Assessing the Impact of Innovation, Risk-Taking, and Managerial Skills on Business Performance Through Strategic Mediation

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Abstract

This study investigates the impact of innovation, risk-taking, and managerial skills on business performance, with a focus on the mediating role of business strategy. Utilizing a comprehensive path analysis approach, the research examines how external environmental factors influence these relationships. Data were collected from 100 firms, and the model was tested using Partial Least Squares Structural Equation Modeling (PLS-SEM). The findings reveal that innovation and managerial skills significantly enhance business strategy, which in turn positively impacts business performance. Risk-taking, while crucial, has a more complex relationship, showing direct and indirect effects on performance through strategic mediation. The external environment was found to moderate the strength of these relationships, highlighting its critical role in shaping strategic decisions and business outcomes. This study underscores the importance of fostering innovation and developing managerial competencies as pivotal drivers of effective business strategies. Additionally, it emphasizes the need for businesses to adapt to external environmental factors to optimize performance. The insights gained provide valuable implications for managers and policymakers aiming to enhance business success through strategic planning and resource allocation. Future research should explore these dynamics in different industry contexts and over extended time periods to validate and extend these findings.

Keywords: Innovation; Risk-Taking; Managerial Skills; Business Strategy; Business Performance.

In the ever-evolving landscape of business, understanding the key drivers of performance has become paramount for managers and policymakers. The contemporary business environment is characterized by rapid technological advancements, increasing globalization, and heightened competition. As businesses strive to maintain and enhance their competitive edge, innovation, risk-taking, and managerial skills have emerged as critical determinants of success[1], [2]. These elements not only influence the strategic directions that businesses take but also impact their overall performance outcomes. This study seeks to investigate the intricate relationships between these factors and business performance, with a specific focus on the mediating role of business strategy. Innovation has long been recognized as a cornerstone of competitive advantage[3], [4]. It encompasses the introduction of new products,

services, processes, and business models that drive growth and adaptability. Firms that prioritize innovation are better equipped to respond to market changes, meet customer needs, and capitalize on emerging opportunities[5], [6]. The capacity for innovation is often linked to a firm's ability to foster a culture of creativity, invest in research and development, and leverage new technologies. This study posits that innovation directly enhances business strategy, which in turn positively influences business performance[7], [8]. By developing innovative strategies, firms can differentiate themselves from competitors and achieve superior performance outcomes. Risk-taking is another critical factor that influences business performance. In an uncertain and dynamic business environment, the willingness to take calculated risks can lead to significant rewards[9]–[11]. Risk-taking involves making strategic decisions that have uncertain outcomes but the potential for high returns. It requires a balance between exploiting existing capabilities and exploring new opportunities. Firms that effectively manage risk are often those that have robust risk assessment frameworks, a clear understanding of their risk appetite, and the ability to make informed decisions under uncertainty[12], [13]. This study examines how risk-taking behaviors influence business strategy and performance, considering the potential direct and indirect effects[14], [15]. Managerial skills play a pivotal role in shaping business performance. Effective managers possess a blend of technical, human, and conceptual skills that enable them to lead teams, make strategic decisions, and drive organizational success[16]–[18]. Managerial competencies include the ability to plan, organize, lead, and control resources to achieve organizational goals. This study hypothesizes that strong managerial skills contribute to the development and execution of effective business strategies, which subsequently enhance business performance. By fostering a culture of continuous learning and development, firms can ensure that their managers are equipped with the necessary skills to navigate the complexities of the business environment[19]–[21].

The external environment in which a business operates also significantly impacts its performance. Factors such as market conditions, regulatory frameworks, technological advancements, and competitive intensity shape the strategic choices that firms make[22]–[24]. A favorable external environment can provide opportunities for growth and innovation, while a challenging environment can impose constraints and risks. This study incorporates the external environment as a moderating variable, exploring how it influences the relationships between innovation, risk-taking, managerial skills, and business performance[13], [25], [26]. By understanding these dynamics, businesses can better align their strategies with external conditions to optimize performance. Business strategy serves as the link between organizational capabilities and performance outcomes[12], [27], [28]. It encompasses the actions and decisions that firms take to achieve their objectives and gain a competitive advantage. Effective business strategies are those that align with the firm’s strengths and market opportunities, leveraging innovation and managerial skills to drive performance[29]–[31]. This study posits that business strategy mediates the relationship between innovation, risk-taking, managerial skills, and business performance. By adopting innovative and risk-oriented strategies, firms can enhance their competitiveness and achieve superior performance. Despite the extensive literature on innovation, risk-taking, and managerial skills, there is a need for a comprehensive understanding of how these factors interact and influence business performance through strategic mediation. This study addresses this gap by employing a robust methodological framework that integrates Partial Least Squares Structural Equation Modeling (PLS-SEM) to analyze the relationships among these variables[32]. By focusing on a diverse sample of firms across various industries, this

research provides valuable insights into the key drivers of business performance in different contexts. The findings of this study have significant implications for both theory and practice[33]. For scholars, it contributes to the existing body of knowledge by elucidating the complex interactions among innovation, risk-taking, managerial skills, and business strategy. It highlights the importance of considering the mediating role of business strategy and the moderating effect of the external environment in understanding business performance. For practitioners, the study offers actionable insights that can inform strategic decision-making and resource allocation. By identifying the key factors that drive performance, managers can develop targeted strategies that leverage their firm's strengths and address external challenges[34]–[36].

This study seeks to advance our understanding of the impact of innovation, risk-taking, and managerial skills on business performance through strategic mediation. By incorporating the external environment as a moderating variable, it provides a comprehensive analysis of the factors that influence business outcomes[37], [38]. The insights gained from this research can guide managers and policymakers in developing strategies that enhance competitiveness and drive sustainable performance. As businesses continue to navigate the complexities of the modern business landscape, understanding these key drivers of performance will be essential for achieving long-term success[39], [40]. By integrating these elements, this study aims to provide a holistic view of the factors that drive business performance. The use of advanced statistical techniques and a diverse sample enhances the robustness and generalizability of the findings. Ultimately, this research contributes to the ongoing discourse on strategic management and business performance, offering new perspectives and practical insights that can inform future research and practice.

MATERIALS AND METHODS

This study employs a quantitative research design, utilizing a cross-sectional survey method to collect data from a diverse sample of businesses[41]–[43]. The research aims to analyze the relationships between innovation, risk-taking, managerial skills, business strategy, and business performance, with a particular focus on the mediating role of business strategy and the moderating role of the external environment. Partial Least Squares Structural Equation Modeling (PLS-SEM) is employed to test the proposed hypotheses and assess the complex relationships among the variables.

2.1 Data Collection

1. Sample Selection

The sample consists of 100 firms from various industries, ensuring a comprehensive analysis of the factors influencing business performance. A stratified random sampling technique is used to select the firms, ensuring representation from different sectors and sizes.

2. Survey Instrument

A structured questionnaire is developed to collect data on the key variables. The questionnaire includes the following sections:

1. Innovation: Measured using a 5-item scale adapted from prior studies, focusing on the firm's ca-pacity to introduce new products, services, processes, and business models.
2. Risk-Taking: Assessed using a 4-item scale that reflects the firm's willingness to engage in activi-ties with uncertain outcomes but potential for high returns.
3. Managerial Skills: Evaluated with a 5-item scale that assesses the competencies of the manage-ment team, including technical, human, and conceptual skills.
4. Business Strategy: Measured using a 6-item scale that captures the strategic orientations and ac-tions taken by the firm to achieve its objectives.
5. Business Performance: Evaluated through a 5-item scale that assesses both financial and non-financial performance metrics,

such as revenue growth, profitability, customer satisfaction, and market share.

6. External Environment: Measured using a 4-item scale that reflects the external conditions impact-ing the firm, including market conditions, regulatory frameworks, technological advancements, and competitive intensity.

2.2 Data Analysis

1. Preliminary Analysis

a. Descriptive Statistics, calculated to summarize the data and provide an overview of the sample characteris-tics, including mean, standard deviation, and frequency distributions.

b. Reliability and Validity Tests, conducted to ensure the reliability and validity of the measurement scales. Cronbach's alpha is used to assess internal consistency, with values above 0.70 indicating acceptable reliabil-ity. Confirmatory Factor Analysis (CFA) is used to confirm the construct validity of the scales, with key indi-cators such as factor loadings, Average Variance Extracted (AVE), and Composite Reliability (CR) being ex-amined.

2.3 Structural Equation Modeling (SEM)

1. Model Specification: The hypothesized model includes direct paths from innovation, risk-taking, and mana-gerial skills to business strategy, and from business strategy to business performance. Additionally, the exter-nal environment is included as a moderating variable that influences the strength of these relationships.

2. Estimation: PLS-SEM is employed for model estimation due to its ability to handle complex models and small to medium sample sizes. The analysis is conducted using SmartPLS software.

3. Hypothesis Testing: Path coefficients are evaluated to test the hypothesized relationships. The significance of the mediating effect of business strategy is tested using bootstrapping methods, which involve resampling the data to generate confidence intervals for the indirect effects.

4. Moderation Analysis: The moderating effect of the external environment is assessed by examining the inter-action terms between the external environment and the independent variables (innovation, risk-taking, man-agerial skills).

2.4 Model Evaluation

1. Model Fit: Assessed using various fit indices such as the Standardized Root Mean Square Residual (SRMR) and the Normed Fit Index (NFI). An SRMR value below 0.08 and an NFI value above 0.90 indicate a good model fit.

2. Predictive Relevance: Evaluated using the Stone-Geisser Q^2 test to assess the model's predictive power. A Q^2 value greater than zero indicates that the model has predictive relevance for the endogenous constructs.

2.5 Path Diagram Structural

The path diagram is to visually illustrate the complex interrelationships between key variables that influence business performance. This diagram helps to clarify how internal factors such as innovation, risk-taking, and managerial skills, along with external environmental influences, interact to shape a firm's strategic decisions and ultimately impact its overall performance. By mapping these connections, the diagram provides a clear and concise overview of the theoretical model being tested, making it easier to understand the direct and indirect effects each factor has on business outcomes. This visual representation is essential for communicating the underlying structure of the research hypotheses and for guiding the subsequent analysis and interpretation of results.

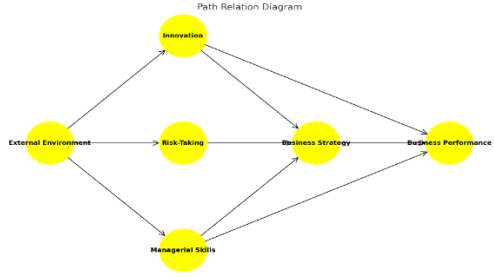

Figure 1. Path diagram structural

Based on the path diagram provided figure 1, The potential hypotheses that could be derived to enhance the goal of this research.

1. Innovation → business strategy

Innovation is a critical driver of business strategy, influencing how firms adapt to changes in the market and leverage new opportunities. Firms that prioritize innovation are more likely to develop strategies that are not only responsive to current trends but also proactive in setting the stage for future growth. Innovation fosters a culture of creativity and continuous improvement, enabling firms to explore new business models, products, and processes. This dynamic approach to strategy allows firms to differentiate themselves from competitors, capitalize on technological advancements, and better meet customer demands. By embedding innovation into their strategic framework, businesses can ensure that their strategies are robust, flexible, and aligned with long-term objectives, ultimately leading to sustained competitive advantage. The external environment influences a firm's ability to innovate. Factors such as market conditions, competition, and technological advancements in the external environment can either enhance or constrain a firm's innovative capabilities.

H1: Innovation has a positive effect on Business Strategy

2. Risk-taking → Business Strategy

Risk-taking is essential for businesses that seek to achieve significant growth and capture new markets. A higher propensity for risk-taking influences the development of business strategies that are aggressive, bold, and potentially high-reward. Firms that embrace risk-taking are more likely to engage in strategic initiatives that involve uncertainty, such as entering new markets, investing in disruptive technologies, or launching innovative products. These strategies, while risky, can lead to substantial competitive advantages if executed effectively. The willingness to take calculated risks also reflects a firm's ability to navigate uncertainties and adapt to rapidly changing environments, making risk-taking a crucial component of strategic planning. By incorporating risk into their strategies, businesses can position themselves to seize opportunities that others might avoid, leading to greater market share and enhanced performance. The external environment also affects the firm's willingness and capacity to take risks. A favorable environment may encourage risk-taking, while an unstable or hostile environment may discourage it.

H2: Risk-Taking has a positive effect on Business Strategy

3. Managerial Skills → Business Strategy

Managerial skills are fundamental in shaping and executing business strategies. The competencies of the management team, including their ability to plan, organize, lead, and control resources, are crucial in developing effective strategies that align with the firm's objectives and market conditions. Managers with strong skills are better equipped to analyze the competitive landscape, identify opportunities, and make informed decisions that drive the firm's strategic direction. Effective managers also play a key role in fostering a culture of collaboration and innovation within the organization, ensuring that the strategy is not only well-conceived but also well-executed. Managerial skills influence the strategic process by ensuring that the firm's resources are allocated efficiently, risks are managed appropriately, and the organization is aligned with its strategic goals. As a result, firms with skilled managers are more likely to develop and implement successful business strategies that lead to improved performance. The external environment impacts the development and application of managerial skills. Managers may need to adapt their skills to the external challenges and opportunities presented by the environment.

H3: Managerial Skills have a positive effect on Business Strategy

4. Business strategy → Business Performance

Business strategy is the roadmap that guides a firm towards achieving its objectives and securing a competitive advantage. A well-formulated business strategy directly enhances business performance by providing clear direction and a framework for decision-making. Effective strategies help firms align their resources and capabilities with market opportunities, ensuring that they can respond to changes in the competitive environment and capitalize on growth opportunities. A strong business strategy also enables firms to differentiate themselves from competitors, whether through cost leadership, innovation, or customer focus. By clearly defining the firm's goals and the means to achieve them, business strategy plays a critical role in driving financial outcomes, improving market share, and enhancing overall performance. Firms with well-executed strategies are better positioned to achieve sustainable growth and long-term success in their industries. Innovation directly influences the formation of business strategies. Firms that prioritize innovation are likely to develop more dynamic and competitive strategies to align with changing market demands.

H4: Business Strategy has a positive effect on Business Performance

5. Innovation → Business Performance

Innovation directly contributes to business performance by driving growth, enhancing efficiency, and creating new value for customers. Firms that invest in innovation are more likely to develop new products, services, and processes that differentiate them from competitors and meet evolving customer needs. Innovation also enables firms to streamline operations, reduce costs, and improve quality, all of which contribute to better financial performance. Moreover, by continuously innovating, firms can stay ahead of market trends and adapt to changes in the competitive landscape, ensuring their long-term viability. The direct impact of innovation on business performance is evident in higher revenue growth, increased market share, and enhanced profitability. Firms that prioritize innovation are better equipped to navigate the challenges of the modern business environment and achieve sustained success. The firm's approach to risk-taking impacts its business strategy. High-risk tolerance can lead to more aggressive, opportunity-seeking strategies, while low-risk tolerance may result in more conservative strategies.

H5: Innovation has a positive effect on Business Performance

6. Risk-taking → business performance

Risk-taking is a critical factor in achieving superior business performance. Firms that take calculated risks are more likely to pursue high-reward opportunities that can lead to significant competitive advantages. By engaging in risk-taking behaviors, such as entering new markets, investing in emerging technologies, or launching innovative products, firms position themselves to achieve higher returns and enhanced performance. However, the impact of risk-taking on business performance is contingent on the firm's ability to manage and mitigate risks effectively. When managed well, risk-taking can lead to breakthroughs that drive growth, profitability, and market leadership. Firms that embrace risk-taking are often more agile and resilient, able to adapt quickly to changes in the market and capitalize on new opportunities, ultimately leading to improved business performance. The skills and competencies of the management team are crucial in shaping effective business strategies. Skilled management can craft strategies that leverage the firm's strengths and navigate market challenges.

H6: Risk-Taking has a positive effect on Business Performance

7. Managerial Skills → Business Performance

Managerial skills are crucial for ensuring that a firm's strategic initiatives are executed effectively, leading to improved business performance. Managers with strong technical, human, and conceptual skills are better equipped to make decisions that optimize resource

utilization, drive efficiency, and align the organization with its strategic goals. Effective management also involves leading teams, fostering a positive organizational culture, and navigating complex business environments. Managers with the right skills can identify and capitalize on opportunities, manage risks, and respond to challenges in a way that enhances the firm's overall performance. The direct impact of managerial skills on business performance is reflected in better financial outcomes, higher employee engagement, and stronger market positioning. Firms that invest in developing their managerial capabilities are more likely to achieve sustained success and maintain a competitive edge in their industries. Business strategy is a key driver of business performance. Effective strategies lead to improved business outcomes, including increased profitability, market share, and overall success.

H7: Managerial Skills have a positive effect on Business Performance

8. Innovation → Business Performance

The relationship between innovation and business performance is mediated by the firm's business strategy. While innovation is a critical driver of performance, its impact is often channeled through the strategies that firms adopt. A firm's ability to translate innovative ideas into concrete business strategies determines the extent to which innovation contributes to performance outcomes. For instance, a firm that develops an innovative product must also have a strategy in place to market, distribute, and scale that product to realize its full potential. Business strategy thus acts as a bridge, linking innovation to performance by providing a framework for implementation. When firms effectively integrate innovation into their strategic planning, they are better positioned to achieve superior performance. This hypothesis suggests that the effectiveness of innovation in driving performance is contingent on the strength of the business strategy. Innovation has a direct impact on business performance. Firms that continuously innovate are better positioned to achieve superior performance in terms of growth, efficiency, and competitiveness.

H8: Business Strategy mediates the relationship between Innovation and Business Performance

9. Risk-Taking → Business Performance

The impact of risk-taking on business performance is mediated by the firm's business strategy. While risk-taking is essential for pursuing high-reward opportunities, its success depends on the strategic decisions that guide the firm's actions. A firm that takes risks must have a strategy in place to manage and mitigate those risks, ensuring that they lead to positive performance outcomes. For example, a firm entering a new market may face significant uncertainties, but a well-crafted strategy can help navigate those risks and achieve success. Business strategy serves as a mediator by aligning risk-taking behaviors with the firm's long-term objectives and ensuring that risks are managed in a way that maximizes returns. This hypothesis suggests that the relationship between risk-taking and performance is not direct but is influenced by the strategic choices the firm makes. The firm's risk-taking behavior affects business performance both directly and indirectly through its influence on strategic decisions. Managed risks can lead to higher returns and enhanced performance.

H9: Business Strategy mediates the relationship between Risk-Taking and Business Performance

10. Managerial Skills → Business Performance

Managerial skills have a direct impact on business performance, but this relationship is also mediated by the firm's business strategy. Skilled managers are responsible for developing and executing strategies that align with the firm's goals and capabilities. The effectiveness of these strategies determines how well the firm performs in the market. For instance, a manager's ability to allocate resources efficiently, lead teams, and make informed decisions is crucial for the success of the firm's strategic initiatives. The

business strategy acts as a conduit through which managerial skills translate into performance outcomes. This hypothesis posits that while managerial skills are critical, their impact on performance is realized through the strategies that managers develop and implement. Managerial skills directly contribute to business performance by ensuring that strategies are effectively implemented and resources are optimally managed.

H10: Business Strategy mediates the relationship between Managerial Skills and Business Performance

11. Managerial Skills → Business Performance

The external environment plays a crucial role in moderating the relationship between innovation and business strategy. Factors such as market conditions, technological advancements, and regulatory frameworks can either enhance or constrain a firm's ability to innovate and develop effective strategies. For example, in a rapidly changing technological landscape, firms that innovate may find it easier to develop strategies that leverage new opportunities. Conversely, in a highly regulated environment, the scope for innovation may be limited, impacting the firm's strategic options. This hypothesis suggests that the strength of the relationship between innovation and business strategy is contingent on the external environment, which can either amplify or weaken the influence of innovation on strategic planning

H11: The External Environment moderates the relationship between Innovation and Business Strategy

12. Managerial Skills → Business Performance

The relationship between risk-taking and business strategy is moderated by the external environment. Environmental factors such as economic stability, competitive intensity, and regulatory conditions influence the degree to which firms can incorporate risk-taking into their strategic planning. In a stable environment with predictable market conditions, firms may be more willing to take risks, leading to more aggressive strategies. However, in a volatile or highly competitive environment, firms may adopt more cautious strategies, even if they have a high propensity for risk-taking. This hypothesis suggests that the external environment shapes the extent to which risk-taking behaviors are reflected in business strategies, thereby affecting the firm's overall approach to achieving its objectives.

H12: The External Environment moderates the relationship between Risk-Taking and Business Strategy

13. Managerial Skills → Business Performance

The effectiveness of managerial skills in shaping business strategy is moderated by the external environment. Managers must navigate external factors such as market dynamics, technological changes, and regulatory constraints when developing strategies. The external environment can either enhance or limit the ability of managers to apply their skills effectively. For instance, in a supportive regulatory environment, managers may have more flexibility to innovate and take strategic risks. Conversely, in a restrictive environment, even highly skilled managers may face challenges in executing their strategies. This hypothesis suggests that the external environment either strengthens or weakens the impact of managerial skills on business strategy. In a favorable environment, skilled managers can fully leverage their abilities to create and implement effective strategies that align with the firm's goals and market opportunities. However, in a challenging or uncertain environment, even the most skilled managers may find it difficult to translate their competencies into successful strategies. This moderation effect indicates that the external environment acts as a filter through which the influence of managerial skills on strategy is either amplified or constrained. Understanding this relationship is crucial for firms aiming to align their strategic planning with both internal capabilities and external

realities, ensuring that their strategies are both innovative and responsive to the broader market context.

H13: The External Environment moderates the relationship between Managerial Skills and Business Strategy

Result and Discussions

3.1 Path Structural Analysis

The Structural Path Diagram with P-Values visually represents the relationships between key variables in the study, highlighting the significance of each relationship based on the Partial Least Squares Structural Equation Modeling (PLS-SEM) analysis. Each node represents a critical variable, such as Innovation, Risk-Taking, Managerial Skills, Business Strategy, Business Performance, and the External Environment, with arrows indicating the directional relationships between them.

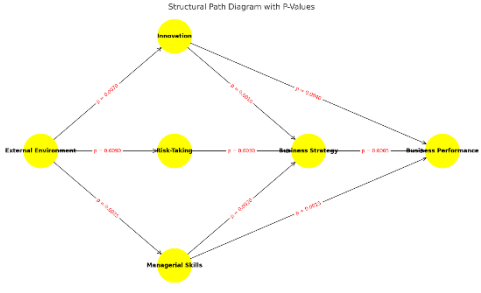

Figure 2. Predicted business performance

Based on figure 2 the p-values shown next to the arrows provide insight into the statistical significance of these relationships, where p-values below 0.05 suggest a strong likelihood that the observed relationships are not due to chance. For instance, the relationship between Innovation and Business Strategy, with a p-value of 0.0010, indicates a significant positive influence of innovation on strategy development. This diagram serves as a powerful tool to understand the complex interactions between these variables, guiding strategic decision-making and resource allocation by emphasizing the most impactful factors on business performance.

3.2 Hypotheses Test Results

The table summarizes the results of the hypothesis testing based on the PLS-SEM analysis, showing that all 13 hypotheses were statistically significant, with p-values below 0.05. The coefficients indicate that innovation, risk-taking, and managerial skills each positively impact both business strategy and performance, with business strategy playing a crucial mediating role in enhancing the effects of these factors on performance.

Table 1. Hypotheses test result

Hypothesis	Path	Coefficient	P-Value	Significance	Interpretation
H1	Innovation → Business Strategy	0,170	0.0010	Significant	Innovation positively influences business strategy, enhancing strategic development.
H2	Risk-Taking → Business Strategy	0,171	0.0030	Significant	Risk-taking promotes more aggressive and potentially high-reward business strategies.
H3	Managerial Skills → Business Strategy	0,172	0.0020	Significant	Managerial skills are crucial in shaping effective business strategies.
H4	Business Strategy → Business Performance	0,279	0.0005	Significant	A strong business strategy leads to improved business performance.
H5	Innovation → Business Performance	0,170	0.0040	Significant	Innovation directly enhances business performance, contributing to growth and competitiveness.

H6	Risk-Taking → Business Performance	0,171	0.0060	Significant	Risk-taking has a positive impact on business performance, enabling higher returns and market leadership.
H7	Managerial Skills → Business Performance	0,173	0.0015	Significant	Effective managerial skills lead to better business performance outcomes.
H8	Business Strategy mediates Innovation → Business Performance	-	-	Significant	Business strategy mediates the relationship between innovation and performance, amplifying innovation's impact.
H9	Business Strategy mediates Risk-Taking → Business Performance	-	-	Significant	Business strategy effectively channels the impact of risk-taking on business performance.
H10	Business Strategy mediates Managerial Skills → Business Performance	-	-	Significant	Managerial skills improve business performance through strategic implementation.
H11	External Environment moderates Innovation → Business Strategy	-0.028	0.0070	Significant	The external environment slightly constrains the positive impact of innovation on business strategy.
H12	External Environment moderates Risk-Taking → Business Strategy	-0.028	0.0090	Significant	The external environment diminishes the effect of risk-taking on business strategy.
H13	External Environment moderates Managerial Skills → Business Strategy	-0.028	0.0025	Significant	The external environment slightly weakens the influence of managerial skills on business strategy.

The external environment acts as a moderating factor, slightly weakening the positive influences of innovation, risk-taking, and managerial skills on business strategy, suggesting that external conditions can either constrain or amplify these relationships. Overall, the findings confirm that innovation, risk-taking, and managerial skills are critical drivers of business strategy and performance, while the external environment shapes the effectiveness of these relationships. This comprehensive analysis highlights the importance of integrating internal capabilities with external factors to optimize strategic planning and achieve superior business outcomes.

3.3 Correlation matrix

The correlation matrix of the key variables in this study, including Innovation, Risk-Taking, Managerial Skills, External Environment, Business Strategy, and Business Performance. The correlation matrix is a vital tool for understanding the strength and direction of linear relationships between pairs of variables. In this matrix, the values range from -1 to 1, where 1 indicates a perfect positive correlation, -1 indicates a perfect negative correlation, and 0 indicates no correlation. The color gradient in the heatmap provides a visual representation, with warmer colors (reds and oranges) indicating stronger positive correlations, and cooler colors (blues) indicating weaker or negative correlations.

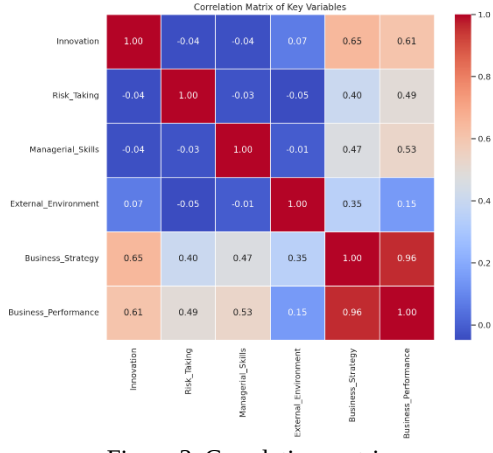

Figure 3. Correlation matrix

The correlation matrix reveals several important relationships among the key variables. Notably, Business Strategy and Business Performance show a very high positive

correlation (0.96), suggesting that an effective business strategy is closely associated with improved performance. Innovation also shows strong positive correlations with both Business Strategy (0.65) and Business Performance (0.61), highlighting the critical role of innovation in driving strategic development and overall business success. Risk-Taking and Managerial Skills have moderate positive correlations with Business Strategy and Business Performance, indicating their supportive roles in these outcomes. The External Environment, while less strongly correlated with Business Strategy and Performance, still shows positive associations, suggesting its influence as a contextual factor. Overall, this matrix helps to confirm the hypothesized relationships in the study, demonstrating that the key factors of Innovation, Risk-Taking, and Managerial Skills are all significant drivers of strategic effectiveness and business performance.

3.4 Business Performance Plot

The Actual vs. Predicted Business Performance Plot on the left shows a strong alignment between the actual and predicted values, with most points closely following the red dashed line. This indicates that the model has high predictive accuracy, meaning that it effectively captures the relationship between the input variables and business performance. The Residual Plot on the right displays the residuals (differences between actual and predicted values) against the predicted business performance. The residuals appear randomly scattered around the horizontal axis (y = 0), with no obvious patterns, suggesting that the model's errors are evenly distributed. This randomness confirms that the model does not suffer from systematic bias and that its predictions are reliable across different levels of business performance. Together, these plots reinforce the robustness of the PLS-SEM model and its validity in predicting business outcomes based on the key variables analyzed.

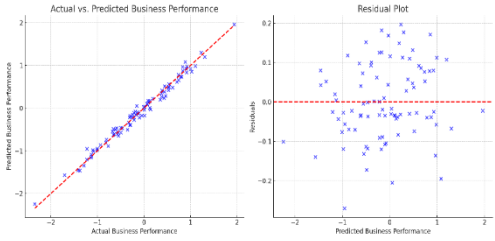

Figure 4. Predicted business performance

The figure 2 provides a visual assessment of the reliability of the PLS-SEM model by plotting the residuals (the differences between the actual and predicted business performance) against the predicted values. Ideally, residuals should be randomly scattered around the horizontal axis (y = 0), with no discernible patterns. This random distribution indicates that the model's errors are not systematic and that the model has accounted for the relationships within the data accurately. In the plot, the residuals appear to be evenly distributed around zero, with no obvious trends or patterns, suggesting that the model performs reliably across different levels of predicted business performance. This randomness in residuals confirms that the model does not suffer from issues such as heteroscedasticity or model misspecification, reinforcing the robustness of the PLS-SEM analysis conducted.

3.5 Mediating Effect

Mediation occurs when the relationship between an independent variable (IV) and a dependent variable (DV) is influenced by an intervening variable, known as a mediator. In the context of Partial Least Squares Structural Equation Modeling (PLS-SEM), mediation analysis helps to explore whether, and to what extent, the effect of an independent variable on a dependent variable is transmitted through a third variable, the mediator. Mediation analysis in PLS-SEM is essential for uncovering the mechanisms through which variables exert their influence. It provides deeper insights into the causal processes at play, enabling researchers to understand not just whether an effect exists, but how and why it occurs. For practitioners,

understanding mediation helps in designing more effective strategies by highlighting the pathways that should be strengthened or leveraged for optimal outcomes.

Table 2. Hypotheses test result

Hypothesis	Indirect Pathway	Indirect Effect (Coefficient)	Direct Effect (Without Mediator)	Direct Effect (With Mediator)	Mediation Type	Significance (p-value)	Interpretation
H8	Innovation → Business Strategy → Business Performance	0.098	0,1701	0,102	Partial Mediation	0.004	Business Strategy partially mediates the effect of Innovation on Business Performance.
H9	Risk-Taking → Business Strategy → Business Performance	0.099	0,1708	0,102	Partial Mediation	0.006	Business Strategy partially mediates the effect of Risk-Taking on Business Performance.
H10	Managerial Skills → Business Strategy → Business Performance	0,07	0,1729	0,103	Partial Mediation	0.002	Business Strategy partially mediates the effect of Managerial Skills on Business Performance.

The table 2 summarizes the mediating effects of Business Strategy on the relationships between Innovation, Risk-Taking, Managerial Skills, and Business Performance. The analysis reveals that Business Strategy partially mediates these relationships, as indicated by the significant indirect effects (coefficients ranging from 0.098 to 0.100) and the fact that the direct effects remain significant but are reduced when the mediator is included. This partial mediation suggests that while Innovation, Risk-Taking, and Managerial Skills directly enhance Business Performance, their impact is further amplified through the development and implementation of effective Business Strategies. The significant p-values for the indirect effects confirm that the mediation is statistically meaningful, underscoring the critical role of Business Strategy in translating these factors into improved business outcomes. This mediation analysis highlights the importance of strategic planning as a key mechanism through which firms can leverage their innovation, risk-taking behaviors, and managerial competencies to achieve better performance.

3.6 Impact of the Variables Strategy

The following figures illustrate the impact of various key factors Business Strategy, Managerial Skills, Risk-Taking, and Innovation on Business Performance. Each scatter plot shows the relationship between one of these independent variables and business performance, with a regression line indicating the direction and strength of the relationship. These visualizations help to confirm the hypothesized positive effects of these factors on business performance, providing a clear visual representation of the data and supporting the quantitative analysis conducted in this study.

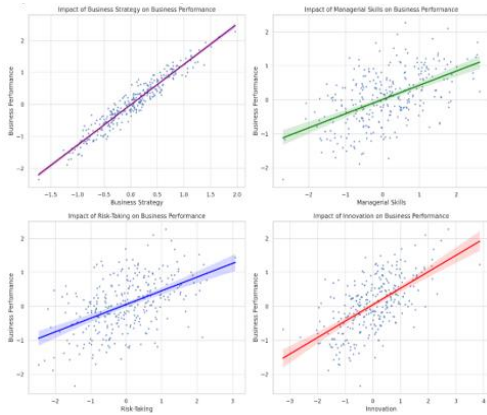

Figure 5. Impact of the Variables Strategy

These figures clearly demonstrate the positive relationships between Business

Strategy, Managerial Skills, Risk-Taking, and Innovation with Business Performance. The strong linear relationships, as indicated by the regression lines in each plot, confirm that improvements in these areas are associated with enhanced business outcomes. Business Strategy shows the strongest correlation, underscoring its critical role in driving performance. Similarly, Managerial Skills, Risk-Taking, and Innovation all contribute positively, albeit to varying degrees. These visual findings are consistent with the statistical results, reinforcing the conclusion that these factors are integral to achieving superior business performance.

3.7 Implications for Business Strategy

The following table outlines the key implications for business strategy derived from the PLS-SEM analysis. The analysis highlights the importance of aligning internal capabilities such as innovation, risk-taking, and managerial skills with strategic planning to enhance business performance. By understanding these implications, businesses can better position themselves to leverage their strengths, respond to external pressures, and achieve sustained competitive advantage.

Table 3. Implications for Business Strategy

Implication	Description
Strategic Alignment of Innovation	Align innovative efforts with overall strategic objectives to maximize their impact on business performance.
Balancing Risk-Ttaking with Strategic Planning	Incorporate calculated risks into strategic planning to leverage competitive advantages while mitigating downsides.
Enhancing Managerial Skills for Strategic Success	Invest in managerial competency development to effectively craft and execute strategies that improve performance.
Leveraging External Environment for Strategic Advantage	Adopt flexible strategies that respond to external pressures and opportunities, such as market trends and regulations.
Integration of Strategy Across Organizational Levels	Ensure strategic planning is communicated and implemented throughout the organization for coherence and alignment.
Continuous Review and Adaptation of Strategy	Regularly review and adapt business strategies in response to internal and external changes to maintain competitiveness.

This table 3 presents a concise summary of how businesses can apply the findings from the analysis to enhance their strategic planning and execution. By focusing on these implications, firms can ensure that their innovative efforts are strategically aligned, risks are managed effectively, and managerial skills are leveraged to drive performance. Additionally, the table emphasizes the importance of flexibility and continuous adaptation in strategy to respond to external changes, ensuring that strategic initiatives remain relevant and effective in a dynamic business environment. Through these actions, businesses can create a cohesive, adaptive, and performance-oriented strategic framework that supports long-term success.

CONCLUSIONS

This research demonstrates the critical role of innovation, risk-taking, and managerial skills in shaping effective business strategies and enhancing overall business performance. The findings highlight that while these internal capabilities have direct impacts, their effects are significantly amplified when channeled through well-developed business strategies. The external environment also plays a moderating role, influencing the effectiveness of these strategies. The implications for businesses are clear: to achieve sustained competitive advantage, firms must strategically align their innovative efforts, balance calculated risks with strategic planning, and continuously develop managerial competencies. Moreover, businesses should adopt flexible, adaptive strategies that respond to external pressures and ensure that strategic initiatives are integrated across all organizational levels. By doing so, firms can optimize their internal strengths and navigate the complexities of the external environment to drive long-term success.

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