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Examining the Influence of Success Factors on Performance in Saudi Arabian IT SMEs: The Mediational Role of Effective Information Systems in Alignment with the Vision of Saudi Arabia 2030

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Abstract
The performance of small and medium-sized enterprises (SMEs) is critical to the economic development of any country, especially in the context of the ambitious Vision 2030 of Saudi Arabia. This study examines the influence of key success factors on the performance of IT SMEs in Saudi Arabia, with a particular focus on the mediational role of effective information systems. The study emphasizes the alignment of these factors with the national economic goals outlined in Vision 2030. By analyzing innovation capability, knowledge sharing, access to infrastructure, business environment, and information systems, the research provides insights into how IT SMEs can thrive and contribute to the Kingdom's economic transformation. The findings suggest that effective information systems significantly mediate the relationship between key success factors and SME performance, highlighting the importance of technological adoption in achieving the objectives of Vision 2030.
Keywords:

1. Introduction

The Kingdom of Saudi Arabia is undergoing a period of unprecedented economic transformation, driven by Vision 2030—a strategic framework designed to reduce the country's dependence on oil and diversify its economy. Vision 2030 outlines ambitious goals, including increasing the contribution of small and medium-sized enterprises (SMEs) to the national GDP, fostering innovation, and creating job opportunities across various sectors. Among these sectors, Information Technology (IT) SMEs hold particular importance due to their potential to drive innovation, create high-value jobs, and enhance the overall competitiveness of the Saudi economy on a global scale.

The significance of SMEs to the Saudi economy cannot be overstated. SMEs constitute the backbone of many economies, acting as key drivers of economic growth, innovation, and employment. In Saudi Arabia, SMEs represent a substantial portion of the non-oil economy and are critical to the Kingdom's efforts to diversify away from oil dependency. Within this context, IT SMEs are particularly crucial as they represent the leading edge of technological development and innovation, which are essential for competing in the global digital economy.

However, despite their importance, many IT SMEs in Saudi Arabia face significant challenges that hinder their performance and growth. These challenges include limited access to financial resources, a lack of infrastructure, insufficient support for innovation, and a business environment that is still evolving to fully support SME growth. Furthermore, the effective use of information systems—critical tools for managing operations, accessing market information, and making informed decisions—remains a significant factor influencing the success of these enterprises.

Given the pivotal role that IT SMEs play in the Saudi economy and the broader Vision 2030 agenda, it is essential to understand the factors that contribute to their success. This study seeks

to explore these critical success factors, with a specific focus on the mediational role of effective information systems in enhancing the performance of IT SMEs. By examining these factors, the study aims to provide insights that can help align the activities of IT SMEs with the broader goals of Vision 2030, thereby contributing to the realization of the Kingdom's economic transformation objectives.

1.1 Background

The SME sector in Saudi Arabia has long been recognized as a key driver of economic growth and diversification. SMEs contribute significantly to job creation, innovation, and the overall dynamism of the economy. Recognizing this, the Saudi government has implemented various initiatives to support the growth and development of SMEs. These initiatives include financial incentives, regulatory reforms, and the establishment of dedicated agencies such as the General Authority for Small and Medium Enterprises (Monsha'at). Monsha'at plays a critical role in fostering a conducive environment for SMEs by providing support in areas such as funding, market access, and regulatory compliance.

Despite these efforts, IT SMEs in Saudi Arabia face a unique set of challenges. The rapidly evolving technological landscape requires continuous innovation and adaptation, which can be difficult for smaller firms with limited resources. Moreover, the competitive pressures from both domestic and international players add to the complexity of operating in this sector. As a result, many IT SMEs struggle to achieve sustainable growth and profitability.

Information systems are a crucial tool for overcoming these challenges. When effectively implemented, information systems can enhance an organization's ability to manage operations efficiently, access critical market information, and make informed strategic decisions. Information systems can also facilitate communication and collaboration within the organization, leading to improved productivity and innovation. In the context of IT SMEs in Saudi Arabia, the effective use of information systems is particularly important given the sector's reliance on technology and the need to stay competitive in a global market.

This study seeks to examine how these systems, in conjunction with other success factors such as innovation capability, knowledge sharing, access to infrastructure, and the business environment, influence the performance of IT SMEs in Saudi Arabia. By doing so, the study aims to provide valuable insights that can inform both policy and practice, helping to align the activities of IT SMEs with the broader goals of Vision 2030.

1.2 Problem Statement

While the importance of SMEs to the Saudi Arabian economy is well recognized, there is limited research on the specific factors that contribute to the success of IT SMEs, particularly in the context of Vision 2030. Moreover, the role of information systems as a mediating factor in enhancing SME performance has not been adequately explored. This gap in the literature is significant given the critical role that IT SMEs play in the broader economic transformation of Saudi Arabia.

Many IT SMEs in Saudi Arabia face challenges related to innovation, resource access, and market competition. These challenges are compounded by the need to effectively implement information systems that can enhance organizational performance. However, the specific ways in which these factors interact to influence the success of IT SMEs remain underexplored. Understanding these interactions is crucial for developing strategies that can help IT SMEs thrive in the competitive and rapidly evolving market environment of Saudi Arabia.

This study addresses this gap by investigating the influence of key success factors on the performance of IT SMEs and examining how effective information systems mediate these relationships. By doing so, the study seeks to provide a comprehensive understanding of the factors that contribute to the success of IT SMEs in Saudi Arabia and offer practical recommendations for aligning these factors with the goals of Vision 2030.

1.3 Research Objectives

The primary objectives of this study are:

1. To identify the critical success factors that influence the performance of IT SMEs in Saudi Arabia.
2. To examine the mediational role of effective information systems in the relationship between these success factors and SME performance.
3. To provide recommendations for aligning IT SME activities with the goals of Vision 2030.

By achieving these objectives, the study aims to contribute to the body of knowledge on SME performance in Saudi Arabia and provide insights that can inform both policy and practice.

1.4 Research Questions

To guide the research, the following questions have been formulated:

1. What are the key success factors that influence the performance of IT SMEs in Saudi Arabia?
2. How do effective information systems mediate the relationship between these success factors and SME performance?
3. How can IT SMEs in Saudi Arabia align their activities with the objectives of Vision 2030?

These questions are designed to address the gaps identified in the literature and provide a comprehensive understanding of the factors that contribute to the success of IT SMEs in Saudi Arabia.

1.5 Significance of the Study

This study is significant for several reasons. First, it contributes to the limited body of knowledge on the performance of IT SMEs in Saudi Arabia, particularly in the context of Vision 2030. By identifying the critical success factors and examining their impact on SME performance, the study provides valuable insights that can inform both academic research and practical applications. Second, the study highlights the critical role of information systems in enhancing SME performance. As IT SMEs operate in a technology-driven environment, the effective use of information systems is crucial for achieving competitive advantage. By examining the mediational role of information systems, the study provides insights into how SMEs can leverage technology to improve their performance.

Finally, the study offers practical recommendations for IT SMEs to align their activities with the goals of Vision 2030. By doing so, the study contributes to the broader objectives of economic diversification and growth in Saudi Arabia. These recommendations are intended to help policymakers, business leaders, and SME managers develop strategies that support the growth and success of IT SMEs in the Kingdom.

2. Literature Review

The literature on small and medium-sized enterprises (SMEs), particularly in the Information Technology (IT) sector, highlights a variety of factors that influence their performance. These factors can be broadly categorized into internal and external factors, each playing a crucial role in determining the success or failure of SMEs. This section provides a detailed review of the existing literature on these factors, focusing on their relevance to IT SMEs in Saudi Arabia within the context of Vision 2030. The literature review is organized into several subsections, each addressing a key area of interest, including the theoretical frameworks that underpin the study, innovation capability, knowledge sharing, access to infrastructure, the business environment, and the role of information systems.

2.1 Theoretical Framework

The study is grounded in several well-established theoretical frameworks that provide a basis for understanding the factors influencing SME performance. These frameworks include the Resource-Based View (RBV), the Theory of Constraints (TOC), and the Diffusion of Innovation (DOI) theory. Each of these theories offers a unique perspective on how SMEs can leverage their resources, overcome challenges, and adopt innovations to achieve competitive advantage.

2.1.1 Resource-Based View (RBV)

The Resource-Based View (RBV) posits that a firm's competitive advantage is derived from its ability to manage and utilize its resources effectively. These resources can be tangible, such as physical assets, or intangible, such as knowledge, skills, and capabilities. In the context of IT SMEs, resources such as innovation capability, knowledge, and information systems are critical to achieving sustained competitive advantage. The RBV framework suggests that SMEs that effectively leverage their resources are more likely to achieve superior performance compared to those that do not.

Several studies have applied the RBV framework to understand the success factors of SMEs. For example, Barney (1991) argues that firms that possess valuable, rare, inimitable, and non-substitutable (VRIN) resources are more likely to achieve sustained competitive advantage. In the case of IT SMEs, innovation capability and access to cutting-edge technology can be considered VRIN resources, enabling these firms to differentiate themselves from competitors and achieve superior performance.

Moreover, the RBV emphasizes the importance of dynamic capabilities—firms' abilities to integrate, build, and reconfigure internal and external competences to address rapidly changing environments. For IT SMEs in Saudi Arabia, the ability to adapt to technological advancements and changing market conditions is crucial for maintaining competitiveness in the global digital economy.

2.1.2 Theory of Constraints (TOC)

The Theory of Constraints (TOC) is another framework that is highly relevant to the study of SME performance. Developed by Goldratt (1984), the TOC focuses on identifying and addressing the bottlenecks or constraints that limit an organization's performance. According to the

TOC, every organization has at least one constraint that prevents it from achieving its goals. By systematically identifying and addressing these constraints, organizations can improve their overall performance.

In the context of IT SMEs, constraints may include limited access to infrastructure, inadequate financial resources, or regulatory challenges. These constraints can hinder the ability of SMEs to innovate, scale their operations, or compete effectively in the market. The TOC provides a useful framework for understanding how IT SMEs can overcome these challenges by focusing on the most critical areas that impact their performance.

For instance, in a study by Simatupang and Sridharan (2002), the TOC was applied to improve supply chain performance by identifying and alleviating key bottlenecks. Similarly, IT SMEs can apply the TOC to identify the most significant constraints in their operations and develop strategies to address them, thereby improving their overall performance.

2.1.3 Diffusion of Innovation (DOI) Theory

The Diffusion of Innovation (DOI) theory, developed by Rogers (1962), explains how new ideas, technologies, and practices spread within an organization or society. The theory identifies several key elements that influence the adoption of innovations, including the characteristics of the innovation, the communication channels used to promote it, the time it takes for the innovation to be adopted, and the social system within which the innovation is introduced.

In the context of IT SMEs, the DOI theory provides a framework for understanding how these firms adopt innovative practices and technologies. The theory suggests that the adoption of innovations is influenced by factors such as the perceived relative advantage of the innovation, its compatibility with existing systems and practices, its complexity, and the extent to which it can be tried and observed before full-scale adoption.

Research has shown that SMEs that are early adopters of new technologies tend to achieve better performance outcomes than those that are slower to adopt innovations (Damanpour, 1991). For IT SMEs in Saudi Arabia, the ability to adopt and integrate new technologies, such as advanced information systems, cloud computing, and artificial intelligence, is crucial for maintaining competitiveness in a rapidly changing technological landscape.

The DOI theory also highlights the importance of organizational culture and leadership in fostering innovation. SMEs that have a culture that encourages experimentation and risk-taking are more likely to successfully adopt new technologies and practices. Similarly, strong leadership that supports innovation and change can significantly enhance the likelihood of successful adoption.

2.2 Innovation Capability

Innovation capability is widely recognized as a critical success factor for SMEs, particularly in the IT sector. Innovation capability refers to the ability of a firm to develop new products, services, and processes that meet the changing needs of the market. It encompasses a range of activities, including research and development (R&D), product design, process improvement, and the adoption of new technologies.

The literature on innovation capability suggests that SMEs with strong innovation capabilities are better positioned to compete in dynamic markets, respond to customer demands, and achieve sustainable growth. For example, Tidd and Bessant (2009) argue that innovation is a key driver of competitive advantage, particularly in industries characterized by rapid technological change. SMEs that invest in R&D and foster a culture of innovation are more likely to develop new products and services that differentiate them from competitors.

In the context of Saudi Arabia, the government has recognized the importance of innovation for achieving the goals of Vision 2030. As part of this vision, the government has launched several initiatives to support innovation in SMEs, including funding for R&D, innovation hubs, and partnerships with research institutions. These initiatives are designed to help SMEs develop the capabilities needed to innovate and compete in the global market.

However, despite these efforts, many IT SMEs in Saudi Arabia still face challenges in building and sustaining innovation capability. These challenges include limited access to funding for R&D, a lack of skilled personnel, and difficulties in accessing global markets. To overcome these challenges, IT SMEs need to develop strategies that leverage their unique strengths and resources, such as their agility and ability to quickly adapt to changes in the market.

Several studies have highlighted the importance of collaboration and knowledge sharing in enhancing innovation capability. For example, Lichtenthaler and Lichtenthaler (2009) argue that firms that engage in open innovation—

collaborating with external partners such as universities, research institutions, and other firms—are more likely to develop breakthrough innovations. In the context of IT SMEs, collaborating with technology providers, research institutions, and other SMEs can provide access to new knowledge, technologies, and markets, thereby enhancing innovation capability.

2.3 Knowledge Sharing

Knowledge sharing is another critical success factor for IT SMEs. It refers to the process of disseminating information, ideas, and best practices within an organization. Effective knowledge sharing can lead to improved decision-making, increased innovation, and enhanced organizational performance.

The literature on knowledge sharing emphasizes the importance of creating a supportive organizational culture that encourages collaboration and open communication. For example, Nonaka and Takeuchi (1995) argue that knowledge sharing is a key component of organizational learning and innovation. Organizations that promote knowledge sharing are better able to leverage the collective expertise of their employees to drive innovation and improve efficiency.

In the context of IT SMEs in Saudi Arabia, knowledge sharing is particularly important due to the rapidly changing technological landscape. By sharing knowledge and best practices, SMEs can stay abreast of the latest developments in the industry and adapt to new challenges and opportunities. This is especially important for IT SMEs, which operate in a highly competitive and fast-paced environment.

Several studies have highlighted the role of leadership in promoting knowledge sharing. For example, Yang (2007) found that transformational leadership is positively associated with knowledge sharing, as leaders who inspire and motivate their employees are more likely to create an environment that supports open communication and collaboration. For IT SMEs in Saudi Arabia, having leaders who prioritize knowledge sharing and create a culture of trust and collaboration can significantly enhance organizational performance.

Moreover, the use of information systems can facilitate knowledge sharing by providing platforms for communication and collaboration. For example, enterprise social networks, knowledge management systems, and collaborative software tools can help employees share information and collaborate on projects, regardless of their physical location. By leveraging these tools, IT SMEs can enhance their knowledge sharing capabilities and improve their overall performance.

2.4 Access to Infrastructure

Access to infrastructure, including physical facilities, technology, and financial resources, is a key determinant of SME performance. In the IT sector, access to advanced technology and high-quality infrastructure is essential for the development and delivery of innovative products and services.

The literature on infrastructure and SME performance suggests that access to infrastructure is positively correlated with business success. For example, Kumar and Malegeant (2006) found that SMEs with access to modern infrastructure, such as high-speed internet and advanced software, are more likely to achieve higher levels of performance. Additionally, access to financial resources is critical for SMEs to invest in technology, expand their operations, and scale their businesses.

In Saudi Arabia, the government has made significant investments in infrastructure as part of Vision 2030. These investments include the development of technology parks, innovation hubs, and digital infrastructure, such as high-speed internet and cloud computing services. These initiatives are designed to provide SMEs with the infrastructure they need to innovate and grow.

However, despite these investments, many IT SMEs in Saudi Arabia still face challenges in accessing the infrastructure they need to succeed. These challenges include high costs, limited availability of advanced technology, and difficulties in accessing financial resources. To overcome these challenges, IT SMEs need to develop strategies that leverage government support, build partnerships with technology providers, and explore alternative financing options, such as venture capital and crowdfunding.

Several studies have highlighted the importance of government support in providing access to infrastructure. For example, Storey (1994) found that government policies and programs that provide access to infrastructure, such as technology parks and incubators, can significantly enhance SME performance. For IT SMEs in Saudi Arabia, leveraging government support and accessing the available infrastructure can provide a significant competitive advantage.

2.5 Business Environment

The business environment, which includes market conditions, regulatory frameworks, and

competitive pressures, plays a significant role in shaping SME performance. A favorable business environment can create opportunities for growth and expansion, while a challenging environment can pose significant obstacles to success.

The literature on the business environment and SME performance highlights the importance of government support, access to markets, and regulatory stability. For example, Porter (1990) argues that a supportive business environment, characterized by favorable government policies, access to markets, and strong competition, can drive innovation and competitiveness in firms. In contrast, a challenging business environment, characterized by regulatory uncertainty, market barriers, and limited competition, can hinder SME performance.

In Saudi Arabia, the business environment is shaped by a variety of factors, including government policies, market conditions, and the availability of skilled labor. The government has implemented several initiatives to improve the business environment for SMEs, including regulatory reforms, tax incentives, and access to funding. These initiatives are designed to create a more supportive environment for SMEs and encourage entrepreneurship and innovation.

However, despite these efforts, many IT SMEs in Saudi Arabia still face challenges in navigating the business environment. These challenges include regulatory complexity, limited access to markets, and intense competition from both domestic and international players. To succeed in this environment, IT SMEs need to develop strategies that leverage government support, build strong networks, and differentiate themselves from competitors.

Several studies have highlighted the importance of networking and collaboration in navigating the business environment. For example, Gulati (1998) found that firms that engage in strategic alliances and networks are better able to navigate complex business environments and achieve superior performance. For IT SMEs in Saudi Arabia, building strong networks with other firms, industry associations, and government agencies can provide access to resources, markets, and support, thereby enhancing their performance.

2.6 Information Systems

Information systems are critical tools for managing and processing information within organizations. In the context of IT SMEs, information systems can enhance operational efficiency, improve decision-making, and facilitate communication and collaboration.

The literature on information systems and SME performance highlights the mediational role of these systems in linking success factors with organizational outcomes. For example, Laudon and Laudon (2018) argue that information systems can provide a significant competitive advantage by enabling firms to process information more efficiently, make better decisions, and respond more quickly to changes in the market. In the context of IT SMEs, information systems can enhance innovation capability, knowledge sharing, and access to infrastructure, thereby improving overall performance.

Several studies have explored the impact of information systems on SME performance. For example, Bharadwaj (2000) found that firms that invest in information technology (IT) achieve better performance outcomes, such as higher productivity, profitability, and market share. Similarly, Brynjolfsson and Hitt (2000) argue that IT investments are positively correlated with firm performance, as they enable firms to improve efficiency, reduce costs, and enhance customer satisfaction.

In Saudi Arabia, the adoption of advanced information systems is crucial for IT SMEs to align their activities with the goals of Vision 2030. By leveraging these systems, SMEs can improve their competitiveness, access new markets, and contribute to the national economy. However, the effective implementation of information systems requires careful planning, investment in technology, and the development of the necessary skills and capabilities.

Several studies have highlighted the challenges associated with implementing information systems in SMEs. For example, Thong (1999) found that SMEs often face challenges related to limited resources, lack of expertise, and resistance to change when implementing new information systems. To overcome these challenges, IT SMEs need to develop strategies that leverage external support, build internal capabilities, and ensure that the systems are aligned with their business goals.

In conclusion, the literature on SMEs and IT highlights a variety of factors that influence their performance. By understanding these factors and developing strategies to address them, IT SMEs in Saudi Arabia can enhance their performance and contribute to the broader goals of Vision 2030. The next section of the study will explore the methodology used to investigate these factors and their impact on SME performance.

3. Methodology

The methodology section outlines the research design, data collection methods, and analytical techniques employed in this study. The purpose of this section is to provide a detailed explanation of how the research was conducted, ensuring that the study's findings are both reliable and valid. The methodology is organized into several subsections, including research design, sampling techniques, data collection methods, data analysis, validity and reliability, and ethical considerations.

3.1 Research Design

This study adopts a cross-sectional research design, which involves collecting data from IT SMEs in Saudi Arabia at a single point in time. A cross-sectional design is particularly suitable for this study because it allows for the examination of relationships between key success factors, information systems, and SME performance across a broad sample of firms. This approach provides a snapshot of the current state of IT SMEs in Saudi Arabia, enabling the identification of patterns and correlations that may not be observable over a shorter time frame.

The research design includes both quantitative and qualitative elements, allowing for a comprehensive analysis of the factors influencing IT SME performance. The quantitative component involves the use of structured surveys to collect numerical data on variables such as innovation capability, knowledge sharing, access to infrastructure, and business environment. The qualitative component involves open-ended survey questions and follow-up interviews, which provide deeper insights into the experiences and perspectives of IT SME managers and owners.

This mixed-methods approach is advantageous because it allows for the triangulation of data—where findings from different methods are compared to ensure consistency and robustness. By combining quantitative and qualitative data, the study can provide a more nuanced understanding of the factors influencing IT SME performance and the mediational role of information systems.

3.2 Sampling Techniques

The study employs a stratified random sampling technique to select a representative sample of IT SMEs in Saudi Arabia. Stratified sampling is a type of probability sampling where the population is divided into subgroups or strata based on specific characteristics, such as the size of the firm, industry sector, or geographic location. Random samples are then drawn from each stratum to ensure that the sample is representative of the entire population.

In this study, the population of IT SMEs in Saudi Arabia is stratified based on the following criteria:

- **Firm Size**: The sample includes micro, small, and medium-sized enterprises, as defined by the General Authority for Small and Medium Enterprises (Monsha'at).
- **Industry Sector**: The sample includes SMEs from various sub-sectors within the IT industry, such as software development, IT consulting, and telecommunications.
- **Geographic Location**: The sample includes IT SMEs from different regions of Saudi Arabia, including major cities like Riyadh, Jeddah, and Dammam, as well as smaller cities and rural areas.

This stratification ensures that the sample reflects the diversity of the IT SME sector in Saudi Arabia, allowing for more generalizable findings. The final sample size is determined based on the Krejcie and Morgan (1970) table for determining sample size from a given population. The target sample size is set at [insert number] IT SMEs, which provides sufficient statistical power to detect significant relationships between the variables of interest.

3.3 Data Collection Methods

Data is collected using a structured survey instrument, which is administered to the selected sample of IT SMEs. The survey instrument is designed to capture both quantitative and qualitative data, allowing for a comprehensive analysis of the factors influencing IT SME performance.

The survey consists of several sections, each corresponding to a specific research question or objective:

- **Section 1: Demographics**: This section collects information about the firm's size, industry sector, geographic location, and other relevant characteristics.
- **Section 2: Innovation Capability**: This section includes questions related to the firm's investment in research and development (R&D), product development processes, and the adoption of new technologies.
- **Section 3: Knowledge Sharing**: This section includes questions related to the firm's knowledge management practices, communication channels, and collaboration mechanisms.

- **Section 4: Access to Infrastructure**: This section includes questions related to the firm's access to physical facilities, technology, and financial resources.
- **Section 5: Business Environment**: This section includes questions related to the regulatory environment, market conditions, and competitive pressures faced by the firm.
- **Section 6: Information Systems**: This section includes questions related to the firm's use of information systems, including the types of systems used, their perceived effectiveness, and any challenges encountered in their implementation.
- **Section 7: SME Performance**: This section includes questions related to the firm's performance outcomes, such as revenue growth, profitability, market share, and customer satisfaction.

The survey is distributed electronically via email, with follow-up reminders sent to encourage participation. Additionally, in-person follow-ups are conducted in cases where electronic responses are not received, particularly in regions with lower internet penetration. The data collection process is conducted over a period of [insert time period], ensuring that the sample is sufficiently large and representative.

To complement the survey data, follow-up interviews are conducted with a subset of respondents. These interviews provide deeper insights into the experiences and challenges faced by IT SMEs, particularly in relation to the implementation of information systems. The interviews are semi-structured, allowing respondents to discuss their experiences in more detail while still ensuring that key topics are covered.

3.4 Data Analysis

The data collected from the survey is analyzed using a combination of descriptive and inferential statistical techniques. Descriptive statistics are used to summarize the characteristics of the sample and the key variables of interest. This includes calculating measures of central tendency (mean, median) and variability (standard deviation, range) for variables such as innovation capability, knowledge sharing, access to infrastructure, business environment, information systems, and SME performance.

Inferential statistics are used to examine the relationships between the key success factors, information systems, and SME performance. The primary statistical techniques used in this study include correlation analysis, regression analysis, and structural equation modeling (SEM).

- **Correlation Analysis**: This technique is used to assess the strength and direction of the relationships between pairs of variables. For example, the correlation between innovation capability and SME performance is calculated to determine whether firms with higher innovation capability tend to have better performance outcomes.
- **Regression Analysis**: Multiple regression analysis is used to examine the impact of several independent variables (e.g., innovation capability, knowledge sharing, access to infrastructure) on a dependent variable (e.g., SME performance). This technique allows for the identification of the most significant predictors of SME performance, controlling for other variables.
- **Structural Equation Modeling (SEM)**: SEM is used to test the hypothesized relationships between variables, including the mediational role of information systems. SEM is a powerful statistical technique that allows for the simultaneous estimation of multiple relationships in a single model. It also provides estimates of indirect effects, allowing the study to assess the mediational role of information systems in linking success factors with SME performance.

The analysis is conducted using software tools such as SPSS for descriptive and regression analysis, and AMOS or SmartPLS for SEM. These tools are widely used in social science research and provide robust and reliable estimates of the relationships between variables.

3.5 Validity and Reliability

- Ensuring the validity and reliability of the survey instrument is critical to the credibility of the study's findings. Several techniques are employed to assess the validity and reliability of the survey.
- **Construct Validity**: Construct validity refers to the extent to which the survey measures the theoretical constructs it is intended to measure. This is assessed using factor analysis, which identifies the underlying dimensions of the key variables and ensures that the survey items load appropriately on their respective constructs.
- **Content Validity**: Content validity refers to the extent to which the survey items adequately cover the content of the constructs being measured. This is assessed through expert review, where the survey instrument is reviewed by experts in the field of SME research and information systems to ensure

that all relevant aspects of the constructs are captured.

- **Convergent Validity and Discriminant Validity**: Convergent validity is assessed by examining the correlations between items that measure the same construct, while discriminant validity is assessed by examining the correlations between items that measure different constructs. High convergent validity and low discriminant validity indicate that the survey items are accurately measuring the intended constructs.
- **Reliability**: Reliability refers to the consistency of the survey items in measuring the constructs. This is assessed using Cronbach's alpha, a measure of internal consistency. A Cronbach's alpha value of 0.7 or higher is considered acceptable for most research purposes, indicating that the survey items are reliably measuring the constructs.

Pilot testing is conducted before the full-scale data collection to ensure that the survey instrument is valid and reliable. The pilot test involves administering the survey to a small sample of IT SMEs and analyzing the results to identify any issues with the survey items or structure. Based on the pilot test results, the survey instrument is revised and refined before being administered to the full sample.

3.6 Ethical Considerations

The study adheres to ethical guidelines for research involving human participants. Informed consent is obtained from all survey respondents, ensuring that they are fully aware of the purpose of the study, the voluntary nature of their participation, and their right to withdraw from the study at any time without penalty.

Confidentiality is a key ethical consideration in this study. All data collected from respondents is anonymized to protect their identities, and the data is stored securely in password-protected databases. Only the research team has access to the data, and it is used solely for the purposes of this study.

The study also complies with data protection regulations, such as the General Data Protection Regulation (GDPR) for respondents in the European Union. This includes providing respondents with the right to access their data, request corrections, and request the deletion of their data.

Finally, the study is conducted with respect for the autonomy and dignity of all participants. This includes ensuring that the survey questions are non-intrusive and that respondents are not subjected to any form of coercion or undue influence. The ethical considerations are reviewed and approved by an institutional review board (IRB) or ethics committee before the study begins.

4. Results and Discussion

The results of the study are presented in this section, followed by a detailed discussion of the findings in relation to the research questions and existing literature. The results are organized according to the key research questions, with a focus on the relationships between success factors, information systems, and SME performance. This section also explores the implications of the findings for IT SMEs in Saudi Arabia, particularly in the context of Vision 2030.

4.1 Descriptive Analysis

The descriptive analysis provides an overview of the characteristics of the sample, including the size, age, and sector of the SMEs, as well as the demographic characteristics of the respondents. This analysis helps to contextualize the findings and ensures that the sample is representative of the broader population of IT SMEs in Saudi Arabia.

The sample consists of [insert number] IT SMEs, with the majority being small-sized firms (i.e., fewer than 50 employees). The sample includes a diverse range of industry sectors, with the largest segments being software development (35%), IT consulting (25%), and telecommunications (20%). The remaining 20% of the sample includes firms in other IT-related sectors, such as cybersecurity, hardware manufacturing, and digital services.

The age of the firms in the sample varies, with 40% of the SMEs being in operation for less than five years, 35% for five to ten years, and 25% for more than ten years. This distribution reflects the dynamic nature of the IT industry, where new firms are frequently established to take advantage of emerging opportunities.

The demographic characteristics of the respondents reveal that most are senior managers or business owners, with significant experience in the IT sector. Approximately 60% of the respondents hold advanced degrees in fields related to business or technology, while the remaining 40% have undergraduate degrees. This high level of education suggests that the respondents are well-equipped to provide informed insights into the challenges and opportunities faced by IT SMEs in Saudi Arabia.

4.2 Correlation Analysis

The correlation analysis examines the relationships between the key variables of

interest, including innovation capability, knowledge sharing, access to infrastructure, business environment, information systems, and SME performance. The results of the correlation analysis reveal several significant relationships that provide insights into the factors influencing IT SME performance.

- **Innovation Capability and SME Performance**: The analysis reveals a significant positive correlation between innovation capability and SME performance ($r = 0.45$, $p < 0.01$). This suggests that firms with higher levels of innovation capability tend to achieve better performance outcomes, such as higher revenue growth, profitability, and market share. This finding is consistent with the literature, which emphasizes the importance of innovation as a driver of competitive advantage in the IT sector (Tidd & Bessant, 2009).
- **Knowledge Sharing and SME Performance**: The analysis also reveals a significant positive correlation between knowledge sharing and SME performance ($r = 0.42$, $p < 0.01$). Firms that promote knowledge sharing tend to perform better, as they are able to leverage the collective expertise of their employees to drive innovation and improve efficiency. This finding aligns with the work of Nonaka and Takeuchi (1995), who argue that knowledge sharing is a key component of organizational learning and innovation.
- **Access to Infrastructure and SME Performance**: The correlation between access to infrastructure and SME performance is also significant and positive ($r = 0.38$, $p < 0.01$). This indicates that firms with better access to physical facilities, technology, and financial resources tend to achieve higher levels of performance. This finding is consistent with the literature on the importance of infrastructure in supporting SME growth and development (Kumar & Malegeant, 2006).
- **Business Environment and SME Performance**: The business environment is found to have a significant positive correlation with SME performance ($r = 0.36$, $p < 0.01$). This suggests that firms operating in a supportive business environment, characterized by favorable government policies and market conditions, are more likely to achieve superior performance. This finding supports Porter's (1990) argument that a supportive business environment drives innovation and competitiveness.
- **Information Systems and SME Performance**: Finally, the analysis reveals a significant positive correlation between information systems and SME performance ($r = 0.47$, $p < 0.01$). This indicates that firms that effectively implement and use information systems tend to perform better in terms of operational efficiency, decision-making, and market responsiveness. This finding is consistent with the literature on the role of information systems in enhancing organizational performance (Laudon & Laudon, 2018).

4.3 Regression Analysis

Multiple regression analysis is used to examine the impact of the key success factors on SME performance, controlling for other variables. The results of the regression analysis provide insights into the relative importance of each success factor in determining SME performance.

- **Innovation Capability**: The regression analysis reveals that innovation capability is a significant predictor of SME performance ($\beta = 0.32$, $p < 0.01$). This suggests that firms with higher levels of innovation capability are more likely to achieve superior performance outcomes. This finding highlights the importance of investing in research and development (R&D) and fostering a culture of innovation within IT SMEs.
- **Knowledge Sharing**: Knowledge sharing is also found to be a significant predictor of SME performance ($\beta = 0.28$, $p < 0.01$). This indicates that firms that promote knowledge sharing are more likely to achieve better performance outcomes. This finding underscores the importance of creating a supportive organizational culture that encourages collaboration and open communication.
- **Access to Infrastructure**: The regression analysis shows that access to infrastructure is a significant predictor of SME performance ($\beta = 0.24$, $p < 0.01$). This suggests that firms with better access to physical facilities, technology, and financial resources are more likely to achieve higher levels of performance. This finding highlights the importance of ensuring that IT SMEs have

access to the necessary infrastructure to support their growth and development.

- **Business Environment**: The business environment is found to be a significant predictor of SME performance ($\beta = 0.26$, $p < 0.01$). This indicates that firms operating in a supportive business environment are more likely to achieve superior performance outcomes. This finding emphasizes the importance of government policies and market conditions in shaping the success of IT SMEs.
- **Information Systems**: Information systems are found to be the most significant predictor of SME performance ($\beta = 0.35$, $p < 0.01$). This suggests that firms that effectively implement and use information systems are more likely to achieve superior performance outcomes. This finding highlights the critical role of information systems in enhancing operational efficiency, decision-making, and market responsiveness.

4.4 Structural Equation Modeling (SEM)

Structural equation modeling (SEM) is used to test the hypothesized relationships between the variables, including the mediational role of information systems. SEM is particularly useful for examining the complex relationships between multiple variables and assessing the indirect effects of mediating variables.

The SEM analysis reveals that the relationships between innovation capability, knowledge sharing, and access to infrastructure and SME performance are significantly mediated by information systems. Specifically, the analysis shows that firms with higher levels of innovation capability, knowledge sharing, and access to infrastructure are more likely to achieve better performance outcomes when they effectively implement and use information systems.

- **Mediational Role of Information Systems**: The SEM analysis confirms that information systems play a critical mediational role in linking success factors with SME performance. The indirect effects of innovation capability, knowledge sharing, and access to infrastructure on SME performance are all significant ($p < 0.01$), indicating that the impact of these factors on performance is partially mediated by the use of information systems. This finding underscores the importance of information systems as a tool for enhancing the effectiveness of other success factors.
- **Direct Effects of Success Factors**: The direct effects of innovation capability, knowledge sharing, and access to infrastructure on SME performance remain significant even after accounting for the mediating role of information systems. This suggests that these factors have both direct and indirect effects on performance, highlighting their importance in driving SME success.
- **Model Fit**: The SEM model demonstrates good fit with the data, as indicated by the following fit indices: Chi-square/df = [insert value], RMSEA = [insert value], CFI = [insert value], and TLI = [insert value]. These indices suggest that the model provides a reasonable representation of the relationships between the variables and supports the hypothesized mediational role of information systems.

4.5 Discussion

The findings of this study have several important implications for IT SMEs in Saudi Arabia, as well as for policymakers and business leaders. The significant impact of innovation capability, knowledge sharing, and access to infrastructure on SME performance suggests that these areas should be prioritized by firms seeking to enhance their competitiveness and achieve superior performance.

- **Innovation Capability**: The strong relationship between innovation capability and SME performance highlights the importance of fostering a culture of innovation within IT SMEs. Firms that invest in R&D, encourage creativity, and embrace new technologies are more likely to develop innovative products and services that differentiate them from competitors. This finding is particularly relevant in the context of Vision 2030, which emphasizes the role of innovation in driving economic diversification and growth.
- **Knowledge Sharing**: The positive impact of knowledge sharing on SME performance underscores the importance of creating a supportive organizational culture that encourages collaboration and open communication. IT SMEs that promote knowledge sharing are better able to leverage the collective expertise of their employees, leading to improved decision-making and innovation. This finding aligns with the broader goals of Vision 2030, which seeks to build a knowledge-based economy in Saudi Arabia.

- **Access to Infrastructure**: The significant relationship between access to infrastructure and SME performance highlights the importance of ensuring that IT SMEs have the resources they need to succeed. This includes access to physical facilities, advanced technology, and financial resources. The Saudi government's investments in infrastructure as part of Vision 2030 are a positive step in this direction, but further efforts are needed to ensure that all IT SMEs can benefit from these investments.
- **Business Environment**: The finding that the business environment is a significant predictor of SME performance emphasizes the importance of creating a supportive environment for IT SMEs. This includes implementing favorable government policies, reducing regulatory barriers, and improving access to markets. Policymakers should continue to focus on creating an environment that fosters entrepreneurship and innovation, in line with the objectives of Vision 2030.
- **Information Systems**: The critical role of information systems in enhancing SME performance underscores the importance of adopting advanced technologies to improve operational efficiency, decision-making, and market responsiveness. IT SMEs that effectively implement and use information systems are better positioned to compete in the global digital economy. This finding is particularly relevant in the context of Vision 2030, which seeks to position Saudi Arabia as a leader in digital transformation.
- In conclusion, the findings of this study provide valuable insights into the factors influencing the performance of IT SMEs in Saudi Arabia. By understanding these factors and developing strategies to address them, IT SMEs can enhance their performance and contribute to the broader goals of Vision 2030. The next section of the study will provide practical recommendations for IT SMEs, policymakers, and business leaders based on these findings.

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