 52(13): 61–77. <<https://doi.org/10.1108/K-05-2023-0819>>.
- VAN ASSCHE, K., BEUNEN, R., GRUEZMACHER, M., DUINEVELD, M. (2020). Rethinking strategy in environmental governance [online]. *Journal of Environmental Policy and Planning*, 22: 695–708. <<https://doi.org/10.1080/1523908X.2020.1768834>>.
- VAN DER GEE, J. (1993). *Multivariate Analysis of Categorical Data: Theory*. London, UK: Sage.

- VARGA, J., CSISZÁRIK-KOCSIR, Á. (2024). The emergence of sustainability in the practices of Hungarian and Slovak micro, small and mediumsized enterprises [online]. In: *2024 IEEE 22nd World Symposium on Applied Machine Intelligence and Informatics (SAMI)*, Stará Lesná, Slovakia, pp. 105–110. <<https://doi.org/10.1109/SAMI60510.2024.10432900>>.
- VÖRÖSMARTY, G., DOBOS, I. (2020). A vállalatméret hatása a zöldbeszerzési gyakorlatra [online]. *Statisztikai Szemle*, 98(4): 301–323. <<https://doi.org/10.20311/stat2020.4.hu0301>>.
- WANG, W., ZHANG, D., WANG, H., ZHU, Q., HERAVI, H. M. (2022). How do businesses achieve sustainable success and gain a competitive advantage in the green era? [online]. *Kybernetes*, 52(9): 3241–3260. <<https://doi.org/10.1108/K-07-2021-0614>>.
- XU, J., CAO, J., WANG, Y., SHI, X., ZENG, J. (2020). Evolutionary Game on Government Regulation and Green Supply Chain Decision-Making [online]. *Energies*, 13: 620. <<https://doi.org/10.3390/en13030620>>.