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STRATEGIC ORIENTATION AND PERFORMANCE OF MULTINATIONAL PHARMACEUTICAL FIRMS IN NAIROBI CITY COUNTY, KENYA

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ABSTRACT

Statistics from the World Bank show that multinational pharmaceutical firms operating in Kenya registered stagnation and declining profits for the last five years due to a turbulent operating environment. The pharmaceutical industry in Kenya has been characterized by many changes and an increasingly turbulent environment. The configuration of competitive forces such as intensity of competition, new entrants, substitute products and supplier and buyer power have transformed the environment a great deal, creating the need for firms to change their competitive positions. The general objective of this study was to examine the effect of strategic orientation on performance of multinational pharmaceutical firms in Nairobi city county, Kenya. The specific objectives were to assess the effect of technological innovation and process innovation on performance of multinational pharmaceutical firms in Nairobi city county, Kenya. This study was guided by the following theories; innovation diffusion theory and dynamic capability theory. The descriptive research design was employed where cross-sectional data was used. The target population for the study included 90 top managers in the 15 multinational pharmaceutical firms in Nairobi City County where a census technique was adopted. Data was collected using a self-administered semi-structured questionnaire. A pilot test was conducted from 15 managers from the firm at Dawa Limited. Descriptive statistical including frequency, percentages, mean and standard deviation, Inferential statistical analysis to be used was multiple regression and correlation analysis. Tables were used to display the rate of responses and to facilitate comparison. The study established that Technological innovation facilitates operational efficiency and process innovation enhances productivity and cost-effectiveness. Based on the t-values and p-values, the study concludes that that all four independent variables (technological innovation and process innovation) positively and significantly impact the performance of multinational pharmaceutical firms. Based on the significant impact of studies variables, it is recommended that firms intensify their efforts in these areas. Investing in cutting-edge technologies, optimizing operational processes, and expanding market reach should be prioritized. Additionally, strategic planning and resource allocation in these domains can enhance overall firm performance and competitiveness. Continuous evaluation and adaptation of these strategies will ensure sustained growth and adaptability in the dynamic pharmaceutical sector.

Key Words: Strategic Orientation, Performance of Multinational Pharmaceutical Firms, Technological Innovation, Process Innovation

Background of the Study

Strategic orientations are "principles that direct and influence the activities of a firm and generate the behaviors intended to ensure its viability and performance" (Evers, Gliga, & Rialp-Criado, 2019). Due to increased globalization and rapid changes in business environments, organizations way of transacting business is increasingly becoming turbulent. Under such an environment, business units should align their internal resources with their strategic focus such as marketing orientation, so as to remain competitive and also to achieve a superior organisational performance (Ahlstrom, 2018). Strategic Orientation focuses on the way an organisation adjusts and interacts with its external environment. It has also been termed as strategic fit (Zhou & Li 2017).

Since a firm's strategy should be multi-dimensional, different attributes of strategy should be pursued by a firm at the same time. By continuously seeking out new opportunities and ensuring strategic alignment, Lukas and Ferrell (2018) note that a firm's strategic orientation posture should take into account its market, competitor strategies, networking and entrepreneurial capacity. Consequently, by a firm developing an appropriate strategy that covers different operational angles, it is expected that it will remain competitive in the short and long-term period. Zhou and Li (2019) highlight that a firm performance is dependent upon its capacity to match its market demands with internal operations through adoption of appropriate technology and entrepreneurial posturing in order to achieve an increased performance as compared to its competitors.

According to Johnson and Scholes (2015) strategic orientation is considered as a critical component for not only profitability but the ultimate survival of any firm is depending on how an organization tends to use its available resources strategically (Chin-Chun & Zailani, 2016). Strategic orientation serves as a strategic tool to achieve competitive advantage through designed orientations that are market orientation and technology orientation which directs an organization to achieve superior performance through designed techniques which serves as a core reason to achieve strategic advantages which are rare, valuable and imitable firm's resource. Building a proper linkage between the exploration of risky ideas and exploitation of old certainties serves as a medium to achieve competitive advantage over its direct and in direct competitors in the market (Hong &Yoo, 2019).

According to Zhou *et al.* (2015) strategic orientation is the company's strategic direction in creating the proper behavior so as to achieve superior performance. Both market and innovation are the most strategic orientations for the company to achieve superior performance over a long term. Strategic orientations are ones consisting of four dimensions, namely market, learning, entrepreneurship and employee orientations. Strategic orientation is related to the decisions that businesses make to achieve superior performance (Ansoff, 2017). Strategic orientation is an organization's direction for reaching a suitable behavior in order to attain superior performance. Competitor and customer orientations are the most important for organizations to achieve long term success. Strategic orientation involves the implementation of strategic trending that guides the activities of an organization to embedded behaviors that achieve permanence in optimal conditions for the business Strategic orientation is therefore important in finding out the organization's chances and abilities support environment and to secure competitive advantage for itself. Gatignon and Xuereb (2016) postulate that strategic orientation as a firm's strategic direction in creating proper behaviors so as to achieve superior performance". Strategic orientation focuses on the way a firm adapts to and interacts with its external environments (Zhou & Li, 2019). Strategic Orientation has also been described as strategic fit, strategic predisposition, strategic thrust, and strategic choice (Morgan & Strong, 2018).

The strategic orientation to be adopted includes technological innovation, and process innovation. Technological innovation refers to the creation, development, and implementation of new or significantly improved technologies, tools, systems, processes, products, or services that bring about meaningful changes, improvements, or disruptions in various industries and

aspects of society (Dereli, 2019). Process innovation involves making significant changes or improvements to the methods, techniques, and systems used in an organization's operations, production, or service delivery processes (Avermaete et al., 2020).

Statement of the Problem

The pharmaceutical industry in Kenya has been characterized by many changes and an increasingly turbulent environment (Kenya Pharmacy and Poisons Board, 2022).The multinational pharmaceutical firms in Kenya encounter challenges which range from rigorous regulatory environment, competition and diverse customer needs.(Mwangi & Gachie, 2020). According to statistics, Kenya spends over 8% of its GDP on health. The per capita spending per person on health is approximately 15 USD (KNBS, 2019). There are 307 local pharmaceutical manufacturing industries actively manufacturing generic drugs for local and export market. Despite this, the country still relies heavily on imported drugs to service the public health needs. In 2015, the country imported $809 million worth of drugs. In the same year, donor communities spent an additional $693 million to purchase drugs for pandemic diseases including malaria, tuberculosis and HIV (WHO, 2016). Kenya's rapidly growing pharmaceutical market is expected to reach $525.40 million in 2024 and anticipated to grow at an annual growth rate (CAGR 2024-2028) of 5.37% resulting in a market volume of US$ 647.70M by 2028 (IQVIA report 2023). The largest market is Oncology with a projected market volume of $94.88M in 2024 controlling a market share of 18% (Statista Market Insights, 2024).

Statistics from Common Market for Eastern and Southern Africa (COMESA) region had revealed the Kenyan market to be the largest, since it dominates 50% of existing market share. From a global comparison, United States is the market lead with a projected revenue generation of USD$636.90B in 2024 (Statista Market Insights 2024). The local pharmaceutical industries only managed to access 30% government and private sector spending in the pharmaceutical market and almost none from the donor communities. Kenya Vision 2030 emphasizes the need for appropriate pharmaceutical strategy for efficient and sustainable practices as a way of making the country globally competitive and a prosperous nation (RoK, 2015). Therefore, there is need for pharmaceutical companies to have strategic orientations inclined to meet the increased need as well as have competitive edge for the long term, including the multinational pharmaceutical innovators.

UNIDO (2010, 42) noted that only Bayer and GlaxoSmithKline were amongst the local manufacturers in Kenya. Although, in 2022, GlaxoSmithKline announced its exit from Kenya in order to adopt a distributor-led model to supply the country, the factory will remain open under its affiliate Haleon (Healthcare Africa 2022). Multinationals like Bayer, Merck, MSD Adcok Ingram have followed this distributor model as well.

The multinational pharmaceutical firms do significant investments and employ varied strategic orientations in reference to market, innovations and with the strategic resources they own. The impact of these strategies on performance of multinational pharmaceutical firms are under explored in Kenya (Juma,2021)

Various studies have been conducted on strategic orientation and organizational performance. For instance; Akhter and Fernando (2019) studied competitive threats, strategic orientation and performance on Brazilian business-to-business (B2B) firms through interviews from top decision makers. However, a conceptual gap exists as the study focus was on competitive threats and not on strategic orientation and performance while a contextual gap exists as the study focus was not in pharmaceutical firms. A methodological gap exists as the study used interviews while the present study uses questionnaires while a contextual gap existed as the study was in the global context and not in pharmaceuticals in Kenya. Bernard and Koerte (2017) examined strategic orientation practices adopted by incumbent company in response to low-cost country competition. However, a conceptual gap exists as the study focus was on low-cost country competition and not on performance while a contextual gap exists as the study

focus was not in pharmaceutical firms. A methodological gap exists as the study focused only on descriptive statistics while the present study uses both descriptive and inferential statistics.

In a cross-sectional descriptive survey, Kimutai (2018) studied external environment, firm capability, strategic responses and performance of large-scale manufacturing firms in Uasin Gishu County). However, a conceptual gap exists as the study focus was not on strategic orientation while a contextual gap exists as the study focus was in large scale manufacturing firms. A methodological gap exists as the study focused only on cross-sectional data while the present study uses both cross-sectional data and panel data. Raila (2021) sought the effect of strategic orientation on the performance of small and medium enterprises in Nairobi Central Business district. However, a contextual gap exists as the study focus was in SMEs and not pharmaceutical firms. To fill the highlighted gaps, the current study seeks to examine the effect of strategic orientation on performance of multinational pharmaceutical firms in Nairobi city county, Kenya.

Objectives of the Study

The general objective of this study was to examine the effect of strategic orientation on performance of multinational pharmaceutical firms in Nairobi city county, Kenya.

Specific Objectives

i. To assess the effect of technological innovation on performance of multinational pharmaceutical firms in Nairobi city county, Kenya
ii. To establish the effect of process innovation on performance of multinational pharmaceutical firms in Nairobi city county, Kenya

LITERATURE REVIEW

Theoretical Review

Innovation Diffusion Theory

Innovation Diffusion Theory, developed by Everett Rogers, is a comprehensive framework that seeks to explain how and why innovations are adopted by individuals, organizations, or societies (Miller, 2015). It outlines the process by which a new idea, technology, or practice spreads and is embraced by different segments of a population. Rogers categorizes potential adopters into five groups based on their willingness to embrace innovation: innovators, early adopters, early majority, late majority, and laggards. Each group has distinct characteristics and timelines for adopting innovations (Bakkabulindi, 2014).

Innovation Diffusion Theory suggests that innovations are typically adopted by certain groups first, such as innovators and early adopters. In the context of multinational pharmaceutical firms, the study will use IDT to identify these early adopters of technological innovation. This helps in understanding why some firms embrace technology more quickly than others. The theory emphasizes that an innovation must offer a clear advantage over existing practices for adoption to occur (Miller, 2015). The study will use this principle to evaluate the perceived relative advantage of technological innovations in the pharmaceutical sector in Nairobi. The study will investigate whether firms believe that adopting technology provides them with a competitive edge or improved performance. The Innovation Diffusion Theory highlights the importance of compatibility between innovations and the existing systems and practices. The theory also acknowledges that complex innovations may face resistance (Wani & Ali, 2015). The study will assess the complexity of technological innovations in the pharmaceutical sector and how it affects firms' willingness to adopt them. Complex technologies might require significant resources and training, which could impact adoption rates.

Innovation Diffusion Theory serves as a theoretical framework that will help the study understand the dynamics of technological innovation adoption within multinational pharmaceutical firms. It will guide the study by providing concepts to categorize firms, assess innovation attributes, understand communication patterns, map the adoption process, relate

adoption to performance. By applying this theory, the researcher will gain a deeper understanding of how and why these firms adopt technological innovations and their impact on performance in the specific context of Nairobi City County, Kenya.

Dynamic Capabilities Theory

Dynamic capability theory was advanced by Teece and Pisano (1994) and further refined by Eisenhardt and Martin (2000) and Teece, Shuen and Pisano, (1997). Dynamic Capability Theory is a concept in strategic management and organizational theory that focuses on an organization's ability to adapt and change in response to a dynamic and rapidly evolving business environment. Firm dynamic capabilities are resources both internal and external that empower a firm to incorporate, study and reinstall its assets and process to achieve improved performance. This theory is particularly relevant when organizations are faced with the need to innovate, respond to market changes, and develop new resources and competencies to stay competitive.

Going with Eisenhardt and Martin (2000) changing capability view explains the important role of capabilities to reconfigure resources that an organization has at present to cope with exceptionally changing environment. Therefore, in business environments that are fast-changing Dynamic Capability View explains the important role of dynamic capabilities to explaining a firm’s level of competitiveness (Barreto, 2010). This is because, changing capabilities are considered as a tool for turning resources into greater achievements.

According to Ambrosini and Bowman (2009) dynamic capabilities involve the ability to sense changes in the external environment. In the context of process innovation, multinational pharmaceutical firms need to be vigilant in identifying shifts in industry regulations, technological advancements, and changes in customer demands. These firms should continuously scan their environment to recognize opportunities for improving their processes. Once changes or opportunities related to process innovation are sensed, dynamic capabilities enable firms to seize these opportunities promptly. This involves making decisions to invest in new technologies, methodologies, or process improvements. Process innovation is not a one-time event but an ongoing endeavor. Dynamic Capability Theory's long-term perspective aligns well with the idea that firms should continuously seek opportunities to innovate their processes to remain competitive (Sune & Gibb, 2015). It encourages organizations to invest in building capabilities that support sustained process innovation efforts.

Process innovation can lead to cost reductions, increased efficiency, and improved product quality, all of which can contribute to a competitive advantage. Firms that excel in dynamic capabilities can leverage process innovation as a source of differentiation and competitiveness. They can also respond effectively when competitors introduce innovative processes (Rammer, 2023). In industries characterized by rapid technological advancements or changing customer preferences, process innovation is often necessary for survival. Dynamic capabilities are particularly valuable in such dynamic environments, where firms must adapt their processes continually to stay relevant. The theory will thus guide the study to establish the effect of process innovation on performance of multinational pharmaceutical firms in Nairobi city county, Kenya.

Conceptual Framework

A conceptual framework is a research tool intended to assist a researcher to develop awareness and understanding of the situation under scrutiny and to communicate this. When clearly articulated, a conceptual framework has potential usefulness as a tool to assist a researcher to make meaning of subsequent findings (Tromp & Kombo, 2016). In this study, strategic orientation will be measured using four constants namely technological innovation, process innovation. The dependent variable is organization performance. The operationalization of the variables is shown in Figure 2.1.

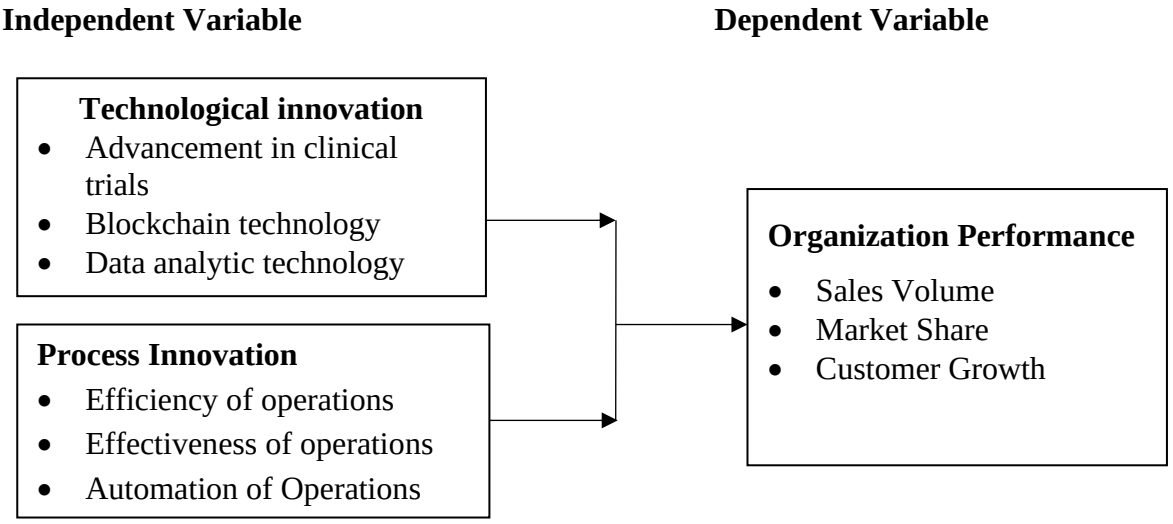

Figure 2.1: Conceptual Framework

Technological innovation

Technological innovation refers to the process of creating and implementing new or significantly improved technologies, products, or processes within an organization or industry (Dereli, 2019). It involves the application of new knowledge, ideas, and inventions to enhance existing products, services, or operations, or to create entirely new ones. According to Srinivasan, Lilien and Rangaswamy (2022) technology innovation orientation entails possessing the will and ability to extract substantial technological basis then applying it on new product creation.

Businesses that are customer-oriented emphasizes on acknowledging the needs of their customers in their functional markets and from the listed demands creating products and services that meets those desires (Jassawalla & Sashittal, 2018). Technological innovation plays a crucial role in driving organization performance, economic growth, improving competitiveness, and fostering development in various sectors. In the study, when assessing the effect of technological innovation on the performance of multinational pharmaceutical firms in Nairobi city county, Kenya, the study will examine how the adoption and integration of new technologies and practices influence their profitability, customer retention and overall performance.

Process Innovation

According to Cleff and Rennings (2019) process innovation is a strategic approach that focuses on improving and optimizing internal operations, workflows, and methods within an organization. Process innovation involves the implementation of new or significantly improved processes, systems, technologies, or practices to enhance efficiency, reduce costs, increase productivity, and ultimately deliver better products or services to customers (Avermaete et al., 2020). Process innovation encompasses a wide range of changes, including modifications to production processes, supply chain management, logistics, information systems, and administrative procedures. It aims to transform how work is done within an organization. Process innovation often involves a commitment to continuous improvement. Organizations seek to identify bottlenecks, inefficiencies, and areas for enhancement in their existing processes and operations (Khazanchi, Lewis & Boyer, 2018). In the study on multinational pharmaceutical firms in Nairobi city county, Kenya, assessing the effect of process innovation on their performance will involve examining how these firms have implemented changes in their internal processes and operations.

Organization Performance

Organizational performance refers to the assessment of how effectively an organization achieves its goals and objectives (Lau, 2019). It is a comprehensive measure of how well an organization uses its resources to produce desired outcomes, deliver value to stakeholders, and sustain its competitiveness in the market. Organizational performance can encompass various dimensions, and its assessment may involve both financial and non-financial indicators. Market-based indicators assess how well an organization competes in its target market (Nasir, 2019). Key metrics may include market share, customer acquisition and retention rates, brand recognition, and pricing strategies. Market performance reflects an organization's competitive position and its ability to meet customer needs (Nugroho, Prijadi & Kusumastuti, 2022). Operational efficiency and effectiveness are crucial for organizational success. Metrics such as production output, product quality, process efficiency, and supply chain management are used to evaluate how well an organization manages its operations. The study will consider multiple dimensions of organizational performance such as profitability, market performance, operational efficiency, customer retention and innovation performance.

Empirical Literature Review

Technological innovation and Organization Performance

Zhang et al. (2019) examined the influence of technological innovation on organization performance with the mediating role of sustainability. To test the model, the study applied structural equation modeling in the analysis of a moment structures (AMOS) on the empirical evidence collected from 304 Pakistani CEOs and top managers. The results indicated that technological innovation significantly positively contributes to sustainability and organization performance.

Singh, Khamba and Nanda (2017) sought the influence of technological innovation on performance of small manufacturing companies. This research was based on an in-depth survey of 135 firms located in India’s Northern region. Multiple regression analysis was employed to examine the correlation between TIIs and manufacturing firm performance (MFP) for these firms. The findings were that entrepreneurial capability, technology infrastructure capability and government initiatives are the most important TIIs for small firms. The findings are also validated by using statistical t-test and canonical correlation analysis.

Lentu, Khayiya and Ondigi (2021) assessed the influence of strategic orientation on performance of publicly owned hotel enterprises in Kenya. A descriptive cross-sectional survey design was used. The targeted institutions for the study were all the 10 existing public owned hotels located in various parts of the country. Stratified sampling technique was used to select the sample. The study used a census of 9 public owned hotels and used purposive sampling to select one General Manager and five heads of departments from each hotel. The study adopted the use of a questionnaire for middle level managers and an interview schedule for the general managers as the main research instruments. Content analysis was used to analyze qualitative data while quantitative data was analyzed using descriptive statistics. The study established that resource orientation, entrepreneurial orientation market orientation and technological orientation positively and significantly influenced performance of public owned hotels in Kenya.

Process Innovation and Organization Performance

Sintset, Nekoumanesh and Yang (2022) did a study on process innovation, impacts on organization's performance: a qualitative study of four Swedish Municipalities. The study investigated how different municipalities in Sweden applied process innovation in the waste management department. The purpose of this qualitative study of four municipalities in Sweden was to investigate the impacts of process innovation in waste collection processes on municipalities' performances in Sweden by the use of grounded theories method. During this study, it was discovered that, the application of process innovation has a positive impact on the

municipalities financial and customers performances. Also, the importance of process innovation as a step-by-step process and not a big bang change was discovered to be crucial for a successful process innovation.

Tsai et al. (2020) reports on a survey of Taiwanese high-tech firms, using a path analysis to examine the effects of managerial accounting information systems (MAIS) on the relationship between product innovation and organizational performance. The study found that product innovation has a positive effect on organizational performance through the use of MAIS, and find the extent of this positive effect is more significant in business environments marked by high levels of uncertainty. This study provides evidence to understand whether product innovation requires more extensive use of MAIS in highly uncertain environments and whether the use of MAIS can improve organizational performance.

Kimani and Kipkorir (2023) did an evaluation on product and process Innovations as strategies for performance. Performance of oil marketing companies in Kenya has been affected by declining market share, low profitability, shift in customer loyalty, declining employee satisfaction and high delivery turnaround time. Product and process innovations enable an organization to come up with new products, services, and better method to create, grow, sustain and fix problems of performance. The specific objectives were to analyze the effects of product innovation and process innovation on performance of oil marketing companies in Uasin Gishu County, Kenya. The study was anchored on balanced scorecard model. Descriptive research design was used, and the target population was 81 depot managers, 37 sales managers and 70 supervisors of 82 oil marketing companies. Census was used and validity of research instrument determined. Coefficient of reliability of research instrument was computed and results showed that the instrument was reliable. Data was collected using a questionnaire and analyzed using descriptive and inferential statistics with the aid of statistical package for social sciences (SPSS) version 29. The results showed that product innovation, and process innovation had positive significant effect on performance. The study concluded that to improve performance, oil marketing companies should embrace product and process innovation strategies.

RESEARCH METHODOLOGY

The descriptive research design was employed where cross-sectional data was used. This study target population included multinational pharmaceutical firms in Nairobi city county, Kenya. According to Pharmacy and Poisons Board (PPB) (2022), there are 15 multinational pharmaceutical firms in Nairobi city county. Top managers play a critical role in decision making and defining the firm's future. These managers were selected since they are directly responsible in the formulation, adoption and implementation of different organizational structures. Therefore, the target population for the study included 90 top managers in the 15 multinational pharmaceutical firms in Nairobi City County. This study adopted a census technique. Data was collected using a self-administered semi-structured questionnaire and a data collection sheet. Data obtained from the field was coded, cleaned, and entered into the computer for analysis using the SPSS version 28. Descriptive statistical included frequency, percentages, mean and standard deviation. Inferential statistical analysis to be used was a multiple regression and correlation analysis. The significant of each independent variable were tested at a confidence level of 95%.

RESEARCH FINDINGS AND DISCUSSION

The study administered 90 instruments to the sampled respondents. Of the 90 respondents, 84 responded and returned completed questionnaires representing a response rate of 93.3%. This was acceptable according to (Denzin, 2017).

Descriptive Statistics

Technological Innovation and Performance of Multinational Pharmaceutical Firms

Participants were asked to indicate the extent to which they agreed or disagreed with the following statements relating to effect of technological innovation on performance of multinational pharmaceutical firms in Nairobi city county, Kenya.

Table 1: Effect of Technological Innovation on Performance of Pharmaceutical Firms

Statements	Mean	Std Dev
Technology has improved the design and execution of clinical trials, allowing multinational pharmaceutical firms to bring new drugs to market faster	4.10	0.70
Innovation has the potential to increase efficiency and reduce production costs	4.08	0.70
Innovations in supply chain visibility, Blockchain technology, and predictive analytics help optimize the supply chain and reduce the risk of drug shortages	4.11	0.62
Our Firms uses data analytics and business intelligence to make informed decisions regarding research, marketing, and market expansion.	4.01	0.72
Our firm use data analytics help pharmaceutical firms analyze vast amounts of data and make more informed decisions in drug development	4.18	0.68
Technology has streamlined the clinical trial process with electronic data capture systems, wearable devices, and remote monitoring.	4.14	0.71
Utilizing digital marketing, telemedicine, and e-commerce platforms has enhance a firm's ability to reach healthcare professionals and patients, increasing brand visibility and market share	4.07	0.69
Technology has helped to ensure product quality and regulatory compliance.	4.11	0.69
Overall Mean and SD	**4.10**	**0.69**

With a mean of 4.18 and low std deviation of 0.68, participants agreed that firm use data analytics to help pharmaceutical firms analyze vast amounts of data and make more informed decisions in drug development, it was reported from multinational pharmaceutical firms that Technology adoption had streamlined the clinical trial process with electronic data capture systems, wearable devices, and remote monitoring as show by a mean of 4.14 and std deviation of 0.71 and that innovations in supply chain visibility, Blockchain technology, and predictive analytics help optimize the supply chain and reduce the risk of drug shortages as show by a mean of 4.11 and std dev of 0.62. These results go hand in hand with research deduction by Srinivasan, Lilien and Rangaswamy (2022) that technological innovation plays a crucial role in driving organization performance, economic growth, improving competitiveness, and fostering development in various sectors.

Further, results established that technology has helped to ensure product quality and regulatory compliance by multinational pharmaceutical firms as show by a mean of 4.11 and std dev of 0.69, also Technology has improved the design and execution of clinical trials, allowing multinational pharmaceutical firms to bring new drugs to market faster (mean = 4.10 and std dev = 0.70). According to Jassawalla and Sashittal, (2018) such technological improvements are pivotal in streamlining clinical trial processes, thereby accelerating the development and availability of new pharmaceuticals.

Descriptive statistics revealed that innovation has the potential to increase efficiency and reduce production costs incurred by multinational pharmaceutical firms (Mean = 4.08 and std dev = 0.70), Utilizing digital marketing, telemedicine, and e-commerce platforms has enhance a firm's ability to reach healthcare professionals and patients, increasing brand visibility and

market share(Mean = 4.07 and std dev = 0.69) and that most of the multinational pharmaceutical firms used data analytics and business intelligence to make informed decisions regarding research, marketing, and market expansion (Mean = 4.01 and std dev = 0.72). The results are in harmony with research conclusion by Lentu, Khayiya and Ondigi (2021) that through digital marketing tools, firms can provide timely information on new products, educate stakeholders, and build stronger relationships, resulting in increased brand loyalty and market share.it was repowered that the advanced technologies, such as automation and data management systems, help pharmaceutical firms maintain regulatory compliance more efficiently. By ensuring adherence to Good Manufacturing Practices (GMP) and other regulatory standards, firms reduce the risk of legal issues and product recalls, thereby safeguarding their reputation and maintaining continuous market access (Singh, Khamba &Nanda 2017).

Process Innovation and Performance of Multinational Pharmaceutical Firms

Table summarized respondents' levels of agreement regarding the effect of process innovation on the performance of multinational pharmaceutical firms in Nairobi City County, Kenya.

Table 2: Process Innovation and Performance of Multinational Pharmaceutical Firms

Statement	Mean	Std Dev
Process innovation often results in increased production output, allowing pharmaceutical firms to meet market demand more effectively	4.01	0.55
Process innovation leads to cost savings through increased efficiency by reducing waste, improving resource utilization, and streamlining production	3.99	0.63
Streamlined and efficient processes can lead to faster product development and shorter time-to-market.	4.20	0.71
Flexible and adaptable processes allow pharmaceutical firms to respond to changes in market demand, regulatory requirements, and emerging technologies.	4.07	0.56
Process innovations help identify and mitigate risks associated with pharmaceutical manufacturing, such as contamination, supply chain disruptions, and regulatory compliance issues	4.08	0.61
Efficient processes can minimize the generation of hazardous waste, which is both environmentally responsible and cost-effective	4.05	0.64
Process innovations can lead to enhanced safety for workers involved in pharmaceutical manufacturing	4.08	0.56
Overall Mean and SD	**4.07**	**0.61**

It was revealed that streamlined and efficient processes contribute to faster product development and a shorter time-to-market for multinational pharmaceutical firms (M = 4.20, Std Dev = 0.71). This aligns with the findings of. Kasekendi (2017) who emphasized that efficient production processes can accelerate innovation and reduce the time it takes for new products to reach the market. Evidence from the study shows that process innovations can enhance safety for workers involved in pharmaceutical manufacturing within multinational firms (M = 4.08, Std Dev = 0.56). This is consistent with research by Kimani and Kipkorir (2023), which indicated that improving processes not only boosts productivity but also reduces workplace hazards by adhering to safety protocols and using safer technologies.

The investigation uncovered that process innovations help multinational pharmaceutical firms identify and mitigate risks related to manufacturing, such as contamination, supply chain disruptions, and compliance with regulatory requirements (M = 4.08, Std Dev = 0.61). This is supported by Cleff and Rennings (2019) who highlighted that robust process innovations are crucial in maintaining quality control and minimizing risks in pharmaceutical production. Descriptive results demonstrated that flexible and adaptable processes allow these firms to

respond efficiently to changes in market demand, regulatory requirements, and emerging technologies (M = 4.07, Std Dev = 0.56). This finding is consistent with the work of Tsai et al. (2020), who argued that adaptable and flexible processes are essential for maintaining competitiveness in a rapidly changing environment.

The results suggest that efficient processes minimize the generation of hazardous waste, which is both environmentally responsible and cost-effective for multinational pharmaceutical firms (M = 4.05, Std Dev = 0.64). This finding is in line with Khazanchi, Lewis & Boyer, (2018) who discussed how waste minimization through efficient processes not only reduces environmental impact but also leads to significant cost savings. The study established that process innovation often results in increased production output, enabling these firms to meet market demand more effectively (M = 4.01, Std Dev = 0.55). This conclusion echoes the work of Sintset, Nekoumanesh and Yang (2022) who emphasized that process innovations can significantly improve output and capacity utilization.

Participants concurred that process innovation leads to cost savings by enhancing efficiency through reduced waste, better resource utilization, and streamlined production processes in multinational pharmaceutical firms (M = 3.99, Std Dev = 0.63). This is consistent with Porter (1985), who stated that process innovation is a key strategy for achieving cost leadership by optimizing resource use and reducing waste. Qualitative data reveled that Process innovation, such as automation, robotics, and advanced manufacturing techniques, improves the efficiency of production lines. This was achieved through to faster production cycles, reduced downtime, and optimized use of resources, which directly lowers production costs and increases output, thereby improving overall profitability. By adopting new processes, pharmaceutical firms can enhance the precision and consistency of their product quality. Innovations in quality control and assurance processes helped in maintaining high standards, minimizing defects, and reducing batch failures, which is crucial in maintaining regulatory compliance and customer trust.

Performance of Multinational Pharmaceutical Firms

Table 3 shows what the respondents generally agree on the performance of multinational pharmaceutical firms in Nairobi City County

Table 3: Performance of Multinational Pharmaceutical Firms in Nairobi

	Mean	Std Dev
Our firm has recorded an increase in revenue growth in the last 3 years	4.19	0.67
Our firm has recorded an increase in market share	4.04	0.55
There has been an increase in the number of customers in our firm	4.01	0.67
Our firm boosts of improved public perception and reputation	4.15	0.74
Number of products in portfolio has increased	4.08	0.64
Overall Mean and SD	4.09	0.65

The study established that multinational pharmaceutical firms in Nairobi City County have recorded an increase in revenue growth in the last three years (M = 4.19, Std Dev = 0.67). This finding aligns with Zhang et al. (2019) who posits that sustainable competitive advantage often results in financial performance improvements, such as revenue growth, due to the firm's ability to leverage its resources effectively. Evidence from the study shows that most of the multinational pharmaceutical firms also boast improved public perception and reputation (M = 4.15, Std Dev = 0.74), which supports Lau, (2019) who argue that a positive corporate reputation can significantly contribute to a firm's performance by enhancing customer loyalty and trust.

Descriptive results demonstrated that the number of products in the portfolio for most of the multinational pharmaceutical firms in Nairobi City County has increased, contributing to the

performance of these firms (M = 4.08, Std Dev = 0.64). This observation resonates with the findings of Nasir, (2019) who noted that product diversification can enhance a firm's market presence and customer reach, thereby boosting overall performance. Participants concurred that their firms have recorded an increase in market share (M = 4.04, Std Dev = 0.55), consistent with Porter (1985), who emphasized that gaining market share is a critical indicator of a firm's competitive success in a given market.

The investigation uncovered that there has been an increase in the number of customers in these firms (M = 4.01, Std Dev = 0.67). This finding is in line with Nugroho, Prijadi and Kusumastuti, (2022) who highlighted that a growing customer base often reflects a firm's ability to effectively meet market needs and preferences, contributing to its overall performance.

Table 4: Performance of Multinational Pharmaceutical Firms in Kenya

Year	Value of Sales Volume in USD	Market Share
2021	69,739,491	0.1050
2022	62,524,177	0.0941
2023	50,109,426	0.0754

Source: Research Data (2024)

Statistical assessment revealed that in the year 2021 the value of the 15 multinational pharmaceutical firms was USD 69,739,491 while in the year 2022 it was USD 62,524,177 and in the year 2023 it was USD 50,109,426. This is an indication that there has been fluctuations in the value of the firms across the years. In regard to market share, the market share was, in the year 2020 was 0.0222, in the year 2021 it was 0.1050, in the year 2022 it was 0.0941 and in the year 2023 it was 0.0754.

Correlation Analysis

The correlation table 5 provide the strength 0and 0direction of the relationships between performance of multinational pharmaceutical firms in Nairobi City County and the various independent 0variables.

Table 5: Combined Correlations Matrix

		Performance Of Multinational Pharmaceutical Firms	Technological Innovation	Process Innovation
Performance Of Multinational Pharmaceutical Firms	Pearson Correlation	1		
	Sig. (2-Tailed)			
	N	84		
Technological Innovation	Pearson Correlation	.309**	1	
	Sig. (2-Tailed)	.004		
	N	84	84	
Process Innovation	Pearson Correlation	.345**	-.154	1
	Sig. (2-Tailed)	.001	.161	
	N	84	84	84

The results indicate a moderately positive and significant correlation between technological innovation and the performance of multinational pharmaceutical firms in Nairobi City County (Pearson Correlation = 0.309, significant at the 0.05 level). This finding is supported by literature that emphasizes the impact of technological innovation on organizational performance. According to Hitt et al. (2021), technological advancements, such as the integration of digital tools and the adoption of cutting-edge technologies, are critical drivers of operational efficiency and competitive advantage in the pharmaceutical industry.

Moreover, the study established a positive and significant correlation between process innovation and the performance of multinational pharmaceutical firms in Nairobi City County (Pearson Correlation = 0.345, significant at the 0.05 level). This finding aligns with the work of Davenport (2023), who emphasizes that process innovation through optimizing production processes, improving resource utilization, and minimizing waste directly impacts a firm's operational effectiveness and efficiency.

Multiple Regression Analysis

Table 6: Multiple Regression Analysis

Model Summary

Model	R	R Square	Adjusted 0R Square	Std. Error of the Estimate
1	.666[a]	.444	.416	.31799

a. Predictors: (Constant), Technological Innovation, Process Innovation

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	6.379	4	1.595	15.770	.000[b]
	Residual	7.988	79	.101		
	Total	14.367	83			

a. Dependent Variable: Performance of Multinational Pharmaceutical Firms
b. Predictors: (Constant), Technological Innovation, Process Innovation

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-1.616	.457		-3.540	.001
	Technological Innovation	.407	.092	.384	4.400	.000
	Process Innovation	.584	.140	.361	4.157	.000

a. Dependent Variable: Performance Of Multinational Pharmaceutical Firms

In line with the second variable, the t-value of 4.400 is high, and the p-value is 0.000, which is less than 0.05. This indicates that the effect of Technological Innovation on the performance of multinational pharmaceutical firms is statistically significant. Thus, we reject the null hypothesis (H0) and accept the alternative hypothesis (H1). The positive coefficient (0.407) means that a unit increase in technological innovation leads to an increase of 0.407 in the performance of these firms, underscoring the critical role of adopting new technologies and digital tools in driving firm efficiency and competitive advantage.

Assessment on the third hypothesis, reveled a t-value of 4.157 and the p-value is 0.000, indicating statistical significance. The evidence strongly suggests that Process Innovation has a significant positive effect on the performance of multinational pharmaceutical firms. We reject the null hypothesis (H0) and accept the alternative hypothesis (H1). The positive coefficient (0.584) suggests that a unit increase in process innovation results in a 0.584 increase in firm performance, emphasizing the role of optimizing processes, reducing costs, and improving operational efficiency in achieving superior firm performance.

Conclusion

The study concludes that technological innovation has a significant effect on the performance of multinational pharmaceutical firms in Nairobi City County, Kenya. Technological innovation influenced firms' performance by enabling more efficient and effective operations

through the adoption of new technologies and digital tools. Integration of various activities such as the use of artificial intelligence, machine learning, automation, and advanced data analytics helped to accelerate research and development processes, optimize supply chain management, and improve the overall quality of pharmaceutical products. The study concludes Firms that had strategically invested in technological innovation were better equipped to address dynamic market demands, regulatory changes, and competition pressures. With technological innovation in place firms were more likely to gain a competitive edge, enhance customer satisfaction through personalized experiences, and maintain high standards of compliance and operational efficiency.

The study concludes that process innovation significantly affects the performance of multinational pharmaceutical firms in Nairobi City County, Kenya. Enhancing manufacturing processes, optimizing clinical trials, improving supply chain logistics, and streamlining regulatory compliance procedures are key strategies for achieving superior operational efficiency and cost-effectiveness. The study concludes pharmaceutical firms that focused on process innovation were better able to reduce costs, minimize delays, and increase productivity. Additionally, streamlined processes allowed firms to adapt quickly to regulatory changes, manage risks more effectively, and ensure high standards of quality and safety. The study concludes investing in process innovation not only improved operational efficiency but also enhanced scalability and responsiveness, positioning firms for sustainable growth and competitiveness in a highly regulated and competitive industry.

Recommendations

Managerial Implications

The study's findings have several important implications for managers of multinational pharmaceutical firms operating in Nairobi City County, Kenya. First, the significant impact of technological innovation on firm performance suggests that managers should prioritize investments in new technologies and digital tools. Managers should focus on adopting advanced technologies such as artificial intelligence, machine learning, and automation to improve research and development processes, streamline supply chains, and enhance product quality. By fostering a culture of innovation and continuous improvement, managers can create a competitive advantage and ensure the firm remains responsive to market dynamics and customer needs.

the significant influence of process innovation on firm performance highlights the need for managers to optimize operational efficiency. This can be achieved by implementing lean manufacturing practices, enhancing quality control processes, and adopting new methods for clinical trials and regulatory compliance. Managers should also focus on integrating technology into operations to reduce costs, minimize delays, and improve overall productivity. Streamlining processes will allow firms to adapt quickly to regulatory changes and market fluctuations, thereby enhancing agility and scalability.

Recommendations for Policy and Practice

It is recommended that policymakers support the pharmaceutical sector by creating a conducive environment for technological innovation. This could involve providing incentives such as tax breaks, grants, or subsidies for firms that invest in research and development and the adoption of advanced technologies. Additionally, establishing innovation hubs or public-private partnerships could facilitate knowledge sharing, research collaboration, and the development of cutting-edge solutions to address healthcare challenges.

To support process innovation, there should be a focus on building the capacity of pharmaceutical firms to implement best practices in operational efficiency. Policymakers and industry associations could provide training programs, workshops, and resources that promote lean manufacturing, quality control, and compliance management. Additionally, encouraging

digital transformation through favorable policies and regulations will enable firms to optimize their processes and improve performance outcomes.

Areas for Further Research

While this study has provided valuable insights into the effects of technological innovation and process innovation on the performance of multinational pharmaceutical firms in Nairobi City County, Kenya, there are several areas where further research could build upon these findings. For instance, further research could focus on the impact of emerging technologies such as blockchain, advanced robotics, and biotechnology on the performance of pharmaceutical firms.

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