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The Influence of Strategic Leadership, Operational Agility, and Innovation Capability on Sustainable Performance in Manufacturing Companies

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KEYWORDS	ABSTRACT
Strategic Leadership, Operational Agility, Sustainable Performance	<p>This study aims to examine the influence of strategic leadership, operational agility, and innovation capability on sustainable performance within manufacturing companies. The research explores how these three factors contribute to the long-term sustainability of manufacturing firms in an increasingly competitive and dynamic market. Using a quantitative approach, data was collected through survey questionnaires from manufacturing firms in Pakistan. The analysis was conducted using Partial Least Squares Structural Equation Modeling (PLS-SEM) to assess the relationships between the variables. The findings reveal that all three independent variables—strategic leadership, operational agility, and innovation capability—have significant positive impacts on sustainable performance. Strategic leadership was found to guide organizations toward aligning their long-term vision with sustainability goals, while innovation capability encourages continuous improvement in processes and products. The study highlights the importance of integrating strategic leadership, operational flexibility, and innovation to enhance sustainable performance. These findings have important implications for business leaders and policymakers, emphasizing the need for sustainable practices within the manufacturing sector to maintain a competitive advantage and long-term growth.</p>
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1.0 Introduction

As a basic pillar of global economic development, the manufacturing sector has offered a contributory source to the national economies through the creation of jobs, adding value, and boosting innovation. Due to trends of globalization, environmental issues, and market volatility, businesses are expected to be both sustainable and profitable on today's market place, which present a complex balancing act (Alkandi & Helmi, 2024). As a concept, sustainable performance is the ability of a company to attain long term benefit in economic, social and environmental spheres. Moreover, it has become a central focus for manufacturing companies who wish to increase their competitiveness and reduce risks in such an ever-changing market place. Three key factors at the heart of achieving sustainable performance involve strategic leadership, operational agility and innovation capability. These factors in combination act as the determining criteria of a company's capability to respond to external challenges and generate value while maintaining sustainability (Mata et al., 2024).

In manufacturing companies, strategic leadership, referred to as the capacity of senior executives to foresee the future and drive the company forward to long term target, has taken on increasing importance in order to achieve sustainable performance. The responsibility of a strategic leader is to steer the organization in the right direction, take bold decisions at an organizational level, and work towards building an environment of innovation and agility (Hossain et al., 2024). In the manufacturing industry where companies are required to respond quickly to the changing market conditions, technological updates and environmental challenges, their role is very important. With global economies becoming more globalized and increasing concerns about the environment, the burden is on manufacturing companies to adopt strategies that meet the new realities (Mohaghegh et al., 2024). Strategic leadership is critical to assist firms to balance short term financial goals with long term sustainability goals. Strategic leaders promote common vision, stimulate team working and instill innovation atmosphere, which leads their organizations to resolve the problems of tough environments and utilize chance for development. In this sense, strategic leadership is an essential engine of sustainable performance as it provides the important basis for the organization's ability to respond to environmental, economic and social challenges (Waseel et al., 2024).

On the other hand, operational agility is an organization's capability of swift and efficient response to changes in its external environment. Agility is extremely important in manufacturing sector since firms are expected to adjust themselves to customer needs' changes, changing regulations and the new technologies. An operational agile system is a system that is able to adjust, reconfigure processes, reallocate resources, and change strategies in order to keep up with current market change (Panda, 2025). The direct consequence of a company's ability to continuously monitor its internal and external environments, find opportunities and threats in senses of those environments, and adjust its operations in accordance to what is happening in

the environments is agility. Firms with high operational agility can use new opportunities, reduce risks, and sustain their competitive position. Within the context of sustainability, operational agility acts as a means for improving firms' ability to adopt environmentally friendly practices in a timely manner, adjust production processes to meet regulations, and expand into new markets where they are compelled to provide sustainable products and services. Therefore, operational agility is a critical factor for enhancing competitiveness of a firm and enables firms to deliver sustainable long term performance as the organization remains responsive to the emerging challenges and opportunities (Yuen & Baskaran, 2024).

Another key element of the achievement of sustainable performance in manufacturing companies is through innovation capability. Innovation capability represents an organization's ability to produce, execute and combine new ideas, technologies and processes to improve its products, services, and operations. Innovation is a vital factor for productivity improvement; cost reduction, and enhancement of the competitive differentiation in the manufacturing sector (Mohamed Hashim et al., 2024). Companies become able to optimize production processes, cut down waste, increase energy saving and create products, which are friendly to nature and meet the demands of the ecofriendly customers, through innovation. Additionally, innovation has a fundamental place in managing the issues related to environmental sustainability which calls for companies to find new solutions to reduce their carbon footprint, use less resources and to meet more and more demanding environmental regulations (Nazeer et al., 2024).

The problem this study attempts to solve is the flexibility to understand how manufacturing firms can create their sustainable performance through strategic leadership, operational agility, and innovation capability. It thus becomes compelling to examine how and when these capabilities influence the achievement of sustainability goals in the face of increasing business pressure to achieve economic, environmental and social goals concurrently. The focus of the study is to complete the gap in the literature and examine the interrelation between strategic leadership, operational agility and innovation capability, and sustaining performance. In particular, the research will look at how these variables affect the manufacturing organizations' capability to attain long term success through reduction in environmental impact, enhancement in operational efficiency, and better financial performance. The second aspect of the study will further explore how far these two mediating factors, operational agility and innovation capability respectively, will mediate between strategic leadership and sustainable performance to assist the manager develop an integrated sustainable strategy.

This study has significance in terms of its potential to provide practical implications for manufacturing firms to pursue sustainable performance with the aid of their internal capabilities. Global competition is becoming fiercer and complying with the regulations or short-term profit cannot go further if firms want to sustain themselves. The findings of the study

will provide managers in the manufacturing sector with actionable recommendations on how to align leadership strategy with innovation initiatives as well as operational agility to attain long term sustainable performance. Furthermore, this research will fill the gap between strategic management, innovation and sustainability research contributing to the academic literature. The study intends to develop a more comprehensive theoretical framework for how manufacturing firms can achieve and maintain a competitive advantage on the basis of their context of the strategic leadership, operational agility, and innovation capability in light of the global sustainability challenges by looking at the interplay among them.

Finally, the manufacturing sector is faced with the rising pressure to attain sustainable performance in the middle of volatile and competitive global markets. Internal factors now recognized as strategic leadership, operational agility, and innovation capability enable firms to reach this goal. These variables are progressively becoming recognized as important, but little research has yet investigated the combined influence of these variables on sustainable performance in manufacturing companies. It is in this gap that this study seeks to operate by exploring how these factors together and independently affect sustainability outcomes. The research is going to be helpful for practitioners as well as for scholars to understand the pathways to a sustainable success in the manufacturing industry with a deeper and more nuanced understanding.

2.0 Literature Review

Initiating the literature review of strategic leadership, operational agility, innovation capability and sustainable performance requires a solid theoretical base. Two important theoretical perspectives that offer the possibility to explain how firms come to and maintain competitive advantage are the Resource-Based View (RBV) and Dynamic Capabilities Theory. Using RBV, an organization can obtain competitive advantage from their internal resources, specifically, those which are valuable, rare, inimitable and non-substitutable (Al Mamun et al., 2025). Strategic leadership, operational agility, and innovation capability will be treated as three crucial internal resources which enable the firms to reach long run sustainable performance. Decision making, vision for sustainability, are at strategic leadership level, whereas operational agility guarantees the firm's adaptability towards market changes and innovation capability leads to a continuous improvement in products and processes. RBV and Dynamic Capabilities Theory complete each other by looking at an organization's capability to reconfigure its resources and capabilities in response to a quickly changing environment (Tierce, Pisano, & Sheen, 1997). It concentrates on the development of dynamic capabilities (operational agility and innovation) in firms in order to facilitate competitiveness and sustainability.

Extensive study on strategic leadership in relation to organizational performance has been undertaken but there is need for further study on its role on driving sustainability in the manufacturing sector. In particular, strategic vision and sustainability-oriented decision making

of the leaders can contribute to shaping the sustainable outcomes of the organization. It has been empirically evidenced that strategic leadership has a positive effect on organizational performance such as the creation of an environment for innovation, promoting risk taking, and ability to think in the long run (Waldman & Siegel, 2008; Farrakhan et al., 2022). For example, in a study by Wang, Waldman, and Zhang (2014), strategic leadership, which exemplifies the importance of sustainability, is evident in their findings that strategic leaders who highlight sustainability not only contributed to financial performance but also the environment and society. One of the determinants of the sustainability initiatives is the ability of leaders to communicate a clear vision and align the organizational goals with sustainable practices. While there is literature developing around this, the synergistic impact of manufacturing strategic leadership along with other dynamic capabilities such as operational agility and innovation capability is not well studied empirically and within the manufacturing sector.

In the recent years, operational agility has become a means of achieving competitive advantage especially in industries with rapid technological changes and volatile market conditions (Sheehy, Karwowski, & Layer, 2007). Agility refers to the capabilities of a firm to respond quickly to the changing market demands, react to external environmental pressures and rearrange the resources and processes as it confronts new challenges. There is a growing body of empirical studies which demonstrate how operational agility can help to improve performance in the organization. A prime example is the studies done by DE Groote and Marx (2013) and Worley and Lawler (2010) that indicated that organizations with high operational agility are more likely to succeed in overriding the uncertainty, taking advantage of new opportunities, and reaching greater performance outcomes. Apart from this, firms with operational agility are able to install sustainability initiatives through adopting environmentally friendly technologies and modifying their production processes so as to decrease the waste and the resource use (Ciara-Navarro et al., 2016). Although well-established is the relationship between operational agility and performance, there is more to be understood about how agility drives sustainable performance (and in the context of strategic leadership and innovation capability).

A firm's ability to create and realize new ideas, products and processes, commonly termed innovation capability and widely acknowledged as a key driver of competitiveness and performance is defined. The role of innovation in enhancing financial and non-financial performance outcomes including sustainability has been widely studied through empirical studies (Schrettle et al., 2014). One of the areas in which innovation is critical in the manufacturing sector includes the development of environmentally sustainable products or processes that are required by environmentally conscious consumers and regulators. According to the research of Boleros et al. (2014), firms with strong innovation capabilities were more often able to decrease their environmental effect, increase the operational efficiency and to generate additional revenues from new products and services in a sustainable domain. Likewise,

Fernando et al. (2019) study revealed that innovation capability increases firms' sustainable performance by allowing them to increase resource efficiency, decrease emissions, and increase social impact. Nevertheless, a plethora of literature surrounds innovation and sustainability, yet, there is a gap in comprehending how the innovation capability relates with strategic leadership and operational agility in realizing sustainability performance.

Some recent studies have started to identify the synergies among these three variables (strategic leadership, operational agility, and innovation capability) and their overall effect on sustainable performance. Lin and McDonough (2014) offer the example of how companies with strong leadership, agility and innovation capabilities were able to best negotiate complex sustainability challenges like decrease of carbon emissions, handling of resource scarcity and enhancement of social outcomes. In the second, the authors argued that the leadership of a firm is important in the creation of a culture that is innovative and agile, which is necessary for firms to constantly improve their sustainability practices. According to Koch et al. (2022), to the same end, their study also indicated that firms with both innovation and agility capabilities are more likely to achieve long-term sustainability goals. This leads to a need for further research to unveil the interactive effects of strategic leadership, operational agility, and innovation capability to sustainable performance, particularly in the manufacturing companies that face more pronounced sustainability challenges.

In addition, this paper strives to build upon existing literature by testing a number of hypotheses relating strategic leadership, operational agility, innovation capability, and sustainable performance in manufacturing companies. We first hypothesize that strategic leadership is positively related to sustainable performance. Sustainable performance is driven in leaders who place importance on sustainability and align their organizations' goals to environmental and social outcomes. Second, we proffer that operational agility mediates the influence of strategic a leadership on sustainable performance. The ability of firms to adapt quickly to the ever changing market conditions in order to implement sustainability initiatives is referred to as agility and increases their ability to attain sustainable outcomes. Secondly, innovation capability is hypothesized to mediate between strategic leadership and sustainable performance. Innovation capabilities of the firms enable them to develop sustainable products and processes more successfully that result in enhanced sustainability outcomes. We further hypothesize that the moderating effect of operational agility and innovation capability on the former's positive effect on sustainable performance is increased. Firms with both agility and innovation are probably better capable of implementing sustainability strategies and achieving long term sustainable performance.

Summing up, the existing literature reveals a robust support for all individual roles of strategic leadership, operational agility, and innovation capability on organizational performance. Yet, the interaction of these variables does not to date provide a full understanding of how the variables affect sustainable performance in manufacturing sector. This study

attempts to add to the increasing body of sustainability in manufacturing literature by examining the combined effects of these internal capabilities, and offer useful insights to managers in formulating a holistic approach to attaining sustainable performance. This study will test hypotheses developed through data collected empirically from manufacturing firms in order to further the knowledge of the key drivers of sustainability in today's competitive business environment.

3.0 Methodology

The research was quantitative research using a cross-sectional design that investigated how strategic leadership, operational agility and innovation capability influenced sustainable performance in manufacturing companies. This design made it possible to take a glimpse of the relationships between variables at a given point in time. Philosophically, the study was built on the positivism as the study wanted to provide a test of the existing theories and hypotheses using objective data, which means that reality, could be observed and measured with empirical evidence. The research involved a deductive approach where there were already existing theories guiding the formulation of the hypotheses and the data was used in confirming or rejecting them.

As manufacturing is one of the key drivers of the country's economic growth and it has been facing major sustainability problems; the population of study consist of manufacturing companies working in Pakistan. They were taken from companies in several sub sectors, including, textiles, chemicals, food and machinery. The companies were chosen using a non-probability purposive sampling technique by selecting companies that were actively engaged in sustainability practices, innovation and operational strategies. This approach had the advantage of guaranteeing the firms included in the sample to be relevant to the objectives of this research. Senior managers, directors, and other key decision makers in charge of strategic leadership, operations and innovation in the respective companies were the target respondents, since they had knowledge and experience to provide the right insights into the variables under research. For the purpose of this study, a total sample of 250 participants was selected based on accessibility and willingness to participate, thereby ensuring that appropriate representation from within various industries of the manufacturing sector was secured.

The study used a structured survey questionnaire as the primary method of data collection aimed at collecting data on strategic leadership, operational agility, capability for innovation and sustainable performance. Likert-scale items of the questionnaire ranged from "strongly disagree" to "strongly agree," thereby enabling quantification of the responses. Reliability and validity of the measures were assessed by adapting the scales used to measure each variable from previously validated instruments in the existing literature. Data collection was done electronically where the survey was sent to individuals through email and a brief explanation of the study's purpose and instructions on how to fill the questionnaire were

enclosed. Since the electronic survey was convenient and cost-effective, it allowed the researcher to contact the respondents scattered across the distances of Pakistan.

The main statistical technique utilized to carry out the analysis of the data was Partial Least Squares Structural Equation Modeling (PLS-SEM). The choice of PLS-SEM was due to its capability in managing complex model with multiple latent variables and its suitability for exploratory research in theory development. It allowed us to look into the relationships among constructs, and to examine the measurement model as well as the structural model simultaneously. To assess reliability and validity of the measurement model Cronach's alpha, composite reliability and convergent validity were evaluated, average variance extracted (AVE). To determine whether the model is free from statistical issues, the Heterotrait-Monotrait ratio (HTMT) was used to check for discriminant validity and Variance Inflation Factors (VIF) were used to check for Multicollinearity based on recommendations in the literature.

Additionally, the research followed ethical standards during this process of research also. All participants were informed and gave consent to take part in the survey and respondents were assured that their responses would remain anonymous and confidential. It was explained to the participants that they can withdraw from the study at any time without any consequences. Moreover, the data was collected and stored safely and was accessible to research team only, as per the institutional ethical guidelines. There were ethical considerations in the research ensuring that the research was conducted in an ethical and acceptable manner and with respect to the rights and privacy of the participants.

Consequently, the methodology of this study was developed in such a way that it rigorously tests the hypotheses of strategic leadership, operational agility and innovation capability over sustainable performance in manufacturing companies in Pakistan. The study was conducted through a robust survey with a well-structured survey, robust sampling strategy, and advanced data analysis techniques (PLS-SEM) to get insightful results on the relationships of the variables of the study while abiding to ethical principles.

4.0 Findings and Results

4.1 Reliability Analysis (Cronach's Alpha and Composite Reliability)

Construct	Cronach's Alpha	Composite Reliability (CR)
Strategic Leadership	0.87	0.91
Operational Agility	0.85	0.89
Innovation Capability	0.82	0.88
Sustainable Performance	0.90	0.93

The Cronbach’s alpha values for all constructs are above the acceptable threshold of 0.7, indicating good internal consistency and reliability of the measures. Composite reliability (CR) values also exceed 0.7, showing that the measurement models are reliable, meaning the items consistently represent the latent constructs they were designed to measure.

4.2 Variance Inflation Factor (VIF)

Table 4.2 Multicollinearity Check

Indicator	VIF
Strategic Leadership	2.10
Operational Agility	2.30
Innovation Capability	1.90
Sustainable Performance	2.25

The VIF values for all constructs are well below the threshold of 5, suggesting no significant Multicollinearity issues. This confirms that the predictor variables do not exhibit high correlations with each other, and the estimates are stable.

4.3 Model Fit Indices

Table 4.3: Model Fitness

Fit Index	Threshold
(Standardized Root Mean Square Residual)	≤ 0.08
Normed Fit Index)	≥ 0.90
Adjusted R-squared (Sustainable Performance)	Above 0.50)

The SRMR value of 0.07 is below the threshold of 0.08, indicating a good model fit. NFI is 0.92, which is also above the threshold of 0.90, confirming an acceptable fit between the hypothesized model and the observed data. The R-squared value of 0.62 for sustainable performance indicates that

62% of the variance in sustainable performance is explained by strategic leadership, operational agility, and innovation capability.

4.4 Structural Equation Model (Path Coefficients)

Table 4.4 Structural Equation Model (Path Coefficients)

Path	Coefficient (β)	t-Value	p-Value	Decision
Strategic Leadership → Sustainable Performance	0.35	4.21	0.001	Supported
Operational Agility → Sustainable Performance	0.40	5.00	0.000	Supported
Innovation Capability → Sustainable Performance	0.28	3.35	0.001	Supported

All path coefficients are positive and statistically significant (p -values < 0.05). Strategic leadership, operational agility, and innovation capability have significant positive impacts on sustainable performance, with operational agility showing the highest influence ($\beta = 0.40$). The t -values indicate strong evidence of the relationships, supporting the hypothesized paths in the model.

5.0 Discussion and Conclusion

This study provides important insights for understanding relationship between strategic leadership, operational agility, innovation capability and sustainable performance in manufacturing companies. All the three variables namely strategic leadership, operational agility and innovation capability has a significant and positive impact on sustainable performance, was the result. Previous literature would support this finding as it indicates that firms who improve leadership and innovation will, without compromising agility in their operations, be able to enhance performance sustainability. This study confirmed strategic leadership as the driver of the positive impact on sustainable performance. A forward thinking and adaptive leadership, capable of adapting to the ever-changing market conditions, encourages sustainability. Strategic leadership aligns the organizational goals with those of broader environmental and social realm, so that sustainability becomes an inherent aspect of the company’s mission, rather than a short-term objective.

Agility in its operational aspect was found to provide the strongest effect on sustainable performance, implying that companies which can respond swiftly to changing external market and internal challenge are better positioned to meet long term performance goals. According to the literature, in highly dynamic and competitive environments, agility is placed as an important factor for the companies. The firms’ ability to quickly pivot facilitates the detailed management of resources, the waste reduction and consequently the optimization of processes, all of this enhancing the sustainable performance.

The results also revealed that there was a significant positive relationship between innovation capability and sustainable performance which signified that the organizations that put money in the innovative processes and products are more likely to perform the sustainable function. New solutions are created through innovation to help companies overcome challenges of sustainability including, minimizing waste, reducing carbon footprints and creating ecofriendly products. Inclusion of innovation in the strategic framework of the company enables improvement in operations continuously leading to short term benefits and long term sustainability.

Therefore, this study concludes that strategic leadership, operational agility and innovation capability are essential for sustainable performance of manufacturing firms. It is then how each factor contributes uniquely in helping the company to maintain competitive advantage while solving the sustainability challenge. Long term vision is assured by strategic leadership, operational agility allows for flexibility in operations, innovation capability for continuous improvement, and this together contributes to an enhanced sustainable performance. The results point to the importance of manufacturing companies finding a balance among these elements in an age where it is becoming increasingly difficult not to be sustainable.

Contributions

Farhan Ahmed: Problem Identification, Literature search

Sajid Hussain: Drafting and data analysis, proofreading and editing

Waseem Abbas: Methodology, Data Collection

Conflict of Interests/Disclosures

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