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DOES THE SIZE AND EXPERIENCE MATTER? EMPIRICAL RESEARCH ON SELECTED BARRIERS TO ECO-INNOVATIONS IN SLOVAK SMES

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Abstract

Enterprises face several challenges when it comes to their innovation activities. Often, they encounter a number of barriers that impede the creation, introduction, use, and diffusion of eco-innovations, particularly for small and medium-sized enterprises (SMEs). SMEs have significant innovation potential, and hence it is crucial to identify, clarify, and reduce the barriers that hinder their innovative activity and the development of eco-innovations. The aim of the article is to assess the barriers that negatively affect the eco-innovation activities of Slovak SMEs, to find out which of them are perceived as the most significant in the SMEs studied, and to identify the relationship between the perception of barriers, the size of the enterprises and their previous involvement in eco-innovations. The empirical data were collected in 2023 from a sample of 487 randomly selected Slovak SMEs. The representativeness of the sample was confirmed by the Chi-square goodness of fit test. The authors of the article formulated three hypotheses, which they tested using non-parametric tests. The first two hypotheses assumed a statistically significant effect of the size of the enterprises and their previous experience in implementing eco-innovation on the intensity of the perception of barriers to eco-innovation. These were not confirmed. The third hypothesis was related to the overall ranking of the importance of the barriers to eco-innovation and confirmed that the cost of eco-innovation is the most important barrier for SMEs in Slovakia.

Keywords

Sustainability; SMEs; Significance of barriers; Cost of eco-innovation; Bureaucracy in introducing eco-innovation.

Introduction

Global rise in intensity of economic activity is having a negative impact in terms of degrading the environment. Its critical state and the urgent need for its protection and improvement are also reflected in the current challenges the business sector is facing and in a more responsible approach to the management of corporate activities. The shift to a green or circular economy necessitates the development of new environmentally friendly goods, services, technologies, or procedures due to the growing significance of sustainable development. An effective way to move humanity towards sustainability is through ecological innovations, also known as eco-innovations, which lower the consumption of natural resources and raw materials in general, cut down on harmful emissions, and enhance people's quality of life. As a result, they are frequently referred to as green, responsible, or sustainable. The transformation towards

sustainable production requires solutions that meet the current demanding needs of customers while being both cost-effective for the enterprise and environmentally friendly. Business practice shows that eco-innovations are an essential component of these solutions, enabling enterprises to increase their competitiveness in the market while respecting the environment. Small and medium-sized businesses (SMEs), which are regarded as the foundation of any economy and an accelerant of the shift towards environmental sustainability, should receive special attention. Despite the growing recognition of the importance of eco-innovation in SMEs, there are still several research gaps on the barriers that SMEs face in their introduction and implementation [1]. They include a better understanding of the different types of barriers that SMEs face, their relative importance and the relationship between the perception of those barriers, and some important characteristics such as the size of the enterprise, its previous involvement in eco-innovation, and others. Therefore, we have decided to fill this knowledge gap by addressing this issue in more detail. In this article, we aim to assess the barriers that negatively affect the eco-innovation activities of Slovak SMEs. We will determine which barriers are considered the most significant among the SMEs studied, and examine the relationship between the perception of barriers, the size of the enterprises, and their previous involvement in eco-innovations.

The article is structured as follows: The first part outlines the theoretical background of barriers to eco-innovation. In the second part, the aim of the research is presented. The third part covers the methodology of the research. The fourth part summarizes the results of the empirical investigation on factors negatively influencing eco-innovation activities, along with a discussion. Finally, the last section of the article presents the conclusions drawn.

1 Literature Review

According to the win-win scenario for both the economic and environmental perspectives, eco-innovations are defined as a change in economic activities that improve the economic and environmental performance of society [1]. Businesses need to play a proactive role in this shift that alters patterns on the way to sustainability [2]. Eco-innovations are anticipated to be essential in the pursuit of more sustainable, environmentally friendly, and competitive societies [3].

Eco-innovations is becoming a more expansive field. Several authors [4] [5] have emphasized the many facets of the eco-innovation concept, including its social, organizational, technological, financial, managerial, and other aspects, demonstrating its complexity and broadness. Eco-innovation is often more complex than other types of innovations since it is driven by potentially contradicting motivations and faces multiple challenges, including double externality and the proper ways to capture and monetize the value it provides [6]. The complexity of eco-innovation implies a variety of factors influencing eco-innovation activities, also depending on the type of business [7]. For this reason, they must be taken into account independently in the SMEs segment. On the one hand, SMEs, with their lean structures and intrinsic entrepreneurial approach, are more likely to produce radical innovations than rigid large companies [8] are; however, the highly variable environment that SMEs now operate in, along with frequent and abrupt changes, does not provide enough support for the introduction of new ideas [9]. These businesses are encountering more and more issues and challenges as they strive to innovate. Gaining knowledge about the factors that influence eco-innovations in SMEs could offer a deeper understanding of their actual situation [10].

Barriers that impede eco-innovation may have similarities with traditional innovation barriers. However, due to the changing overlap between 'policy-driven' and 'market-driven' eco-innovation, there are specific characteristics of eco-innovation barriers and how enterprises

respond to them [11]. According to [12], there are three levels at which these barriers operate – macro, meso and micro. The macro-level barriers include limited access to external funding, subsidies, and financial incentives, as well as a lack of government support through tax incentives. The meso-level barriers include uncertain demand, a lack of disclosure of subsidies to reduce material and energy use, the market dominance of traditional companies, and a lack of a specialized supply chain. Lastly, the micro-level barriers include a lack of skilled personnel and technological capacity, limitation by self-funding of projects, a lack of information on technology and work, a lack of appropriate business partners, and a lack of cooperation with research organizations.

The barriers to eco-innovation can be categorized based on the degree of radicality. This classification has been explored in depth by [13]. Additionally, such barriers can be classified as either internal (e.g. a lack of financial resources, a lack of innovation-oriented management, inadequate access to knowledge, and insufficiently skilled employees) or external (e.g. innovation-related government policies, difficult access to external finance, high innovation costs, and intense market competition), as researched by [14]. [15] summarized the main barriers to eco-innovations, including market and customer-related barriers, technological barriers, human resource barriers, economic barriers, political barriers, information barriers, managerial barriers, and stakeholders and external partnership barriers while stressing that the economic barrier is the most significant in SMEs. Other authors (e.g. [16]) rank the high costs of eco-innovations among the most important barriers to their implementation. [17] consider administrative and bureaucratic burdens and a lack of environmental culture in SMEs as significant barriers. Some authors (e.g. [18] and [19]) cite a lack of capital, government support, effective legislation, appropriate information, and technical or technological knowledge as significant barriers to the implementation of eco-innovation strategies in SMEs.

Numerous studies have examined how various characteristics influence people's perceptions of barriers to eco-innovation activities; size of the business and prior experience with eco-innovations are frequently mentioned. [20] contend that an enterprise's performance in terms of eco-innovation and the challenges related to these activities are correlated with its size. Small businesses typically have fewer financial, human, and technological resources than larger businesses and may therefore a lack the internal expertise to develop eco-innovations or the internal financial resources to purchase innovations available on the market. Moreover, they may suffer from disadvantages of scale because their size prevents them from making good use of certain green technologies that require a minimum installation size [21]. [22] also point out that smaller enterprises tend to perceive more difficulties and problems in implementing eco-innovations than larger ones. Other authors attest that a company's prior experience with innovations, particularly eco-innovations, may have an impact on its future participation in this field as well as the incentives and challenges it faces [23]. In this regard, [11] suggests that when dealing with data on perceived barriers to innovation, it is necessary to take into account prior experience with innovation activities, as businesses only encounter certain problems when they actually face them as part of their innovation activities. The authors point to ‘revealed’ and ‘deterring’ barriers; the former refers to the obstacles that enterprises face when they innovate, while the latter refers to the obstacles that prevent them from engaging in eco-innovation.

2 Aim of the Research

The aim of the research is to assess the main barriers to eco-innovations among SMEs in Slovakia and to verify if the selected characteristics of SMEs (size and previous experience with eco-innovations) are correlated with the importance of barriers to eco-innovations. We

focus on the barriers that prevent SMEs from becoming more involved in eco-innovation activities.

3 Methodology

The online survey was used to gather empirical data. We asked respondents (SMEs categorized in accordance with EU recommendation 2003/361) to rank the barriers to eco-innovation on a Likert scale from 1 to 5, with 1 denoting the least importance of barriers and 5 denoting the greatest importance. In addition to the barriers selected in the questionnaire, respondents were free to add additional barriers; however, none of them took advantage of this feature. The Finstat database was used to randomly select the SMEs (respondents) for the research sample. Online distribution of the questionnaires was done, and they were gathered between November 2022 and April 2023. SMEs in the Slovak Republic responded to our survey in total with 672 responses. We did not accept 185 questionnaires because of missing responses or untrustworthy information. The research sample consisted of 487 Slovak SMEs (see Tab. 1).

Tab. 1: *Characteristics of the SMEs sample*

Size of enterprise	**Frequency**
micro	465
small	17
medium	5

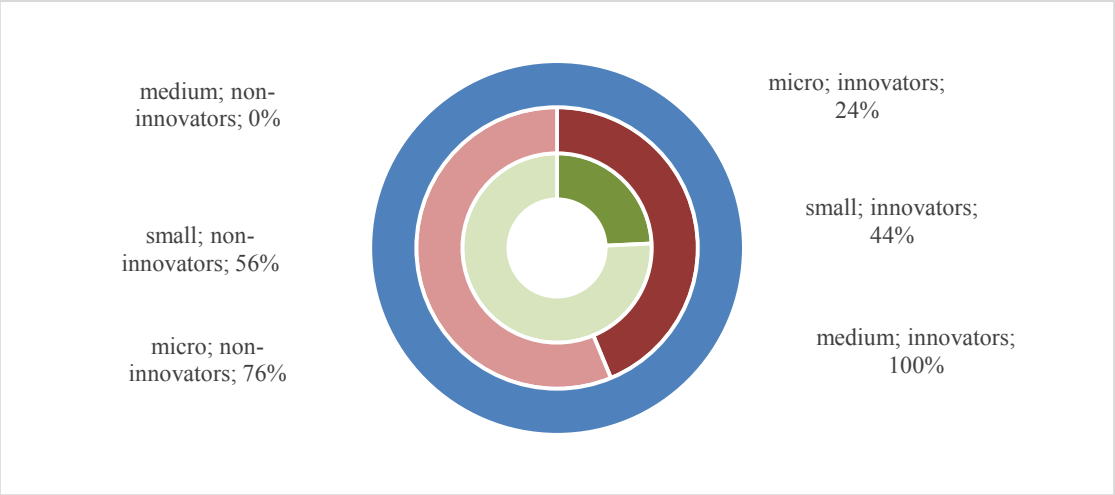
Source: own processing according to [24]

We used the Chi-square goodness of fit test to confirm that the research sample was representative. Based on the size criterion, we were able to confirm that the research sample was representative of Slovakia's SMEs population with a *p*-value of 0.08.

We analyzed the correlation of barriers' importance and the characteristics of selected SMEs (size and previous involvement in eco-innovation), and we also investigated the order of perceived importance of barriers in the research sample. Relying mainly on the theoretical background and the results of the studies carried out so far, we formulated the following three hypotheses for our research.

First, we made the assumption that smaller businesses would face distinct obstacles than larger ones because they would have fewer financial resources or fewer human resources available for eco-innovations. Hypothesis H1 supported this assumption: The significance of the obstacles to eco-innovations is largely dependent on the size of the business.

Second, we examined the SMEs in the research sample with regard to their prior participation in the eco-innovation initiative (refer to Fig. 1). Businesses that adopted eco-innovation prior to 2022 are classified as "innovators", while those without prior experience are classified as "non-innovators". Merely 24% of micro enterprises had innovators; 44% of small enterprise respondents had innovators, and 100% of medium-sized respondents had some eco-innovation.



Source: Own processing according to [24]

Fig. 1: *Structure of the research sample*

We established the following hypothesis, H2: Prior experience implementing eco-innovation influences SMEs' perception of the significance of eco-innovation barriers. This hypothesis aims to investigate any potential relationship between SMEs' prior experience with eco-innovations and their perception of the barriers' importance.

We examined the normality of the response distribution in the research sample using the Shapiro-Wilk test. We moved on to the nonparametric tests since the test's outcome did not support normalcy. We used a Spearman's correlation test to look into the relationship between the size of the company and prior eco-innovation involvement and the perception of barriers to eco-innovation.

In the end, we chose to investigate hypothesis H3: The largest obstacle to eco-innovations in Slovak SMEs is the high cost of implementation. We conducted a separate analysis of the relative importance of each barrier to eco-innovation, excluding the effects of size and prior eco-innovation experience. We applied the Friedman test in this way. The Wilcoxon signed rank test was used to assess the overall rank (order of barriers) among Slovakia's small and medium-sized enterprises. We arrived at the ranking of eco-innovation barriers in Slovak SMEs at the 0.05 level of significance, as shown in Tab. 4. The most significant obstacles are those that surveyed enterprises ranked highest.

4 Results of Research and Discussion

The findings of the evaluation of the importance of obstacles to eco-innovations in Slovak SMEs are shown in the following tables. The Likert scale average values of specific barriers' importance are displayed in Tab. 2 in relation to the respondents' enterprises' sizes.

Tab. 2: *The mean values of the importance of the barriers to eco-innovations according to the size of respondents*

Barrier	**micro**	**small**	**medium**
Lack of internal financial sources	4.00	4.24	4.00
Difficult access to external sources of funding for eco-innovations	3.94	4.29	4.00
The high cost of eco-innovations	4.16	4.35	4.20
Lack of qualified staff to create or implement eco-innovations	3.51	3.59	3.60
Lack of willingness of business's management to innovate	3.07	2.82	2.00
Lack of cooperation with other businesses	2.93	2.59	3.40
Lack of cooperation with research institutions and universities	2.91	2.82	3.40
Insufficient state policy to support innovative activities of businesses	3.66	3.59	3.80
The high level of bureaucracy (when drawing financial support, dealing with various permits, etc.)	4.14	4.47	4.60
Lack of awareness of the benefits of eco-innovations in a business	3.54	3.65	4.00
Uncertain returns on investments in eco-innovations or a too long payback period	3.76	3.88	3.40
Limited access to external sources of information and knowledge on eco-innovations	3.53	3.53	4.20
Lack of support services (from state institutions) for the introduction of eco-innovations in a business	3.77	4.00	4.40
Uncertain customers' demand for eco-innovations in the current market	3.34	3.18	3.80
Existing technical and technological constraints in the economy (e.g. outdated technical infrastructure)	3.50	3.41	3.40
Existing legal restrictions in a country	3.30	2.82	3.00
Macroeconomic uncertainties (COVID-19, war in Ukraine, inflation, etc.)	3.70	3.35	3.80

Source: Own processing according to [24]

The main obstacle for the respondents' size categories was the high degree of bureaucracy. According to SMEs, it is the biggest barrier (4.47 and 4.60, respectively, on a Likert scale of 1 to 5). The biggest obstacle to eco-innovation, according to micro enterprises, is the high cost of it; the second biggest obstacle is the amount of bureaucracy. When we separate businesses into innovators and non-innovators, we find that, similar to small and medium-sized businesses, businesses that had previously implemented eco-innovation saw bureaucracy as the biggest obstacle, while non-innovators, like micro enterprises, were primarily hampered in their eco-innovation endeavors by the high cost of eco-innovation [24].

The mean values of the chosen barriers' level of importance are shown in Tab. 3 based on respondents' classifications as "innovators" or "non-innovators".

Tab. 3: *The mean values of the importance of the barriers to eco-innovations according to the previous experience with eco-innovations*

Barrier	**Innovators**	**Non-innovators**
Lack of internal financial sources	4.18	4.03
Difficult access to external sources of funding for eco-innovations	4.11	3.95
The high cost of eco-innovations	4.22	4.21
Lack of qualified staff to create or implement eco-innovations	3.51	3.54
Lack of willingness of business's management to innovate	2.91	3.17
Lack of cooperation with other businesses	3.04	2.91
Lack of cooperation with research institutions and universities	3.13	2.86
Insufficient state policy to support innovative activities of businesses	3.78	3.64
The high level of bureaucracy (when drawing financial support, dealing with various permits, etc.)	4.30	4.15
Lack of awareness of the benefits of eco-innovations in a business	3.49	3.63
Uncertain returns on investments in eco-innovations or a too long payback period	3.72	3.86
Limited access to external sources of information and knowledge on eco-innovations	3.47	3.65
Lack of support services (from state institutions) for the introduction of eco-innovations in a business	3.98	3.79
Uncertain customers' demand for eco-innovations in the current market	3.29	3.47
Existing technical and technological constraints in the economy (e.g. outdated technical infrastructure)	3.44	3.52
Existing legal restrictions in a country	3.30	3.24
Macroeconomic uncertainties (COVID-19, war in Ukraine, inflation, etc.)	3.87	3.63

Source: Own processing according to [24]

The significance of barriers to eco-innovation as seen from the perspectives of "innovators" and "non-innovators" shows that "innovators" view bureaucracy, low state support, lack of funding, and lack of collaboration with research institutions as more significant barriers than "non-innovators". However, obstacles such as a lack of knowledge, hazy demand, a questionable return on eco-innovations, and unclear advantages from eco-innovations are more significant for "non-innovators". Both sets of respondents had similar opinions about the exorbitant costs associated with eco-innovations and the scarcity of skilled workers. Given the nature of the top barriers between "innovators" and "non-innovators", state institutions and academia have a great deal of potential to both coordinate cooperation between businesses (the supply side) and academia and pique customers' interest in eco-innovative products (e.g. innovation vouchers, tax reliefs, etc.) [24].

The Likert scale is used to examine the barriers to eco-innovation in SMEs, and the results show some variation in perception depending on the size of the businesses and their prior eco-innovation experience. Nevertheless, the findings of a statistical analysis of dependence using the Spearman correlation test demonstrated that the enterprises' size or prior eco-innovation

experience had no bearing on how these barriers are perceived. At the 0.05 level, this result is statistically significant. As a result, we disprove H1 and H2.

When we look at the overall ranking of barriers in Slovak SMEs, which was created independent of other factors and statistically verified (see Tab. 4), we can see that the main obstacles to eco-innovations, according to Slovak SMEs, are the high cost of eco-innovations and the high degree of bureaucracy. However, businesses were still able to implement eco-innovations to a significant degree despite their management's lack of innovation-drivenness and lack of collaboration with universities, research institutions, and other businesses.

Tab. 4: *Overall rank of the importance of the barriers to eco-innovations*

Barrier	**Overall rank**
The high cost of eco-innovations	1
The high level of bureaucracy (when drawing financial support, dealing with various permits, etc.)	1
Lack of internal financial sources	2
Difficult access to external sources of funding for eco-innovations	3
Uncertain returns on investments in eco-innovations or a too long payback period	4
Lack of support services (from state institutions) for the introduction of eco-innovations in a business	4
Lack of qualified staff to create or implement eco-innovations	5
Limited access to external sources of information and knowledge on eco-innovations	5
Uncertain customers' demand for eco-innovations in the current market	5
Existing technical and technological constraints in the economy (e.g. outdated technical infrastructure)	5
Insufficient state policy to support innovative activities of businesses	5
Lack of awareness of the benefits of eco-innovations in a business	5
Macroeconomic uncertainties (COVID-19, war in Ukraine, inflation, etc.)	5
Existing legal restrictions in a country	6
Lack of willingness of business´s management to innovate	7
Lack of cooperation with research institutions and universities	8
Lack of cooperation with other businesses	8

Source: Own processing according to [24]

According to the statistically representative sample of Slovak SMEs, the most pressing barrier to introducing eco-innovations is the high cost of implementing such innovations. This confirms the hypothesis H3 at a 0.05 level of significance. High cost has also been consistently ranked as one of the most significant barriers to eco-innovation [25]. It also seems to be the biggest obstacle for Slovak SMEs that are not innovative; in terms of scale, it is the biggest obstacle to eco-innovation in microbusinesses, although small and medium-sized businesses also listed it as one of the top three obstacles. The main ones, according to some authors [26] who looked at obstacles to eco-innovation in developing nations, are process bureaucracy, bad governance, a lack of support and incentives, and a lack of coordinated action between businesses, government organizations, and academic institutions. While excessive bureaucracy and associated poor governance have been confirmed as the most significant barrier (together with high cost) in Slovak SMEs, a lack of support services does not appear among the top barriers but is still in the first third of the most intensely perceived barriers [24]. The results of our empirical investigation are consistent with the findings of [27]. The authors, who, based on a cross-sectional survey of European SMEs,

identified regulatory obstacles—that is, the existence of complex administrative and legal procedures and the cost of complying with regulations —as the main barriers enterprises face when promoting the circular economy. On the other hand, when the authors [27] distinguished between revealed and deterring obstacles, their results indicated that regulatory obstacles and a lack of human resources are examples of revealed barriers that enterprises engaged in innovation activities face. On the contrary, enterprises not involved in these activities face deterring barriers such as a lack of expertise in new technologies and the capability to change their mindset in the long term. Our research indicates that administrative barriers are significant not only for innovating businesses but also for non-innovating ones. This implies that Slovak entrepreneurs are very sensitive to this obstacle, which discourages them from engaging in eco-innovation activities more than their limited knowledge of eco-innovations.

The next-highest barriers are those pertaining to inadequate sources of capital. The relevant authorities will need to search more thoroughly for solutions to remove these barriers. Taking the initiative and making financial resources from EU funds easier to use is one way. Slovakia's long-standing issue with excessive bureaucracy and a lack of progress in this area has been widely criticized. One of the primary obstacles, according to many academics, is the challenge of allocating capital in a qualitative and quantitative way [4] [28]. Slovak SMEs are also having trouble finding both internal and external sources of funding at the moment, ranking the difficulty of obtaining capital as their second most urgent issue, behind the high expense of eco-innovations and the high degree of bureaucracy. Conversely, our research indicates that Slovak SMEs consider networking with research institutions and other businesses to be among the least pressing barriers to eco-innovation, despite the fact that this is frequently mentioned as a major obstacle [1]. Remarkably, micro-enterprises tend to view obstacles to eco-innovation initiatives less keenly than do small and medium-sized businesses.

According to our research, there is no statistically significant correlation between Slovak SMEs' size or prior eco-innovation involvement and how they perceive obstacles to eco-innovation. Nonetheless, we think that even incomplete data indicating variations in the way that various enterprise groups in the study sample perceive obstacles may be intriguing and helpful to people who have an impact on the business environment. These results may also be helpful for future studies, particularly if other developed nations have previously confirmed similar dependencies. Therefore, an important task of the new Slovak political establishment will be to seek solutions in the area of support for eco-innovation activities of SMEs, which are an important accelerator and carrier of innovation potential, the support and development of which is essential for the competitiveness of the economy and its long-term sustainable development.

Conclusion

Our study’s findings showed that Slovak SMEs view the largest obstacles to implementing their eco-innovation initiatives as being the high expense and degree of bureaucracy. One distinctive characteristic of Slovak businesses is that, in contrast to the findings of multiple international studies, they do not view a management team's reluctance to innovate or a lack of collaboration with universities, research institutions, and other businesses as major obstacles. Taking a closer look at the ranking of the individual barriers, we find that there are slight differences depending on the size and prior eco-innovation activities of the businesses. It was not possible to confirm a statistically significant correlation between these traits and the degree of perceived barriers to eco-innovation (the H1 and H2 hypotheses have been disproved).

The article’s added value is found in its identification of the primary obstacles that SMEs currently face when attempting to introduce and implement eco-innovations more intensively.

Policy makers may find these findings useful in their search for suitable instruments to address obstacles to eco-innovations.

Our research has a number of limitations, the most significant of which is the state of the world today. The Covid-19 pandemic, war in Ukraine, and the ensuing economic hardships, such as a shortage of raw materials and other supplies and a high rate of inflation, all seem to have had a direct impact on the research findings, emphasizing the urgent need for eco-innovations and the significance of obstacles pertaining to their costs and availability of funding.

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JE VEĽKOSŤ A SKÚSENOSŤ ROZHODUJÚCA? EMPIRICKÝ VÝSKUM VYBRANÝCH BARIÉR EKO-INOVAČNÝCH AKTIVÍT V MALÝCH A STREDNÝCH PODNIKOCH NA SLOVENSKU.

Podniky čelia viacerým výzvam v oblasti ekologických inovácií. Často sa stretávajú s množstvom prekážok, ktoré bránia vytváraniu, zavádzaniu, využívaniu a šíreniu ekologických inovácií, najmä v prípade malých a stredných podnikov (MSP). MSP majú významný inovačný potenciál, a preto je nevyhnutné identifikovať, objasniť a obmedziť prekážky, ktoré bránia ich inovačnej činnosti a rozvoju ekologických inovácií. Cieľom článku je posúdiť bariéry, ktoré negatívne ovplyvňujú eko-inovačné aktivity slovenských MSP, zistiť, ktoré z nich sú v skúmaných MSP vnímané ako najvýznamnejšie a identifikovať vzťah medzi vnímaním bariér, veľkosť podnikov a ich predchádzajúce zapojenie do ekologických inovácií. Primárny výskum sa uskutočnil v roku 2023 a zahŕňal vzorku 487 náhodne vybraných slovenských MSP. Reprezentatívnosť vzorky bola potvrdená testom dobrej zhody. Autori článku stanovili tri hypotézy, ktoré overili prostredníctvom neparametrických testov. Prvé dve hypotézy predpokladali štatisticky významný vplyv veľkosti respondentov ako aj predchádzajúcich skúseností na intenzitu vnímania bariér pri eko-inovačných aktivitách. Tieto hypotézy sa nepotvrdili. Tretia hypotéza súvisela s celkovým poradím významnosti prekážok eko-inovácií a potvrdila, že náklady na eko-inovácie predstavovali najvýznamnejšiu prekážku pre MSP na Slovensku.

SIND GRÖSSE UND ERFAHRUNG WICHTIG? EMPIRISCHE FORSCHUNG AUSGEWÄHLTER HINDERNISSE FÜR ÖKO-INNOVATIONEN IN SLOWAKISCHEN KLEINE UND MITTLERE UNTERNEHMEN

Unternehmen stehen bei ihren Öko-Innovationsaktivitäten vor mehreren Herausforderungen. Sie stoßen häufig auf eine Reihe von Hindernissen, die die Schaffung, Einführung, Nutzung und Verbreitung von Öko-Innovationen, insbesondere für kleine und mittlere Unternehmen (KMU), behindern. KMU verfügen über ein erhebliches Innovationspotenzial. Daher ist es von entscheidender Bedeutung, die Hindernisse zu identifizieren, zu klären und abzubauen, die ihre Innovationstätigkeit und die Entwicklung von Öko-Innovationen behindern. Ziel des Artikels ist es, die Hindernisse zu bewerten, die sich negativ auf die Öko-Innovationsaktivitäten slowakischer KMU auswirken, herauszufinden, welche von ihnen bei den untersuchten KMU als am bedeutendsten wahrgenommen werden, und den Zusammenhang zwischen der Wahrnehmung von Hindernissen, dem Größe der Unternehmen und ihre bisherige Beteiligung an Öko-Innovationen. Die Untersuchung wurde im Jahr 2023 durchgeführt und umfasste eine Stichprobe von 487 zufällig ausgewählten slowakischen KMU. Die Repräsentativität der Stichprobe wurde durch den Chi-Quadrat-Anpassungstest bestätigt. Die Autoren des Artikels stellten drei Hypothesen auf, die sie durch nichtparametrische Tests überprüften. Die ersten beiden Hypothesen gingen von einem statistisch signifikanten Effekt der Größe der Befragten und ihrer Vorerfahrungen auf die Intensität der Wahrnehmung von Hindernissen für Öko-Innovationen aus. Diese wurden nicht bestätigt. Die dritte Hypothese bezog sich auf die allgemeine Reihenfolge der Bedeutung von Hindernissen für Öko-Innovationen und bestätigte, dass die Kosten das größte Hindernis für KMU in der Slowakei darstellten.

CZY WIELKOŚĆ I DOŚWIADCZENIE MAJĄ ZNACZENIE? BADANIA EMPIRYCZNE WYBRANYCH BARIER DLA EKOINNOWACJI W SŁOWACKICH MAŁYCH I ŚREDNICH PRZEDSIĘBIORSTWACH

Transformacja w kierunku zrównoważonej produkcji wymaga rozwiązań, które zaspokoją aktualne, wymagające potrzeby klientów, a jednocześnie będą opłacalne dla przedsiębiorstwa i przyjazne dla środowiska. Praktyka biznesowa pokazuje, że ekoinnowacje są nieuniknionym elementem tych rozwiązań, umożliwiając przedsiębiorstwom zwiększenie ich konkurencyjności na rynku przy jednoczesnym poszanowaniu środowiska. Działania innowacyjne przedsiębiorstw są w wielu aspektach trudne i często towarzyszy im szereg barier, utrudniających tworzenie, wprowadzanie, wykorzystywanie i rozpowszechnianie ekoinnowacji, w szczególności w przypadku MŚP. Ze względu na znaczny potencjał innowacyjny MŚP, bariery te należy zidentyfikować, skonkretyzować i zniwelować. W artykule skupiono się na identyfikacji i ocenie barier, które negatywnie wpływają na działalność innowacyjną MŚP i utrudniają rozwój ekoinnowacji. W szczególności analizuje dane empiryczne z próby słowackich MŚP dotyczące dostrzeganych przez nie barier i bada bardziej szczegółowo korelację barier z wielkością przedsiębiorstwa i wcześniejszymi doświadczeniami we wdrażaniu ekoinnowacji.