



Analyzing The Mediating Role of Green Creativity Climate on Green Product Performance: Evidence Form Industrial Manufacturing Sector of Pakistan

Ali Nasir¹

¹ Faculty of Business and Management Sciences, Superior University, Lahore, Pakistan.
Email: alinasirdar100@gmail.com

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ABSTRACT

This paper aimed to explore the effects of EIP dimensions' success factors, in particular, environmental management, climate creativity, creative sustainability, and the environmental effects of products. innovation on organizational success of Pakistani manufacturers at different levels of execution, including environmental performance, economic performance, and operational performance. It also highlights the need for further research on EIP practices in developing nations such as Pakistan. Using a Convenient sample technique, survey questionnaires were used to gather data for this study, from the management of 185 companies in Pakistan. PLS-SEM was used to examine data related to the intended target market. which was managerial staff members (business experts & executives) from private business firms. Our results demonstrate that EIP, with its creative climate and green technology, has a favorable effect on the performance of green product development. We also learn that consumers with low standards for the environment and little desire to purchase goods can be found in manufacturing enterprises. According to our research, which supports the organizational innovation theory, raw art is the most crucial component of an organization that encourages the creation of a green manufacturing product. One finding from the research is that the presence of a green creative atmosphere is a crucial component in explaining the beneficial effects of EIP on the efficiency of green product development. Second, the EIP encourages the growth of organizational qualities in addition to raw material development. but additionally offers the advantages of organizational performance. Researchers may be able to gain a better understanding of the intermediary mechanisms linking green creativity, raw product innovation, and EIP with the use of these studies.

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Corresponding Author's Email: alinasirdar100@gmail.com

1. Introduction

Strong and an educated community always leads to a healthy environment. Since we are aware, the rapid environmental issues all around the world has been growing from customers, purchasers, districts, and the government (Chiou, Chan, Lettice, & Chung, 2011). Such as, both customers who come from abroad or locally and buyers are now demanding their suppliers to produce goods that are environmentally friendly. Pollution and environmental sustainability one of the most important world problems. The environment, automobiles, and population growth in Pakistan is pretty unnatural. Pakistan is a country in development going through a difficult period marked by degradation in the environment (Junior, da Silva, Gabriel, & de Oliveira Braga, 2015). Green products are those that make an effort to prevent damage or enhance the environment, save natural resources, and save energy as well as to use less harmful pollutants. Seman et al. (2019) GI are divided into environmentally friendly products, green processes, and green management aimed at preserving the environment characteristics

that lead to lower energy consumption, more resource efficiency, enhanced organizational performance, and the provision of a pollution-free environment for society as a whole (Tseng, Wang, Chiu, Geng, & Lin, 2013). The significance of green practice in the company lies in green environmental innovative activities. Our article's study is narrowly focused and uses the creativity climate to support it that may encourage an environment where businesses can improve the manufacturing industry's environmental innovation practices. Thus far, the growth of the industrial sector has proven essential to the economic development of nations like South Korea and China. These nations' manufacturing sectors have consistently improved and as a result made significant economic advancements. China's State Council announced a 10-year national plan in 2015, The goal of Made in China 2025 is to elevate China from a global manufacturing powerhouse to that of a manufacturing. The experts think that Pakistan can benefit from similar measures to boost industry and national competitiveness. Pakistan is benefiting from the growth of its industrial sector because it is a developing nation. Evidence from recent surveys suggests that the manufacturing sector is now a significant contributor to the GDP of the nation. According to the Government of Pakistan (2016), this industry currently contributes 14.2 percent of total employment and 13.3 percent of the country's GDP. Because of its recent and potential growth as well as its effects on the environment, this study concentrated on Pakistan and the manufacturing sector there.

Pakistan's economy is predicted to grow from its current position as the 20th largest in the world to the 16th position by 2050. The manufacturing sector in Pakistan leads the economy and accounts for 13.5% of GDP, making it the second largest economic sector (Government of Pakistan Ministry of Finance, 2019). C. H. Chang (2016); (Huang, Hu, Liu, Yu, & Yu, 2016) It's a win-win approach since it lessens the tension between rapid economic growth and environmental consciousness. (Y.-s. Chen, 2013); Vickers (2017) Consumers, the public, and governmental organizations are pressuring this sector to lower global pollution and conserve resources, energy, and the environment while maintaining sustainability. Cordano, Marshall, and Silverman (2010); Lin and Ho (2011)) or on a single industry. According to Xie, Zhu, and Wang (2019) researchers talked about how GI is special or altered systems, procedures, goods, and practices that support both the sustainability of organizations and the environment. Biel (2013) Go green is a benefit that businesses mostly use to address environmentally friendly issues. Heidenreich and Breukers (2020); Jabbour, Santos, Fonseca, and Nagano (2013), C. H. Chang (2016) discovered that the performance of green product innovation is positively impacted by environmental commitment. Amabile, Conti, Coon, Lazenby, and Herron (1996); Y. Li (2014) implies that the relationship between EIP and the performance of green product innovation is dependent on the creativity climate. When applied well, they improve the performance of green product innovation. Consequently, we examined the impact of EIP on green product creation performance as seen from the perspective of organizational climate.

2. Literature Review

Organizational creativity theory forms the study's theoretical basis. As the global economy continues to expand at a rapid pace, governments and businesses are finding it more difficult to address environmental concerns and significant barriers to both economic growth and business performance (Huang et al., 2016; Laosirihongthong, Adebajo, & Tan, 2013). Green creativity is a serious organizational component supporting green environmental innovation strategies of businesses, which contributes to organizational creativity theory. We used organizational creativity theory to oversee the environmental management. This study concentrated on the environment for creativity that can foster an environment where businesses can improve. The manufacturing sector boosts economies around the world by creating goods and services. Thus far, the rise of the manufacturing sector has been essential to the economic expansion of nations like South Korea and China. These nations have made significant economic progress as a result of their industrial industries' constant improvement. China's State Council unveiled Made in China 2025, a 10-year national plan, in 2015 with the goal of transforming the country from a manufacturing into a global manufacturing power. The experts think that Pakistan can benefit from similar measures to boost industry and national competitiveness. Pakistan is benefiting from the growth of its industrial sector because it is a developing nation. Evidence from recent surveys suggests that the manufacturing sector is now a significant contributor to the GDP of the nation. According to the Government of Pakistan (2016), this industry currently contributes 14.2 percent of total employment and 13.3 percent of the country's GDP. Because of its recent and potential growth as well as its effects

on the environment, this study concentrated on Pakistan and the manufacturing sector there. Pakistan's economy is predicted to grow from its current position as the 20th largest in the world to the 16th position by 2050. With 13.5% of GDP, the manufacturing industry in Pakistan is the main key of the nation's economy and the second-largest economic sector overall (Government of Pakistan Ministry of Finance, 2019). Abdul-Rashid, Sakundarini, Ghazilla, and Thurasamy (2017) Pakistan is the fifth most popular country in the world based on population, which has an impact on pollution. Population growth has led to higher energy consumption and expanding businesses, all of which negatively impact the environment by causing pollution, noise pollution, and poor air quality. Environmental challenges have been shaped by the unplanned waste management and chemical consumption systems in manufacturing enterprises (Khwaja, 2012). One of the world's most vulnerable nations is Pakistan in terms of climate risk index, ranking seventh out of ten, and facing severe environmental issues.

2.1. Environmental Innovation Practices and Creativity Climate

Given the numerous environmental concerns that organizations face in the current day (Porter & Van der Linde, 1995). Businesses and stakeholders are supervising proactive engagement to modify their tactics, green innovation, and EIP initiatives to address environmental issues. Our numerous research examined the relationship between organizational characteristics and EIP as well as the atmosphere of innovation in the manufacturing sector. According to van der Linde (1995); Yahia, Al-Neama, and Kerbache (2018) Numerous scholarly works have examined Environmental Innovation Practices, emphasizing the advantages of green innovation methods for the environment, cost savings, and efficiency gains. Numerous research found a connection between creativity in climate change and environmental innovation practices, but no clear conclusion has been reached as of yet. The manufacturing industry's use of climate creativity and environmental innovation techniques has rapidly moved into the center of research in recent years. The relationship between environmental innovation practices and climate creativity is one of function; nevertheless, it is currently unclear what exactly connects these two concepts. The study of climate organizations' originality and environmental innovation practices is crucial to their transformation to sustainable development.

As Alam, Murad, Noman, and Ozturk (2016) stated that a nation's economy is its main source of economic growth, with the manufacturing sector being the only major contribution. On the other hand Smith, Dunne, and Kurki (2010) asserts that in order to turn their new products in an innovative and environmentally friendly atmosphere, businesses in poor nations need put more of an emphasis on using environmental innovation practices and cutting-edge technology. The organization's members benefit greatly from the degree of environmental education and understanding, which helps them comprehend the goals and actions of environmental leaders and superbly supports a company's innovative processes. A company's ability to be sustainable depends on its environmental innovation, and market demand may have a favorable effect on its capacity for creativity and innovation. The two key pillars that organizations must focus on in order to accomplish the objectives of sustainability of 2030 are sustainable development and green environmental innovation. Liao and Wang (2018) Sustainable refers to economical and resource-efficient production. EIP therefore has a significant impact on climate creativity. The manufacturing sector can handle a number of difficulties with the use of environmental innovation, including waste management, cost and energy savings, and emission reduction. Ahmed et al. (2020) The primary employer in Pakistan is the manufacturing sector in the country's economy. Zubair, Farid, Danish, and Zafar (2017) Pakistan's industrial industry is growing quickly, yet there is a lack of direction and concern for accomplishing more to boost output.

H₁ A positive association occur between Environmental Practices, Creativity and Climate Change.

2.2. Environmental Management and Creativity Climate

This study evaluated how implementation of an environmental management system enhances sustainability and green management, examining green vision (GSV) and climate creativity in Pakistan's industrial sector. Consumers today want things to be both acceptable and environmentally sustainable. Governments and organizations are attempting to address

these issues by implementing environmental management techniques. Implementing the necessary measures to mitigate the harm to the environment (Lawal, Choudhury, & Nukman, 2013). An organization's creative atmosphere is what fosters greater innovation inside it (Hult, Ketchen Jr, & Slater, 2004). The promotion of sustainable innovation is greatly aided by knowledge acquisition, which also improves business performance. Discussions on green management have included the idea of environmental protection more and more in response to the growing environmental consciousness. Govindan, Muduli, Devika, and Barve (2016) Environmental management is a very useful financial tool for businesses looking to develop new goods at a reduced cost of production. Developing countries, like as Pakistan, observe that there are no laws or regulations governing the adoption of sustainable practices in climate creativity and environmental management. A new model of innovation in the production zone was made possible by environmental management, ensuring a safe and healthy environment for all parties involved.

According to Poch, Comas, Rodríguez-Roda, Sanchez-Marre, and Cortés (2004) Understanding and valuing environmental management fosters innovative thinking about the field's management of the environment, which enhances performance overall. As of right now, the groups are working to implement the necessary adjustments to raise public awareness of environmental issues and promote sustainable behaviors. In addition to having a considerable effect on the output of the company, environmental leaders can enhance current green technologies, green products, and green processes with the support of an environmental management culture (Ahi & Searcy, 2015). Businesses who adhere to EMS are obligated to implement environmentally friendly production techniques, which enhance environmental performance and increase the quality of goods and services. Organizations' top priority is to make a positive contribution to society, which eventually aids in their pursuit of sustainable development (Baumgartner & Winter, 2014). Local and global businesses have to be compelled to implement cutting-edge EMS in order to incorporate certain tasks, support businesses, decrease their environmental impact, and boost business effectiveness. A good EMS should be created using the Plan, Do, Check, Act methodology. Modern organizations find it difficult to create management systems, yet doing so will enable them to better manage their resources and ultimately achieve sustainable development (Yu & Lee, 2017). De Oliveira Matias and Coelho (2002) meeting the demands of environment management, health and safety, and quality is the main goal of EMS. Organizations can get a number of advantages from EMS, including improved control, cost and time savings, and resource assurance.

H₂ There is a positive relationship between Creativity Climate and Environmental Management

2.3. Creativity Climate and Green Creativity

S. Wang, Kirillova, and Lehto (2017) G In Pakistan's manufacturing sector, "green creativity" is characterized as the creation of original and practical concepts that lead to environmentally friendly procedures and goods. Mittal and Dhar (2016) Leaders in the manufacturing organization set an example for innovation by acting in an innovative and creative manner. Using creativity is crucial when implementing green practices. Green innovation encourages workers in the manufacturing business to find solutions to environmental issues. Zhu and Sarkis (2006) Customers find green companies more appealing, which helps them feel unique and develop a sense of loyalty. A creative environment fosters trust between clients and staff, which fosters an environment conducive to knowledge acquisition. Because green products are typically accepted, companies these days are mostly focused on developing green products and green management to achieve big profits. (Y. S. Chen, 2011) Environmental challenges are impossible to ignore and constitute a significant part of an organization's personality (Parker et al., 2003). The characteristics of the organization that represent how employees perceive its strategy and organizational function are called the organizational climate (Ghosh, 2015). A creative climate is a critical environment that is abundant and represents the organizational atmospheres that support a company's social-environmental, and well-being and willingness to share information and ideas. When a company fosters a culture of extreme creativity, internal staff members should be encouraged to develop and exchange environmental knowledge and skills. This can foster fresh ideas for green innovation by fostering communication (Açıkgöz & Günsel, 2016). The utilization of an organizational climate that fosters creativity helps a business solve problems more successfully and become more productive. If a company lacks a green culture, it will have less money to devote to its green strategy. Nevertheless, those resources are necessary

to maintain an organization's environment. When a business and its employees are under a lot of stress from the environment, a creative climate not only helps to direct but also shapes employee behaviors. A creative climate fosters an environment that is favorable to green creativity, which can strengthen the environmental commitment of manufacturing companies.

H₃: There is a positive connection exists between Green Creativity and Climate.

2.4. Creativity of Climate and Green Product Performance

Tseng et al. (2013) In an effort to decrease clearing and its negative effects on the environment, green product performance aims to alter or adapt products and their designs by utilizing non-toxic substances or materials during manufacturing. Our products fall into three categories: mixed, horizontal, and vertical differentiation. When customers evaluate a product based on a single feature quality, vertical differentiation occurs. When products are divided into categories that make it difficult to evaluate their quality, this is known as horizontal differentiation. A combination of vertical and horizontal differentiation is known as a mixed differentiation. Manufacturers can discover that customers with less stringent environmental quality standards were less likely to be enthusiastic about purchasing products (Chiou et al., 2011; Yung et al., 2011; Zhu, Sarkis, & Lai, 2008). Numerous manufacturing companies have created a number of eco-friendly initiatives, such as green products and green technology, with the aim of enhancing organizational capacity for green product performance. Environmental protection and economic prosperity are aided by green product performance. Businesses are increasingly taking the initiative to incorporate green innovation into their products (Albino, Balice, & Dangelico, 2009; Pujari, 2006; Yi-Chan & Tsai, 2007). Green products are the tangible results of manufacturing in a way to reduce environmental effect over the course of its life-cycle, use less energy and are more ecologically friendly, all while generating profit and giving the company a competitive edge (C.-H. Chang, 2011; Wong, 2012).

Businesses can create new chances in the market and produce a new green product success by investing in green product performances. Researchers also talked about how a "green product" or "green performance" in a creative setting refers to a process that causes the least amount of environmental harm possible. However, "green" doesn't necessarily mean "zero pollution" (Junior, da Silva, Gabriel, & de Oliveira Braga, 2018). Other manufacturing sectors also depend heavily on green productions. Consequently, research is needed to determine how green manufacturing can offset a competitive advantage in the green space. Gualandris and Kalchschmidt (2014) emphasized that a company will undoubtedly lose market share if it chooses to ignore consumer demand for green products, which could result in lower sales and profitability. The study on sustainable processes, green product innovation, and performance management is also highlighted. An organization's competitiveness is increased by preserving environmental awareness of green production through eco-labeling (D. Li et al., 2017). Innovation in Green Products Performance management used to demand systematic changes to all managerial and operational procedures in directive to growth resource efficiency and encourage the industrial sector to produce more environmentally friendly goods. Businesses that are under consumer pressure to be environmentally conscientious offer green products and support green awareness. These days, businesses are focusing on developing green innovation strategies in order to provide environmentally friendly product concepts and improve the performance of their companies' green product innovation.

H₄: There is a direct correlation between Climate Creativity and Green Product Performance.

2.5. Environmental Innovation Practices and Creativity Climate and green creativity

Businesses that are better equipped to develop strategies for achieving green creativity and environmental sustainability in an atmosphere that fosters creativity. When opposed to other industries, businesses are genuinely cautious about being creative and inventive, and they aren't really thought of as green creativity within the creative environment of the company (Olsson, B. Paredes, Johansson, Olander Roese, & Ritzén, 2019). Businesses have to deal with a lot of environmental issues. Creative Thinking and Environmental Innovation Practices Climate improves environmental knowledge, aids in members of an organization's comprehension of environmental conduct, and successfully supports businesses and their

green creativity practices (Jeong & Shin, 2019) Theory of creativity grounded in a company's green organizational creativity in a creative setting. Adopting EIP can increase organizational green awareness and spark creative ideas for environmentally friendly products, which increases the program's capacity to foster green creativity.

H₅: Environmental Innovation Practices and Creativity, Climate change and green creativity are positively correlated.

2.6. Creativity Climate and Green Innovation Performance on Environmental Innovation Practices

Product innovation techniques enhance Innovation in the Environment Sustainability and best practices are employed to meet client needs. One important tool that influences the effectiveness of innovative green products is EIP. Environmental innovation is a key approach for minimizing environmental harm in the manufacturing sector. It also helps businesses by assisting them in meeting their environmental objectives in the innovative environment (Li, 2014). EIP of the companies' green product innovation performance to meet client wants, which can enhance the companies' environment for creativity.

H₆: There is a positive correlation between the climate of creativity and green innovation performance on environmental innovation practices.

2.7. Creativity, Environmental Management on Green creativity

Organizational creativity theory states that the management of the working environment, which encompasses the organizational green ingenuity. EMS looks at the green vision (GSV) and climate inventiveness in Pakistan's manufacturing sector in order to enhance sustainability (Ivanaj, Poldner, & Shrivastava, 2020). The role that creative capacities play within the parameters of green creativity and organizational sustainability has received very little attention up to this point. Businesses like PepsiCo, Unilever, Red Bull, and the Coca-Cola Company use inventive methods to their business models by working together with direct competitors (Awan, Sroufe, & Kraslawski, 2019). The 17 Sustainable Development Goals (SDGs) of the UN provide plenty of opportunity for scholars to explore connections between Green Creativity, the SDGs, and Environmental Management performance, as well as for professionals to evaluate their efforts in light of these objectives.

H₇ Green creativity has a positive relationship with environmental management and creativity.

2.8. Environmental Management and Creativity and Green Product Innovation Performance

According to organizational creativity theory Tseng et al. (2013) Eco-friendly item Innovation performance refers to altering or changing product designs in the manufacturing sector by utilizing non-toxic substances or materials. Numerous manufacturing companies have created a number of eco-friendly initiatives, such as green products and green technology, in an effort to increase organizational capacity for green product performance. Environmental protection and economic prosperity are better promoted by green product performance (Shrivastava, Ivanaj, & Ivanaj, 2012). Product Innovation Performance is important for environmentally friendly goods and services as well as for an organization's creativity and environmental management.

H₈ The performance of green product innovation is positively correlated with environmental management and creativity.

3. Methodology

This study's context was constructed at the organizational level. A questionnaire survey was used to investigate the theories and evaluate the research model from a number of Pakistani manufacturing sectors. Due to the fact that every data point was gathered simultaneously through a single survey, common method variance (CMV) has an impact on the findings of this study. Employees from manufacturing companies, such as those in Pakistan's petrochemical, biotech, health care, and food, biotech, and communication equipment, materials and components, and machinery and equipment manufacturing sectors, were the research applicants. The respondents are leaders and participants in green product creation, as well as managers of manufacturing, environmental, R&D, or marketing

departments. We called each chosen organization to verify the identities and work titles of the respondents and to provide an explanation of the study's aims and the contents of the questionnaire in an effort to boost the effective response rate. A total of 188 surveys were distributed, and 125 viable samples were received back, resulting in a 67% useable response rate.

4. Discussion and Conclusion

In the Pakistani manufacturing industry, this research aids in focusing on the creative climate that can foster an environment where businesses can enhance their environmental innovation practices and environmental management. A deeper knowledge of how businesses' innovative strategies affect green creativity that develops their innovation performance is provided by the examination of the effects of EIP on green product innovation performance. Furthermore, the principle of organizational creativity was employed to assist us in concentrating on green creativity. Green product innovation performance inside enterprises can be enhanced by the significant role that green creativity plays in the process. Although EIP monitors the impact of green product innovation performance either directly or indirectly, they also have a positive impact on it by fostering a creative environment within a company and producing green products (H. Wang et al., 2021). Environmental management has seen some disagreement in the past. Nonetheless, our research showed that the environmental concept aids in the removal of wastes, improves energy efficiency, and achieves biological variety. Manufacturing sectors are thought to pollute heavily (H. Wang et al., 2021). EIP is used to stop the environment from becoming even more embarrassing and to improve overall and business performance. The goal of this study is to pinpoint the major variables influencing green creativity and how those elements affect the viewpoints of stakeholders. Green product development performance is positively correlated with green inventiveness. Businesses that engage heavily in proactive green innovation fare better when it comes to developing green products (Xie, Huo, & Zou, 2019). Green product innovation benefits from green creativity innovation, and both types of innovation can raise a company's bottom line. We anticipate that the study's findings will be helpful to managers and decision-makers, and that they will open up new research opportunities.

4.1. Theoretical Contribution

Our results have several implications. Our study raises new questions about how EIP influences the performance of green product innovation in Pakistan's manufacturing sectors. In fact, we have uncovered the green creativity climate's mediating influence, which was overlooked in earlier research on this subject. The intermediate mechanisms connecting EIP, green creativity, and green product innovation performance can be better understood by researchers with the aid of this discovery. Firstly, our research showed that EIP positively impacts green product innovation performance by fostering a creative environment and encouraging green creativity (Y.-S. Chen & Chang, 2013). Some elements, like green dynamic capacities and leadership style, have been studied in the past (Ellonen, Blomqvist, & Puumalainen, 2008) discovered a relationship between innovation in every organization or at the individual level and the green creative atmosphere. Ghosh (2015) shown that an innovative workplace and employee creativity can be positively impacted by a creative setting. Thirdly, our research suggests that EIP has a good impact on the atmosphere of creativity, which supports the performance of green product innovation. Our findings support the organizational creativity theory by demonstrating that green creativity is a significant organizational element boosting businesses' innovation in green products. Organizational creativity theory forms the basis of this study's theoretical framework. Given how quickly the global economy is expanding, governments and businesses are having to deal with more environmental issues as well as significant issues like economic development and business performance (Huang et al., 2016; Laosirihongthong et al., 2013). This study assessed the implementation of an (EMS) and contributes to the advancement of sustainability and green management by examining green creativity in the Pakistani manufacturing sector.

4.2. Practical Implementation

The study's conclusions have some real-world ramifications for the management, policymakers, and employees of the company. First, our results suggest that the climate for green creativity plays a significant role in explaining the beneficial impact of EIP on the success of green product creation. The study's conclusions advise managers to focus on

developing a strong organizational climate for creativity and devising strategies for doing so that will encourage staff members to contribute to innovation. Organizational green product innovation assists businesses in adhering to environmental protection regulations. Managers of companies ought to look for items that enhance organizational innovation capacity in order to consistently gain a competitive edge. Through organizational aspects, EIP not only increases the invention of green products but also improves organizational performance. Y. Li (2014) Legislators provide economic and other incentives, together with environmentally friendly regulations, to support EIP. In order to support sustainable organizational development skills, managers should take an active interest in environmental policy and implement an EIP.

4.3. Future Limitation

The study has several limitations, but our findings add in different ways to the body of previous literature. Small cities were not taken into consideration in this study, which was limited to Pakistan and only covered significant regions of the nation. Initially, we studied EIP, the atmosphere for creativity, green creativity, and the effectiveness of innovative green products across all development stages for different sectors. Despite the fact that the data came from a variety of industries, it's critical to consider the distinctive characteristics of every industry. We haven't taken organizational aspects into account that could have an impact on this relationship; instead, we have just looked at how EIP and Green Creativity affect the performance of green innovation. As a result, we suggested that organizational aspects be taken into account in future research, including transformational leadership, innovative approaches to pollution prevention, and technologies for pollution control. This might produce some intriguing findings. Lastly, we looked at how Pakistani green creativity and the creative climate affect the performance of green product innovation through the lens of the EIP. This research may have been constrained by the cultural features. We advise academics to pursue a comparable investigation within a Western cultural framework. To further investigate the dynamic relationship between green technological innovation and enterprises' financial performance, future research should look for more legal metrics and gather panel data to measure these variables.

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