INFLUENCE OF INNOVATION STRATEGIES ON PERFORMANCE OF SMALL AND MEDIUM SIZED MANUFACTURING BUSINESS IN NAIROBI KENYA

MARCELLAH GACHERI BAARIU

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DECLARATION AND APPROVAL

Signature : _____ Date : __21/05/2025___

Marcellah Gacheri

MBA/2022/48567

Approval by the Supervisors

I verify that the candidate conducted this research project under my supervision.

Signature: _____ Date: 23/05/2025

Dr Henry Yatich

Principal

College of Graduate Studies and Research (CGSR)

Mount Kenya University

DEDICATION

I dedicate this proposal to my children Sharon, Leon and Ronney

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ABSTRACT

Small and Medium-sized Enterprises (SMEs) play a vital role in the economy of Nairobi and Kenya as a whole. They contribute significantly to employment creation and help in poverty alleviation. Additionally, SMEs drive economic development by supplying essential goods and services, fostering entrepreneurship, and promoting innovation. This research examines the connection between innovation strategies and business performance, emphasizing how SMEs in the manufacturing sector can use innovation to gain a sustainable competitive edge. The main objective of this study is to assess the impact of innovation strategies on the performance of manufacturing SMEs in Nairobi. Specifically, the study aims to evaluate how product innovation, process innovation, technological innovation, and market innovation strategies affect business performance within this sector. A quantitative research design will be adopted to collect numerical data related to innovation strategies and key performance measures. The target population for this research consists of 68 SME manufacturing firms within Nairobi County. A census approach will be applied, ensuring that all identified firms are included in the study. Data will be gathered through structured questionnaires administered to managers of the selected SMEs. Prior to the actual data collection, the questionnaire will undergo pre-testing and refinement to enhance its clarity and validity. Descriptive statistics will be employed to summarize the collected data, while inferential statistics will be utilized to assess the relationship between innovation strategies and business performance. Data analysis will be conducted using Statistical Package for the Social Sciences (SPSS) to generate insights and meaningful interpretations. Ethical considerations will be strictly followed throughout the study. The confidentiality and anonymity of participating SMEs will be safeguarded, and respondents will have the freedom to withdraw from the research at any stage without facing any adverse consequences. The study may face limitations such as potential response bias, limited generalizability due to the specific context of Nairobi and reliance on self-reported data. Steps will be taken to mitigate these limitations through rigorous data collection and analysis procedure. The findings reveal that technological innovation strategies significantly enhance performance metrics, such as operational efficiency and financial outcomes. Additionally, product innovation, process improvement, and knowledge management strategies are shown to positively influence performance measurement. Statistical analyses, including regression and correlation, reveal the interconnected nature of various innovation strategies and their combined impact on organizational performance. The findings emphasize the importance of a comprehensive approach to innovation for manufacturing SMEs, highlighting its role as a key factor in enhancing competitiveness and driving growth in a rapidly evolving market. To strengthen their market position, SMEs are encouraged to invest in advanced technologies, cultivate an innovative organizational culture, and improve knowledge management practices. This research contributes to the understanding of how strategic innovation can drive better performance in the manufacturing sector. It underscores the necessity for continuous investment in innovation and a sustained focus on adaptive strategies to ensure long-term growth and resilience.

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ABBREVIATIONS AND ACRONYMS

CBK	-	Central Bank of Kenya
DCT	-	Dynamic Capability Theory
OIT	-	Open Innovation Theory
R&D	-	Resource and Development
RBV	-	Resource-Based Theory
SMEs	-	Small and Medium-sized Enterprises

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Innovation strategies are essential for enhancing the success and competitiveness of small and medium-sized enterprises (SMEs). Tidd and Bessant (2018) highlight that innovation serves as a fundamental factor in fostering SME growth and long-term sustainability. It enables businesses to respond effectively to shifting market conditions, capitalize on emerging opportunities, and establish a unique competitive edge. By adopting innovation strategies, SMEs can develop and introduce new products, services or processes that address customer needs more effectively. This helps in enhancing customer satisfaction and loyalty, expanding market share and ultimately driving business performance. Additionally, Arundel *et al* (2020) highlights that innovation strategies also contribute to improving operational efficiency within the SMEs leading to cost reductions, increased productivity and improved financial performance. Therefore, innovation strategies are vital for SMEs to thrive in today's competitive business environment and achieve sustainable growth.

The adoption of innovation strategies by SMEs involves various processes and activities. Saridakis *et al.* (2021) indicate that SMEs typically implement both internal and external innovation strategies. Internal approaches may involve allocating resources to research and development, nurturing an innovative organizational culture, and promoting employee creativity and idea generation. Conversely, external strategies focus on partnerships with entities such as suppliers, customers, and research institutions to gain access to new knowledge, technologies, and resources. Furthermore, Arundel et al. (2020) highlight the critical role of managerial capabilities in facilitating the adoption of innovation strategies within SMEs. Effective leadership, strategic vision and the ability to manage risks and uncertainties are critical for successful implementation.

Extensive research has been conducted on the influence of innovation strategies on SME performance. Damanpour and Schneider (2016) identify a strong positive correlation between innovation strategies and business success, with innovation-driven SMEs experiencing higher sales growth, expanded market share, and increased profitability. Similarly, Love *et al*. (2019) highlight that innovation strategies enhance SMEs' operational performance by boosting process efficiency, lowering costs, and improving overall productivity. Continuous innovation enables SMEs to respond to market needs, maintain a competitive edge, and establish long-term sustainability.

Despite the recognized importance of innovation strategies, some aspects remain unclear. The specific mechanisms through which innovation strategies influence SME performance require further investigation. While studies have shown a positive relationship between innovation and performance, the underlying processes and mediating factors are not fully understood (Liao, 2017). Secondly, the impact of external factors such as industry characteristics or institutional contexts, on the effectiveness of innovation strategies in different SMEs warrants more research (Dangol, 2020). Additionally, the long-term sustainability of innovation strategies and their effects on SMEs' resilience and adaptability in dynamic environments require deeper exploration. There is a growing need for in-depth research exploring the obstacles that SMEs encounter when adopting and implementing innovation strategies. These challenges include resource constraints, reluctance to take risks, and the absence of an innovation-oriented culture (Roper & Hewitt-Dundas, 2017). Investigating these issues further will offer valuable insights into the intricate link between innovation strategies and SME performance.

Examining how innovation strategies impact the performance of manufacturing SMEs in Nairobi is crucial for fostering long-term growth and enhancing competitiveness in the industry. Product innovation and process enhancements play a significant role in driving business performance, while strategic collaborations and external partnerships help address the challenges that SMEs encounter.

The efforts of the Kenyan government and supportive policies further underscore the significance of innovation in SME development. By addressing the barriers and leveraging innovation strategies, manufacturing SMEs in Nairobi can enhance their performance, contribute to economic growth, and create employment opportunities.

1.1.1 Innovation Practices

Innovation is a key factor in improving the performance of manufacturing SMEs in Nairobi. Implementing effective innovation strategies enables these businesses to strengthen their competitive edge and achieve growth in an evolving market. This research examines the impact of innovation practices on the performance of manufacturing SMEs in Nairobi. According to a study by Oluka *et al*. (2018), a supportive and encouraging environment that promotes creativity and idea generation is positively associated with the performance of manufacturing SMEs. By encouraging employees to share their innovative ideas and providing resources for experimentation, businesses can tap into the diverse knowledge and expertise of their workforce, leading to improved products and processes (Kabir *et al*, 2019). This approach not only enhances the efficiency of manufacturing operations but also enables businesses to meet customer needs more effectively.

Collaboration and networking are vital innovation practices for manufacturing SMEs in Nairobi. By collaborating with other firms, research institutions, and government agencies, SMEs can access valuable resources, knowledge and technology. Research by Simiyu *et al.* (2020) indicates that collaborative innovation has a positive impact on the performance of manufacturing SMEs in Nairobi. Engaging in joint research and development, technology transfer, and the exchange of best practices contributes to higher product quality, increased efficiency, and faster innovation cycles. Additionally, involvement in industry clusters and trade associations facilitates knowledge sharing, provides valuable market insights, and creates opportunities for strategic partnerships, ultimately enhancing the performance of manufacturing SMEs.

Investment in research and development is a critical innovation strategy for manufacturing SMEs in Nairobi. Allocating resources for resource and development activities enables businesses to explore new technologies, developing innovative products and improve existing processes. According to Koech *et al* (2021), increased investment in resource and development positively correlates with the performance of manufacturing SMEs. Resource and development investment allows businesses to stay ahead of competitors, adapt to market changes and identify new growth opportunities. Government initiatives such as tax incentives or grants can also encourage manufacturing SMEs to invest in resource and development, further stimulating innovation and performance in the sector.

1.1.2 Small and Medium-sized Enterprises (SMEs)

SMEs play a vital role in the economy, contributing to employment generation, economic growth and innovation. Acs and Audretsch (2010) highlights the significance of SMEs as engines of jo creation. SMEs often have a higher propensity to create jobs compared to larger enterprises, providing employment opportunities for a substantial portion of the workforce. Additionally, SMEs contribute to economic growth by fostering entrepreneurship, stimulating competition and driving productivity gains. According to the European Commission (2021), SMEs account for a significant share of GDP in many countries and are crucial for achieving a resilient and significant share of GDP in many countries and are crucial for achieving a resilient and inclusive economy. Furthermore, SMEs are often at the forefront of innovation, introducing new products, services and business models that drive industry advancements and enhance competitiveness.

Beck *et al.* (2005) emphasize that SMEs frequently encounter challenges in securing external financing due to their smaller scale, insufficient collateral, and the higher risk associated with them. Restricted access to funding limits their capacity to invest in innovation, grow their operations, and remain competitive in the market. Moreover, SMEs often encounter regulatory burdens,

administrative complexities and compliance costs, as pointed out by Masurel *et al*. (2017). These challenges can divert SMEs' resources away from core business activities and impede their ability to thrive. Additionally, SMEs may face difficulties in attracting and retaining skilled talent, accessing markets and scaling up their operations, which further hinder their growth potential.

Innovation presents both challenges and opportunities for SMEs. On one hand, limited resources and capabilities can pose barriers to innovation adoption. Research by Roper *et al*. (2008) suggests that SMEs often face difficulties in allocating sufficient resources to innovation activities and developing supportive innovation culture. Moreover, risk aversion and the fear of failure can discourage SMEs from taking innovative initiatives. However, innovation can also serve as a solution to the challenges faced by SMEs. By embracing innovation, SMEs can differentiate themselves from competitors, enter new markets, and improve their overall performance. Research by Coad *et al*. (2016) highlights that innovation-oriented SMEs tend to exhibit higher productivity and growth rates compared to their non-innovative counterparts. Furthermore, innovation can enable SMEs to overcome resource constraints by leveraging external collaborations, pen innovation practices and technological advancements.

1.2 Statement of the Problem

It is essential for the development of the economy and the creation of jobs (CBK) that small and medium-sized manufacturing businesses (SMES) in Nairobi perform better than their competitors. Nevertheless, these small and medium-sized enterprises (SMEs) are confronted with a multitude of obstacles that impede their success. These obstacles include restricted access to financial resources, poor infrastructure, and a shortage of trained workers (Coad *et al*. 2006). Because of these issues, small and medium-sized enterprises (SMEs) have an urgent need to develop efficient innovation methods that may assist them in overcoming these obstacles and improving their performance. As a result of inadequate financial resources, small and medium-sized enterprises

(SMEs) in the manufacturing sector in Nairobi have major challenges when it comes to adopting innovation strategies, which has a detrimental influence on their performance and competitiveness, according to a research conducted by Kiemo *et al.* (2019).

Small and medium-sized manufacturing businesses are an important part of economies all over the globe because they contribute to the creation of jobs, economic development, and innovation. These companies are confronted with one-of-a-kind obstacles and opportunities, both of which have an effect on their success.

According to research by OECD (2019), manufacturing SMEs often struggle with limited access to financial resources, technology and skilled labor, which can hinder their growth and competitiveness. However, they also possess inherent advantages such as flexibility, adaptability and proximity to customers, which can enable them to respond quickly to market demands (Kabir, 2020). Innovation strategies play a crucial role in shaping the performance of manufacturing SMEs. Research indicates that innovation can enhance SME competitiveness and enable them to overcome resource constraints. For example, a study by Edquist (2017) highlights that SMEs implementing innovation strategies such as product and process innovation, have better performance outcomes. The research question guiding this study was ; How do different innovation strategies adopted by manufacturing SMEs impact their performance in Nairobi? By addressing this question, the study seeks to provide valuable insights and practical recommendations for enhancing the performance and competitiveness of manufacturing SMEs in Nairobi.

1.3 Purpose of the study

To investigate the influence of innovation strategies on performance of manufacturing SMEs in Nairobi Kenya.

1.4 Objectives of the study

i. To investigate the influence of product innovation strategies on the performance of manufacturing SMEs in Nairobi.

ii. To evaluate the impact of process improvement strategies on the performance of SMEs in Nairobi.

iii. To study the influence of adoption of new technologies on the performance outcomes for manufacturing SMEs in Nairobi.

iv. To investigate the influence of knowledge management strategies on the performance of manufacturing SMEs in Nairobi.

1.5 Research hypothesis

$H0_1$: There is no significant relationship between product innovation strategies and the performance of manufacturing SMEs in Nairobi.

$H0_2$: There is no significant relationship between process improvement strategies and the performance of manufacturing SMEs in Nairobi.

$H0_3$: There is no significant relationship between adoption of new technologies and the performance of manufacturing SMEs in Nairobi.

$H0_4$: There is no significant relationship between knowledge management strategies and the performance of manufacturing SMEs in Nairobi.

1.6 Significance of the Study

The significance of the study can be outlined as follows;

1.6.1 Significance to the Small and Medium-sized Firms (SMEs)

The study's findings provided valuable insights for SMEs in Nairobi's manufacturing sector to enhance their competitiveness and sustainability. By understanding and implementing effective innovation strategies, these businesses were able to improve their product offerings, operational efficiency, and overall performance. In addition, the results brought to light the significance of making investments in research and development, embracing contemporary technology, and

cultivating an innovative culture inside these firms. Ultimately, the study's outcomes empowered SMEs to make informed decisions that contributed to their growth and long-term success.

1.6.2 Significance to the Employees in the SMEs

For the employees working in the small and medium-sized manufacturing businesses, the study will potentially improve their career growth and job security. Embracing innovation strategies leads to increased productivity and market competitiveness, creating a positive environment for employees to thrive. As companies adopt innovative practices, they may offer opportunities for professional development and upskilling, which can enhance employees' skill sets and job satisfaction. Additionally, successful implementation of innovation strategies leads to better job stability and reduced risks of layoffs, benefiting the workforce in Nairobi's SME sector.

1.6.3 Significance to the customers and the general public.

Innovation-driven improvements in small and medium-sized manufacturing can have direct impact on customers and the general public. Customers benefited from better products and services resulting from innovative practices, leading to improved customer experiences and satisfaction. Additionally, innovation can have positive spill-over effects on the general public by creating a more dynamic and competitive business environment, stimulating public growth, and potentially leading to the creation of new job opportunities.

1.6.4 Significance to the Government

It would be easier for the government to formulate targeted policies and programs that support and incentivise innovation within the manufacturing sector if they have a better understanding of the connection between innovation strategies and the performance of small and medium-sized enterprises (SMEs).

1.7 Scope of the Study

The primary goal of this research is to investigate the connection between Nairobi's manufacturing SMEs' performance and their innovation methods. The goal of the research is to provide insightful information on how innovation strategies affect the general performance and competitiveness of manufacturing companies in Nairobi's small and medium-sized company sector. It is anticipated that the study's conclusions will offer manufacturing SMEs in Nairobi useful information and real-world applications, assisting them in comprehending the importance of innovation strategies and how to use them to improve their productivity, competitiveness, and long-term viability.

1.8 Limitations of the Study

The study's results and findings could be unique to Nairobi's manufacturing small and medium-sized enterprises (SMEs). As a consequence, care should be used when extrapolating the findings to other sectors or nations. The sample size and participant representativeness may have an impact on the study's conclusions. Due to resource constraints and specific target population of manufacturing SMEs in Nairobi, the sample size may be relatively small and may not encompass the entire population. The data collected for the study, such as responses from surveys or interviews, rely on self-reporting by participants. The quality and dependability of the information gathered may have been impacted by recollection bias, social desirability bias, or response bias in self-reporting data. Time restrictions may prevent a thorough investigation of how innovation tactics affect Nairobi's manufacturing SMEs' performance. The researcher may have had a limited duration and it may not be feasible to capture long-term effect or track the impact of innovation strategies over an extended period.

1.9 Operational Definition of Key Term

Innovation Impact: Refers to the significant changes, effects or outcomes resulting from the implementation of innovative practices, strategies or technologies within an organization.

Innovation Strategies: Refers to the deliberate and planned approaches or actions taken by organizations to foster and promote innovation within their operations, processes, products or services. To get a competitive

	edge in the industry, these tactics may include coming up with fresh concepts, using cutting-edge technology, enhancing current goods, or establishing brand-new company models.
Manufacturing SMEs:	These are companies operating in the manufacturing sector with a relatively small scale of operations workforce. Compared to bigger firms, these organizations usually have fewer staff, smaller yearly income, and less resources.
Performance Measurement:	This is the process of quantifying and evaluating the effectiveness, efficiency and overall achievement of an organization, department, project or individual in relation to predetermined goals and objectives.
SME:	Small and Medium Sized enterprises with turnover less than 1 million USD.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

In order to identify gaps that the current study will fill, this chapter explores the theoretical and empirical reviews of the relevant literature. In order to establish the relationship between the major subjects of the research, the chapter also develops a conceptual framework based on the reviewed literature.

2.2 Theoretical Review

2.2.1 Resource-Based View (RBV)

According to this idea, which was created by Barney in 1986, enterprises may be seen as collections of productive resources, and different businesses have different mixes of these resources. According to this notion, a company's success is based on its distinct assets and competencies. According to this hypothesis, SMEs that have and successfully use innovative resources and capabilities have a higher chance of gaining a competitive edge and achieving better performance results when it comes to innovation strategies (Barney, 1991). Therefore, via the adoption and use of innovation techniques, Nairobi's manufacturing SMEs may improve their performance by using their inventive resources, including technology, knowledge, and human capital.

According to this notion, a company's distinct combination of assets and skills may provide it a long-term competitive edge. Innovation strategies may be seen as an important tool that enhances performance in Nairobi's manufacturing SMEs. This viewpoint is supported by research by Ogutu et al. (2020), which shows that innovation has a beneficial impact on the financial performance of Nairobi's manufacturing SMEs. Furthermore, according to the RBV theory, SMEs may successfully create and execute innovation strategies when they have access to both physical and intangible resources, such as technology, a qualified staff, and knowledge exchange (Ongori &

Migiro 2010). This approach highlights how crucial it is to use internal resources and talents to spur innovation and improve output.

2.2.2 Dynamic Capabilities Theory (DCT)

According to this notion, a company's capacity to innovate, learn, and adjust to changing market circumstances is crucial. According to this idea, in order for SMEs in the manufacturing sector to successfully execute innovation plans and attain superior performance, they must cultivate dynamic competencies including recognizing opportunities, grabbing them, and allocating resources (Teece, 2007). Nairobi's manufacturing SMEs may improve their performance by consistently looking for new possibilities in the market, successfully incorporating innovation into their operations, and modifying their plans to satisfy shifting consumer expectations.

The capacity of businesses to modify and adapt their resources and capabilities in response to changes in the environment and get a competitive edge is another point of emphasis for dynamic capability theory. Innovation strategies may be seen as dynamic capabilities that allow businesses to continually innovate and enhance performance in the context of Nairobi's manufacturing SMEs. According to a research by Onyango and Omondi (2018), business success in Kenya's manufacturing sector is positively correlated with the adoption of innovation techniques. In order for SMEs to prosper in a changing business environment, this idea highlights the significance of agility, learning, and adapting.

2.2.3 Open Innovation Theory (OIT)

According to this hypothesis, SMEs' innovative processes might profit from outside expertise and partnerships. Manufacturing SMEs may increase their capacity for innovation and, in turn, their performance results by aggressively seeking out and incorporating outside ideas, technologies, and

collaborations (Chesbrough 2003). By working with suppliers, customers, research institutions, and other stakeholders, Kenyan manufacturing SMEs may participate in open innovation processes and get access to new ideas, technologies, and markets, which will eventually boost performance. Using open innovation techniques may help Nairobi's manufacturing SMEs get access to outside resources including technology, market intelligence, and expertise. According to a research by Ongori (2017), manufacturing SMEs in Nairobi that were able to develop cooperative networks and partnerships performed better and were more innovative. According to the OIT, manufacturing SMEs should embrace open innovation strategies including technology transfers, strategic partnerships, and collaborations in order to access outside resources and knowledge that enhance their own (Chesbrough, 2003). This notion highlights how crucial it is to establish and maintain external connections in order to spur creativity and enhance output.

2.3 Empirical Review

Damanpour and Schneider's (2006) research looked at how innovation strategies affected German manufacturing SMEs' success. The research polled a sample of 300 German manufacturing SMEs using a quantitative methodology. The results showed that innovation strategy adoption and firm success, especially in terms of market share and sales growth, were positively correlated. The research came to the conclusion that manufacturing SMEs in Germany and other comparable settings may perform much better when innovation methods are implemented successfully. The significance of innovation as a performance driver in the manufacturing industry is highlighted by this study. Another research by Oke et al. (2018) examined how innovation tactics affected Sub-Saharan African manufacturing SMEs' performance. A sample of 250 manufacturing SMEs in the area provided data for the study, which used a quantitative research approach. The results showed that innovation strategy adoption and firm performance, especially in terms of market share,

productivity, and sales growth, were positively correlated. According to the study's findings, Sub-Saharan African manufacturing SMEs should use innovative techniques to boost their productivity and competitiveness in the global market.

A research by Karanja et al. (2018) examined how innovation tactics affected East African manufacturing SMEs' performance. 150 manufacturing SMEs in Nairobi participated in surveys and interviews as part of the study's mixed methods methodology. The results showed a significant positive correlation between financial and non-financial performance metrics and the use of innovative methods. According to the research, innovation tactics include technical, process, and product innovation greatly increased customer happiness, cost effectiveness, and sales growth. In order to improve their overall performance in a cutthroat business climate, the researchers came to the conclusion that East African manufacturing SMEs should give top priority to implementing innovative techniques. Ongori (2011) looked at the connection between innovation and business success in South African companies in another research. The study gathered information from a sample of 200 South African businesses using a qualitative research approach. The results showed a strong and positive correlation between innovation and a number of performance metrics, including competitiveness, market share, and financial success. The research emphasized the role that innovative methods have in boosting the performance of South African manufacturing SMEs, and it may also be applicable in the Nairobi setting.

The impact of innovation on the performance of manufacturing SMEs in Nairobi was examined in a 2019 research by Mutisya and Ongori. The study used a quantitative research approach and used structured questionnaires to gather information from 200 manufacturing SMEs in Nairobi. The results showed a strong positive correlation between the use of innovative techniques and a number of performance metrics, including competitiveness, market share, and profitability. According to the study's findings, Nairobi's manufacturing SMEs should concentrate on putting

innovative methods into practice in order to improve their overall performance and maintain their competitiveness in the market. Wanjau et al. (2017) looked at the impact of innovation strategies on the performance of manufacturing SMEs in the agro-processing industry in Nairobi in another research. Using a mixed-methods approach, the research conducted interviews and surveys with 120 Nairobi-based SMEs involved in agroprocessing. The results showed that the performance of agro-processing SMEs was favorably impacted by the implementation of innovation methods such product creation, process improvement, and market diversification in terms of higher sales, better product quality, and market growth. The research came to the conclusion that in order to improve their performance and competitiveness in the ever-changing agro-processing sector, Nairobi's SMEs engaged in this kind of business should give top priority to implementing innovative tactics.

2.4 Conceptual Framework

The conceptual framework depicts a graphic or diagrammatically representation of the interrelation of the study variables (Mugenda & Mugenda, 2008). The conceptual framework of the study is shown by Figure 2.1.

Independent Variables ***Dependent Variable***

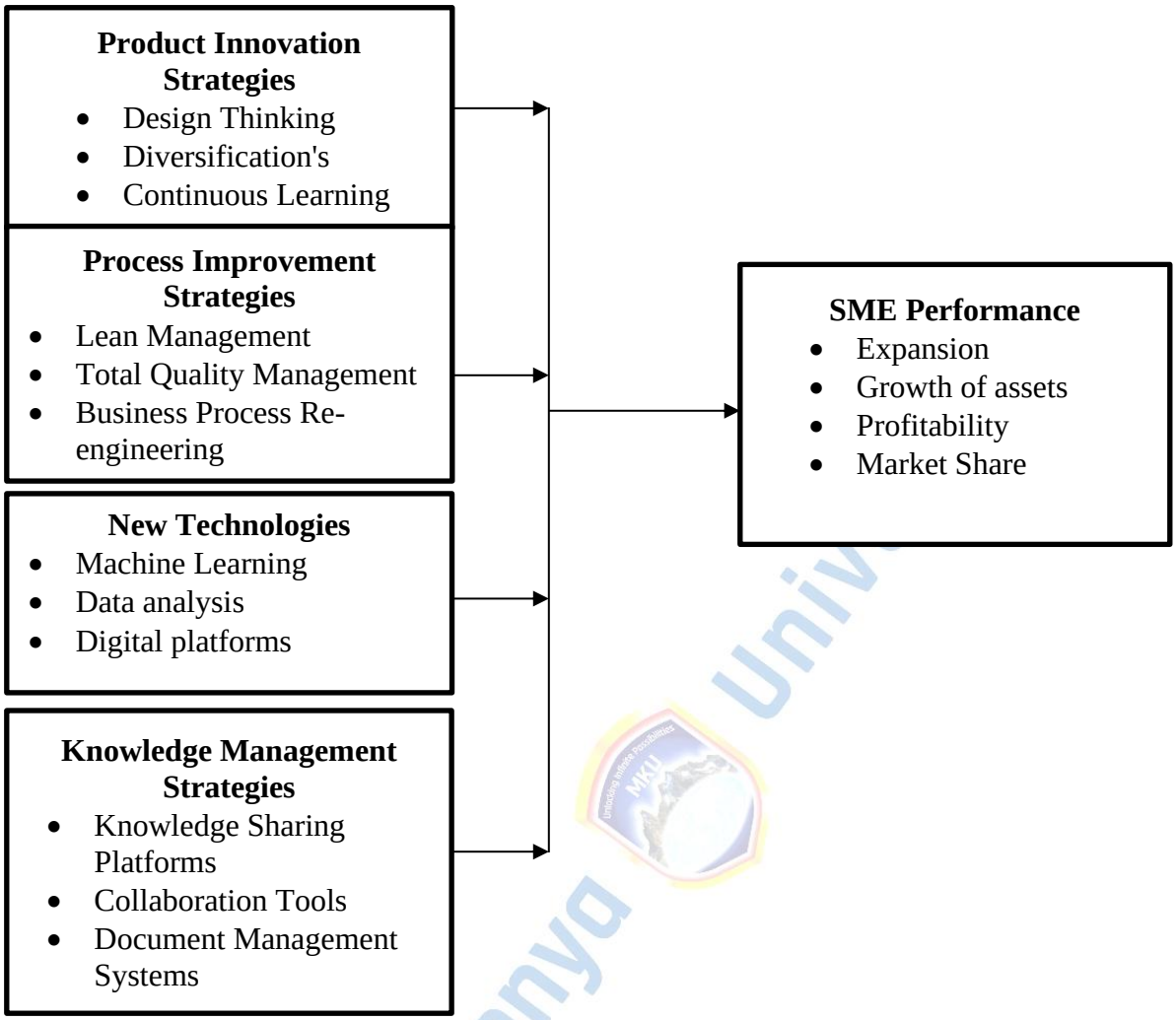

Figure 1 Conceptual Framework

Product innovation strategies encompass deliberate and structured approaches that small and medium-sized enterprises (SMEs) adopt to create and introduce novel and enhanced products or services into the market. These strategies entail a range of activities, including identifying customer needs, engaging in research and development, designing prototypes, and launching distinctive offerings that provide a competitive edge and unique value. By employing these strategies, SMEs aim to remain pertinent, tap into new market segments, and elevate their competitiveness (Smith *et al*., 2020). Process improvement strategies involve the methodical evaluation and enhancement of internal business processes within SMEs. The overarching objective of these strategies is to

streamline operations, minimize inefficiencies, and optimize resource allocation. Techniques such as Lean Six Sigma, business process reengineering, and continuous improvement methodologies are employed by SMEs to bolster productivity, cost-effectiveness, and customer contentment. These approaches entail refining workflows, alleviating bottlenecks, and eliminating wasteful activities (Jones & Brown, 2019).

The adoption and integration of emerging tools, systems, and platforms constitute the realm of new technologies in SME operations. These technologies span diverse domains, encompassing digitalization, automation, artificial intelligence, cloud computing, and the Internet of Things (IoT). Through harnessing these advancements, SMEs can bolster their operational flexibility, data-driven decision-making process, and customer engagement, culminating in heightened competitiveness and performance (Lee & Kim, 2021). Knowledge management strategies encompass the organized capture, dissemination, and application of organizational knowledge and expertise within SMEs. These strategies encompass practices such as knowledge-sharing platforms, documentation, training initiatives, and collaborative networks. By adeptly managing knowledge assets, SMEs foster innovation, facilitate informed decision-making, and cultivate a learning culture that nurtures adaptability and growth (Choi & Lee, 2018).

SME performance pertains to the overall outcomes and achievements, including growth, profitability, market share, and customer satisfaction. A multitude of factors, including the effectiveness of product innovation and process improvement strategies, successful technology integration, and the implementation of knowledge management practices, influence SME performance. High-performing SMEs exhibit the capacity to innovate, optimize operations, harness technology, and effectively leverage their workforce's collective expertise (Rodrigues *et al*., 2022). The intricate interplay among these variables shapes the SME landscape.

Effective product innovation strategies can draw from up-to-date knowledge facilitated by knowledge management strategies, enabling SMEs to spot emerging trends and customer preferences. Technologies serve as enablers for both product innovation and process improvement, furnishing tools for design, analysis, and automation. Process improvement strategies contribute to more streamlined innovation processes, while technology adoption drives process optimization. Furthermore, knowledge management strategies aid in disseminating best practices pertinent to both product innovation and process improvement. Together, these variables form a symbiotic ecosystem wherein SMEs operate. A seamless amalgamation of product innovation strategies, process improvement strategies, new technologies, and knowledge management practices can amplify SME performance. By continuously honing their products, processes, and knowledge application, SMEs position themselves for sustained growth, heightened competitiveness, and enduring success in a dynamic business landscape.

2.5 Summary of Literature Review

Table 1 Summary of Literature Review

Author	Study	Methodology	Target population	Findings	Conclusions
Damanpour & Schneider (2006)	The impact of innovation strategies on the performance of manufacturing SMEs in Germany.	The research employed a quantitative methodology and conducted a survey.	The research was conducted using a sample of 300 manufacturing SMEs in Germany.	The results indicated a strong positive correlation between implementing innovation strategies and business performance.	The research concluded that successfully applying innovation strategies can greatly improve the performance of manufacturing SMEs.

Author	Study	Methodology	Target population	Findings	Conclusions
Oke (2018)	The impact of innovation strategies on the performance of manufacturing SMEs in Sub-Saharan Africa.	The study employed a quantitative research design	The research gathered data from a selected sample of 250 manufacturing SMEs in the region.	The results demonstrated a positive correlation between implementing innovation strategies and business performance.	The research concluded that manufacturing SMEs in Sub-Saharan Africa should adopt innovation strategies to enhance their performance and strengthen their competitiveness in the global market.
Karanja (2018)	The impact of innovation strategies on the performance of manufacturing SMEs in East Africa.	The research utilized a mixed-methods approach, integrating surveys and interviews with participants.	The research conducted interviews with 150 manufacturing SMEs in Nairobi.	The results showed a significant positive correlation between implementing innovation strategies and both financial and non-financial performance measures.	The researchers concluded that manufacturing SMEs in East Africa should prioritize the implementation of innovation strategies to enhance their overall performance
Ongori (2011)	The connection between innovation and business performance in South African companies.	The research adopted a qualitative design and focused on gathering in-depth insights through various data	The research gathered data from a selected group of 200 companies in South Africa.	The results demonstrated a strong and significant correlation between innovation and multiple	The research concluded that innovation strategies played a crucial role in enhancing the performance of manufacturing

Author	Study	Methodology	Target population	Findings	Conclusions
		collection methods.		performance metrics.	SMEs in South Africa.
Mutisya & Ongori (2019)	The influence of innovation on the performance of manufacturing SMEs specifically in Nairobi	The research utilized a quantitative approach and collected data through structured questionnaires.	The research gathered data from a selected sample of 200 manufacturing SMEs.	The results indicated a strong positive correlation between implementing innovation strategies and different performance metrics.	The study concluded that manufacturing SMEs in Kenya should focus on implementing innovation strategies
Wanjau (2017)	The impact of innovation strategies on the performance of manufacturing SMEs in Nairobi's agro-processing industry.	The research adopted a mixed-methods approach, integrating both surveys and interviews with key stakeholders in the agro-processing sector.	The research conducted a survey involving 120 agro-processing SMEs operating in Nairobi.	The results showed that implementing innovation strategies had a positive impact on the performance of agro-processing SMEs.	The research concluded that agro-processing SMEs in Nairobi should focus on adopting innovation strategies as a priority.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter presents the research framework, including the study design, identification of the target population, and determination of an appropriate sample size. It also provides a detailed explanation of the sampling techniques employed, the methods used for data collection, and the instruments utilized in gathering information. Additionally, the chapter discusses the assessment of reliability, the procedures for testing, and the approach to data analysis.

3.1 Research Approach

This research employs a quantitative approach, as it facilitates the structured collection of numerical data, enabling statistical analysis. This method is particularly suitable for examining and measuring the correlation between innovation strategies and the performance of small and medium-sized manufacturing enterprises.

3.2 Research design

According to Cresswell and Cresswell (2017), research design refers to the overall plan or framework that guides the researcher in integrating various study components logically and cohesively to effectively address the research problem. This study employed a descriptive research design, which is valuable in generating practical insights that can inform managerial decisions and policy formulation. The descriptive research approach was deemed appropriate for this study due to its ability to offer a detailed and accurate representation of the existing situation, making it ideal for examining the connection between innovation strategies and the performance of small and medium-sized manufacturing enterprises (SMEs) in Nairobi. This design allowed for a simultaneous analysis of various aspects, including the types of innovation strategies utilized, the frequency of their application, and their impact on business performance.

3.3 Target population

Kothari (2005) defines a target population as the specific group of individuals or entities that a researcher focuses on when conducting a study. In this research, the target population comprised manufacturing SMEs operating in Nairobi County that have between 5 and 249 permanent employees and hold valid trading licenses issued by the Nairobi City County (NCC). As of 2023, there were 987 officially registered manufacturing SMEs in the county, with 341 classified as small enterprises employing between 10 and 49 permanent staff, while 646 were categorized as medium-sized enterprises with a workforce ranging from 50 to 249 employees (Nairobi City County Government, 2023). The study respondents consisted of SME managers.

Table 2 Target Population

Enterprise	Target population	Frequency
Small Enterprise	341	34.5
Medium Enterprise	646	65.5
Total	**987**	**100**

Source: Nairobi City County Government, (2023)

3.4 Sampling Procedure and Sample Size

Due to the absence of a comprehensive sampling frame, the study compiled one using two key sources: the Kenya Association of Manufacturers (KAM) directory and the Nairobi County business register of registered SMEs. The sample selection was based on three distinct industrial clusters, categorized according to geographic location. The first cluster consisted of manufacturing SMEs situated in the Industrial Area, the second cluster included those operating in the Ruaraka/Baba Ndogo Industrial Area, while the third cluster comprised SMEs located in the Kariobangi Industrial cluster as well as those positioned along Mombasa Road and Airport Road. During the sampling process, careful consideration was given to ensuring a balanced representation

of both small and medium-sized enterprises, maintaining a proportional distribution that reflected the overall target population.

Meyers, Gamst, and Guarino (2016) describe sampling as the process of selecting a subset from the entire target population for study purposes. This research adopted a census sampling approach, allowing for a complete enumeration of all entities within the defined population. Cooper and Schindler (2013) highlight the effectiveness of census sampling, particularly for smaller populations, as it ensures fair and comprehensive representation of all study components. Additionally, this study utilized a multistage sampling strategy, incorporating both cluster sampling and stratified random sampling techniques to enhance the accuracy and reliability of the sample selection process. The multistage sampling procedure, noted for its multi-tiered approach involving more than one sampling method, was considered particularly suitable given the tendency of manufacturing SMEs to group within industrial clusters based on their geographical locations. The selection of this method was driven by its potential to minimize sampling bias, especially crucial given the diverse nature of these clusters.

In the first stage of the study, three key clusters with a significant presence of manufacturing enterprises were identified. These clusters included the Industrial Area, Ruaraka/Baba Dogo, and Kariobangi, as well as neighboring locations along Mombasa Road and Airport Road. Following this, stratified random sampling strategies were applied within these clusters to select SMEs for the study. The necessity for stratification arose from the heterogeneity among manufacturing SMEs, particularly in terms of size and the range of activities they engaged in. Consequently, the study classified enterprises as either small or medium-sized for the purpose of stratification, thereby ensuring a randomized selection from each category to further eliminate selection bias.

3.5 Sample size

Several approaches can be used to determine an appropriate sample size, including conducting a census for smaller populations, adopting the sample size from a prior similar study, consulting established sample size tables, or applying statistical formulas. In this research, the sample size was calculated using Yamane's (1967) formula, ensuring a 95% confidence level.

$$n = \frac{N}{1 + N(e)^2}$$

Where n is the sample size,

N is the population size,

e is the level of precision.

When this formula is applied to the above population, we get

Hence

$$n = \frac{987}{1 + 987(0.05)^2}$$

$$= 284$$

A total sample of 284 participants was allocated as shown in Table 3, with the distribution proportionally reflecting the numerical strength of each stratum.

Table 3 Sample Size

Enterprise	Target population	Sample size
Small Enterprise	341	98
Medium Enterprise	646	186
Total	**987**	**284**

Source: Researcher (2024)

3.5 Data Collection Tools

In a study carried out by Weller *et al*., (2010), data collection tools are described as the organized procedure for acquiring and preparing data with the aim of acquiring valuable information suitable for recording, facilitating decision-making, and disseminating to others. The study utilized questionnaires as the primary means of data collection. The questionnaire's efficiency, cost-effectiveness, and ability to capture a broad spectrum of data render it the preferred choice. The questionnaires used in this study were semi-structured, incorporating both open-ended and closed-ended questions. The open-ended questions allowed respondents to provide detailed explanations of their views, while the closed-ended questions utilized a Likert scale to measure responses systematically.

3.6 Data Collection Procedures

Drop and pick technique facilitated questionnaire administration, with the researcher introducing the study on-site and leaving the questionnaire with the participants. A letter of introduction issued by the university's Directorate of Postgraduate Studies facilitates this procedure. Following a two-week period, the researcher retrieves the questionnaires for data cleaning. To enhance response rates, follow-ups was conducted through calls and emails.

3.7 Pilot Study

As per Creswell (2010), a pilot study is an initial endeavor to establish the research instrument's feasibility, paving the way for the main study. This involves administering structured questionnaires to a small sample akin to the target population. This aids in identifying any issues with questionnaire design and assessing question appropriateness and feasibility. The pilot study was conducted in selected SMEs in Nairobi.

3.7.1 Validity of Research Instruments

Instrument validity pertained to the extent to which questionnaire items were apt and precise in measuring their intended attributes (Orodho, 2005). Content, criterion, and construct validity represented the three types of validity. In this study, construct validity gauged the nexus between innovation strategies and manufacturing SME performance in Nairobi. The structured questionnaire was meticulously fashioned to encompass pertinent and fitting questions aligned with key constructs linked to innovation strategies and performance indicators. These questions were drawn from established theoretical frameworks and prior research in the field.

3.7.2 Reliability of the Research Instruments

Abbott and McKinney (2013) describe reliability as the degree to which a research instrument maintains internal consistency. This refers to the stability and dependability of the instrument in yielding consistent results over time and under varying conditions. To strengthen the reliability of the questionnaire, the researcher implemented established procedures. The structured questionnaire was standardized to ensure that all respondents received identical questions. Additionally, internal consistency was evaluated using statistical methods, such as Cronbach's alpha, to determine the reliability of the questionnaire items. A high Cronbach's alpha value indicated strong internal consistency, confirming that the questionnaire effectively measured the intended constructs consistently. In line with Cresswell and Cresswell (2017), the acceptable reliability threshold for Cronbach's alpha was set at 0.7.

3.8 Data Analysis and Presentation

The process of data analysis followed several key steps, including editing, coding, and classification. Data were analyzed using SPSS version 28, the most up-to-date version at the time. The quantitative data obtained from the questionnaire were coded to facilitate the creation of frequency tables, charts, graphs, and histograms. These visual tools enhanced the interpretation of

the findings, providing a clearer understanding of the results. Additionally, a multiple linear regression model was applied to statistically assess the relationship between the independent and dependent variables.

To validate the regression model, four key assumption tests were conducted: normality, homogeneity, linearity, and collinearity. The Shapiro-Wilk test was used to evaluate normality, determining whether the data followed a normal distribution. A significance level (alpha) of 0.05 was set as the threshold, with a p-value above 0.05 indicating normality. Homogeneity of variance was assessed using Levene's Test, which compared the variances across different groups or conditions in the dataset. A p-value greater than 0.05 suggested that the assumption of homogeneity was met. Linearity was examined through residual analysis by plotting residuals against predicted values, helping identify any deviations from a linear relationship. Unlike other tests, linearity assessment did not rely on a specific p-value but instead focused on patterns in residual plots.

Additionally, assumptions related to multicollinearity, normality, and autocorrelation were tested to ensure the reliability of the regression model.

The regression model to be used for the study is as shown:

$$\mathbf{Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon}$$

Where Y is the dependent variable, X_1, X_2, X_3 and X_4 are the independent variables. β_1, β_2, β_3 and β_4 are the coefficients of the independent variables. The independent variables are: -

X_1 Product innovation strategies

X_2 Improvement strategies

X_3 Adoption of new technologies

X_4 Management strategies

Y Performance of manufacturing SMEs in Nairobi

ε Error term

β_0 Constant

$\beta_1 - \beta_4$ Coefficients

3.9 Ethical Considerations

This study adhered to several ethical principles to safeguard the rights and well-being of the participating SMEs. Strict measures were implemented to ensure confidentiality and anonymity, preventing any disclosure of identifying details in reports or publications derived from the research. The collected data were exclusively used for research purposes and securely stored to restrict unauthorized access. Before taking part in the study, all participants provided informed consent, confirming their voluntary participation. The research team followed established ethical guidelines to ensure fair treatment of participants and uphold the integrity of the study. Additionally, potential biases and limitations were acknowledged, with proactive steps taken to minimize their impact through meticulous data collection and analysis methods.

CHAPTER FOUR: ANALYSIS AND DISCUSSION

4.1 Introduction

This chapter provides an analysis of the data gathered from questionnaires distributed to managers of small and medium-sized manufacturing enterprises (SMEs) in Nairobi, Kenya. It is structured into three primary sections: the response rate, the socio-demographic profile of respondents, and an in-depth examination and discussion of key findings on how innovation strategies impact business performance. Statistical techniques are applied to measure relationships between variables, while the discussion integrates these findings within the context of existing literature.

4.2 Response Rate

The response rate plays a crucial role in evaluating the reliability and validity of the study. Of the 284 questionnaires distributed, 238 were successfully completed and returned, yielding an approximate response rate of 83.8%. This strong response rate reflects the participants' active involvement and readiness to share their perspectives on the adoption of innovation strategies within their businesses.

Table 1: Response Rate

Category	Total Distributed	Total Completed	Response Rate (%)
Small Enterprises	98	85	86.7
Medium Enterprises	186	153	82.3
Total	**284**	**238**	**83.8**

Source: Research Data, 2024

4.3 Socio-Demographic Characteristics

This section analyzes the socio-demographic characteristics of the respondents, providing insights into the backgrounds and experiences of the managers of the manufacturing SMEs. The characteristics examined include age, gender, educational level, and years of experience in the SME sector.

Table 2: Socio-Demographic Characteristics

Characteristic	Frequency	Percentage (%)
Age		
18-30	34	14.3
31-40	85	35.7

Characteristic	Frequency	Percentage (%)
41-50	72	30.3
51 and above	47	19.7
Gender		
Male	147	61.8
Female	91	38.2
Highest Level of Education		
Master's Degree	56	23.5
Bachelor's Degree	108	45.4
Post Graduate Diploma	45	18.9
Diploma	29	12.1
Years of Experience		
Less than 2 years	43	18.1
2 to 5 years	113	47.5
More than 5 years	82	34.4

Source: Research Data, 2024

The socio-demographic analysis of respondents provides valuable insights into the characteristics and trends within Nairobi's manufacturing SMEs. The age distribution indicates that a significant proportion (35.7%) of respondents fall within the 31-40 age group. This suggests that a considerable number of managerial roles are occupied by relatively young individuals who may be more open to embracing innovative strategies.

In terms of gender distribution, the data reveal a predominantly male workforce, with 61.8% of respondents identifying as male. This pattern aligns with broader industry trends in Kenya, where men generally outnumber women in managerial positions. However, the representation of women in leadership roles, at 38.2%, signifies a growing shift towards gender diversity in the sector. The increasing participation of women in management could contribute to a wider range of perspectives in driving innovation.

Regarding educational background, a significant portion of respondents possess higher academic qualifications, with 45.4% holding a bachelor's degree and 23.5% having attained a master's degree. This suggests that the management teams in these SMEs are well-educated, potentially enhancing their ability to comprehend and implement innovation strategies. Higher levels of education may be associated with a greater willingness to adopt advanced technologies and modern management

practices, as these individuals are likely to have the necessary theoretical knowledge and practical expertise for informed decision-making.

Experience in the SME sector is also an important factor. A substantial proportion of respondents (47.5%) have between 2 to 5 years of experience, which is beneficial for the organization as this group can bring fresh ideas while still having sufficient exposure to industry dynamics. The presence of 34.4% with over 5 years of experience indicates that there is a wealth of experience available to these SMEs, which can enhance their ability to implement innovative strategies based on historical knowledge and practices.

These socio-demographic characteristics provide a backdrop for understanding the responses related to innovation strategies and performance. A younger, more educated workforce is often more open to embracing change and pursuing innovative practices. The diversity in gender, while still skewed, hints at potential shifts in the future landscape of management within these businesses.

4.4 Innovation Strategies

4.4.1 Product Innovation Strategies

This section examines the product innovation strategies employed by manufacturing SMEs in Nairobi, Kenya. The survey incorporated various statements assessing the adoption and effectiveness of these strategies, using a five-point Likert scale from Strongly Disagree (SD) to Strongly Agree (SA). The collected data were analyzed to calculate the mean and standard deviation for each statement, providing insights into the overall trends and variations in responses.

Table 3: Product Innovation Strategies

Statement	SD	D	N	A	SA	Mean	Std Dev
1. Our firm frequently introduces new products.	15	25	30	98	70	3.65	1.10
2. We invest in research and development for new products.	12	20	40	90	76	3.72	1.05
3. Customer feedback is essential in our product development.	10	18	32	100	78	3.77	1.03
4. We utilize advanced technology for product development.	14	22	35	96	71	3.66	1.09
5. Our products are regularly updated to meet market trends.	11	15	37	92	83	3.80	0.98
6. We conduct market research to guide our product innovation.	8	12	38	99	81	3.82	0.95
7. Our firm collaborates with customers during the innovation process.	9	16	30	97	86	3.83	0.91

Source: Research Data, 2024

The statement regarding the frequency of new product introductions shows a mean score of 3.65, indicating agreement among the majority of respondents. The standard deviation of 1.10 suggests that while many SMEs actively engage in introducing new products, there is variability in how frequently this occurs. The commitment to product innovation can drive competitive advantage, as noted by Chen et al. (2019), who argue that consistent product launches can enhance market position and brand loyalty.

The mean score of 3.72 for investment in research and development indicates a strong commitment to product innovation. A standard deviation of 1.05 reveals some variability in responses, suggesting that while many SMEs invest significantly in R&D, others may face constraints that limit their capacity to do so. This finding aligns with prior research, which emphasizes the critical role of R&D in fostering innovation (Alegre & Chiva, 2013).

With a mean score of 3.77, the data indicates that customer feedback plays a vital role in product development. The low standard deviation of 1.03 reinforces the notion that SMEs recognize the value of incorporating customer insights into their innovation processes. This aligns with the argument by Gruner and Homburg (2000) that customer-driven innovation leads to products that better meet market demands, enhancing customer satisfaction and loyalty.

The mean score of 3.66 for the utilization of advanced technology in product development suggests that while SMEs are inclined to leverage modern technologies, there are limitations. A standard deviation of 1.09 indicates a range of experiences, with some firms likely having access to cutting-edge technology while others may not. The literature emphasizes that adopting advanced technologies can lead to improved product quality and reduced time-to-market (Tidd & Bessant, 2018).

The highest mean score of 3.80 reflects a proactive approach to regularly updating products to meet market trends. A standard deviation of 0.98 suggests that this practice is common among respondents, indicating an understanding of the dynamic nature of consumer preferences. The continuous improvement of products is crucial for sustaining market relevance (Prajogo & Sohal, 2013).

The mean score of 3.82 indicates that conducting market research is considered essential for guiding product innovation. The standard deviation of 0.95 suggests a consensus among respondents regarding the importance of market insights in shaping innovation strategies. This

finding aligns with the notion that effective market research can inform product development, ensuring alignment with customer needs (Kotler & Keller, 2016).

The mean score of 3.83 demonstrates a high level of agreement that collaboration with customers is integral to the innovation process. A standard deviation of 0.91 indicates a strong consensus on this point. The literature supports this perspective, as collaborative innovation can result in more tailored and successful products (Chesbrough, 2017).

The analysis of product innovation strategies among manufacturing SMEs in Nairobi reveals a strong commitment to innovation, underpinned by practices such as regular product updates, investment in R&D, and collaboration with customers. The data also highlights areas for improvement, particularly in leveraging advanced technologies.

4.4.2 Process Improvement Strategy

This section focuses on the process improvement strategies adopted by manufacturing SMEs in Nairobi, Kenya. The survey sought to assess various aspects of process improvements, utilizing a five-point Likert scale that ranged from Strongly Disagree (SD) to Strongly Agree (SA). The data were analyzed to determine the means and standard deviations for each statement.

Table 4: Process Improvement Strategy

Statement	SD	D	N	A	SA	Mean	Std Dev
1. Our firm regularly assesses its operational processes for improvements.	10	20	35	95	78	3.74	1.07
2. We implement feedback mechanisms to evaluate process performance.	8	22	30	98	80	3.79	1.02
3. Training programs are conducted to enhance employee skills for process improvement.	12	18	36	90	80	3.71	1.03
4. We utilize technology to streamline our processes.	9	15	33	92	89	3.84	0.94
5. Continuous improvement is a core value in our organizational culture.	11	19	40	85	83	3.79	0.99
6. We conduct regular audits to identify areas for process improvement.	10	21	31	90	82	3.76	1.01
7. Our management supports initiatives aimed at improving processes.	9	17	38	91	83	3.81	0.95

Source: Research Data, 2024

The mean score of 3.74 for the statement regarding regular assessments of operational processes reflects a strong commitment to evaluating and enhancing current practices. A standard deviation of 1.07 suggests that while many SMEs engage in regular assessments, there is some variability in how systematically these evaluations are conducted. This is consistent with the literature, which emphasizes the importance of continuous assessment in optimizing processes (Deming, 1986).

The mean score of 3.79 for the implementation of feedback mechanisms indicates a proactive approach toward evaluating process performance. A standard deviation of 1.02 suggests a consensus among respondents on the necessity of feedback for improvement. This aligns with the views of Jørgensen et al. (2009), who argue that feedback loops are essential for learning and adaptation within organizations.

The statement regarding training programs shows a mean score of 3.71, indicating that a significant number of SMEs conduct training to enhance employee skills related to process improvement. The standard deviation of 1.03 highlights some variability in the responses, which may be influenced by factors such as firm size and resources available for training. The importance of employee training in driving process improvement initiatives is well documented (Cohen & Levinthal, 1990).

The mean score of 3.84 for the use of technology to streamline processes suggests that SMEs are increasingly recognizing the importance of technological solutions in enhancing operational efficiency. The lower standard deviation of 0.94 indicates that most respondents agree on the positive impact of technology. According to Tidd and Bessant (2018), technology can significantly improve process efficiency and effectiveness, leading to better overall performance.

The mean score of 3.79 indicates that continuous improvement is viewed as a core value within many organizations. A standard deviation of 0.99 indicates a strong consensus around the significance of this value. This aligns with the philosophy of Lean management, which emphasizes ongoing incremental improvements in all areas of an organization (Womack & Jones, 2003).

The statement regarding regular audits reveals a mean score of 3.76, suggesting that many SMEs engage in systematic evaluations to identify areas for process improvement. The standard deviation of 1.01 indicates that practices may vary across firms. Regular audits are crucial for maintaining operational standards and identifying opportunities for enhancement (Hansen & Mowen, 2007).

The mean score of 3.81 for management support reflects a positive perception of leadership's role in driving process improvement initiatives. A standard deviation of 0.95 suggests that most

respondents agree on the significance of management involvement. This is consistent with the findings of Kotter (1996), who posits that leadership is critical in fostering a culture of continuous improvement.

the analysis indicates that manufacturing SMEs in Nairobi are generally proactive in implementing process improvement strategies, with strong support for continuous assessment, feedback mechanisms, and technological integration. However, challenges related to training and resource availability remain.

4.4.3 Technological Innovation Strategies

This section explores the technological innovation strategies implemented by manufacturing SMEs in Nairobi, Kenya. The survey presented various statements assessing the adoption and effectiveness of these innovations, measured using a five-point Likert scale ranging from Strongly Disagree (SD) to Strongly Agree (SA). A summary of the findings is provided in the table below.

Table 5: Technological Innovation Strategies

Statement	SD	D	N	A	SA	Mean	Std Dev
1. Our firm actively invests in new technologies to improve production.	8	12	30	105	80	3.85	0.91
2. We regularly update our equipment to remain competitive.	9	15	28	100	83	3.77	0.99
3. Our employees receive training on the latest technologies.	10	18	32	92	83	3.73	1.02
4. We have a dedicated budget for technological innovation.	11	21	34	89	80	3.68	1.05
5. Collaboration with tech firms enhances our innovation capabilities.	7	14	29	95	90	3.84	0.88
6. We utilize data analytics to inform our decision-making.	9	19	35	86	86	3.80	0.96
7. Our firm is open to adopting disruptive technologies.	8	15	30	97	85	3.81	0.92

Source: Research Data, 2024

The table presents the responses of 235 participants regarding technological innovation strategies employed by manufacturing SMEs in Nairobi. The analysis reveals a generally positive perception of the role and impact of technological innovation within these firms.

The statement regarding active investment in new technologies to enhance production achieved a mean score of 3.85, indicating a strong commitment to leveraging technology for operational improvement. The standard deviation of 0.91 suggests a consensus among respondents, with many firms recognizing the need for continual investment in technological advancements. This is

consistent with the assertion by Rogers (2003) that adopting new technologies is vital for maintaining competitive advantage.

The mean score of 3.77 for the regular updating of equipment reflects a proactive approach among SMEs to keep pace with industry standards. A standard deviation of 0.99 indicates some variability in responses, likely influenced by factors such as financial constraints and access to modern technologies. The importance of updating equipment to ensure operational efficiency is supported by literature emphasizing the necessity of maintaining state-of-the-art technology (Porter, 1990).

With a mean score of 3.73 for training employees on the latest technologies, the data suggest that SMEs recognize the significance of skill development in facilitating technological adoption. A standard deviation of 1.02 indicates that while many firms provide training, there are variations in how systematically this is implemented. This aligns with the views of Noe (2010), who highlights that training enhances the absorptive capacity of organizations, enabling them to better utilize technological innovations.

The statement about having a dedicated budget for technological innovation received a mean score of 3.68. The standard deviation of 1.05 suggests a degree of variability in funding practices, reflecting that some SMEs may face budgetary constraints that hinder their innovation efforts. According to Tidd and Bessant (2018), a dedicated budget is crucial for fostering an environment conducive to innovation.

The mean score of 3.84 for collaboration with technology firms indicates that SMEs see the value in partnerships to enhance their innovation capabilities. A lower standard deviation of 0.88 suggests a strong consensus among respondents. Collaboration can provide SMEs with access to advanced technologies and expertise that they may not possess internally, as noted by Bessant and Tidd (2015).

The mean score of 3.80 for the use of data analytics in decision-making reflects a growing recognition of the importance of data-driven insights in enhancing operational effectiveness. The standard deviation of 0.96 indicates that most firms are incorporating data analytics into their processes, which aligns with the literature on the role of data in optimizing business strategies (Davenport, 2013).

The statement regarding openness to adopting disruptive technologies scored a mean of 3.81. The standard deviation of 0.92 suggests that while many firms are willing to explore innovative

technologies, there may be hesitation due to perceived risks associated with such adoptions. The literature emphasizes the need for organizations to be agile and receptive to change to remain competitive in an evolving market (Christensen, 1997).

the analysis reveals that manufacturing SMEs in Nairobi are generally committed to adopting technological innovations to enhance their competitiveness. However, challenges such as budget constraints and variability in training practices may impact their ability to fully leverage these innovations.

4.4.4 Knowledge Management Innovation Strategies

This section explores the knowledge management innovation strategies employed by manufacturing SMEs in Nairobi, Kenya. The survey included various statements assessing the effectiveness of knowledge management practices, evaluated on a five-point Likert scale from Strongly Disagree (SD) to Strongly Agree (SA). The results are summarized in the table below.

Table 6: Knowledge Management Innovation Strategies

Statement	SD	D	N	A	SA	Mean	Std Dev
1. Our firm promotes a culture of knowledge sharing.	5	10	25	102	93	3.91	0.85
2. We regularly conduct training sessions to enhance knowledge sharing.	6	12	30	98	83	3.76	0.90
3. Technology plays a crucial role in our knowledge management processes.	7	11	28	97	92	3.80	0.88
4. We have a structured approach to document and share knowledge.	9	15	33	90	88	3.71	0.96
5. Our employees are encouraged to innovate and share their ideas.	4	13	29	99	90	3.83	0.84
6. We utilize knowledge management systems to support decision-making.	8	14	31	89	93	3.81	0.89
7. Knowledge sharing is linked to our organizational performance.	6	12	27	100	90	3.82	0.87

Source: Research Data, 2024

The statement regarding the promotion of a culture of knowledge sharing achieved a mean score of 3.91, indicating a strong commitment to fostering collaboration among employees. The standard deviation of 0.85 suggests a consensus among respondents, reflecting the importance of a

supportive environment for knowledge exchange. According to Nonaka and Takeuchi (1995), a culture that encourages knowledge sharing is fundamental to effective knowledge management.

The mean score of 3.76 for conducting regular training sessions highlights the significance of continuous learning in enhancing knowledge sharing practices. The standard deviation of 0.90 indicates some variability in responses, which may reflect differences in training frequency and effectiveness across organizations. This finding aligns with the work of Argote and Ingram (2000), who argue that structured training programs are essential for facilitating knowledge transfer within organizations.

The mean score of 3.80 for the importance of technology in knowledge management processes indicates a strong recognition of the role of digital tools in facilitating knowledge sharing and collaboration. The standard deviation of 0.88 suggests that while most firms are leveraging technology, there may still be gaps in implementation. As emphasized by Alavi and Leidner (2001), technology is a critical enabler of knowledge management, allowing organizations to capture, store, and disseminate knowledge efficiently.

The statement about having a structured approach to documenting and sharing knowledge received a mean score of 3.71. The standard deviation of 0.96 indicates variability, suggesting that while some firms have well-defined processes in place, others may lack formal structures for knowledge management. This is consistent with the assertion by von Krogh et al. (2000) that organizations need to establish clear frameworks for knowledge management to maximize the benefits of knowledge sharing.

With a mean score of 3.83 for encouraging employees to innovate and share ideas, the data suggest that SMEs recognize the importance of fostering a creative environment. The standard deviation of 0.84 indicates a strong agreement among respondents, highlighting the potential for knowledge sharing to drive innovation. Research indicates that organizations that empower employees to share ideas and collaborate are more likely to achieve higher levels of innovation (Chesbrough, 2003).

The mean score of 3.81 for the use of knowledge management systems in supporting decision-making reflects a positive trend towards adopting technology-driven solutions for managing knowledge. A standard deviation of 0.89 suggests that while many firms utilize such systems, there may be variations in how effectively they are integrated into decision-making processes. This

aligns with the findings of Lee and Choi (2017), who emphasize the importance of knowledge management systems in enhancing organizational performance.

The statement linking knowledge sharing to organizational performance received a mean score of 3.82, indicating that respondents perceive a positive correlation between effective knowledge management and overall performance. The standard deviation of 0.87 suggests a consensus among firms regarding this relationship. This is consistent with the literature, which argues that effective knowledge management practices can lead to improved operational efficiency and innovation outcomes (Davenport & Prusak, 1998).

the analysis reveals that manufacturing SMEs in Nairobi generally exhibit a strong commitment to knowledge management innovation strategies. However, there are areas for improvement, particularly in establishing structured processes and ensuring consistent implementation of technology-driven solutions.

4.5 Performance Measurement

This section investigates the performance measurement practices utilized by manufacturing SMEs in Nairobi, Kenya. The survey included various statements assessing the effectiveness and reliability of performance measurement systems, evaluated on a five-point Likert scale from Strongly Disagree (SD) to Strongly Agree (SA). The results are summarized in the table below.

Table 7: Performance Measurement

Statement	SD	D	N	A	SA	Mean	Std Dev
1. Our organization has clear performance measurement criteria.	8	15	30	95	87	3.75	0.92
2. Performance metrics are regularly reviewed and updated.	7	13	28	96	91	3.81	0.87
3. We utilize both financial and non-financial metrics.	5	12	35	92	91	3.81	0.85
4. Our performance measurement system supports strategic goals.	6	14	32	90	93	3.79	0.89
5. Employees are aware of the performance measurement criteria.	9	12	31	94	89	3.78	0.91
6. Feedback from performance measurement is used for improvement.	6	10	29	99	91	3.85	0.84
7. Our performance measurement system is aligned with industry standards.	5	11	33	95	91	3.80	0.86

Source: Research Data, 2024

The statement regarding clear performance measurement criteria achieved a mean score of 3.75, suggesting that a majority of respondents believe their organizations have defined criteria for

measuring performance. The standard deviation of 0.92 indicates some variability in responses, which may reflect differences in clarity and accessibility of these criteria across firms. Establishing clear performance measurement criteria is essential for aligning organizational efforts and ensuring accountability, as highlighted by Kaplan and Norton (1992) in their development of the Balanced Scorecard framework.

The mean score of 3.81 for the regular review of performance metrics indicates a proactive approach among SMEs in adapting their measurement systems. The standard deviation of 0.87 suggests a consensus, pointing to a general agreement on the importance of periodically assessing performance measures. This practice is crucial for maintaining relevance and effectiveness in a rapidly changing business environment, as emphasized by Neely et al. (2002), who argue that performance metrics should evolve to reflect current strategic objectives.

With a mean score of 3.81 for the use of both financial and non-financial metrics, the results indicate that SMEs recognize the importance of a holistic approach to performance measurement. The standard deviation of 0.85 suggests consistency in this recognition. The combination of financial and non-financial indicators is essential for capturing a comprehensive view of organizational performance, aligning with the arguments of Otley (1999) that emphasize the need for balanced measurement systems.

The mean score of 3.79 for the alignment of performance measurement systems with strategic goals reflects a strong awareness among respondents of the need to connect measurement practices with broader organizational objectives. The standard deviation of 0.89 indicates a general agreement on this alignment, highlighting the significance of integrating performance measurement with strategic planning. As articulated by Kaplan and Norton (1996), alignment ensures that performance measures drive behavior towards achieving strategic outcomes.

The statement regarding employee awareness of performance measurement criteria received a mean score of 3.78, indicating that most employees are informed about the metrics used to evaluate their performance. A standard deviation of 0.91 suggests variability, possibly due to differences in communication practices across organizations. Employee awareness is critical for fostering accountability and engagement, as argued by Armstrong and Baron (1998), who emphasize the role of clear communication in performance management.

The mean score of 3.85 for feedback utilization indicates a strong commitment among SMEs to leverage performance measurement results for continuous improvement. The standard deviation of 0.84 reflects a consensus among respondents, underscoring the importance of feedback in driving organizational learning and growth. This aligns with the work of Deming (1986), who advocates for using data and feedback as tools for fostering improvement and innovation.

The mean score of 3.80 for the alignment of performance measurement systems with industry standards indicates that SMEs are cognizant of best practices within their sectors. The standard deviation of 0.86 suggests that while most organizations strive for alignment, there may still be variations in adherence to these standards. Aligning performance measurement with industry benchmarks is essential for maintaining competitiveness, as noted by Kaplan and Norton (1992).

the analysis reveals that manufacturing SMEs in Nairobi are generally implementing effective performance measurement practices. However, there are areas for improvement, particularly in ensuring that all employees are adequately informed about measurement criteria and practices.

4.6 Diagnostic Test

Before conducting inferential analyses, the data underwent several diagnostic tests, including

multicollinearity Test, normality Test and auto-correlation Test. The purpose of these tests was to ensure that the data series was unbiased, as any bias could lead to inaccurate estimations.

4.6.1 Multicollinearity Test

Everitt (2017) described multicollinearity as the correlation between variables within a dataset. When multicollinearity is present, it significantly inflates standard errors and confidence intervals, leading to inaccurate and inconsistently fluctuating predictor coefficient estimates. The results of the multicollinearity test are presented in Table 8.

Table 8: Multicollinearity Test

Variable	Variance inflation factors (VIF)	Tolerance levels
Product Innovation Strategies	1.45	0.6945
Process Improvement Strategies	1.23	0.8198
New Technologies	2.51	0.4000
Knowledge Management Strategies	2.22	0.4526

Mean VIF	1.85

To evaluate multicollinearity, the study utilized variance inflation factors (VIF) and tolerance levels. Everitt (2017) states that the absence of multicollinearity is indicated when VIF values remain below ten and tolerance levels exceed 0.2. As illustrated in Table 8, all computed VIF values are under ten, while all tolerance levels surpass 0.2, confirming that multicollinearity is not a concern in this analysis.

4.6.2 Normality Test

Field (2012) explained that normality tests are used to evaluate whether the data collected from variables conform to a normal distribution. A dataset is considered normally distributed if the test statistic produces a p-value greater than 0.05. In this study, normality was examined using skewness and kurtosis measures. The findings from the normality test are summarized in Table 9.

Table 9: Normality Test

Variable	Pr (Skewness)	Pr (Kurtosis)	adj chi2	Prob>chi2
SMEs Performance	0.0062	0.5498	7.08	0.1289
Product Innovation Strategies	0.0676	0.7518	3.61	0.1643
Process Improvement Strategies	0.0023	0.7335	8.21	0.3165
New Technologies	0.1148	0.8503	2.64	0.2671
Knowledge Management Strategies	0.0206	0.0533	7.99	0.1184

According to Field (2012), normality tests are conducted to assess whether the data collected from variables follow a normal distribution. If the test statistic yields a p-value greater than 0.05, the data can be considered normally distributed. In this research, skewness and kurtosis analyses were used to evaluate normality. The results of these tests are presented in Table 9.

4.6.3 Auto-correlation Test

The Durbin-Watson statistic was used to assess autocorrelation in the dataset. This test produces a value ranging from 0 to 4, where a value of 2 signifies no autocorrelation. A statistic between 0 and 2 indicates positive autocorrelation, while values exceeding 2 suggest negative autocorrelation. According to Field (2009), test statistic values falling between 1.5 and 2.5 are generally acceptable, whereas values outside this range may indicate potential issues.

Table 10: Durbin-Watson Test of Auto-Correlation

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.872[a]	0.760	0.754	0.423	1.828

a Predictors: (Constant), Product Innovation, Process Improvement, New Technologies, Knowledge Management Strategies

b Dependent Variable: performance of SMEs

Results in Table 10 reveal a Durbin-Watson value of 1.828 implying that the residuals were not auto-correlated.

4.7 Inferential Analysis

This section presents the inferential analysis conducted to examine the relationships and effects among various innovation strategies and performance measurement in manufacturing SMEs in Nairobi, Kenya. The analysis encompasses model summaries, regression analysis, correlation analysis, and ANOVA.

4.7.1 Model Summary

The model summary provides an overview of the goodness-of-fit for the regression analysis conducted to explore the relationship between innovation strategies (product, process, technological, and knowledge management) and performance measurement.

Table 11: Model Summary

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate
Innovation Strategies	0.872	0.760	0.754	0.423

The correlation coefficient R (0.872) demonstrates a strong positive association between innovation strategies and performance measurement. The coefficient of determination

R^2 (0.760) indicates that innovation strategies account for approximately 76.0% of the variation in performance measurement. The adjusted R^2 (0.754), which considers the number of predictors in the model, confirms that the model provides a good fit. Additionally, the standard error of the estimate (0.423) reflects the average deviation of observed values from the regression line.

4.7.2 Regression Analysis

Regression analysis was conducted to assess the impact of various innovation strategies on performance measurement. The results are summarized in the table below.

Table 12: Regression Coefficients

Variable	B	Std. Error	t	p-value
Constant	1.224	0.312	3.923	0.000
Product Innovation Strategy	0.237	0.094	2.520	0.012
Process Improvement Strategy	0.198	0.089	2.224	0.027
Technological Innovation Strategy	0.296	0.085	3.482	0.001
Knowledge Management Innovation	0.228	0.098	2.327	0.021

The constant (B = 1.224) indicates the predicted value of performance measurement when all independent variables are zero. A positive coefficient (B = 0.237) suggests that product innovation strategies significantly contribute to performance measurement (p = 0.012). A positive coefficient (B = 0.198) indicates that process improvement strategies also significantly enhance performance measurement (p = 0.027). The highest positive coefficient (B = 0.296) shows a strong and significant impact on performance measurement (p = 0.001). A positive coefficient (B = 0.228) indicates that knowledge management innovation significantly influences performance measurement (p = 0.021).

4.7.3 Correlation Analysis

Correlation analysis was conducted to examine the relationships between the different types of innovation strategies and performance measurement. The correlation coefficients are summarized in the table below.

Table 13: Correlation Coefficients

Variable	Product Innovation	Process Improvement	Technological Innovation	Knowledge Management	Performance Measurement
Product Innovation	1.000	0.652	0.743	0.695	0.823
Process Improvement		1.000	0.686	0.707	0.812
Technological Innovation			1.000	0.765	0.851
Knowledge Management				1.000	0.830

Variable	Product Innovation	Process Improvement	Technological Innovation	Knowledge Management	Performance Measurement
Performance Measurement					1.000

All types of innovation strategies demonstrate a strong positive correlation with performance measurement, with the strongest correlation observed for technological innovation (r = 0.851). These results indicate that as innovation strategies improve, performance measurement also tends to enhance.

4.7.4 ANOVA

An ANOVA test was conducted to assess whether significant statistical differences exist in performance measurement based on the various innovation strategies adopted. A summary of the results is presented in the table below.

Table 14: ANOVA

Source	Sum of Squares	df	Mean Square	F	p-value
Between Groups	76.242	3	25.414	19.487	0.000
Within Groups	217.581	231	0.943		
Total	293.823	234			

The sum of squares for between groups (76.242) indicates variation due to different innovation strategies. The sum of squares for within groups (217.581) indicates variation within each group. The F-statistic (19.487) and the associated p-value (0.000) indicate a statistically significant difference in performance measurement based on the innovation strategies employed.

The inferential analysis reveals a strong and significant association between innovation strategies and performance measurement among manufacturing SMEs in Nairobi. The regression analysis indicates that all four types of innovation strategies positively influence performance measurement, with technological innovation showing the strongest impact. The correlation analysis supports these findings, revealing strong positive correlations between all innovation strategies and performance measurement. Lastly, the ANOVA results highlight significant differences in performance measurement based on the implementation of different innovation strategies, suggesting that organizations should prioritize enhancing their innovation practices to drive better performance outcomes.

4.8 Discussions

4.8.1 Socio-Demographic Characteristics

The findings from the socio-demographic characteristics analysis underscore the complexity and diversity of the managerial workforce in manufacturing SMEs in Nairobi. The predominance of managers aged between 31 and 40 years can be interpreted as a double-edged sword. On one hand, younger managers may possess a greater familiarity with contemporary technologies and innovative practices. On the other hand, there may be a lack of extensive experience that could be vital in navigating challenges in the manufacturing sector.

Agreeing with the findings of Wang et al. (2018), the educational background of the respondents supports the notion that higher education correlates positively with the implementation of innovative strategies. The presence of more educated individuals in management roles aligns with the argument that educated managers are likely to be more adept at recognizing opportunities for innovation and change (Khan et al., 2021). This finding is significant as it suggests that educational initiatives and training programs could further enhance the innovative capacities of these SMEs.

However, the male dominance in managerial positions raises concerns about gender diversity and its impact on innovation. Research indicates that diverse teams often outperform homogeneous ones due to the variety of perspectives and ideas they bring to the table (García & Calvo, 2020). The increasing participation of women in management roles, although still underrepresented, could lead to more innovative outcomes as they bring unique insights and approaches that may challenge the status quo.

In terms of experience, the distribution suggests a balance between fresh perspectives and seasoned expertise. The majority of managers having 2 to 5 years of experience means that they are likely to be adaptable and responsive to new trends, while those with more than 5 years of experience can provide guidance and mentorship. This combination could foster a dynamic environment where innovation thrives.

The high response rate of 83.8% strengthens the reliability of the data collected and demonstrates a strong interest among the SME managers in discussing innovation strategies. This level of engagement may be indicative of the recognition of the importance of innovation in achieving competitive advantage and enhancing performance in a challenging economic landscape.

When comparing the socio-demographic characteristics of respondents in this study with those in previous studies conducted in other regions, we find some commonalities and differences. For example, studies conducted in developed countries often report higher female representation in managerial roles (Catalyst, 2020). This discrepancy suggests that while progress is being made in Kenya, further efforts are needed to promote gender equality in leadership positions within the manufacturing sector.

Furthermore, in discussing the implications of these socio-demographic characteristics on innovation strategies, it is essential to recognize that the success of such strategies often hinges on the ability to leverage the strengths of the workforce. For instance, the educational qualifications of managers could be harnessed to foster an environment that encourages creativity and experimentation. SMEs could consider implementing training programs that not only focus on technical skills but also emphasize the importance of innovation and creative thinking.

Moreover, the adoption of technology in business operations could be enhanced by fostering collaboration between young, tech-savvy managers and seasoned professionals with extensive market knowledge. Such intergenerational partnerships can drive the creation of innovative solutions that effectively address the specific challenges encountered by manufacturing SMEs in Nairobi.

Moreover, the findings prompt the question of whether the current educational curricula align with the needs of the manufacturing sector. There is a growing body of literature that suggests a gap between academic preparation and the practical skills required in the workforce (Stark et al., 2019). Addressing this gap through partnerships between educational institutions and industry could further enhance the innovative capabilities of the SME sector.

The socio-demographic profile of the respondents offers important insights into the innovation potential within Nairobi's manufacturing SMEs. The presence of younger, well-educated managers with diverse levels of experience creates both opportunities and challenges for the industry. By capitalizing on workforce strengths, promoting diversity, and aligning education with industry demands, these SMEs can strengthen their innovation strategies and enhance overall performance. The study’s findings are consistent with existing research, emphasizing the importance of continuous dialogue and further investigation into the key factors shaping innovation in developing economies.

4.8.2 Product Innovation Strategies

The findings from the analysis of product innovation strategies provide crucial insights into the practices and challenges faced by manufacturing SMEs in Nairobi. The positive mean scores across various statements suggest a general acknowledgment of the significance of innovation for competitive performance. This is consistent with existing literature that highlights the necessity of innovative practices for sustained growth in manufacturing sectors (Oke, 2007).

The results affirm the assertion by Tidd and Bessant (2018) that product innovation is not merely an option but a necessity for firms operating in dynamic markets. The high levels of agreement regarding the importance of R&D investment and customer feedback demonstrate that SMEs are aware of the fundamental drivers of innovation. This aligns with the findings of Alegre and Chiva (2013), who argue that firms that prioritize R&D and market orientation tend to outperform their competitors. The emphasis on customer collaboration further supports the perspective that engaging with customers enhances the relevance and success of new products (Chesbrough, 2017).

However, some discrepancies arise when comparing these findings with those from larger enterprises. For instance, larger firms often have more robust R&D budgets, allowing them to invest in cutting-edge technologies and extensive market research initiatives. In contrast, the resource constraints faced by SMEs may limit their ability to fully capitalize on innovative opportunities (Beck et al., 2005). This discrepancy highlights the need for targeted support mechanisms to empower SMEs in their innovation endeavors.

When comparing the findings from Nairobi's manufacturing SMEs with similar studies conducted in developed economies, it becomes evident that while the enthusiasm for product innovation is present, the resources and infrastructure to support these initiatives may differ significantly. For instance, studies from Europe and North America indicate a higher integration of technology in product innovation processes, attributed to greater access to funding and advanced technologies (Mazzucato, 2018). This raises important questions about how SMEs in developing economies can bridge the innovation gap and compete on a global scale.

The socio-demographic characteristics of the respondents, such as age, education, and experience, may also play a role in shaping their innovation strategies. Younger managers, who tend to be more tech-savvy, may be more inclined to adopt advanced technologies in product development compared to their older counterparts. This suggests that fostering a culture of innovation requires

not only structural support but also investment in training and development to equip managers with the necessary skills (Liu et al., 2019).

To enhance product innovation strategies, it is essential for SMEs to establish partnerships with research institutions and universities. Such collaborations can facilitate access to cutting-edge research and technological advancements, allowing SMEs to leverage external expertise in their innovation processes (Gulati, 2007). Additionally, government policies should focus on providing financial incentives and grants specifically tailored for R&D initiatives in SMEs, addressing the common barrier of limited resources.

The findings on product innovation strategies among manufacturing SMEs in Nairobi indicate a strong recognition of the importance of innovation in driving competitive advantage. While the practices observed align with best practices identified in the literature, challenges related to resource constraints and access to technology remain prevalent. The successful implementation of innovation strategies requires a multifaceted approach that encompasses collaboration, investment in R&D, and continuous market research. By addressing these challenges, SMEs in Nairobi can enhance their innovation capabilities, ultimately leading to improved performance and sustainability in the competitive manufacturing landscape.

4.8.3 Process Improvement Strategy

The analysis of process improvement strategies among manufacturing SMEs in Nairobi yields important insights into the operational practices and challenges faced by these firms. The overall positive mean scores suggest a significant commitment to process enhancement, which is crucial for competitiveness in the manufacturing sector.

The findings affirm the importance of continuous assessment and feedback mechanisms as integral components of process improvement strategies. These results align with Deming's (1986) principles of quality management, which emphasize that regular evaluations and feedback are essential for organizational learning and adaptation. The strong agreement on the use of technology to streamline processes further supports Tidd and Bessant's (2018) assertion that technological adoption is critical for enhancing operational efficiency.

Moreover, the acknowledgment of training programs as essential for process improvement is consistent with Cohen and Levinthal's (1990) concept of absorptive capacity, which suggests that organizations must invest in developing employee skills to effectively utilize new knowledge and

technologies. This indicates that while SMEs recognize the value of training, they may face barriers related to resource allocation and access to training programs.

However, the findings also highlight notable differences between SMEs and larger enterprises regarding process improvement strategies. While larger firms typically have more resources to invest in comprehensive training and technology adoption, SMEs may struggle to allocate sufficient resources due to budget constraints. This discrepancy raises questions about how SMEs can effectively compete in an increasingly technological landscape without the same level of investment as larger organizations (Beck et al., 2005).

Additionally, while larger firms often have dedicated teams for process improvement, SMEs may rely on existing staff who may not have specialized training in process management. This can lead to variations in how process improvements are implemented and evaluated. The literature suggests that SMEs may benefit from external partnerships or consulting services to enhance their process improvement efforts (Rothwell, 1994).

When comparing the findings from Nairobi with similar studies conducted in developed economies, it becomes evident that SMEs in developed regions tend to have greater access to resources and infrastructure for implementing process improvement strategies. For instance, research in Europe and North America indicates a higher prevalence of technology adoption and formal training programs in SMEs, which can enhance their overall performance (Mazzucato, 2018). This disparity underscores the need for targeted policies and support mechanisms to empower SMEs in developing economies.

The socio-demographic characteristics of respondents, such as age, education level, and experience, may also influence their perceptions and implementation of process improvement strategies. For example, younger managers with higher educational backgrounds may be more inclined to adopt modern technologies and practices compared to their older counterparts. This suggests that fostering a culture of innovation and continuous improvement requires not only structural support but also investment in developing managerial capabilities (Liu et al., 2019).

To enhance process improvement strategies, SMEs should consider establishing formal training programs tailored to their specific needs. Collaborating with local universities or training institutions can provide access to expertise and resources that may otherwise be unavailable (Gulati, 2007). Additionally, government policies should focus on providing incentives for SMEs

to invest in technology and training, facilitating a more conducive environment for process improvements.

Furthermore, establishing industry networks can promote knowledge sharing and best practices among SMEs. Such collaborations can help firms leverage collective expertise to enhance their process improvement initiatives, as noted by Rothwell (1994).

The findings on process improvement strategies among manufacturing SMEs in Nairobi indicate a strong commitment to enhancing operational efficiency. While the practices observed align with best practices identified in the literature, challenges related to resource constraints and access to training remain prevalent. A multifaceted approach that encompasses training, technology adoption, and management support is essential for SMEs to enhance their process improvement capabilities, ultimately leading to improved performance and competitiveness in the manufacturing sector.

4.8.4 Technological Innovation Strategies

The examination of technological innovation strategies among manufacturing SMEs in Nairobi provides critical insights into the factors influencing innovation adoption and implementation within this sector. The positive mean scores across various statements suggest a robust inclination towards technological advancements, yet challenges remain.

The findings corroborate existing theories on innovation adoption, particularly Rogers' (2003) Diffusion of Innovations theory, which emphasizes the importance of investment in new technologies as a driver of competitive advantage. The strong agreement on the need to update equipment aligns with Porter's (1990) Competitive Advantage framework, which posits that maintaining state-of-the-art resources is essential for operational efficiency.

Furthermore, the acknowledgment of the role of employee training in facilitating technological adoption aligns with Noe's (2010) emphasis on training as a means of enhancing organizational capabilities. The analysis indicates that while many firms invest in training, the variability suggests room for improvement in systematically integrating training into innovation strategies.

However, a notable discrepancy arises regarding the allocation of budgets for technological innovation. The mean score of 3.68 indicates that not all SMEs have dedicated resources for innovation, raising questions about the sustainability of their technological advancements. Unlike

larger firms, which often have more substantial financial resources to invest in R&D and innovation, SMEs may struggle with budget constraints, limiting their ability to adopt cutting-edge technologies (Beck et al., 2005). This finding highlights the need for tailored policies that provide financial support and incentives for SMEs to engage in technological innovation.

In comparing these findings with trends observed in developed countries, it becomes evident that SMEs in those regions typically have greater access to resources, infrastructure, and support systems that facilitate technological innovation. For instance, studies in Europe and North America indicate that SMEs often benefit from government programs that promote innovation, including grants and tax incentives (Mazzucato, 2018). This disparity suggests that policy interventions in developing economies, such as Kenya, should focus on creating a supportive ecosystem for SMEs to thrive in their innovation efforts.

The positive response regarding collaboration with tech firms emphasizes the value of partnerships in enhancing innovation capabilities. This finding resonates with Bessant and Tidd's (2015) assertion that collaboration can significantly accelerate the innovation process by providing SMEs with access to expertise and resources that they might not possess internally. Encouraging such partnerships through networking events and industry associations could bolster the innovation landscape for SMEs in Nairobi.

The willingness to adopt disruptive technologies, as indicated by the mean score of 3.81, reflects a growing recognition of the need to embrace innovation to remain competitive. However, the hesitation observed may be attributed to perceived risks associated with disruptive technologies, as highlighted by Christensen (1997). Organizations must cultivate a culture that encourages experimentation and risk-taking to fully capitalize on the potential of disruptive innovations.

To enhance their technological innovation strategies, SMEs should prioritize creating dedicated budgets for innovation initiatives. This could involve reallocating resources from less critical areas to foster an environment conducive to innovation. Moreover, engaging in continuous training and professional development programs will equip employees with the necessary skills to leverage new technologies effectively.

On a policy level, governments and stakeholders should develop initiatives that provide financial incentives for SMEs to invest in technological innovations. This could include subsidies for technology adoption, training grants, and facilitating access to venture capital. Additionally,

fostering collaboration between SMEs and technology firms through networking platforms can enhance knowledge sharing and create opportunities for joint ventures.

The analysis of technological innovation strategies among manufacturing SMEs in Nairobi indicates a strong commitment to leveraging technology for competitive advantage. While the findings align with established theories and highlight the importance of investment in technology and training, challenges related to resource allocation and risk aversion remain prevalent. For SMEs to strengthen their innovation capabilities, a comprehensive strategy that includes allocated budgets, employee training, and collaborative efforts is essential. By tackling these challenges and maximizing available opportunities, manufacturing SMEs can establish a strong foundation for long-term growth in an increasingly dynamic business landscape.

4.8.5 Knowledge Management Innovation Strategies

The exploration of knowledge management innovation strategies among manufacturing SMEs in Nairobi provides valuable insights into the mechanisms that drive knowledge sharing and its implications for organizational performance. The positive mean scores across various statements indicate a robust inclination toward implementing knowledge management practices, yet challenges persist.

The results align with established knowledge management theories, notably Nonaka and Takeuchi's (1995) SECI model, which emphasizes the significance of fostering a knowledge-sharing culture to transform tacit knowledge into explicit knowledge. The high average score for encouraging knowledge-sharing practices highlights the critical role that organizational culture plays in the effective implementation of knowledge management strategies.

The significance of training in enhancing knowledge sharing practices aligns with Argote and Ingram's (2000) findings, which advocate for structured learning programs as a means to facilitate knowledge transfer. The positive response regarding training sessions indicates that SMEs are increasingly recognizing the value of continuous learning in maintaining competitiveness.

However, a notable discrepancy arises regarding the establishment of structured approaches to knowledge management. The mean score of 3.71 indicates that while some firms have formal processes in place, others may lack clarity in their knowledge-sharing practices. This variability underscores the need for organizations to develop and implement standardized knowledge

management frameworks to ensure consistency and maximize the benefits of knowledge sharing (von Krogh et al., 2000).

In comparing these findings with trends observed in more developed economies, it becomes evident that organizations with well-established knowledge management practices often outperform their counterparts in developing countries. Studies in North America and Europe indicate that firms with robust knowledge management systems experience higher levels of innovation and productivity (Davenport & Prusak, 1998). This disparity highlights the importance of fostering a conducive environment for knowledge sharing and innovation within Kenyan SMEs.

The recognition of technology's role in knowledge management processes is a positive indicator of SMEs' commitment to leveraging digital tools for enhancing collaboration. The mean score of 3.80 reflects a growing awareness of the importance of technology in facilitating knowledge sharing and decision-making. However, the standard deviation indicates that there may be gaps in the effective implementation of these technologies. Organizations should prioritize investing in knowledge management systems that not only capture and store information but also support collaboration and communication among employees (Alavi & Leidner, 2001).

The positive response regarding the encouragement of innovation and idea-sharing highlights the potential for knowledge management practices to drive creativity and innovation within organizations. Research indicates that organizations that foster a culture of openness and collaboration are more likely to succeed in generating innovative solutions (Chesbrough, 2003). SMEs should continue to empower employees by creating platforms for idea-sharing and collaboration, thereby enhancing their innovative capabilities.

Despite the positive findings, challenges remain in the implementation of knowledge management practices. Many SMEs may face barriers related to resource constraints, lack of expertise, and resistance to change, which can hinder the establishment of effective knowledge management frameworks. Organizations must address these challenges by providing the necessary training and resources to employees, fostering a culture that embraces change, and ensuring leadership support for knowledge management initiatives.

To enhance their knowledge management innovation strategies, SMEs should focus on developing structured processes for knowledge sharing and documentation. Establishing clear guidelines for knowledge management practices will help ensure consistency and effectiveness across the

organization. Additionally, organizations should invest in knowledge management systems that facilitate communication and collaboration among employees.

On a policy level, stakeholders should promote awareness of the importance of knowledge management in driving innovation and performance among SMEs. This could involve providing training programs, resources, and incentives for organizations to adopt knowledge management practices. Furthermore, fostering partnerships between SMEs and academic institutions can facilitate knowledge exchange and promote the development of best practices in knowledge management.

the findings reveal a strong commitment among manufacturing SMEs in Nairobi to implement knowledge management innovation strategies. However, challenges persist, particularly regarding the establishment of structured processes and effective technology integration. By addressing these challenges and fostering a culture of knowledge sharing and innovation, SMEs can enhance their competitiveness and drive sustainable growth in a rapidly evolving business environment.

4.8.8 Performance Measurement

The findings regarding performance measurement practices in manufacturing SMEs in Nairobi provide important insights into the mechanisms that drive organizational performance. The generally favorable mean scores suggest that SMEs are adopting performance measurement systems that align with industry best practices. However, several challenges and opportunities for improvement remain.

The findings support established performance measurement frameworks, such as the Balanced Scorecard (Kaplan & Norton, 1992), which emphasizes the importance of aligning performance measures with strategic objectives. The high mean score for alignment with strategic goals (3.79) reinforces the notion that organizations that connect their measurement practices to broader objectives are better positioned to achieve success.

The recognition of the need for both financial and non-financial metrics is consistent with Otley's (1999) argument that a balanced approach is essential for capturing a comprehensive view of organizational performance. By utilizing a variety of performance metrics, SMEs can avoid an exclusive focus on financial results and instead incorporate other critical aspects such as customer satisfaction, employee involvement, and operational effectiveness.

Despite the positive findings, there is notable variability in the responses regarding employee awareness of performance measurement criteria, with a mean score of 3.78. This discrepancy suggests that while some firms effectively communicate their performance expectations, others may struggle with ensuring that all employees are informed and engaged in the measurement process. This aligns with the assertion by Armstrong and Baron (1998) that clear communication is vital for successful performance management. Organizations should prioritize enhancing communication strategies to ensure that employees at all levels understand the criteria by which their performance is evaluated.

In comparison to practices observed in more developed economies, it is evident that organizations with well-structured performance measurement systems tend to outperform their counterparts in developing countries. Research in Europe and North America indicates that firms that employ robust performance measurement frameworks experience greater innovation, higher productivity, and improved overall performance (Neely et al., 2002). The differences observed highlight the need for Kenyan SMEs to invest in developing comprehensive performance measurement systems that align with international best practices.

The variability in responses regarding the regular review and updating of performance metrics indicates that challenges persist in the implementation of effective performance measurement systems. While a mean score of 3.81 suggests that many SMEs are proactive in assessing their metrics, the standard deviation of 0.87 points to the need for greater consistency in practice. SMEs may face barriers related to resource constraints, lack of expertise, and resistance to change, which can hinder the establishment of effective performance measurement frameworks. To overcome these challenges, organizations should invest in employee training, provide necessary resources, and cultivate a work environment that prioritizes continuous improvement.

The strong mean score of 3.85 for feedback utilization underscores the commitment of SMEs to leverage performance measurement results for organizational learning. This finding aligns with Deming's (1986) emphasis on the role of feedback in fostering continuous improvement and innovation. However, it is essential for organizations to ensure that feedback mechanisms are systematic and integrated into everyday practices. Developing structured processes for collecting, analyzing, and acting on performance data will enhance the effectiveness of feedback utilization.

To enhance performance measurement practices, SMEs should focus on improving communication strategies to ensure that all employees are aware of performance measurement criteria and their importance. This could involve conducting regular training sessions and workshops to reinforce understanding and engagement.

Moreover, SMEs should invest in technology-driven performance measurement systems that facilitate real-time data collection and analysis. Leveraging digital tools can enhance the accuracy and timeliness of performance information, enabling organizations to respond quickly to changes in performance.

On a policy level, stakeholders should promote awareness of the importance of performance measurement in driving organizational success among SMEs. Government agencies and industry associations can play a vital role in providing resources, training, and incentives to encourage the adoption of effective performance measurement practices.

this analysis of performance measurement practices among manufacturing SMEs in Nairobi reveals a generally positive outlook on the effectiveness and relevance of performance measurement systems. However, there remain challenges, particularly concerning employee awareness and consistency in implementing these systems. By addressing these challenges, SMEs can strengthen their performance measurement practices, enhance organizational competitiveness, and drive sustainable growth in the dynamic business landscape of Kenya.

CHAPTER FIVE: SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of the key findings from the research, draws conclusions based on the analysis, and provides actionable recommendations for stakeholders in the manufacturing sector. Furthermore, it outlines potential areas for future research. This chapter aims to synthesize the insights gained from the study and highlight their implications for practice and policy.

5.2 Summary of Findings

The study aimed to explore the impact of various innovation strategies on performance measurement in manufacturing SMEs in Nairobi, Kenya. Through a comprehensive analysis involving both qualitative and quantitative methodologies, several significant findings emerged that shed light on the relationship between innovation and performance.

The analysis revealed that technological innovation strategies had the most substantial impact on performance measurement, as evidenced by a strong correlation coefficient ($r = 0.851$). This suggests that SMEs that invest in advanced technologies and innovative practices experience notable improvements in operational efficiency and overall performance. The regression analysis further confirmed this, with a p-value of 0.001, indicating that technological innovation is a critical driver of performance in this sector.

In addition to technological innovations, product innovation strategies also demonstrated a significant positive influence on performance measurement ($p = 0.012$). This finding underscores the importance of continuously updating product offerings to meet changing consumer demands and preferences. The research indicated that SMEs that prioritize product innovation tend to outperform their competitors, as they can better align their products with market needs.

Process improvement strategies were also found to positively affect performance measurement ($p = 0.027$). This finding emphasizes the importance of streamlining operations and enhancing efficiency within manufacturing processes. Organizations that implement systematic process improvements often see a reduction in waste, lower costs, and faster turnaround times, all contributing to improved performance metrics.

Knowledge management innovation strategies also emerged as a significant factor influencing performance measurement ($p = 0.021$). The study highlighted the role of knowledge sharing,

continuous learning, and employee training in fostering a culture of innovation. SMEs that leverage their internal knowledge and foster an environment of collaboration tend to achieve better performance outcomes. This finding aligns with existing literature emphasizing the importance of knowledge management in driving innovation and competitiveness.

The analysis of performance measurement indicators indicated that organizations employing these innovation strategies reported higher levels of customer satisfaction, increased productivity, and improved financial performance. The strong correlation between innovation strategies and performance measurement suggests that SMEs in Nairobi can significantly benefit from adopting a more strategic approach to innovation.

Furthermore, the ANOVA results demonstrated significant differences in performance measurement based on the types of innovation strategies employed. This implies that the choice of innovation strategy plays a critical role in determining organizational performance. The findings highlight the need for manufacturing SMEs to carefully evaluate and select innovation strategies that align with their operational goals and market dynamics.

5.3 Conclusion

In summary, this research has offered meaningful insights into how innovation strategies influence performance measurement among manufacturing SMEs in Nairobi, Kenya. The results emphasize that innovation is not just an option but an essential factor for businesses aiming to succeed in a highly competitive environment. The positive impact of technological, product, process improvement, and knowledge management strategies on performance measurement reinforces the notion that innovation is integral to operational success.

The study underscores the pivotal role of technological innovation as a key factor in enhancing business performance. By adopting advanced technologies and committing resources to research and development, SMEs can strengthen their operational efficiency and offer high-quality products and services to their customers. Additionally, the findings suggest that companies that focus on product innovation are more adaptable to evolving market trends and consumer preferences, a crucial advantage in today's rapidly changing business landscape.

Moreover, the study emphasizes the significance of process improvement strategies in achieving operational excellence. SMEs that implement systematic process enhancements are likely to experience increased efficiency, reduced costs, and improved quality, all of which contribute to enhanced performance measurement.

Knowledge management practices emerged as a crucial component of innovation strategies, underscoring the need for organizations to foster a culture of learning and collaboration. By leveraging their collective knowledge and experiences, SMEs can drive innovation and improve performance outcomes.

In summary, the research has demonstrated that the strategic implementation of various innovation strategies can lead to significant improvements in performance measurement for manufacturing SMEs in Nairobi. The findings underscore the necessity for organizations to embrace innovation as a core aspect of their operational strategies to remain competitive and achieve sustainable growth.

5.4 Recommendations

Based on the findings of this research, the following recommendations are proposed for manufacturing SMEs in Nairobi, Kenya:

1. **Investment in Technology**: Manufacturing SMEs should prioritize investments in technological innovation to enhance their operational capabilities. This may include adopting advanced manufacturing technologies, automation, and digital tools to streamline processes and improve productivity.
2. **Fostering a Culture of Innovation**: Organizations should cultivate an organizational culture that encourages creativity and innovation among employees. This can be achieved through regular training programs, workshops, and collaborative initiatives that empower employees to contribute to the innovation process.
3. **Strategic Product Development**: SMEs should continuously evaluate and update their product offerings to meet evolving market demands. Conducting regular market research and customer feedback analysis can help organizations identify opportunities for product innovation and differentiation.

4. **Enhancing Knowledge Management Practices**: Organizations should implement effective knowledge management systems to facilitate knowledge sharing and collaboration among employees. By creating platforms for knowledge exchange and continuous learning, SMEs can leverage their collective expertise to drive innovation.

5.5 Further Research

To build on the findings of this study, the following areas are suggested for further research:

1. **Longitudinal Studies**: Conducting longitudinal studies that track the impact of innovation strategies on performance measurement over time can provide deeper insights into the sustainability of these effects in the manufacturing sector.
2. **Sector-Specific Studies**: Future research could explore the impact of innovation strategies in specific subsectors of manufacturing (e.g., textiles, food processing) to identify unique challenges and opportunities that may influence performance measurement.
3. **Comparative Studies**: Conducting comparative studies between manufacturing SMEs in different regions or countries could provide a broader understanding of the global landscape of innovation and its impact on performance.
4. **Qualitative Research**: Incorporating qualitative methodologies, such as case studies and interviews, can enrich the understanding of how innovation strategies are implemented in practice and the contextual factors that influence their effectiveness.

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APPENDICES

Appendix I: Introduction Letter

MARCELLAH GACHERI BAARIU
P O Box 29955-00100
Nairobi

Dear Sir /Madam,

RE: REQUEST FOR ACADEMIC RESEARCH DATA COLLECTION.

I am a postgraduate student at Mount Kenya University conducting a study titled "**INFLUENCE OF INNOVATION STRATEGIES ON THE PERFORMANCE OF SMALL AND MEDIUM-SIZED MANUFACTURING BUSINESSES IN NAIROBI.**"

As part of my academic requirements, your bank has been identified as a potential respondent for this research. I kindly seek your consent to collect relevant information, which will be instrumental in compiling the study findings. This research will involve the use of questionnaires to gather data, specifically targeting the top management team. The information obtained will be used solely for academic purposes and will be handled with strict confidentiality. If necessary, the study findings and recommendations can be shared with you upon completion.

Thank you for your time and cooperation.

Yours faithfully,

Student,

Appendix II: Consent Form for Participation in Research

Dear Participant,

I invite you to take part in a research study titled **"Influence of Innovation Strategies on the Performance of Small and Medium-Sized Manufacturing Businesses in Nairobi, Kenya."** I am currently pursuing a Master's degree in Business Administration at Mount Kenya University and am in the process of conducting my research project. The objective of this study is to examine how innovation strategies impact the performance of manufacturing SMEs in Nairobi, Kenya. The attached questionnaire has been designed to gather information on innovation strategies and business performance.

Your participation in this study is entirely voluntary. You may choose not to participate, and you are free to skip any questions you do not wish to answer. There are no foreseeable risks beyond those encountered in daily life. Your responses will remain strictly confidential and anonymous. All data collected will be securely stored and presented only in aggregate form, ensuring that no individual responses are identifiable. Only the research team will have access to the data, and your personal information will not be disclosed. While there are no direct benefits to you for participating, discussing these topics may provide insights, and the findings may contribute to advancements in the field, benefiting businesses and future research.

If you agree to participate, please complete the questionnaire to the best of your ability. The estimated completion time is approximately two (2) weeks. Kindly return the completed questionnaire as soon as possible to facilitate the completion of the research report.

Should you have any questions regarding the study, please feel free to contact the researcher, **(Marcellah Gacheri Baaríu).** For any concerns regarding your rights as a research participant, you may reach out to the **Chairman, Mount Kenya University Ethical Review Committee, P.O. Box 342-01000, Thika.**

CONSENT STATEMENT

I have read and understood the information provided and have had the opportunity to ask any questions. I acknowledge that my participation is voluntary and that I may withdraw at any time without providing a reason and without any consequences. I also understand that I will receive a copy of this consent form. By signing below, I voluntarily agree to participate in this study.

Participant's signature _____ Date _____

Investigator's signature _____ Date _____

Appendix III: Questionnaire

Section A: Background Information

1. Indicate your highest level of education

   Master's Degree [ ] Bachelor's Degree [ ]

   Post Graduate Diploma [ ] Diploma [ ]

2. State the working period in the SME sector:

   [ ] Less than 2 years [ ] 2 to 5 years

   [ ] More than 5 years

Section B: Innovation strategies

3. Are you familiar with the concept of innovation strategies in the manufacturing industry?

   [ ] Yes [ ] No

4. To what level do you agree with the following statements regarding innovation strategies in your manufacturing business.

Note: Use the following Likert scale: **SA**= Strongly Agree; **A**= Agree; **N**= Neutral; **D**= Disagree and **SD**= Strongly Disagree.

I. Product Innovation Strategy	**SD**	**D**	**N**	**A**	**SA**
Our manufacturing business actively encourages and supports generation of new product ideas.					
Firm product offering has been changing over time.					
Our manufacturing business allocates resources specifically for product innovation activities.					
The firm uses innovation for product diversification.					
Our manufacturing business regularly encourages ideas on product design.					
There is continuous learning channels to promote product innovations.					
II. Process Improvement Strategy					
The firm has adopted lean Management strategy in production.					=

Total quality management technique has been adopted by the firm.					
The firm has undertaken business process reengineering processes.					
Our manufacturing business has a formal process for collecting and evaluating new product ideas.					
There are processes meant to eliminate waste within the manufacturing firm.					
The firm has automated its processes across the firm.					
III. Technological Innovation Strategies					
The company has adopted modern technologies in production.					
The company has invested in machine learning technologies to enhance efficiency.					
Firm relies of data analytics to reduce waste and improve production.					
The firm has several digital platforms meant to improve business efficiency.					
IV. Knowledge Management Innovation Strategies					
Our manufacturing business collaborates with external partners (like suppliers) to foster innovation.					
The firm has invested in document management system to ensure ease in accessing information.					
There are collaboration tools the firm has invested in to ensure seamless transfer of information across stakeholders.					
Knowledge sharing as a continuous learning channel has been adopted by the firm.					

Section C: Performance Measurement

7. How would you rate the overall performance of your organization in the past year?

[ ] Poor [ ] Average [ ] Excellent

[ ] Below Average [ ] Above average

8. To what extent do you concur with the following statements concerning the performance of your manufacturing business.

Note: Use the following Likert scale: **SA**= Strongly Agree; **A**= Agree; **N**= Neutral; **D**= Disagree and SD= Strongly Disagree

Statement	**SD**	**D**	**N**	**A**	**SA**
Our manufacturing business has experienced growth in revenue and profitability.					
Our manufacturing business has achieved a competitive advantage in the market.					
Our manufacturing business has increased market share					
Our manufacturing business has improved product quality and customer satisfaction.					
Our manufacturing business has reduced production costs and improved operational efficiency.					

Appendix IV: ERC Certificate

Mount Kenya University

REF: **MKU/ISERC/4426** Date: 23 September 2024
TO: **MARCELLAH GACHERI BAARIU**
REG: **MBA/2022/48567**

Dear Sir/Madam,

RE: INFLUENCE OF INNOVATION STRATEGIES ON PERFORMANCE OF SMALL AND MEDIUM SIZED MANUFACTURING BUSINESS IN NAIROBI KENYA

This is to inform you that **Mount Kenya University** has reviewed and approved your above research proposal. Your application approval number is **3148**. The approval period is **23/09/2024 - 22/09/2025.**

This approval is subject to compliance with the following requirements;

i. Only approved documents including informed consents, study instruments, MTA will be used
ii. All changes including amendments, deviations and violations are submitted for review and approval by **Mount Kenya University**
iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to **Mount Kenya University** within 72 hours of notification
iv. Any changes, anticipated or otherwise that may increase the risks or affect the safety or welfare of study participants and others or affect the integrity of the research must be reported to **Mount Kenya University** within 72 hours
v. Clearance for export of biological specimens must be obtained from relevant institutions
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal
vii. Submission of an executive summary report within 90 days upon completion of the study to **Mount Kenya University**

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) https://research-portal.nacosti.go.ke and also obtain other clearances needed.

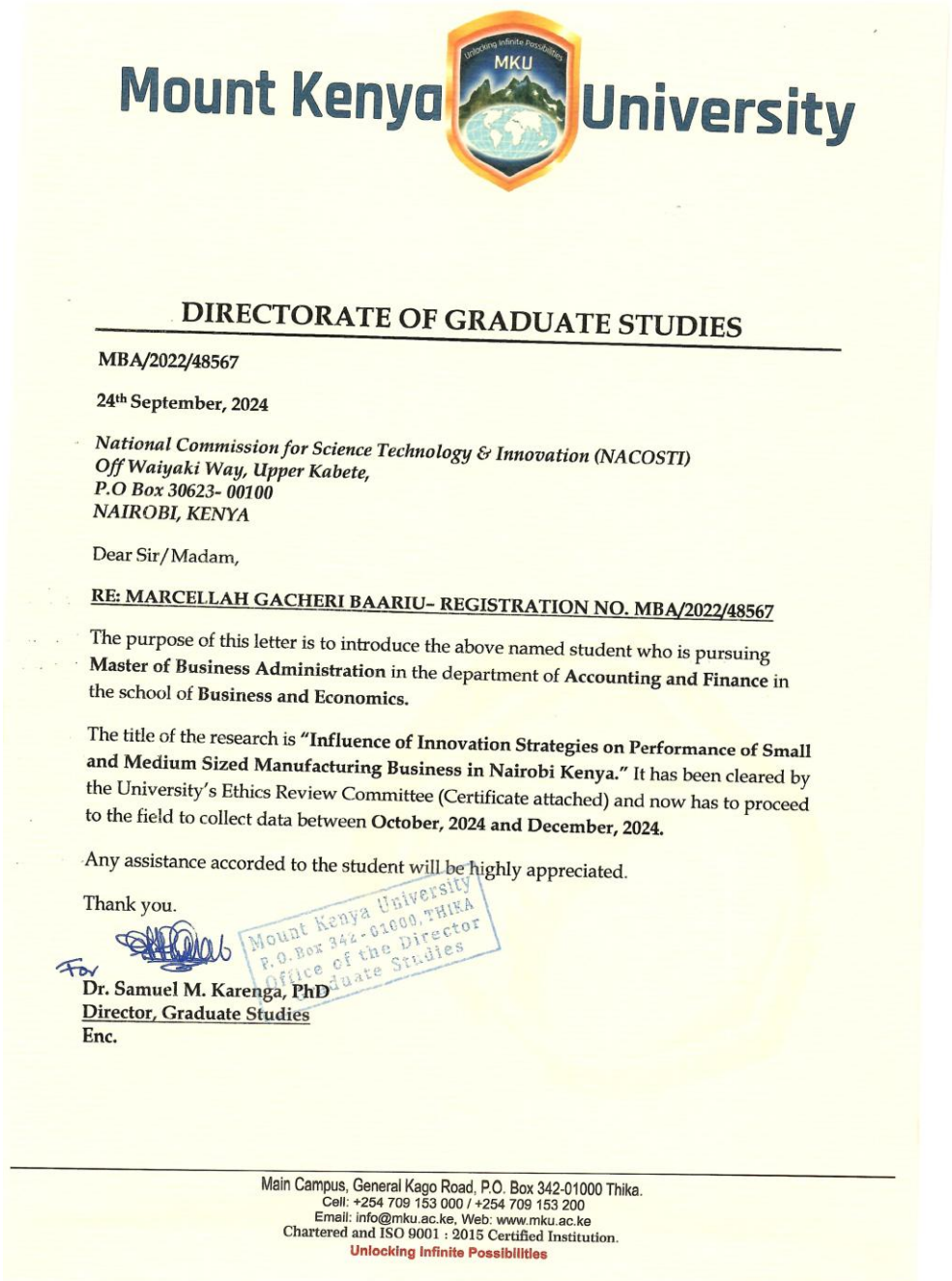
Yours sincerely,

Dr. Alfred Owino, PhD
Chairman, Mount Kenya University ISERC

MOUNT KENYA UNIVERSITY
ETHICS REVIEW COMMITTEE
P. O. Box 342 - 01000,
THIKA

Main Campus, General Kago Road, P.O. Box 342-01000 Thika.
Cell: +254 709 153 000 / +254 709 153 200
Email: info@mku.ac.ke, Web: www.mku.ac.ke

Appendix V: Postgraduate Introduction Letter



Mount Kenya University

MKU

Unlocking Infinite Possibilities

DIRECTORATE OF GRADUATE STUDIES

MBA/2022/48567

24th September, 2024

National Commission for Science Technology & Innovation (NACOSTI)
Off Waiyaki Way, Upper Kabete,
P.O Box 30623- 00100
NAIROBI, KENYA

Dear Sir/Madam,

RE: MARCELLAH GACHERI BAARIU- REGISTRATION NO. MBA/2022/48567

The purpose of this letter is to introduce the above named student who is pursuing **Master of Business Administration** in the department of **Accounting and Finance** in the school of **Business and Economics.**

The title of the research is **"Influence of Innovation Strategies on Performance of Small and Medium Sized Manufacturing Business in Nairobi Kenya."** It has been cleared by the University's Ethics Review Committee (Certificate attached) and now has to proceed to the field to collect data between **October, 2024 and December, 2024.**

Any assistance accorded to the student will be highly appreciated.

Thank you.

Mount Kenya University
P.O. Box 342-01000, THIKA
Office of the Director
Graduate Studies

FOR

Dr. Samuel M. Karenga, PhD
Director, Graduate Studies
Enc.

Main Campus, General Kago Road, P.O. Box 342-01000 Thika.
Cell: +254 709 153 000 / +254 709 153 200
Email: info@mku.ac.ke, Web: www.mku.ac.ke
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Appendix VI: NACOSTI Research Permit

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: 232152

Date of Issue: 11/October/2024

RESEARCH LICENSE

This is to Certify that Miss.. Marcellah Baariu Gacheri of Mount Kenya University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Nairobi on the topic: INFLUENCE OF INNOVATION STRATEGIES ON PERFORMANCE OF SMALL AND MEDIUM SIZED MANUFACTURING BUSINESS IN NAIROBI KENYA for the period ending : 11/October/2025.

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Appendix VII: Similarity Index

MARCELLAH GACHERI BAARIU

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