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Green Innovation for Sustainable Competitive Advantage: A Resource-Based View Perspective on SMEs in Pakistan

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ABSTRACT

Green innovation's impact on Pakistani manufacturing SMEs' environmental and financial performance is examined in this article. The Resource-Based View (RBV) was used to study product and process green innovation. We used Partial Least Squares Structural Equation Modelling to examine data from an online survey of 381 Punjabi SMEs. Green innovation is positively correlated with environmental and financial performance by 62.7 and 41.9, respectively. According to the research, SMEs can achieve dual performance by supporting environmentally friendly product designs, energy-saving technology, and sustainable production procedures. This leads to more profits and environmental performance. The research articles supplement the literature in the sense that they demonstrate that green innovation capabilities are valuable and distinctive organisational resources that provide sustainable competitive advantage. This means that the small and mid-sized enterprises (SMEs) are supposed to be strategic in their investments in the new green technology and processes. The policy makers should support them financially, by regulations and training.

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1. Introduction

Companies must improve their environmental deterioration, obey regulations, and fulfill stakeholder expectations in the modern business climate. Environmentally friendly products, techniques, and business strategies have been developed become a strategic requirement of the small and great firms. In addition to the positive influence on the environment, it was also established that green innovation is a dual effect since it does not only influence the environmental performance positively, but also the financial performance (Ha et al., 2023; Liu, Liu, & Feng, 2024). A worldwide survey also diverges substantive investments in green innovation in eco-efficient products and technologies having direct positive and negative effects on environmental and financial performance and strategic green innovation, geared towards branding, signaling, which is more probable to increase environmental results than financial results (Liu, Liu, & Feng, 2024). SMEs are increasingly vital to green innovation, the backbone of most economies. SMEs may lack financial and technological resources, the research has also revealed that they could gain a lot due to the green innovation activities. In point, the study that investigated the Vietnamese manufacturing SMEs discovered that there was a positive and significant association between the green products innovation and the environmental, and financial performance relying on the customer demands, the government intervention, and the market forces (Ha et al., 2023). Moreover, in Ghana, a research established that financial performance of the SMEs focused on the green process innovation such as maximizations of energy use and minimization of wastes also gained prominence (Osei et al., 2025).

Furthermore, the Indonesian study also proposes that the green dynamic capabilities of companies supporting green innovations and financial performance development are promoted by the stakeholder pressures in the form of regulations and consumer demands (Putri et al., 2025). This is justified by a complementary study that found that intellectual capital such as knowledge and skills of the workers, technology skills and management capability is a valuable factor of the green innovation that increases the sustainability and financial performance of the SMEs (Situmorang, Ferdinand, & Indriani, 2024). Consequently, the literature indicates SMEs plans of implementing traditional green activities in part because, according to the assertion of Chong and Kaliappen (2025), in a highly uncertain market, green innovation is applicable to the achievement of sustainable competitive advantage across the organizations, and financial and environmental performances are the focal factors (Nanath & Pillai, 2017). The readiness of a company to utilize green technologies and make its products and ideas more widespread among the competitors is crucial to ensuring the growth and directing the company towards its longevity. The companies are working in the footsteps of other businesses that are profit oriented in the sector as they believe that they are doing well. Decision-making of senior management in small organizations is not analogous to the efforts of these management in large companies, hence, one cannot generalize the problem of using green technologies and compare their application in the policies of product and service design of small and big enterprises. The motives and intentions of the small companies vary with that of the large companies due to the immense climate change and the adverse effects on the environment (Chong & Kaliappen, 2025). Green technology and innovative products and services have remained the primary source of sustainable competitive advantage (Sellitto & Hermann, 2019). As per the past research, several researchers Raza and Siddiqui (2024); Sahoo and Vijayvargy (2021) have concluded the introduction of green programs and the provision of corporate social responsibility to be significant predictors of enhanced financial and environmental performance. The study focuses on small enterprises' green innovativeness to sustain organizational success. Managers and policymakers will be advised that financial resources are the biggest predictor of sustainable performance with green innovation. Innovation is better supported by meta-analyses and cross-country surveys, which indicate that green innovation has enhanced the financial and environmental performance of consumer-facing and fast-paced industries and new market economies, where institutional needs are increasing (Osei et al., 2025; Putri et al., 2025). The papers demonstrate that, green innovation is not a mere compliance factor, however it is a strategic competency that can assist companies, particularly the SMEs, to achieve long-term sustainability and profitability.

Small and medium-sized enterprises (SMEs) in Pakistan must embrace green innovation as it represents a strategic necessity and a reaction to the evolving environmental policy landscape in the country. The Green Pakistan Program, which focusses on tree planting and environmental protection, along with the National Environmental Policy, represents recent initiatives aimed at promoting sustainable practices among businesses. Institutions such as the Small and Medium Enterprises Development Authority (SMEDA) are increasingly emphasizing eco-innovation within their support programs. It is recognized that the development of green skills is essential for enhancing the competitiveness of local businesses globally (Smeda, Maleki, & Jasztal, 2025). Raza and Siddiqui (2024) observe that the adoption rate among Pakistani SMEs varies, often impeded by budgetary limitations and insufficient technical skills, despite the potential for substantial improvements in environmental and financial results. The evolving circumstances indicate a necessity for specific strategies that align the growth of small and medium-sized enterprises (SMEs) with national sustainability objectives. This research requires small firm senior management and policymakers to investigate the relationship between environmental performance, financial performance of green activities, and innovativeness. The present study persuades the policy makers and the managers to act and introduce the green technologies by exploiting the exposure to financial performance. The implications of the current work are of paramount importance to the top management and that is what is requesting how the financial and environmental performance can be improved. The current research is founded on the theory of Resource-Based View that explains that organizations with rare, valuable, and inimitable intangible and tangible resources are guaranteed to have a competitive edge and high performance (Barney, 1991). According to Barney (1991), the resources consist of tangible and intangible resources, with respect to which the resources are valuable assets that are hard to imitate and hard to obtain Barney (2001). Second, Resource-Based View (RBV) indicates that certain organizational resources

possess peculiarities that result in them being one of the most crucial competitive advantages in the changing market (Madueno et al., 2016). The purpose of the paper was to describe the framework by applying the Resource-Based View (RBV) due to the fact that the financial element is the initial resource that a corporation may apply to apply initiatives and also stay competitive. Adequate fund provision will be the necessary trigger to encourage strategic decision-makers to embrace the green initiative that will be well placed to support the society and the environment (Aragón-Correa et al., 2008). However, green initiatives are the greatest driver of having a competitive advantage (Utomo, Sudayanto, & Saddhono, 2020). Figure 1 shows the updated framework based on the Resource-Based View (RBV) that assumes finance and green initiatives are important resources needed to gain competitive advantage in new countries' financial and environmental growth frameworks.

2. Literature Review

2.1. Green Innovation

2.1.1. Green Product Innovation

Green product innovation creates eco-friendly goods and services (e.g., efficient products, biodegradable products, or modular products which respond to consumer and regulatory pressures and cause a smaller environmental impact). This kind of innovation is related to the sustainability purposes and is one of the significant mediators between the organizational orientation and the performance results. In this respect, Sulaiman (2025) found that the strength of green market orientation is related to sustainable performance among the Omani manufacturing SMEs, and power of green product innovation is a highly efficient mediator. Similarly, Ha et al. (2023) showed that the impact of green products innovation on the environmental and financial performance is much greater in Vietnamese manufacturing SMEs, and the coefficient of influence is around 0.559 and 0.585, respectively.

2.1.2. Green Process Innovation

Green process environmental innovation can be described as the introduction of cleaner manufacturing processes that involve improved waste management, consumption of less energy and resources, resulting to cutting down of environmental footprints by industries. Wang and Ahmad (2024) conducted the research basing on the dynamic panel model of 280 non-financial companies (South Asia). Green process and product innovation strongly affect ROA, ROE, and Q of Tobin. The Resource-Based View theory (RBV) was applied in Indonesian manufacturing companies, and the authors found that green process innovation positively and significantly improved corporate financial performance when controls like asset turnover were added.

2.2. Environmental Performance

The performance of the environment is an indicator of how well a company has minimized its environmental impact either by cutting down on its emissions, producing a lesser amount of waste or using its resources more efficiently. The general meta-analysis of eco-innovation although not recent confirms the claim that it positively but moderately influences the overall sustainable performance of SMEs (Oduro, 2024). The qualitative research on the SMEs has also revealed that the managers appreciate the importance of green innovation (product and process). However, the idea of converting it into the augmented environmental performance does not lend itself to easy operationalization due to the small number of resources and infrastructures (Rodrigues & Franco, 2023).

2.3. Financial Performance

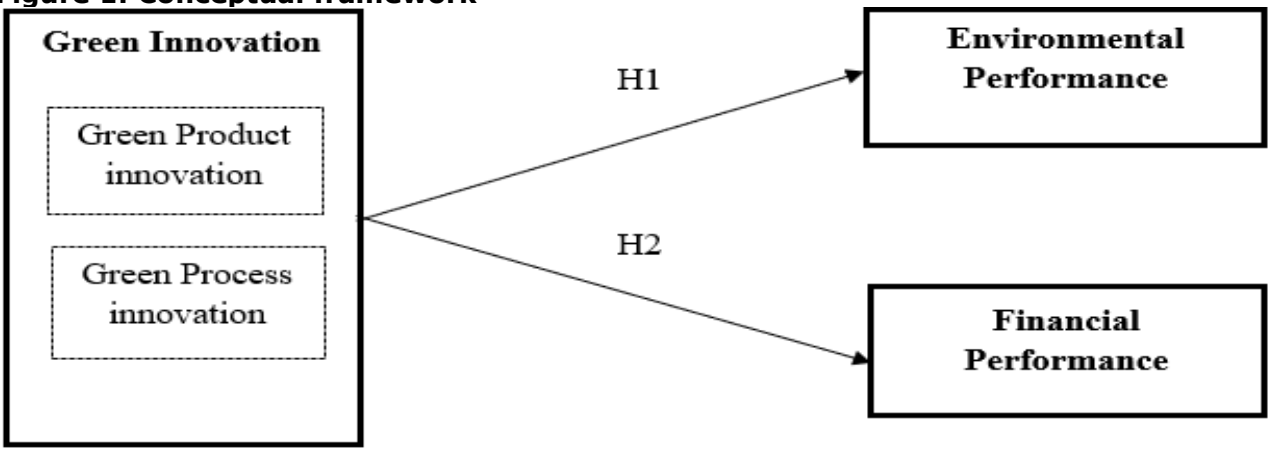
Financial performance is the measure of economic success of a firm based on the profitability, growth, and market value. The empirical statistics reveal that the green innovation products and processes have been encouraging enhanced financial performances in varied environments. The Wang and Ahmad (2024) system-GMM study showed that positive ROA, ROE, and Q of Tobin effects of green innovation are significant in South Asian companies. Similarly, the evidence provided by the Indonesians also supports these findings according to the theoretical prism of RBV. The role of a green intellectual capital (GIC) to mediate the effects is attracted to the study of the Indonesian listed firms provided by Sumayyah, Damayanti and Zahara (2025), in which the green product innovation has a positive and significant impact on the environmental performance and surprisingly a negative impact on the financial performance.

2.4. Green innovation and firm performance

The relationship between sustainable strategies of organizational profitability, growth, and environmental impact has presented contradictory findings where most studies have indicated that it has either positive, negative, U-shaped, or insignificant nature (Guo & Lu, 2021; Pinelli & Maiolini, 2017). All this inconsistent findings of the previous literature on sustainable practices to profitability in organizations and environment, therefore, supports the claim that green initiatives improve the environment. Researchers also believe product differentiation can improve financial and environmental performance that product differentiation is characterized as differentiation of a product with a competing product. As recent sources claim, the financial performance of the organization can be significantly enhanced by its capacity to become environmentally green (Khan, Johl, & Akhtar, 2021). Nevertheless, similar to the green practices, they can help the firm strike a balance between the adverse effects of cost high operations in the environment and profitability. Further, analysis by Golicic and Smith (2013) has indicated that a green initiative or product/service differentiation can not only satisfy the needs of organizations, but also the lifestyle of the society and a 20-year meta-analysis. Similarly, Sellitto and Hermann (2019) present the findings of their empirical study indicating that green strategic decisions and activities can enhance the efficiency of management and internal processes of the organization and, therefore, can enhance the sustainable competitive advantage and monetary performance. The results could also be compared to a large number of studies conducted in other organizational contexts, and they discovered that there is a positive correlation between the green organizational practices and financial and environmental wellbeing of the organizations (Ramanathan, 2018; Roscoe et al., 2019). We, therefore, propose above literature that the organizational green practices are positively and significantly related to environmental and financial success.

H1a: Green Product innovations enhances environmental performance.
H1b: Green Process innovations enhances environmental performance.
H2a: Green Product innovations boost financial performance.
H2b: Green Process innovations boost financial performance.

Figure 1: Conceptual framework



3. Methodology

The major purpose was to prove the resource-based perspective theory, hence the research was deductive. The sample will include Pakistani manufacturing SMEs bearing particular reference to virtually all towns within the Punjab region. This study focusses on Punjab, providing access to a significant and diverse population of manufacturing enterprises, thereby enhancing the generalizability of the results within Pakistan's essential economic framework. This strategic decision establishes a robust foundation for examining the Resource-Based View theory in a context where its impacts are most pronounced. Small enterprises have not been developed in a very similar way; this has not been the case in other countries (Khan, Johl, & Akhtar, 2021). Pakistan can be said to be small and medium sized enterprise that has 20 to 250 employees and whose annual sales not exceeding of Rs 800 million. The samples of SMEs were obtained with the assistance of the chambers of commerce of the city. The method used in this investigation is the random sampling technique since there is a complete list of all

the registered SMEs with the SMEDA. Web surveys are the easiest solution. Thus, we sent 970 questionnaires to top management via email because they make decisions and may access future planning information. Only 470 and 89 filled questionnaires were not qualified, because of being not found and properly filled. There were 381 sample points in questionnaires that were selected and to be analyzed.

3.1. Measurement variables

This study's four main constructs are: green innovation is autonomous and financial and environmental performance are dependent. Green innovation is an organizational campaign and inventiveness in terms of converting the conventional technologies in environmentally friendly options. Eight items based on Chen, Lai and Wen (2006) were used to evaluate the green innovation. Sustainable performance assessment was done in a multi-dimensional structure that included financial and environmental measures. Financial performance (FP) refers to the six-item scale that assesses the annual sales and growth of an organization according to the previous literature (Anwar, 2018). The environmental performance (EI) was measured using five items which were adapted by (Melnyk, Sroufe, & Calantone, 2003) and Daily, Bishop and Massoud (2012). The FP is the only variable that should be measured in terms of the 5-point Likert scale (1 = strongly agree to 5 = strongly disagree).

4. Analysis and Findings

The process of data analysis entails estimating the profile of the respondent which is then followed by data screening. SPSS identifies data validity and reliability. We estimate final hypotheses with Smart PLS SEM. Software Smart (PLS 3) will divide the analysis into two parts. Beginning with measurement model analysis. Next, we'll evaluate the structural model. Measurements will include factor loading, Cronbachs alpha, composite reliability, concurrent validity, discriminant validity, and AVE.

4.1. Descriptive Statistics

Table 1: Descriptive analysis

Variables	Mean	Std. Deviation	Variance	Kurtosis
Green Innovation	4.04	1.02	1.04	0.814
Environmental Performance	3.054	1.066	1.142	0.617
Financial Performance	3.453	0.989	0.980	1.143
Valid N (list-wise)	381			

The mean of Green Innovation is 4.04 and it indicates that the tendency towards green processes and products is moderate among SMEs in Pakistan. The average of the environmental performance is 3.05 which indicates that the companies are not undergoing remarkable alteration in terms of environmental friendliness, but are reporting a continuous progress in this area. The average financial performance which is 3.45 implies that the majority of the firms believe that the exploration of green innovations can create quantifiable returns to the business. The findings align with the findings of Ha et al. (2023), the factors were similar in the SMEs as they witnessed the same trends in which sustainable practices correlate with better sustainability indices of both environmental and financial performance.

4.2. Multi-Collinearity Analysis

Table 2: Collinearity Statistics

Variables	VIF	1/VIF
Green Innovation	3.111	0.321
Environmental Performance	2.294	0.436
Financial Performance	2.299	0.435
Mean VIF	2.568	

The VIF for all variables is not equal to the critical value of 5.0 or more, which proves that there are no multi-collinearity problems (Hair et al., 2021). Green innovation, environmental performance, and financial performance are unrelated, making the model robust.

4.3. Measurement Model Assessment

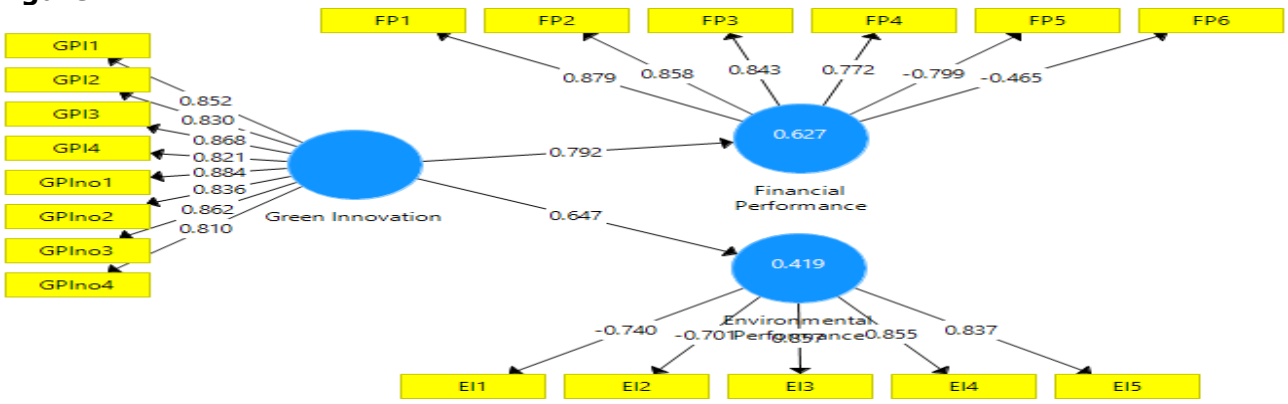
The measurement model (Figure 4.1) demonstrates strong relationships between constructs. Green Innovation is modeled through Product Innovation (GPI1–GPI4) and Process

Innovation (GPIno1–GPIno4) dimensions. The factor loadings for these indicators exceed 0.80, supporting convergent validity (Sarstedt, Hair, & Ringle, 2023).

- H1a: Product Innovation → Environmental Performance
- H1b: Process Innovation → Environmental Performance
- H2a: Product Innovation → Financial Performance
- H2b: Process Innovation → Financial Performance

Figure 4.1 (Smart PLS Path Model) displays the standardized path coefficients (β values) and R^2 results for the endogenous variables. Green Innovation explains 41.9% of Environmental Performance and 62.7% of Financial Performance variation, indicating substantial explanatory power. These findings support the Resource-Based View (RBV), emphasizing that green innovation acts as a non-substitutable strategic asset that enhances competitiveness and sustainable growth (Barney, 2001).

Figure 2



The structural model above shows a strong positive correlation between Pakistani SMEs and green innovation. This shows that SMEs may adopt eco-friendly products, technologies and energy efficient modes of production, they would experience massive transformations in their profits and the environment. Green innovation explains 62.7 percent of financial performance and 41.9 percent of environmental performance according to the model, which is significant in terms of economic benefits.

4.4. Reliability and Validity

Table 3: Reliability and Convergent Validity

Construct	Indicators	Loading	Cronbach's Alpha	CR	AVE
Green Innovation	GPI1	0.852	0.941	0.953	0.715
	GPI2	0.830			
	GPI3	0.868			
	GPI4	0.821			
	GPIno1	0.884			
	GPIno2	0.836			
	GPIno3	0.862			
	GPIno4	0.810			
Environmental Performance	EI1	-0.740	0.782	0.652	0.641
	EI2	-0.701			
	EI3	0.857			
	EI4	0.855			
	EI5	0.837			
Financial Performance	FP1	0.879	0.581	0.406	0.612
	FP2	0.858			
	FP3	0.843			
	FP4	0.772			
	FP5	-0.799			
	FP6	-0.465			

Note: Indicators FP5, FP6, EI1, and EI2 have negative loadings, indicating potential reverse coding or conceptual misalignment; these should be reviewed in future research. The Cronbach's alpha and CR values for Green Innovation and Environmental Performance exceed 0.70, confirming internal consistency reliability. However, the low CR (0.406) for Financial Performance suggests that some indicators require refinement or removal.

These results align with recent reports by Ha et al. (2023) and Widyantoro et al. (2025), which show that SMEs that use green innovation strategies have a better competitive edge, gain customer trustworthiness and sustainable development. The factor loading of the measurement indicators of green product innovation (GPI1-GPI4) and green process innovation (GPIno1-GPIno4) is high (> 0.80), which validates high construct validity (Sarstedt, Hair, & Ringle, 2023). The results are consistent with the Resource-Based View (RBV) theory, according to which green innovation is a valuable non-renewable strategic resource that creates the sustainable competitive advantage (Barney, 2021) (Putri et al., 2025). On the whole, the model focuses on the fact that SMEs that use green technologies and state-of-the-art sustainability practices can enjoy two-fold benefits because, on the one hand, they can improve their performance in terms of finances; on the other hand, they can ensure that they can address the increasing environmental requirements, and regulatory and stakeholder pressures, which are becoming more significant in the emerging economies.

4.5. Discriminant Validity

Table 4: Fornell- Larcker Criterion

	Environmental Performance	Financial Performance	Green Innovation
Environmental Performance	0.801		
Financial Performance	0.646	0.782	
Green Innovation	0.647	0.792	0.846

The diagonal values (square root of AVE) are larger than the inter construct correlation and it represents high degree of discriminant validity (Fornell & Larcker, 1981). The measurement paradigm is reasonable since green innovation, financial performance, and environmental performance are conceptually distinct.

Table 5: HTMT Ratio

	Environmental Performance	Financial Performance	Green Innovation
Environmental Performance			
Financial Performance	0.763		
Green Innovation	0.700	0.876	

The values of all ratios of HTMT are lower than the critical value of 0.90 (Henseler, Ringle, & Sarstedt, 2015), which additionally attributes to the discriminant validity. This contributes to the impression that the constructs are distinct and connected ideas.

4.6. Variance Explained (R^2)

The R-square (R^2) value has been obtained from the output of Partial Least Squares (PLS) analysis.

Table 6: R-Squared Analysis

Variables	R^2	Adjusted R^2
Environmental Performance	0.419	0.417
Financial Performance	0.627	0.626

The results prove that, the green innovation explains 41.9% and 62.7% of the variation in environmental and financial performances, respectively. This indicates a moderate to high model explanatory strength as it was stated in the guidelines and provided by Cohen (2018), and the critical role of green innovation to promote sustainability and profitability.

4.7. Structural Model and Hypothesis Testing

Table 7: Path Coefficients and Hypothesis Results

Hypothesis	Path	β	T Statistics	P Values	Decision
H1a	Product Innovation → Environmental Performance	0.564	12.851	0.000	Supported
H1b	Process Innovation → Environmental Performance	0.647	13.564	0.000	Supported
H2a	Product Innovation → Financial Performance	0.755	22.671	0.000	Supported

H2b	Process Innovation → Financial Performance		0.792	24.170	0.000	Supported	

All hypotheses were supported at $p < 0.001$, confirming that both green product and process innovation significantly improve environmental and financial performance among SMEs in Pakistan.

5. Discussion

The article shows how green product and process innovation can improve the financial and environmental performance of Pakistani manufacturing SMEs. Green innovation has a considerable beneficial effect on financial and environmental performance (SPSS and PLS-SEM model = 0.792, p =0.001). These results confirm the thesis that, using more environmental-saving technologies, developing production-saving products, and simplifying and rationalizing production procedures can help to increase the level of SMEs profitability and lead to a greater number of positive environmental effects. The model builds on the 62.7 and 41.9 per cent variety in financial and environmental performance and shows that green innovation is a strong predictor of organizational performance. These findings are correlated with the former research of Ha et al. (2023) and Osei et al. (2025) who show that two benefits can be attained by the green activities SMEs: the heightened competitiveness and the escalated environmental sustainability. Furthermore, the paper has given focus to the fact that the green product innovation is one of the critical elements of sustainable performance. The indicators of product innovation that have high factor loading (0.83) rationalize the necessity to develop products in an environmentally-conscious way, materials, which might be recycled, energy conservation, product development to boost market competitiveness and customer trust.

6. Conclusion

Green product and process innovation's effects on Pakistani SMEs' environmental and financial performance will be examined in the paper. The results of the PLS-SEM analysis show that green innovation improves financial, environmental, and financial performance (0.792, p = 0.001) (0.647, p = 0.001), is strong. The model is able to determine 62.7 percent of financial performance variance and 41.9 percent of environmental performance variance which shows that the eco-innovative practices is the most prevalent one in sustainable business performance. These are consistent with the other studies Ha et al. (2023); Widyantoro et al. (2025) that had been carried out and indicate that a two-fold competitive advantage will be acquired in terms of profitability and environmental and societal demands due to going green by the SMEs.

6.1. Theoretical implications

This study provides important theoretical insights by effectively utilizing and enhancing the Resource-Based View (RBV) in relation to green innovation within an emerging economy. This study provides empirical evidence that green innovation capabilities, encompassing both product and process dimensions, serve as valuable, rare, inimitable, and non-substitutable strategic resources. The findings indicate that these resources serve not only as cost centers for compliance but are essential for creating a sustainable competitive advantage, accounting for 62.7% of the variance in financial performance and 41.9% in environmental performance. This method advances theoretical discourse by transcending the conventional emphasis on tangible assets and general intellectual capital. Green-specific skills represent a crucial category of strategic assets for the 21st century. This study enhances the existing literature on green innovation by offering clear, quantitative evidence from a significant yet under-researched context Pakistani manufacturing SMEs thus illustrating that the performance advantages of green innovation extend beyond developed economies and large firms. This research offers a validated theoretical framework that may be further refined through the inclusion of mediating variables, such as green intellectual capital, or moderating variables, such as stakeholder pressure, in subsequent studies.

6.2. Practical implications

This research offers distinct and practical implications for managers of SMEs and policymakers. The study articulates a compelling rationale for SME managers and owners to strategically invest in green innovation, repositioning it from a regulatory obligation to a growth opportunity. Managers should emphasize the development of environmentally sustainable

products through the selection of recyclable materials, the implementation of energy-efficient designs, and the use of modular architectures to enhance market differentiation and build customer trust. Concurrent investment in green process innovations is essential, encompassing the adoption of energy-saving technologies, optimization of resource consumption, and implementation of waste reduction and recycling systems, to minimize operational costs and improve profitability. The findings underscore the need for policymakers to create a supportive framework that encourages the adoption of sustainable practices among SMEs. This entails designing targeted financial incentives, including tax breaks or subsidies for green technology, to lower initial investment costs. It is crucial to establish capacity-building programs via institutions like SMEDA to provide technical training on sustainable production and to strengthen and communicate environmental regulations effectively. A comprehensive strategy can reduce risks linked to green investments for SMEs, enabling the achievement of financial and environmental performance objectives while advancing industrial sustainability in Pakistan.

6.3. Future Research Directions

Although these censure comments have been brought to the fore in this paper, there are still opportunities that can be exploited in future research. First, a cross-country comparative study may be useful to determine how institutional and regulatory environments affect green innovation and company success. Second, to gain a clearer insight into the way dual performance is induced, the scholars will have to examine the mediating and moderating roles of these variables as the green intellectual capital, pressure of the stakeholders, and environmental regulations (Sumayyah, Damayanti, & Zahara, 2025). Third, the longitudinal research would provide additional data on the sustainability and profitability of SMEs in the long-term due to the green innovation. Finally, the specific research in the industry can be applied to revealing the variations between the approaches of green innovation in the industries, and the more detailed policies and management practices can be implemented to facilitate the sustainable development.

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APPENDIX A: MEASUREMENT ITEMS

Items	Indicator variables	References
Green Innovation		
1. Green Product Innovation		
Green product innovation is used to boost the performance of environmental management in order to satisfy the requirements of environmental protection. The measurement of the performance of green product innovation contained four items:		
GPI1	The company chooses the materials of the product that produce the least amount of pollution for conducting the product development or design	(Chen, Lai, & Wen, 2006)
GPI2	The company chooses the materials of the product that consume the least amount of energy and resources for conducting the product development or design	
GPI3	The company uses the fewest amount of materials to comprise the product for conducting the product development or design	
GPI4	The company would circumspectly deliberate whether the product is easy to recycle, reuse, and decompose for conducting the product development or design	
2. Green Process Innovation		
The green process innovation is used to increase the performance of environmental management in order to satisfy the requirements of environmental protection. The measurement of the performance of green process innovation contained four items:		
GPIno1	The manufacturing process of the company effectively reduces the emission of hazardous substances or waste	(Chen, Lai, & Wen, 2006)
GPIno2	The manufacturing process of the company recycles waste and emission that allow them to be treated and re-used	
GPIno3	The manufacturing process of the company reduces the consumption of water, electricity, coal, or oil	
GPIno4	The manufacturing process of the company reduces the use of raw materials	
Environmental Performance		
EI1	Helped enhance the reputation of your company	(Melnyk, Sroufe, & Calantone, 2003) and
EI2	Helped your company design/develop better products	
EI3	Significantly reduced waste within the production process	
EI4	Significantly reduced waste within the equipment selection process	

EI5	Improved its chances of successfully selling its products in international markets	(Daily, Bishop, & Massoud, 2012)
3. Financial Performance		
FP1	Overall, how would you rate your company's annual sales growth?	
FP2	How satisfied are you with the improvement in your company's profitability over the past year?	
FP3	To what extent has your company's market share grown in the past year?	
FP4	How would you assess the growth in your company's total revenue over the past year?	(Anwar, 2018)
FP5	How would you rate your company's return on investment (ROI) for the last fiscal year?	
FP6	To what extent do you believe your company's financial performance has improved due to green innovation?	