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Green Innovation, Environmental Management, and Digital Capability as Drivers of Business Performance: Mediating Role of Sustainable Competitive Advantage

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ABSTRACT

As global markets shift toward sustainability and digitalization, firms must realign their strategies to remain competitive. This study investigates the impact of Green Innovation, Environmental Management Practices, and Digital Capability on Business Performance, with Sustainable Competitive Advantage serving as a mediating variable. Drawing on the Resource-Based View (RBV) and Dynamic Capability Theory, the study argued that firms capable of integrating green initiatives with digital competencies and structured environmental practices can achieve a sustained competitive edge that translates into superior performance outcomes. Data were collected through a structured questionnaire from 345 managerial-level respondents in manufacturing and service firms across Pakistan. The proposed model was tested using Partial Least Squares Structural Equation Modeling (PLS-SEM). Results demonstrated that all three independent variables significantly contribute to sustainable competitive advantage, which in turn positively affects business performance. Moreover, the mediation analysis confirmed that sustainable competitive advantage partially mediates these relationships, underscoring its role as a strategic enabler. The findings offer both theoretical and practical insights for businesses aiming to create sustainable value through green and digital transformations.

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1.0 Introduction

The gradual evolution of the global industrial ecosystem requires a considerable reassessment of traditional paradigms, in terms of which business performance is traditionally evaluated (Narang, 2022). The growing rate of environmental deterioration, increased regulatory pressure, and the rising expectation of the society all require companies to reevaluate their business models and translate ecological awareness into the core of their strategic decision-making processes. At the same time, unprecedented progress in the field of digital technologies has redesigned the contours of industries and adjusted competitive logics, with digital capability rising to a core factor defining organizational survival and flexibility (Andrade & Goncalo, 2021). These macro-dynamics are highly evident in emerging economies like that of Pakistan, where vulnerability of the environment, technological acceleration, and fast industrial growth altogether create a highly uncertain and fast-changing business environment. Under these conditions, strategic action should go beyond the obligations of the short-term compliance and compliance with minimal costs, and strive to achieve sustained resilience and maintain a sustainable competitive advantage. The similar position can be found in empirical studies: studies by Fauzi et al. (2020) and Leyva Carreras et al. (2018) emphasize that companies that want to become long-term sustainable and competitive should focus on multidimensional socio-ecological problems instead of purely efficiency-driven approach.

Modern companies find themselves in a dual transformation including not only environmental change, but also digital transformation, and are increasingly recognizing that green innovation, environmental management practices (EMPs), and digital capabilities together support performance. Green innovation can be defined as the creation or implementation of environmental-friendly products, services, and procedures that reduce environmental degradation but maintain economic usefulness (Ullah et al., 2022). EMPs, in their turn, include the systemic activities and organizational practices aimed at monitoring, control, and improving environmental performance, frequently formalized in terms of such instruments as ISO certification, life cycle assessment, and the corporate sustainability reporting (Saeed & Cek, 2024).

Digital capability refers to the ability of a firm to design, implement digital infrastructure, skills and processes that facilitate strategic responsiveness and innovation (Atobishi et al., 2024). These constructs, though operating in different domains, are united in a common strategic imperative, which is the use of internal resources to adjust to the volatile external environments. Their combined value is visible when they combine to support the development of a Sustainable Competitive Advantage (SCA) which is an intermediary that leads to the translation of capabilities into high and sustainable business performance (Asa, Nautwima, & Villet, 2024).

Theoretically, this relationship is placed both in the Resource-Based View (RBV) and Dynamic Capability Theory (DCT). The RBV assumes that competitive advantage is achieved by the companies implementing valuable, unique, inimitable, and substitutable resources entrenched into the organisational architecture (Lubis, 2022). The green innovation and environmental stewardship are very rare and precious strategic assets in the current environmentally sensitive and digitally complex world. At the same time, digital capability serves as an active resource that

enables companies to constantly restructure their operations, client relations, and use of new market opportunities as a reaction to the external change. DCT goes further to highlight the point that firms do not merely have capabilities but actually construct, integrate, and rearrange them in order to operate in rapidly evolving settings (Ostadi, Barrani, & Aghdasi, 2024). Green innovation, EMPs, and digital capability intersection with the DCT model help firms to increase their adaptive capacity and hence maintain competitive advantage in a variable market.

Despite the conceptual arguments that the modern literature promotes, empirical studies are still conducted on green innovation and environmental management practices (EMPs), and digital capability separately, thus ignoring the synergy and interdependent effects that can become available through the combination of these concepts and areas. The literature evidences that green innovation has positive effect on the cost-effectiveness, brand equity, and regulatory compliance, all of which in turn improve firm performance. Similarly, EMPs were proved to contribute to corporate legitimacy, reduce environmental risk, and align organizational activities to the perceived expectations of the stakeholders. Digital capability, in its turn, increases organizational agility, facilitates making decisions based on data, and helps to engage with customers, all of which are essential to remain competitive in the digital era. However, the lack of integrative models of how these variables co-evolve and how they interact to affect performance, especially through mediating constructs like SCA, reveals a huge theoretical and empirical gap. Furthermore, although scholars have always cited SCA as an attractive outcome, the factors mediating the transformation of organizational capabilities into performance outcomes have been less understood, especially in the context of emerging economies whereby institutional complexity has the potential to change the relationship between capabilities and performance.

Empirically, Pakistan is an important case to study the ability of organizations to leverage the green innovation, environmental stewardship and digital transformation as a performance advantage. According to the research of Gul et al. (2025), the Pakistani industrial sector, including existing manufacturing companies and new service businesses, is under increasing pressure to balance the growth of the economy with environmental sustainability and, at the same time, move to digital modernization. Even though state institutions and policy frameworks have focused more on sustainable, technology-driven development, majority of firms in this sector, have not integrated these aspects in a cohesive way in their strategic agendas. Also, the applicability of the findings of research carried out in the economies that are mature and with well-established regulatory systems and strong institutional backing is limited in the Pakistani context of volatile and resource-limited setting. As a result, context-specific empirical studies, which are localized, are critical in progressing academic discourse and managerial practice.

The present study aims to fill the conceptual and empirical gaps existing in the current body of knowledge by hypothesizing and testing a complex model whereby green innovation, environmental management practices (EMPs), and digital capability serve as antecedents to business performance that is mediated by Sustainable Competitive Advantage (SCA). The present conceptualization differs with the earlier research papers in which the condition of SCA is considered to be a dynamic one-a strategic interface through which organizational capability is

transformed into high-performance outcomes. The model is based on the Resource-Based View (RBV) and Dynamic Capability Theory (DCT) to explain how companies can mobilize resources and adjust themselves in changing sustainability-oriented environments especially in the emerging markets like Pakistan.

The results have great practical implications. They encourage managers to consider green innovation and digital transformation as core, but not marginal, factors of competitive strategy. Through the convergence of environmental and digital agendas, companies will achieve the increased resilience, efficiency of operation, and competitive sustainability. In their turn, policymakers are encouraged to develop friendly regulatory conditions, invest in green R&D, and strengthen digital infrastructure. On a larger scale, the empirical findings of the study would add value to the under-researched discourse on sustainability in the developing economies which have been arguing that sustainable success of business operations is possible in such transitional economy like Pakistan with integration of strategic capabilities?

2.0 Literature Review

Conceptually, the present study is based on both Resource-Based View (RBV) and Dynamic Capability Theory (DCT), which form a complete framework in the development of competitive advantages and their maintenance by firms in dynamic environments. RBV places a particular focus on the acquisition and the use of valuable, rare, inimitable, and non-substitutable (VRIN) resources to deliver high performance (Sun et al., 2024). However, it has been criticized due to lack of enough insight regarding how firms respond to rapid change. To overcome this shortcoming, DCT emphasizes the importance of dynamic capabilities, which refers to the capacity of firms to transform, restructure and innovate to meet the changing circumstances (Guzairy et al., 2024). Scholars like Carmona (2022) and Saytari et al. (2025) promote this combined perspective to examine the effect of capabilities, such as the green innovation, environmental management, and digital transformation, on strategic performance outcomes through sustainable competitive advantage.

Empirical studies confirm significantly that green innovation and environmental management are strategic tools, which are critical in enhancing the performance of firms. The results are conclusive that green innovation has a positive and direct association with financial and operational performance. Rahman et al., (2023) analyzed green banking initiatives in Bangladesh and India and recorded a greater profitability and efficiency in companies after the introduction of green initiatives, and Shehzad et al. (2023) reported similar results in market positioning in Pakistan. So based on above literature, following hypothesis is formulated, H1: There is a significant impact of green innovation on business performance. At the same time, the practice of environmental management, such as ISO 14001 certification, showed real value in costs savings and risk minimization. As demonstrated by Javed et al. (2022) and Aslam et al. (2021), formalized environmental policies have a decisive effect on the reputation of a brand and compliance with regulations. Further, Wu and Tham (2023) substantiate the idea that effective environmental governance increases the resilience of organizations to external disturbance. So based on above literature, following hypothesis is formulated, H2: There is a significant impact of environmental

management on business performance. All these studies confirm the positive, direct effects of green innovation and environmental management on performance of firms.

The concept of digital capability, which is the competency of an enterprise to utilize the digital tools and infrastructures, has become vital to the competitive survival as well as excellent business performance. Deng, Duan, and Wibowo (2023) revealed that the increase in digital capability is well correlated with the increase in knowledge sharing and customer responsiveness. Mushtaq et al. (2023) noted that innovation and competitiveness is positively affected by digital maturity of Pakistani companies. Atobishi et al. (2024) further stated that strategic digital agility enables the alignment of consumer expectations that are shifting. So based on above literature, following hypothesis is formulated, H3: There is a significant impact of digital capability on business performance.

At the same time, sustainable competitive advantage (H4) has a direct positive effect on firm performance. According to Hayat and Qingyu (2024), organizations that develop capabilities that impossible to copy by practicing innovation and environmental fit beat their rivals all the time. Digital capability and sustainable competitive advantage therefore play a role in their own way in achieving a better business performance. So based on above literature, following hypothesis is formulated, H4: There is a significant impact of sustainable competitive advantage on business performance.

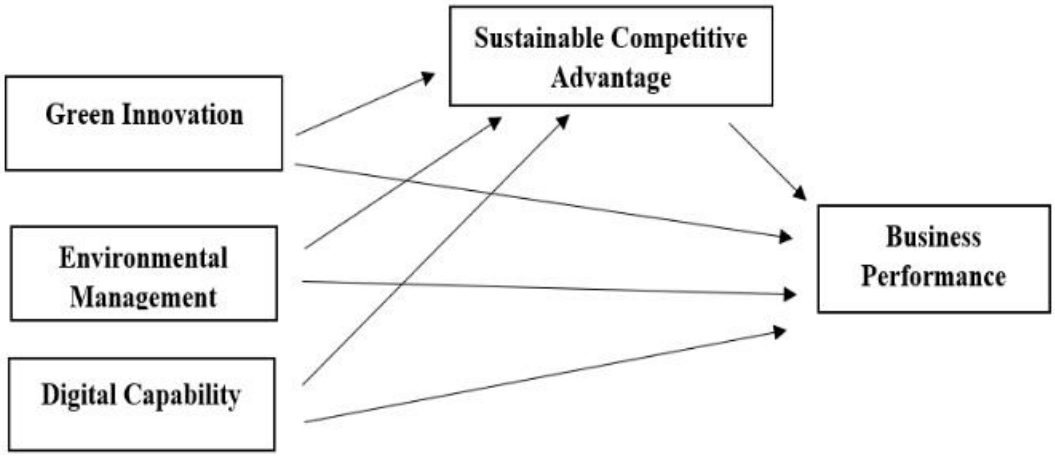
The chain of determinants by which green innovation and environmental management affect firm performance is usually channeled by the sustainable competitive advantage (SCA) as indicated in hypothesis H5 and H6. Indeed, green innovation has been proved to create a unique form of ecological differentiation, hence giving companies cost advantages and brand prestige both of which improves performance (Hayat and Qingyu, 2024; Akhtar et al., 2024). SCA, in its turn, is supported by environmental management, which aids in the efficient compliance with regulations, risk mitigation, and the continuity of operations (Saputra et al., 2023). The capabilities thus lead to performance in two mutually reinforcing ways (a) directly due to the direct advantages that they bring and (b) indirectly due to the strategic mediating effect of SCA which brings about the connection between resource utilization and sustained organizational success. So based on above literature, following hypotheses are formulated, H5: There is a significant mediating impact of sustainable competitive advantage on the relationship between green innovation and business performance. H6: There is a significant mediating impact of sustainable competitive advantage on the relationship between environmental management and business performance.

In the recent theoretical development, the mediating role of SCA in the relationship between digital capability and business performance has attained scholarly focus. Leao and da Silva (2021) stated that the digital tools allow strategic alignment and innovation, thus transforming them into sustainable competitive advantage. The empirical evidence provided by Van Hoang et al. (2025) showed that SCA is a significant mediator of this relationship that turns digital investments into unique and value-generating market positions. Aksoy (2023) further commented that companies that use digital platforms to align operational and environmental data are flexible and perform better. So based on above literature, following hypothesis is formulated,

H7: There is a significant mediating impact of sustainable competitive advantage on the relationship between digital capability and business performance.

Whereas, the individual effects of green innovation, environmental management, and digital capability have been studied in the available literature in detail, the issue of the synergistic effect of these eco-friendly concepts on sustainable competitive advantage is barely addressed, especially in emerging economies like Pakistan. This study tries to address this gap by connecting these constructs into a frame which will be based on resource-based view (RBV) and digital capability theory (DCT). The institutional environment of Pakistani companies that constantly faces uncertainty and is subject to fast technological change makes the investigation topical and actual. There are seven hypotheses that the study will test: H1 to H3 test the direct effect of green innovation, environmental management, and digital capability; H4 tests the direct effect of sustainable competitive advantage and H5-H7 will be used to test the mediating effect of sustainable competitive advantage in the three relationships. The overall strategy brings out not only theoretical but also practical advice to companies aiming at improving their performance within sustainability-driven and transforming digital markets.

Theoretical Framework:



3.0 Methodology

This study was a quantitative research design with a positivist paradigm to test the proposed hypotheses and investigate the mediating effect of sustainable competitive advantage empirically. Primary data was collected via a structured questionnaire through the adoption of a cross-sectional survey methodology that ensures consistency and replicability of data collection. The target population included managerial-level professionals working in manufacturing sector and service sector firms based in Pakistan as they are in a strategic position in the environmental practice, innovation decisions, and digital transformation. Purposive sampling method was employed to make sure that the knowledge of the respondents on the firm-level strategies concerning green innovation, environmental management, and digital capability was sufficient. The sample was generalized and diverse as data were collected via online and in-person methods with 345 valid

respondents, which is a considerable number.

The measurement tools used in the current research included validated scales that were drawn out of previous literature. Green innovation was operationalized using items that were adapted by Ullah et al. (2022), environmental management practices were measured with the help of scales developed by Aslam et al. (2021), and digital capability was measured through items developed by Atobichi et al. (2024). The sustainable competitive advantage was measured using the constructs designed by Asa, Nautwima, and Villet (2024), whereas the business performance was measured using both financial and non-financial indicators, as developed by Narang (2022). Each of the constructs was measured using a five-point Likert scale where 1 (strongly disagree) and 5 (strongly agree) were used. The analysis of the data was performed via Partial Least Squares Structural Equation Modeling (PLS-SEM) in Smart PLS 4.0 since it is a strong approach to complex models with numerous mediators and reflective constructs.

4.0 Findings and Results

4.1 Reliability Analysis

According to the reliability tests presented in Table 1, there was a strong internal consistency and an acceptable convergent validity. The Cronbach Alpha results of Environmental Management (0.707), Business Performance (0.771), Digital Capability (0.838), Green Innovation (0.841), and Sustainable Competitive Advantage (0.710) are higher than the traditional threshold of 0.70. Composite reliability estimates of each construct, as well as rho_A, are also above 0.70 and, therefore, construct reliability and internal consistency are also confirmed. The values of composite reliability are between 0.794 (Environmental Management) and 0.882 (Digital Capability), which highlights a high internal reliability level. In addition, the values of the Average Variance Extracted (AVE) are all above 0.50 and thus convergent validity is acceptable since each construct explains over 50 % of the variance in its indicators. Therefore, the reliability evidence determines the appropriateness of the constructs in the following structural equation modeling.

Table 4.1: Reliability Analysis

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Environmental Management	0.70729	0.71139	0.794	0.50041
Business Performance	0.77098	0.79727	0.82618	0.50615
Digital Capability	0.83776	0.83445	0.88227	0.55897
Green Innovation	0.84052	0.84932	0.87045	0.50484
Sustainable Competitive Advantage	0.70991	0.71148	0.80338	0.50942

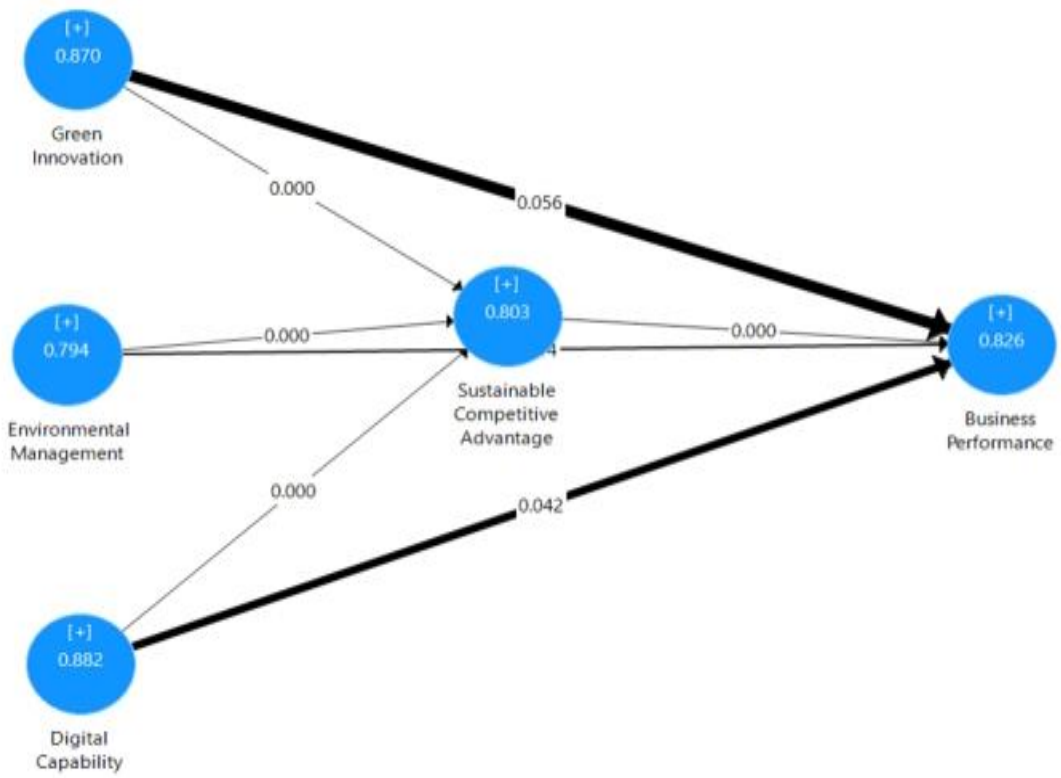


Figure 1: Reliability Analysis

4.2 Validity Analysis

The Heterotrait-Monotrait Ratio (HTMT) is provided in Table 2 in order to assess the discriminant validity between the constructs in the model. As per the set standards, HTMT values must be less than 0.85 (more conservative) or 0.90 (liberal) to ensure the sufficient discriminant validity. Values obtained in this analysis are between 0.185 (between Environmental Management and Digital Capability) and 0.755 (between Business Performance and Green Innovation), which are way below the threshold of 0.85. The results showed that the constructs are unique and measure different concepts and so the measurement model is valid. The largest HTMT value is the one between Green Innovation and Business Performance (0.755), which indicates a relatively large connection but not exceeding the reasonable range of discriminant validity. The least value is seen between Environmental Management and Digital Capability (0.185) meaning there is little overlap. These findings verified that the constructs are distinct at an empirical level and are appropriate to be carried out to structural modeling.

Table 4.2: Validity Analysis (HTMT)

	Environmental Management	Business Performance	Digital Capability	Green Innovation	Sustainable Competitive Advantage
Environmental Management					
Business Performance	0.49566				
Digital Capability	0.18501	0.56947			
Green Innovation	0.55109	0.75535	0.59002		
Sustainable Competitive Advantage	0.43375	0.66037	0.60991	0.70621	

4.3 Structural Equational Model

The results indicated in Table 3 show statistically significant direct relations between the variables involved in the study. All of the hypothesized direct paths are confirmed by p-value of less than 0.05 and t-statistic more than the critical value of 1.96. Green Innovation has the highest direct effect on Business Performance (β=0.3755, t=7.54, p<0.001) and Sustainable Competitive Advantage (β=0.3987, t =7.27, p < 0.001). Hence, the importance of Green Innovation in the field of organizational competitiveness and performance is confirmed. There is also a positive influence of Digital Capability on Business Performance (β=0.1938, t= 4.77, p< 0.001) and Sustainable Competitive Advantage (β=0.2965, t=7.14, p<0.001), which means that technological preparedness is an important source of sustained results. The positive but slightly lower effect of Environmental Management on Business Performance (β=0.1441, t=4.64, p<0.001) and Sustainable Competitive Advantage (β=0.0975, t=2.58, p=0.010) is also present. Lastly, Sustainable Competitive Advantage has a direct positive effect on Business Performance (β= 0.1412, t = 3.03, p = 0.0025) which confirmed its mediating and strategic impact in transforming the practices of organizations into performance. Overall, the findings confirmed all the direct research hypotheses (H1-H4) and, thus, support theoretical perspectives on Resource-Based View and Dynamic Capabilities Theory.

Table 4.3: Direct Effect

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Environmental Management -> Business Performance	0.14412	0.14497	0.03107	4.63852	0
Environmental Management -> Sustainable Competitive Advantage	0.09747	0.10314	0.03785	2.57522	0.01016
Digital Capability -> Business Performance	0.1938	0.19825	0.04064	4.76816	0
Digital Capability -> Sustainable Competitive Advantage	0.29654	0.29326	0.04151	7.14387	0
Green Innovation -> Business Performance	0.37552	0.37415	0.04979	7.54221	0
Green Innovation -> Sustainable Competitive Advantage	0.39873	0.39782	0.05488	7.26553	0
Sustainable Competitive Advantage -> Business Performance	0.14117	0.13697	0.04658	3.03085	0.0025

Mediating Effect

Table 4 summarizes the results of the mediation analysis of the indirect relations between Environmental Management, Digital Capability, and Green Innovation to Business Performance mediated by Sustainable Competitive Advantage. The p-value indicates partial mediation because it is less than 0.05 and t-statistics are more than 1.96 in each of the mediating models. The most significant indirect impact is observed in the link between Green Innovation and Business Performance through Sustainable Competitive Advantage (β = 0.0563, t = 2.78, p = 0.0056), which depicted those competitive advantages of green innovations have a significant impact on the firm performance. Digital Capability also presents a significant mediating effect (β =0.0419, t = 2.74, p = 0.0062) to imply that technological strengths must be converted into sustainable capabilities to achieve the best performance results. The indirect impact of Environmental Management on Business Performance through Sustainable Competitive Advantage is also high, although not as

high (β = 0.0138, t = 1.98, p = 0.048), suggesting that systematic environmental actions alone do not have as large of a direct impact on performance as they do when they are coordinated with overall sustainability objectives. These findings confirmed the mediating hypotheses (H5, H6, H7) and underscore the fact that Sustainable Competitive Advantage is an important intermediate between green and digital strategies and increased business performance.

Table 4.4: Mediating Effect

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Environmental Management -> Sustainable Competitive Advantage -> Business Performance	0.01376	0.01405	0.00695	1.98018	0.04796
Digital Capability -> Sustainable Competitive Advantage -> Business Performance	0.04186	0.04022	0.01526	2.74394	0.00618
Green Innovation -> Sustainable Competitive Advantage -> Business Performance	0.05629	0.05463	0.02027	2.77722	0.00559

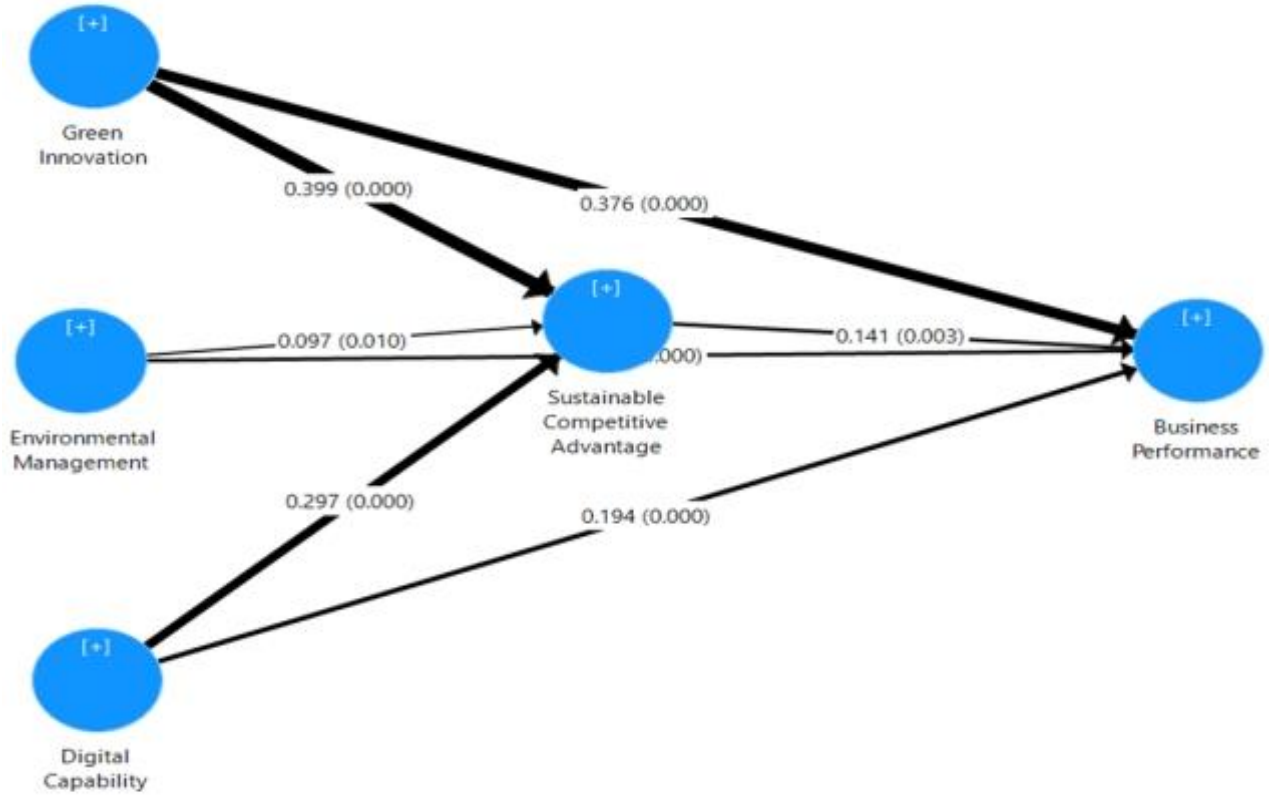


Figure 4.2 PLS SEM Results

5.0 Discussion and Conclusion

Findings in this study support the hypothesis that when combined, green innovation,

environmental-management practices, and digital capability have a positive impact on the business performance. They are mediated by sustainable competitive advantage (SCA), which in turn offers empirical evidence that high performance depends on the firm-specific resources and capabilities. Based on the Dynamic Capability Theory (DCT) and the Resource-Based View (RBV), the results indicate that assets with the characteristics of being valuable, rare, inimitable, and non-substitutable (VRIN) are imperative elements in the SCA formation (Sun et al., 2024). However, since RBV fails to fully explain the way in which organizations are able to respond to the external volatility, DCT is introduced to the analysis because it focuses on dynamic capabilities that allow renewing and reconfiguring competencies on an ongoing basis in order to respond to change (Guzairy et al., 2024). The scholars like Carmona (2022) and Saytari et al. (2025) confirmed this complementary framework and stress that green innovation, environmental practices, and digital transformation should be strategically integrated to convert organizational capabilities into sustainable performance outputs through SCA.

The current research supports Hypotheses 1-4, which proves the existence of direct connection between green innovation, environmental management, digital capability, and strategic capability area (SCA) and firm performance. Empirical evidence suggests that green innovation has a positive effect on performance in terms of increasing resource efficiency and enabling regulatory compliance-as stated in the literature by Mukhtar et al. (2025) and Shehzad et al. (2023). At the same time, environmental management practices (in particular, the implementation of ISO 14001) increase savings associated with operations, resilience, and stakeholder confidence (Javed et al., 2022; Aslam et al., 2021; Wu and Tham, 2023). Digital capability also becomes an important parameter, allowing companies to develop the ability of agility, customer responsiveness, and further increase innovation capacity, following the findings of Deng et al. (2023), Mushtaq et al. (2023), and Atobishi et al. (2024). Finally, SCA has a direct impact on business performance, and it is consistent with Hayat and Qingyu (2024), who claim that firms with unique, embedded capabilities have maintained market advantage.

The results of the hypotheses that were tested, H5, H6 and H7, are supported by the mediator of sustainable competitive advantage (SCA). These findings suggest that those strategic capabilities that are most powerful in terms of competitive advantage provide the ability to build a unique firm position. The environmental management practices (EMPs) and green innovation contribute to the improvement of SCA by providing ecological differentiation, risk mitigation, and stakeholder legitimacy (Hayat and Qingyu, 2024; Akhtar et al., 2024; Saputra et al., 2023). A similar effect is seen with digital capability, which is transformed into high performance by the creation of digital infrastructures that are difficult to replicate and the integration of organizational strategy and operations (Leao and da Silva, 2021; Van Hoang et al., 2025; Aksoy, 2023). Though, each of these drivers was isolated and studied previously, their collective impact through SCA has been less studied in the context of emerging economies. The current research will overcome this limitation by providing a holistic framework based on the Pakistani industrial setting, thus providing both theoretical and practical models of how companies can transform the environmental and digital demands into sustainable strategic competence.

5.1 Conclusion

The results of this study empirically confirmed the significant impact of green innovation, environmental management practices, and digital capability on business performance, supporting all proposed hypotheses. Drawing upon the Resource-Based View and Dynamic Capability Theory, the findings reinforce that these strategic resources not only contribute individually to firm success but also act as dynamic enablers that help firms adapt to evolving environmental and technological landscapes. Moreover, sustainable competitive advantage was found to significantly enhance business performance, validating its central role as a performance driver in today's competitive markets. These results underscore the necessity for firms, particularly in emerging economies like Pakistan, to embed environmental sustainability and digital transformation into their core strategies to realize measurable performance gains.

Importantly, the mediation analysis revealed that sustainable competitive advantage partially mediated the relationships between green innovation, environmental management, digital capability, and business performance. This indicates that while these capabilities directly influence performance, their contribution is further amplified through the development of enduring strategic advantages that differentiate firms in the marketplace. The partial mediation suggests that sustainable competitive advantage functions both as a direct performance enhancer and as a mechanism that channels the benefits of green and digital initiatives. These insights contribute meaningfully to the literature by integrating environmental strategy, innovation, and digital capability within a unified performance framework and offer practical guidance to business leaders aiming to build resilient, sustainable, and high-performing organizations.

5.2 Implications, Limitations, and Future Research

The findings of this study hold several important theoretical and practical implications. Theoretically, the research extends the Resource-Based View and Dynamic Capability Theory by empirically demonstrating how green innovation, environmental management, and digital capability serve as valuable strategic resources that enhance business performance both directly and through sustainable competitive advantage. Practically, the study offers actionable insights for managers and policymakers in emerging economies such as Pakistan, where environmental pressures and digital disruption are increasingly shaping competitive dynamics. Firms are encouraged to adopt an integrated approach by aligning green and digital strategies with long-term competitive positioning. Strengthening internal digital capabilities and institutionalizing environmental practices can not only improve operational efficiency but also elevate the firm’s brand image and stakeholder trust—factors that are crucial for sustained performance in volatile markets.

Despite its contributions, the study is not without limitations. The use of a cross-sectional design restricts the ability to infer causality, and self-reported measures may introduce common method bias. Moreover, the focus on Pakistani firms limits the generalizability of the findings to other cultural and institutional contexts. Future research should consider employing longitudinal designs to capture the dynamic evolution of competitive advantage over time and explore sector-specific differences in more detail. Additionally, comparative studies across different emerging

and developed economies could provide richer insights into how institutional environments moderate these relationships. Expanding the model to include other strategic variables such as leadership orientation, organizational culture, or technological turbulence could further enhance understanding of the pathways through which sustainability and digital transformation impact long-term firm success.

Shahid Kalim Khan: Problem Identification and Theoretical Framework
Nauman Ahmad Syed: Data Analysis, Supervision and Drafting
Muhammad Ahmar Jamshaid: Methodology and Revision

Conflict of Interests/Disclosures

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