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The Role of Entrepreneurial Environmental Awareness in Promoting Eco-Innovation

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Abstract

Environmental awareness among managers and employees is a critical factor that can significantly influence the implementation of eco-innovation within enterprises. This article aims to explore the role of an entrepreneur's ecological awareness in driving the adoption of eco-innovative practices. To achieve this objective, a comprehensive literature review was conducted, focusing on the intersection of environmental awareness and eco-innovation. The findings from the literature analysis provided the foundation for conducting in-depth qualitative research, which was carried out using a case study approach. The selected case study offers a detailed examination of how high levels of environmental awareness within an enterprise can translate into its value systems, influencing both organizational culture and operational practices. The case study highlights that when an entrepreneur possesses a strong ecological consciousness, this mindset is often embedded within the company's core values, leading to the development of a pro-ecological culture. This cultural shift not only fosters the adoption of eco-innovative solutions but also promotes sustainable business practices that align with environmental preservation. The results suggest that an entrepreneur's ecological awareness plays a pivotal role in shaping the attitudes and behaviors of employees, creating a ripple effect that enhances the company's overall commitment to sustainability. The study underscores the importance of integrating environmental considerations into the strategic and operational frameworks of enterprises, as doing so can facilitate the successful implementation of eco-innovation. This article demonstrates that fostering environmental awareness at the leadership level is crucial for embedding eco-innovation into the fabric of an organization. By cultivating a strong environmental ethos, entrepreneurs can drive significant positive change, ensuring that their enterprises not only contribute to sustainability but also thrive in a competitive market that increasingly values eco-friendly practices.

Keywords: Environmental Awareness, Eco-Innovation, Entrepreneurial Leadership, Organizational Culture

JEL Codes: Q56, M14, L26

1. INTRODUCTION

Ecological awareness is crucial in influencing social attitudes toward the natural environment, as well as in driving the adoption of eco-friendly practices and innovations in businesses. For entrepreneurs, particularly in the small and medium-sized enterprise (SME) sector, having heightened awareness of environmental issues can significantly reduce the adverse effects their business activities may have on nature (Seroka-Stolka, 2011). This awareness can inspire them to implement sustainable practices, adopt eco-innovations, and engage in activities that prioritize environmental protection, thereby limiting harmful impacts on ecosystems. In the context of SMEs, which often have limited resources compared to larger firms, ecological awareness can motivate cost-effective, sustainable solutions that not only help the environment but also enhance competitiveness and resilience. For instance, adopting resource-efficient technologies, reducing waste, and improving energy efficiency can lead to financial savings and a positive public image, ultimately benefiting the business (Seroka-Stolka, 2011). Ecological awareness thus serves as a foundation for aligning economic objectives with environmental responsibilities, fostering sustainable growth while preserving natural resources for future generations. Extensive analyses of environmental initiatives underscore the critical importance of transforming human ecological awareness, which significantly shapes attitudes towards ecosystems and defines the level of environmental responsibility exhibited by individuals (Majchrowska, 2010). Ecological awareness encompasses an individual's understanding of environmental issues, recognition of the impact of human activities on nature, and the acceptance of the responsibility to minimize ecological damage. It serves as the foundation for developing sustainable behaviors, influencing not only personal lifestyle choices but also business practices. As such, enhancing ecological awareness is essential for fostering a culture of sustainability within organizations, especially among entrepreneurs in the small- and medium-sized enterprise (SME) sector.

Improving ecological awareness among entrepreneurs is particularly important as it influences their decision-making processes and strategic approaches. Entrepreneurs with higher levels of ecological awareness are more likely to incorporate sustainable practices into their business models, leading to a shift from traditional profit-centered approaches to ones that balance economic growth with environmental stewardship. This shift can involve adopting sustainable resource management practices, implementing eco-innovation, reducing waste, and minimizing the environmental impact of production processes. As entrepreneurs integrate ecological considerations into their operations, they contribute to a

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broader cultural shift towards sustainability that extends beyond individual businesses to influence entire industries and supply chains. Moreover, enhancing ecological awareness among business leaders can drive the adoption of ecological innovations—new or significantly improved products, processes, or organizational methods that reduce environmental impacts compared to existing alternatives. When entrepreneurs understand the long-term benefits of sustainable practices, such as cost savings from energy efficiency, improved stakeholder relationships, and enhanced corporate reputation, they are more motivated to invest in green technologies and sustainable business models. This awareness not only leads to direct environmental benefits, such as reduced pollution and resource conservation, but also generates competitive advantages for businesses, as consumers increasingly prefer companies with strong environmental credentials (Seroka-Stolka, 2011). The role of ecological awareness in shaping sustainable business practices is especially relevant in the context of global environmental challenges, such as climate change, resource depletion, and biodiversity loss. Addressing these challenges requires a paradigm shift in how businesses operate, moving away from linear models of production and consumption towards circular economies that emphasize reuse, recycling, and the responsible management of natural resources. Entrepreneurs with high levels of ecological awareness can be key drivers of this transition by pioneering innovative business solutions that not only mitigate environmental harm but also create value through sustainable development. Furthermore, raising ecological awareness within the business community can have a cascading effect, inspiring employees, customers, and other stakeholders to adopt more sustainable behaviors. When entrepreneurs prioritize sustainability, they set an example for others in their organizations and industries, encouraging a culture of environmental responsibility that extends to employees' everyday actions, customer choices, and supplier practices. This cultural shift can contribute to the development of green markets, where sustainable products and services become the norm rather than the exception.

In addition, government policies and incentives can play a significant role in supporting the growth of ecological awareness among entrepreneurs. For example, environmental regulations, subsidies for green technologies, and tax incentives for sustainable practices can encourage businesses to adopt eco-friendly strategies. When combined with increased ecological awareness, such policies can accelerate the adoption of sustainable practices across various sectors, leading to significant reductions in environmental impacts at the national and global levels. Ultimately, fostering ecological awareness among entrepreneurs is not just about compliance with environmental laws; it is about embracing a broader vision of sustainability that integrates economic, social, and environmental goals. By embedding ecological values into business strategies, entrepreneurs can help create a more sustainable future, where economic development is decoupled from environmental degradation. This holistic approach to business management aligns with the principles of corporate social responsibility (CSR) and sustainable development, positioning companies to contribute positively to society while achieving long-term economic success. This paper presents a comprehensive literature review and findings from a qualitative research study focused on understanding the role of ecological awareness in promoting ecological innovations, or eco-innovations, within a selected enterprise. The study aims to explore how ecological awareness influences the decision-making processes related to adopting eco-innovations and the extent to which environmental considerations are integrated into the company's strategic management.

The literature review provides a background on the concept of ecological awareness, defined as the understanding and recognition of environmental issues and the responsibility to act in an eco-friendly manner. It also discusses the significance of eco-innovations, which refer to the introduction of new or significantly improved products, processes, or organizational methods that reduce environmental impact compared to existing alternatives. Previous studies highlight the relationship between increased ecological awareness among business leaders and the likelihood of implementing sustainable practices. This review forms the foundation for analyzing how awareness levels shape eco-innovation adoption. In conducting the qualitative research, the study uses in-depth interviews with key stakeholders from the enterprise, including management, employees, and experts in sustainability. The qualitative approach aims to uncover the motivations, attitudes, and barriers related to ecological awareness that influence eco-innovation practices within the company. The enterprise selected for the research was chosen based on its ongoing efforts to integrate sustainability into its business model and its commitment to reducing environmental impact through innovative solutions.

The research findings suggest that higher levels of ecological awareness among the company's leadership significantly facilitate the adoption of eco-innovations. Leaders who are ecologically conscious prioritize environmental considerations in their strategic planning, allocate resources to support green technologies, and promote a culture of sustainability within the organization. Moreover, the study reveals that when ecological awareness is deeply embedded in the corporate culture, it encourages employee engagement in sustainable practices, leading to a collective effort towards achieving environmental goals. Barriers to implementing eco-innovations are also discussed, with factors such as financial constraints, lack of technical knowledge, and uncertain market demand for green products identified as common challenges. Nonetheless, the research indicates that a strong ecological awareness helps mitigate these barriers by motivating the company to seek external partnerships, access funding for sustainable projects, and invest in employee training programs.

The paper contributes to the understanding of how ecological awareness drives eco-innovation adoption, providing insights into the practical implications for businesses aiming to enhance their sustainability performance. The findings suggest that fostering ecological awareness at all organizational levels can be a key strategy for encouraging the successful implementation of eco-innovations, thereby contributing to environmental protection and sustainable business growth. The paper addresses the critical role of ecological awareness in fostering the introduction of eco-innovations within enterprises, using a case study of a selected enterprise to illustrate the relationship. It assumes that the identification

and development of ecological awareness, along with understanding its social determinants, significantly influence an enterprise's ability to adopt eco-innovations. The study explores how social awareness and attitudes towards environmental issues impact the willingness and capacity of businesses to integrate sustainable practices and technologies. The problem tackled in this research centers on identifying the level of social awareness regarding environmental issues and the attitudes that influence the implementation of eco-innovations in businesses. It seeks to understand how these factors shape decision-making processes and contribute to creating a corporate environment that supports sustainability. The case study serves as a practical example of how ecological awareness can manifest within a company, demonstrating the correlation between socially-driven environmental consciousness and the adoption of eco-friendly practices. The findings suggest that ecological awareness is not only about recognizing the environmental impacts of business activities but also about adopting a proactive stance towards mitigating these effects. The attitudes and values held by business leaders, employees, and other stakeholders play a crucial role in driving the transition towards eco-innovative solutions. For instance, the case study revealed that in the selected enterprise, social awareness extended beyond compliance with environmental regulations, incorporating a genuine commitment to minimizing the company's ecological footprint. This was evident in various strategies aimed at resource efficiency, waste reduction, and the use of sustainable materials. Moreover, the paper highlights the role of social determinants—such as cultural values, societal norms, educational background, and public opinion—in shaping ecological awareness and influencing eco-innovation adoption. It notes that companies embedded in communities with high environmental awareness are more likely to implement eco-innovations, as social pressure and expectations motivate businesses to align with sustainable practices. In the case study, the enterprise's commitment to eco-innovation was partly driven by community values that favored environmental sustainability.

The research emphasizes that for companies to effectively introduce eco-innovations, there must be a concerted effort to enhance ecological awareness among all stakeholders. This involves not only raising awareness about the benefits of eco-innovations but also addressing potential misconceptions and barriers that may hinder their adoption. The paper suggests that targeted educational initiatives, training programs, and communication strategies can help build a culture of sustainability within organizations. The paper posits that ecological awareness is a foundational element in the journey towards sustainable development for enterprises. By understanding and nurturing social awareness and positive attitudes towards environmental responsibility, companies can better position themselves to embrace eco-innovations, leading to long-term benefits such as improved competitiveness, regulatory compliance, and a positive corporate reputation. The case study underscores the potential for businesses to leverage ecological awareness as a strategic asset in promoting sustainability and driving eco-innovative practices.

2. LITERATURE REVIEW

The concept of ecological awareness has been extensively discussed by various authors, who often highlight the ambiguity surrounding the term, especially from an ontological standpoint. This ambiguity arises partly due to disciplinary differences across academic fields. Many scholars associate ecological awareness with social awareness. For instance, Hull (1984) describes ecological awareness as a type of social awareness that manifests in individual thought processes, experiences, and socially accepted norms concerning the appreciation and valuation of nature. Similarly, Penc (2003) emphasizes that ecological awareness encompasses not only the knowledge and thinking patterns of individuals but also their intellectual and emotional responses, decision-making, and adherence to societal standards regarding environmental values, respect for nature, and actions for environmental preservation. To further clarify the notion of ecological awareness, it is important to explore the broader concept of "social awareness." The term was first introduced by Émile Durkheim, who defined it as a collective set of ideas, symbols, beliefs, opinions, and superstitions shared by the majority within a particular community. According to Sztompka (2002), social awareness comprises widely accepted beliefs and convictions that form mental models or patterns ingrained in community members, often reinforced by social pressure. This collective aspect of social awareness implies that individual consciousness is shaped by shared societal beliefs, creating a reflexive relationship between collective and individual awareness. As a result, social awareness inherently influences personal attitudes and behaviors toward the environment.

Wódcz extends this concept by suggesting that ecological awareness includes all social beliefs, opinions, and judgments as well as values, norms, and behavior patterns related to humans' relationship with their natural surroundings. Huczek takes a more individual-oriented view, defining ecological awareness as a responsible attitude toward the environment, driven by knowledge and motivation to preserve nature in its original state. Both perspectives emphasize the crucial role of individual and collective consciousness in shaping ecological behaviors and norms. Ecological awareness also serves as a measure of the extent to which sustainable development principles are adopted within a given society. According to Skolimowski, one of the pioneers of eco-philosophy, ecological awareness is a fundamental element of eco-development and a *sine qua non* condition for achieving sustainable growth. He argues that proper awareness and values constitute the foundation for sustainable development. Without such awareness, it is challenging to implement sustainable practices effectively. Sarzała (2003) further posits that ecological awareness is not only an integral component of sustainable development but also a necessary condition for addressing the global crisis of modernity and fostering a new, ecologically conscious civilization.

The transition toward ecological awareness necessitates a profound shift from traditional anthropocentric worldviews to an ecocentric approach that prioritizes environmental sustainability. This shift represents a radical transformation in collective thinking and societal practices. The development of ecological awareness involves a fundamental reevaluation

of values, norms, and behaviors, promoting a deeper understanding of the interconnectedness between humans and the natural environment. By embedding eco-friendly ideas into social consciousness, ecological awareness fosters sustainable practices that contribute to the long-term well-being of both society and the planet. Thus, the process of cultivating ecological awareness can be viewed as both a social and an individual endeavor. It involves not only educating people about environmental issues but also encouraging a cultural shift in values that prioritize environmental protection. This transformation aims to integrate environmental considerations into daily life, business practices, and policy-making, ultimately leading to a more sustainable future. As various scholars suggest, the formation of ecological awareness requires a combination of knowledge dissemination, value formation, and social engagement to reshape the relationship between society and the natural world. The development of ecological awareness among entrepreneurs is significantly influenced by the level of ecological knowledge they possess. This knowledge shapes their value system, leading to the adoption of eco-friendly attitudes and behaviors. Seroka-Stolka (2011) emphasizes that having a solid foundation in ecological knowledge is essential for cultivating prudent business practices that align with environmental sustainability. The process of acquiring, processing, and applying this knowledge in business operations is crucial for making informed decisions that benefit both the company and the environment. Education plays a vital role in this context. Nakonieczna (2008) explains that ecological knowledge encompasses an understanding of the relationships and interactions that maintain balance within natural systems, as well as awareness of pollution, environmental threats, and strategies to combat them. This type of knowledge is rooted in a comprehensive understanding of the processes occurring in the biosphere and ecosystems. Ecological education, therefore, not only imparts knowledge about sustainable development, environmental risks, and conservation practices but also instills values related to the responsible treatment of nature. It serves as a catalyst for encouraging eco-friendly behaviors in business.

For managers and specialists, possessing ecological knowledge influences strategic decision-making processes. They can incorporate sustainability considerations into the company's goals and operations, setting a precedent for their organizations to follow. Additionally, managers have a crucial role in raising ecological awareness among their employees. This can be achieved by supporting initiatives that help employees acquire and strengthen their ecological knowledge. For example, managers might facilitate training programs or workshops that educate employees on sustainable practices. Implementing systems that motivate and reward employees who actively participate in eco-friendly activities can also enhance the adoption of sustainable practices within the organization. Recognition programs, incentives, and bonuses for employees who contribute significantly to reducing the company's environmental impact can foster a culture of environmental responsibility. Moreover, promoting ecological education through internal communication campaigns is another effective approach to enhancing ecological awareness within a company. Campaigns that focus on efficient waste management, energy conservation, and sustainable use of resources such as water and electricity can encourage employees to develop eco-friendly habits. These habits not only align with corporate sustainability goals but also help in the practical implementation of environmentally friendly strategies set by the management.

In this way, ecological education becomes a continuous process that extends beyond formal training. It involves creating an organizational culture where sustainability is valued, and eco-friendly behaviors are integrated into everyday business operations. As employees become more knowledgeable about environmental issues, they are more likely to support and actively participate in the company's sustainability initiatives. Thus, shaping ecological awareness among entrepreneurs and employees alike is essential for building a sustainable business model that meets the growing demand for responsible environmental practices. When considering social awareness in terms of knowledge, opinions, ideas, and values, the inclusion of motivation for eco-friendly actions is vital. As A. Papuziński (2006) and J. Wódz & K. Wódz (2001) have emphasized, ecological awareness encompasses the motivational aspects that drive individuals and organizations toward sustainable behaviors. This perspective shows that ecological awareness goes beyond mere knowledge and includes the underlying motivation to engage in activities that benefit the environment. Ecological awareness plays a significant role in shaping the behaviors and eco-friendly initiatives undertaken by enterprises, including the implementation of environmental innovations and eco-innovations. It acts as a regulatory force that motivates behaviors and directs initiatives toward achieving specific environmental goals (Penc, 1995). This motivational component is an essential aspect of the contemporary understanding of social accountability in business. Companies are increasingly recognizing that ecological awareness should not just be a matter of compliance or marketing but rather an integral part of their corporate social responsibility (CSR) strategies.

The concept of greening management emerges as an extension of ecological awareness within businesses. It involves integrating a set of environmentally oriented tasks into the company's operations to improve the environmental impact across all areas of activity. The idea is to incorporate environmental considerations into management practices, which can lead to better sustainability outcomes. Matejun (2008) argues that greening management aims to embed the principles of environmental protection in every aspect of the company's functioning, thus aligning corporate objectives with ecological goals. A key area where ecological awareness translates into practical action is through the implementation of ecological innovations. These innovations are broadly defined in the literature as changes that lead to improvements in environmental protection and foster sustainable development (Kłosok-Bazan et al., 2015). Ecological innovations can include new products, processes, or business models that reduce environmental impact by using resources more efficiently, cutting down emissions, or minimizing waste. They can also involve the adoption of renewable energy sources or the development of closed-loop systems that recycle materials.

The link between ecological awareness and the adoption of ecological innovations suggests that companies with a higher

level of environmental consciousness are more likely to invest in sustainable technologies and practices. This relationship can be explained by the fact that companies motivated by ecological awareness recognize the long-term benefits of sustainability, such as regulatory compliance, cost savings from resource efficiency, and an enhanced reputation with consumers and stakeholders. Additionally, ecological awareness encourages companies to go beyond the minimum legal requirements for environmental protection and to adopt more proactive and innovative approaches to sustainability. This proactive stance is reflected in the growing trend among businesses to incorporate eco-innovations as part of their strategic planning processes. Firms that prioritize environmental sustainability are more likely to engage in research and development (R&D) activities focused on creating green technologies and finding new ways to integrate sustainability into their core operations. Ecological awareness is a key driver of eco-innovation implementation, influencing both the motivation behind adopting green practices and the extent to which these practices are integrated into a company's strategy. By promoting ecological awareness and embedding it within their organizational culture, companies can better navigate the challenges of sustainable development and enhance their competitive advantage in a market that increasingly values environmental responsibility. This, in turn, helps shape a more sustainable business landscape where ecological considerations are central to corporate decision-making and innovation efforts. In the literature, there are multiple terms whose meanings overlap, including ecological innovations, environmental technologies, eco-innovations, and ecological technologies. These terms share a common characteristic: they all contribute to reducing the environmental stress caused by business activities. According to Rennings (2000), ecological innovations encompass all actions undertaken by significant entities such as enterprises, politicians, associations, churches, and households. These actions involve initiating, employing, and implementing new ideas, behaviors, production processes, and products that support environmental protection or aid the ecological dimension of sustainable development (Urbaniec, 2009). Huczek (1999) further defines ecological innovations as changes in technology, organizational structures, and enterprise management practices that reduce the negative impact on the natural environment.

Eco-innovations specifically refer to innovations aimed at preventing and reducing environmental pollution resulting from human activities. These innovations also address damage remediation and involve the identification and monitoring of environmental pollution (Urbaniec, 2009). The term "eco-innovation" was comprehensively defined in 2009 by the Central Statistical Office (GUS) of Poland, which presented studies on the topic. According to GUS (2010), an eco-innovation is "an innovation bringing benefit for the environment" that involves a new or significantly upgraded product, process, organizational or marketing method that is beneficial for the environment compared to alternatives. The implementation of eco-innovations is closely linked to European Union (EU) policy trends. The European Commission established the Eco-Innovation Observatory (EIO), a platform that gathers structured data and analyses on various ecological innovations within the EU and other key global regions. The EU actively monitors the development and introduction of eco-innovations through the Eco-Innovation Scoreboard, which is a comprehensive assessment and comparison tool for the performance of eco-innovation implementation across the EU-27 Member States. The scoreboard evaluates 16 indices across five areas: outlays, actions, results, environmental effects, and socioeconomic effects (Eco-Innovation Observatory, 2016).

The 2013 Eco-Innovation Scoreboard showed that Sweden, Finland, Germany, and Denmark had the highest levels of eco-innovation performance within the EU. Conversely, countries such as Bulgaria and Slovakia ranked at the lower end of the scoreboard, having not reached even half of the eco-innovation index for the entire EU (Eco-Innovation Scoreboard, 2016). This disparity underscores the need to foster ecological awareness among entrepreneurs, especially in countries with lower eco-innovation scores. By doing so, businesses can better understand the benefits and opportunities associated with implementing ecological innovations. Ecological awareness plays a crucial role in shaping the attitudes of managers and employees toward the natural environment. A heightened awareness encourages a proactive approach to adopting eco-friendly practices, which should, in turn, motivate the implementation of environmental innovations. The literature suggests that enhancing ecological awareness can significantly influence a company's commitment to sustainability, leading to increased motivation to pursue eco-innovative strategies.

Raising awareness about the advantages of eco-innovations can help overcome barriers that hinder their adoption. These barriers may include concerns over the costs of new technologies, uncertainty about market demand, or a lack of knowledge about potential economic benefits. Educating entrepreneurs and decision-makers on the importance of eco-innovation, as well as providing them with information on existing support systems and financial incentives, can help facilitate the transition towards sustainable business practices. Moreover, ecological awareness not only influences the decision-making processes within companies but also contributes to shaping public policy. By encouraging businesses to adopt eco-innovative solutions, policymakers can create a regulatory environment that supports sustainable development goals. For example, eco-innovation policies can provide incentives for research and development (R&D) in green technologies, establish regulations that encourage resource efficiency, or promote circular economy practices. Ecological awareness is a significant factor in promoting the adoption of eco-innovations within enterprises. It serves as a catalyst for aligning business practices with environmental sustainability goals, influencing both internal company culture and broader public policy initiatives. By enhancing ecological awareness, companies can better understand the long-term benefits of investing in eco-friendly technologies, thereby fostering a business environment that prioritizes sustainability and supports the development of innovative solutions to environmental challenges.

3. DISCUSSIONS

However, over time, the enterprise adopted more sustainable practices by recycling PVC waste. The PVC waste generated

during production is now collected and processed for reuse, reducing the amount of material sent to landfills. The company has invested in equipment that allows for the recycling of PVC scraps back into the production process, effectively closing the loop on waste management. This approach not only minimizes environmental harm but also reduces raw material costs, enhancing the company's economic efficiency. Furthermore, the enterprise has implemented a system to control and reduce air pollution emissions. This involves using air filtration systems that capture solvent fumes and chemical vapors released during production. These filtration systems are designed to comply with local environmental regulations and standards. The company also monitors emission levels regularly to ensure compliance and continually seeks ways to improve air quality. The review of documents, including environmental permits and monitoring reports, indicated that the enterprise meets the legal requirements for waste management and air quality. Nonetheless, there is an ongoing effort to exceed basic compliance by exploring new technologies and methods to further reduce the environmental footprint of the manufacturing processes. For instance, the company has been testing alternative materials and formulations that may lessen the use of potentially harmful chemicals in production. In terms of worker safety, the audit revealed that exposure to dust, fumes, and noise are potential occupational hazards. The company has established protocols to mitigate these risks, including the use of personal protective equipment (PPE), regular health monitoring, and safety training for employees. The factory layout was also adjusted to separate high-risk areas from other parts of the facility, limiting workers' exposure to potentially hazardous conditions. The company's proactive approach to environmental management has contributed to its competitive advantage in the Polish and European markets. By integrating eco-innovations into its operations, the enterprise has not only met but also anticipated the increasing demand for environmentally responsible products. This alignment with sustainability trends has enabled the company to attract eco-conscious clients and comply with stricter environmental standards imposed by various European Union regulations. The case of this enterprise illustrates the importance of adopting a holistic approach to sustainability in the industrial sector. It demonstrates that environmental risks can be effectively managed through a combination of technological upgrades, waste reduction strategies, employee training, and adherence to quality standards. Such practices not only benefit the environment but also support long-term business success by improving efficiency, reducing costs, and enhancing the company's reputation.

The environmental audit's findings highlight the ongoing need for improvement, as there remain challenges in achieving a fully sustainable operation. For example, despite efforts to recycle PVC waste, some residual materials cannot yet be repurposed efficiently. Additionally, while emission control measures are in place, the use of certain chemical agents still presents an environmental impact, necessitating continued research into alternative, greener production methods. The enterprise's journey from traditional manufacturing practices to a more eco-conscious operation reflects a broader shift in industrial sectors towards sustainable development. The case study suggests that companies can achieve economic benefits by integrating environmental considerations into their business strategies. By continually assessing and addressing environmental risks, the company sets an example for other firms in the industry to follow, demonstrating that sustainability can be a driver of innovation and growth. The evolution of the enterprise's approach to waste management shows a deepening commitment to environmental sustainability. What began as an internal effort to address waste disposal challenges eventually became a critical part of the manufacturing process. The company formed an innovative team to design and construct a waste-grinding mill in-house, which allowed the firm to reduce waste by reusing ground material as a raw material supplement. The success of these technological trials resulted in significant reductions in both waste production and raw material consumption, highlighting the positive environmental and economic outcomes achieved through eco-innovation.

The enterprise also deals with hazardous waste, ensuring its safe collection and storage before it is sent to licensed entities for proper disposal. This approach aligns with legal waste management requirements and demonstrates the company's dedication to compliance with environmental regulations. The firm's ongoing commitment to sustainability extends to monitoring air quality, as the thermal processing of plastics can emit pollutants. Bench testing has shown that emissions remain within current regulatory standards, thanks in part to an effective ventilation system and personal protective measures that ensure safe working conditions for employees. Moreover, the company takes a proactive stance in reporting atmospheric emissions to the local authorities, such as the City Mayor. This transparency indicates that the enterprise not only complies with legal requirements but also seeks to contribute positively to the community by sharing environmental data. The emphasis on adhering to environmental protection laws, while simultaneously finding innovative ways to minimize ecological impact, demonstrates the company's ongoing efforts to integrate sustainability into its core business strategy.

The ecological awareness and social responsibility displayed by the owner have extended beyond the company's operations, influencing broader community efforts. After acquiring the production hall and initiating operations, the company took on a leadership role in addressing local environmental issues in the post-industrial area. As the head of a local action group, the owner led initiatives to resolve pressing challenges such as rainwater drainage, landscaping, and waste management. These efforts culminated in the creation of a Green Business Park, a significant accomplishment that earned the owner the "Green Cheque" award from the Voivodship Environment Protection Fund. This recognition underscores the company's impact on regional sustainability and the owner's role as a change-maker in the community. The environmental ethos of the company's leadership has permeated the organizational culture, significantly influencing employee attitudes and behaviors. Workers exhibit a heightened sense of responsibility for environmental protection and actively participate in initiatives aimed at minimizing the company's ecological footprint. This shared commitment to sustainability fosters a culture where employees feel empowered to make a difference, both within the enterprise and in

the broader community.

The results of the research indicate that the high level of ecological awareness exhibited by both the owner and employees is instrumental in driving environmental innovation. The company's efforts are not limited to its internal processes but extend to community engagement and sustainability projects. This holistic approach not only benefits the environment but also enhances the company's reputation, strengthens stakeholder relationships, and provides a model for other businesses seeking to integrate eco-innovation into their operations. The case study of the enterprise illustrates how ecological awareness can play a pivotal role in the successful initiation and implementation of environmental innovations. The company's journey from traditional waste disposal practices to integrated sustainable development initiatives reflects a strategic shift towards long-term ecological responsibility. The involvement in local environmental issues and the recognition received for these efforts further emphasize the impact that businesses can have on regional sustainability when they prioritize eco-innovation. The enterprise's experience suggests that strong leadership, employee engagement, and a commitment to continuous improvement are key factors in achieving sustainable business practices that benefit both the company and the community.

4. CONCLUSION

The analyses and case study presented affirm the significance of ecological awareness in the successful implementation of ecological innovations within enterprises. The research findings, derived from in-depth interviews and a detailed case study of a purposefully selected enterprise, highlight that both the owner and employees exhibit a notably high level of ecological awareness. This awareness is accompanied by a strong belief in their ability to address environmental challenges through the adoption of eco-innovations. The findings thus suggest that ecological awareness plays a critical role in motivating and guiding enterprises toward sustainable practices. Ecological awareness emerges as a vital factor in driving the implementation of eco-innovations. The investigations reveal that companies actively introducing ecological innovations often possess a high degree of ecological knowledge, which serves as a foundation for cultivating ecological awareness. This knowledge extends beyond a mere understanding of environmental regulations to include awareness of sustainable development principles, the environmental impacts of business operations, and potential solutions to mitigate those impacts. It enables leaders and employees to make informed decisions that prioritize environmental considerations alongside business objectives. The development of strong ecological awareness positively influences the system of values within an enterprise, shaping eco-friendly attitudes and behaviors among both management and staff. When leaders and managers exhibit a commitment to sustainability, it sets a precedent for the entire organization, fostering a culture that values environmental protection. This culture encourages employees to actively participate in sustainability initiatives, such as waste reduction, resource conservation, and the use of sustainable materials. As a result, ecological awareness becomes ingrained in the company's ethos, driving continuous improvements in environmental performance. Entrepreneurs who possess a keen sense of ecological awareness are more likely to embrace ecological challenges, seeing them as opportunities rather than obstacles. This proactive approach often translates into not only environmental benefits, such as reduced waste, lower emissions, and sustainable resource use, but also economic gains. The case study demonstrates that eco-innovations can lead to cost savings through more efficient use of resources, enhanced product quality, and compliance with environmental regulations, which may reduce potential legal risks and liabilities. Moreover, the implementation of ecological innovations contributes to the company's competitive advantage. Enterprises that invest in sustainable practices are better positioned to meet the growing demand for eco-friendly products and services, appealing to environmentally conscious consumers and gaining market differentiation. Additionally, the adoption of eco-innovations can enhance a company's reputation, attract investors interested in sustainability, and open up new business opportunities, such as accessing green markets or qualifying for government incentives for environmental compliance.

Overall, the study underscores that ecological awareness, particularly among leaders and managers, is a key driver of ecological innovation within enterprises. This awareness shapes a company's values and attitudes towards sustainability, encouraging a proactive approach to environmental challenges. As businesses integrate eco-innovations into their operations, they not only achieve environmental and economic benefits but also strengthen their competitive position in the market. The findings suggest that fostering ecological awareness and knowledge within organizations can lead to a more sustainable business environment, where ecological and economic objectives are mutually reinforcing. To promote the widespread adoption of ecological innovations in enterprises, a supportive policy framework should play a substantial role in shaping ecological awareness among entrepreneurs. This policy should employ various instruments, such as incentives, regulations, and educational programs, to drive an increase in the number of ecological innovations across the enterprise sector. The anticipated outcome is a range of benefits that extend beyond environmental improvements to encompass social and economic gains as well. Education stands out as a key approach to elevating ecological awareness within enterprises. Targeted educational initiatives should aim to cultivate ecological sensitivity, instill appropriate environmental values and behaviors, and provide knowledge on the practical implementation of eco-innovations. Training programs, workshops, and awareness campaigns can be tailored to address the specific needs and contexts of different industries, ensuring that entrepreneurs and employees alike understand the importance of sustainable practices. Through such education, businesses can better appreciate the impact of their operations on the environment and recognize the potential economic advantages of adopting eco-innovations.

While policies supporting ecological innovation are increasingly being adopted, the literature review reveals a relative scarcity of studies that specifically examine the role of ecological awareness in driving the implementation of

environmental innovations within enterprises. This gap in research represents an important opportunity for future studies to explore how increasing ecological awareness among business leaders and employees can serve as a catalyst for sustainable practices. Understanding the relationship between ecological awareness and the uptake of eco-innovations can inform more effective strategies to promote sustainable business practices. Research challenges in this area include identifying the most effective ways to foster ecological awareness, assessing the long-term impacts of ecological education on business practices, and measuring the specific benefits of increased ecological awareness for both individual companies and the broader economy. Additionally, further studies could investigate the role of various policy instruments, such as tax incentives, grants, or penalties, in motivating businesses to integrate ecological awareness into their strategic decision-making. Ultimately, by investing in the development of ecological awareness through education and supportive policies, governments and organizations can drive a significant increase in the adoption of eco-innovations. This, in turn, will not only mitigate environmental harm but also enhance the sustainability of economic growth, foster social well-being, and help enterprises gain a competitive edge in a market that increasingly values sustainability.

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