# LEAN MANAGEMENT PRACTICES AND COMPETITIVE ADVANTAGE AMONG PHARMACEUTICAL MANUFACTURING FIRMS IN KENYA

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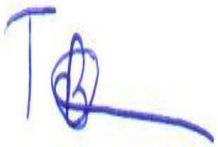
## DECLARATION

I, the undersigned hereby affirm that this research project is my original work and has not been previously presented in part or in totality to any other institution of learning for the award of any degree or examination.



Signed… …… Date

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This thesis has been submitted for examination with my permission as the University supervisor.

Signature…. Date…03/11/22……..…….

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## ABBREVIATIONS AND ACRONYMS

**LMP:** Lean Management Practices

**SOP:** Standard Operating Procedures

**SPSS:** Statistical Package for Social Sciences

**TOC:** Theory of Constraints

**SPSS** Statistical Package for Social Sciences

# ABSTRACT

The study sought to establish the relationship between lean management and competitive advantages for pharmaceutical companies in Kenya. The specific objectives were to establish the extent to which lean management practices are adopted at pharmaceutical companies, to determine the practices relationship of lean management practices and competitive advantages and to identify challenges in Kenya in implementing lean management practices by pharmaceutical companies in Kenya. The study was anchored on three theories including Queuing Theory, The Theory of Constraints and Resource Based View Theory. The study adopted cross sectional descriptive research design. The study employed a census of 32 pharmaceutical firms operating in Nairobi, Kenya. The study adopted questionnaire as data collection instrument. Descriptive statistics were used to present the findings that contain central (mean) and dispersion measurement trends (variance and standard deviation). Tables were used to show the results. From the findings, lean customer practices influenced competitive advantage. It was established that there was positive and significant relationship between the lean customer practices and competitive advantage among pharmaceutical firms in Nairobi. There was also a significant relationship between the lean transportation practices and competitive advantage in pharmaceutical firms. In lean procurement, the roles associated with procurement operations have to be discharged efficiently in order to influence the needed goals on competitiveness. The study recommends that the policy makers in pharmaceutical firms should ensure that in lean customer practices, for it to be improved, there is need to improve first, how the customer needs can be timely established. The management should note that the lean transportation practices can be improved only when the pharmaceutical firms adopt the use of automatic monitoring devices on processes. In lean procurement, the practices can be enhanced when the pharmaceutical firms adopt sound replenishment models to pull consumption for its product, that the pharmaceutical firm gives suppliers feedback on quality and timely delivery and that cost and waste reduction approaches are fully adhered to by the personnel concerned in the firms.

# CHAPTER ONE:

# INTRODUCTION

## 1.1 Background of the Study

Many firms, in the manufacturing as well as the service sector face various challenges that arise from competition in the global arena, and this has necessitated them to embrace appropriate strategies in manufacturing management, in a bid to remain competitive and efficient. Service and manufacturing firms that have adopted lean philosophies have benefited by having strategic and operational gains (Wafa & Small, 2011). Lean procedures are methods that reduce waste and maximize customer value. In the service industry, these lean practices produce value for the customers and hence meeting the customer expectations.

This study will be steered by the queuing theory. This theory is applied in the management of queues and waiting lines (Singh & Sharma, 2009). Its applicability in lean management ensures identification of improvement opportunities that shorten waiting time and improve speed of delivery. It is also guided by the theory of constraints (TOC) that focuses on identifying limiting factors that hinder an organization from achieving a set of performance goals. Theory based on resources, the new theory of public administration and, finally, theory of agencies. Wernerfelt (1984) has established the resource perspective and believes that intentional management efforts are made by companies aimed at obtaining a sustainable competitive advantage.

Kenya is a major pharmaceutical manufacturer and distributor within the Eastern and Southern African Common Market (COMESA) area. In Kenya, there are numerous pharmaceutical businesses, some locally owned, while others are international pharmaceutical corporations with Kenyan headquarters and distributors. The sector is categorized into three: producers, distributors and retailers (Kenya Economic survey 2015).The pharmaceutical

industry supports the overall growth of an economy by supporting the healthy sector. Manufacturing pharmaceuticals ensure a constant supply of drugs and other health products that support human life.

### 1.1.1 Lean Management Practices

Lean practices are all things done in an organization with a clear goal of eliminating waste (Walters, 2006). Waste is any process or people of which the attainment of the end result is inconsequential to the desired result either in a production process service or a manufacturing industry (Benson & Kulkarni, 2011). Benson and Kulkarni further argue that, lean thinking and practices are concepts aimed at offering a very low cost to satisfy the needs of customers using the minimal available resources at one's disposal. Sharing of responsibilities is a common practice in ensuring total quality management (TQM) so that everyone owns the idea aimed at ensuring that the organization achieves more with less factors of production.

According to Coyne (2016), customers desire consistent value from products and services that can result from application of lean management practices supported by simple tools and processes. In today's business environment, lean focuses on value rather than cost issues, which largely signifies a more strategic and general approach that is less specific and tactical. This therefore makes the lean concept less dependent on the context and hence suitable for application in enhancing operational efficiency in both manufacturing and service delivery organizations. Successful implementation of lean practices like value streaming mapping, total quality management and lean leadership requires strong management commitment and support considering that lean is a continuous program that takes time to implement.

There are various lean practices as outlined by various studies. Perfection, the value stream, pull, value and flow are five major lean principles pointed out by Womack and Jones (2003). Total productive maintenance, JIT, how total quality is managed and how human resources

are managed are categories of a four-some of bundles of lean practices that were summarized from lean principles by Shah & Ward (2003).Production stop procedure, continuous improvement, standardized work, level production, just in time, and visual control are 8 lean principles which were identified and Plenert, (2010) together with supplies as well as human resources are the three main practices of lean operations. The emphasis of this study will be on lean components based on customer behaviors, lean transport techniques, lean storage, lean storage, and lean supplier practices.

### 1.1.2 Competitive Advantage

The competitive advantage may be described as a set of measures, procedures and abilities that enable a company to continually provide or sell products and services to its customers (Coyne, 2016). The capacity of a company to provide goods and services that are better than competitors and meet client requirements may alternatively be described as Poirier (2009). Porter (1985) stated that the primary goal of the competitive strategy of a company is to have a deeper insight into a certain market and build better mechanics to overcome competition. For any company to gain competitive advantages in a market environment, it must creatively and proactively balance both external and internal factors (Barney, 2011). An organization which consistently exceeds its competitors and delivers its services and products in a way which satisfies its customers has a sustainable competitive advantage.

According to Meihami, and Meihami (2014), organizations that have a competitive advantage consistently produce products or services that carry the qualities that match the major buying criteria for most of the consumers in the market. It involves achieving superior performance and economic value over a prolonged period in the market. Moreover, it entails continual adjustment to environmental changes and ability to withstand all efforts to duplicate firm's advantages by its competitors. Many scholars have concluded that some forms of competitive

advantage cannot be easily imitated which enables the firm to reap long-lasting benefits. This perception has contributed to the growth of the competitive advantage concept from resourced based perspective and the industrial organizations (IO) in the previous years which led to the advancement of the sustained competitive advantage (SCA).

The competitive advantage is classified as three focal strategies, cost leadership and differentiating strategy, according to Stonehouse and Snowdon (2007). Ongolo (2004) outlines the approach of focusing on a specific sector of the market. This involves developing, marketing and selling products or services to a niche market. Wheelen and Hunger (2015) presented cost management approach based on pricing to restrict market targets. With this business approach, companies aim to be the low-cost manufacturer in their sector.

### 1.1.3 Pharmaceutical Manufacturing Firms in Kenya

The pharmaceutical industry is segmented into manufacturers, distributors and retailers. Manufacturers are segmented into two broad sectors namely local and foreign manufacturers. The local manufacturers produce drugs for local consumptions while the foreign manufacturers concentrate on producing pharmaceutical products for exportation. These play a very crucial function in sustaining both the local and international health sector. The majority of Kenyan pharmaceutical companies are located in and around Nairobi. Kenya's pharmaceutical market is worth US $500M and experts project an increase rate of about 11.8% until 2020. Distribution of pharmaceutical products in Kenya is undertaken by the Ministry of Health through The Kenya Medical Supplies Agency (KEMSA)(Langat et al. 2015).

The organization provides medicines to public health institutions and private health centers. There are many agencies in Kenya who regulate the production, storage, marketing and disposal of pharmaceutical goods. All pharmaceutical goods must be registered with the

Pharmacy and Poison Board (PPB). The KMA and the KPA are also crucial to ensuring compliance with ethical standards. Decrease in customer purchasing power, the increase in importation of generic drugs and donor funding declining, lowering the purchasing power of the government are the biggest challenges faced by local pharmaceutical companies as this increased competition (Yala, 2016).

### 1.2 Research Problem

Lean methods have enabled companies to improve their competitiveness significantly (Ramachandran, 2013). Investment in lean practices has enabled companies to be more flexible and profitable. According to Manrodt, and Visatek (2010) the most widespread advantages widely connected to lean practices implementation are lead time improvement, quality, turnaround time, manufacturing cost coupled up with improvement in labor productivity. Piercy and Rich (2009) have shown significant improvements in operational metrics via the use of lean services techniques. Lean techniques that may be used in service companies such as lean management, full quality management and mapping of value streams are the same as those used by production companies (Allway & Corbett, 2002).

World Health Organization (WHO) strategic goal is to achieve universal healthcare and eradication of diseases in the entire world by helping every individual have a better life, stay healthier, do more and live longer (Collier, 2006). The pharmaceutical industry plays a bigger role towards attainment of this goal. However, the pharmaceutical industry continues to face numerous challenges such high costs of research and development and well as managing its operations due to meltdown in world economy and stiff completion within themselves rendering this ambition a mirage. In order to survive and deliver to WHO goal, this industry needs to adopt new strategies such Lean and Kaizen philosophy in its supply chain and other operations of the firm.

Laosirihong, Rahman & Sohal (2010) have looked at lean management techniques in Thailand's industrial organisations, and the competitive advantage of these practices. The findings showed that waste minimization, Just in Time and flow management were positively and significantly related to the competitive advantage. Jain, Lyons, Nepal, Panwar & Rathore (2017) investigated how lean practices impacted the improvement Process industry competitive advantage in India. The lean practices investigated were found to have influenced competitive advantage by waste elimination, productivity, inventory control and cost reduction. Malonza (2014) demonstrated a favorable impact on the operational performance of lean manufacturing techniques at Mumias Sugar Company. Rucha (2018) has studied lean techniques and operational performance in Kenya for third parties in port-centered logistics. Quality management, cost management, customer orientation and waste management have been shown to affect performance.

Based on previous studies both locally and globally, knowledge research is lacking, as lean management methods have been left unsolved in Nairobi Kenya. The goal of this study was to solve these shortcomings in the following questions: to what degree do pharmaceutical companies use lean management? What are the effects of lean management to competitive advantage and what challenges are faced during adoption of lean management by pharmaceutical manufacturing firms?

### 1.3 Research Objectives

The aim of this research was to explore the connection between lean management and competitive advantages for pharmaceutical companies in Kenya.

The specific objectives were:

i. To establish the extent to which lean management practices are adopted at pharmaceutical companies in Kenya.

ii. To determine the practices relationship of lean management practices and competitive advantages among pharmaceutical companies in Kenya.

iii. To identify challenges in Kenya in implementing lean management practices by pharmaceutical companies in Kenya

**1.4 Value of the Study**

The research is important for regulatory agencies such as the PPB, the administration of all Kenya's manufacturing and future scientists and academics. The study suggests possible ways for the PPB to manage the pharmaceutical sector by developing effective laws and guidelines to enhance their competitiveness. This provided businesses engaged in the production of pharmaceutical goods a sustained competitive edge.

The research looked at how top companies in the pharmaceutical business can innovate and remain competitive in the market. The research will suggest the best lean management techniques to assist such businesses to achieve competitive advantage. The company management would depend on the results of the research to make appropriate and informed choices on innovation and how this might result in a competitive advantage.

This research contributes much to ideas of lean management techniques. The three theories of the study; knowledge-based view, queuing theory and theory of constraints (TOC), mainly focus on the production processes in manufacturing industries. This study provides information on how these theories will be used in the industries, and more specifically in the manufacturing industry.

# CHAPTER TWO

# LITERATIRE REVIEW

## 2.1 Introduction

This section analyzes research on the connection between lean management and competitive advantages. This chapter deals in particular with theoretical examination, lean management techniques and competitive advantage, empirical evaluation as well as conceptual framework.

## 2.2 Theoretical Literature Review

The following hypotheses are used for this study: Theory of queuing, concept of restriction and resource theory.

### 2.2.1Queuing Theory

Demand for a service in a service organization is mostly unpredictable and often depends on the date of the month, which day of the week it is, or even the time of the day. Many service companies such as hotels and hospitals require daily work scheduling to deliver the service when demanded. This is because poor staff-customer scheduling results in waste in the form of long customer waiting long times, loss of productivity, and consequently, waiting cost (Chowdhury, 2013). Operations managers need to recognize peak times and non-peak cycles to settle on the staffing requirements putting into consideration variability in demand levels from past or real-time data. Using queuing theory and a control system that can simulate the system ensures close monitoring to enable model and analyze a real-time queuing situation, consider scheduling options and the matching the level of service being offered to provide a superior scheduling combination based on the desired service level.

### 2.2.2 The Theory of Constraints

Eliyahu and Cox first presented the Constraint Theory (TOC) (1984). It gives out strategies which states issues to be changed and how to effect the change to facilitate implementation of a whole. It refers change to being a continuous process, other than focusing on restricted enhancements in all zones. TOC can be made use of as a system to facilitate implementation of quality management. It should be utilized to assist the company identify problems in its implementation and to focus the efforts of quality management on its goal. It is a highly important approach to a company's continual transformation. It is an arrangement of concepts, standards and appliances that may be used in order to facilitate frameworks and to expand implementation by identifying the most prohibitive limiting component that needs the implementation and supervision of the framework. It focuses on improving implementation and not reducing costs.

The Theory of Constraints (2013) was utilized by a study by Oglethorpe and Heron to identify and reduce the functional and supply blockades and limitations in the pharmaceutical supply chains, in particular fewer producers, who seek to enter the market over a larger region. According to Oglethorpe and Heron (2013), TOC offers web-based know-how in the field of pharmaceutical delivery and maintains visibility. In addition, Oglethorpe and Heron (2013) identified seven main types of limitations based on: market, size and product characteristics; institutional imperatives; certification, policy and law limits; jobs and skills; individual attitudes and humanoid attributions.

### 2.2.3 Resource Based View Theory

It was Birge who first proposed this idea back in 1984. Essentially, this hypothesis is predicated on the premise that firms analyze their competitive advantage through processes of evaluating their strategic advantages. According to the RBVs, each and every firm has unique,

tangible and intangible resources and firm abilities to utilize those assets. This is an attributing factor to the differences between them. Resources owned by each firm form a basis of competitive advantage for each firm when developed well (Alvarez & Busenitz, 2001). Resources owned by a firm play a crucial part in the strategic practice and organizational performance.

Barney (1996) proposes that organizations succeed by improving resources that offer rare sources of competitive edge. Resources based on their rareness, value and uniqueness give a competitive edge that is embedded in the firm structure. Every firm has certain and likely powers and gaps; it's crucial to learn what they are and separate them. Therefore, what the organization can do is not just to excise the time it faces but what funds the firm can master. Learned et al. (1969) suggest that the secret to a company's victory or its long-term growth lies in its potential to develop talent that is truly unique. According to RBV, organizations with better organization design are viewed as being successful. This is due to the fact that they have distinctly lower costs, provide superior product and performance (Das & Teng2000). The resource-based view theory is critical in informing this study and helps understand how the combination of resources over time allows for the evolution of specific capabilities, which leads to performance and competitive advantage.

### 2.3 Lean Management Practices

Lean techniques have a more substantial effect in conjunction with the implementation of stand-alone initiatives. These include lean customer practices, lean transportation techniques, clean storage procedures, lean storage practices and lean supplier practices.

### 2.3.1 Lean Customers Practices

Lean customer practices include building successful relationships with customers that always strive to further enhance the whole supply chain in order to decrease costs. Lean customers demand value from their goods and value for consumers with whom they engage (FAO, 2007). Lean method promotes a fast reaction to changing consumer requirements, focusing instead on mass personalization rather than mass manufacturing. Lean methods enhance efficiency, productivity and workflow adaptability for changing requirements (Simone & Kleiner, 2004).

### 2.3.2 Lean Transportation Practices

Cooper (2000) states that lean transport includes core transport programmes, enhanced management and automation, optimum selection and packing, cross-docking, correct to size, transport and input/backhaul transportation. As per Lander and Liker (2007), it is essential to apply a TPS or a lean system to any industry, service or environment. Although the universality of Lean is disputed, it is assumed that the whole TPS idea is extensive. Two factors are linked strongly between transport and JIT systems: the essential function of the transmission chain and the scheduling, flow and delivery requirements of JIT.

### 2.3.3 Lean Procurement Practices

Lean procurement methods include electronic procurement and automated procurement. E - procurement 12 apps for auction and strategic procurement, online and bidding (Kallrath & Maindl, 2006). Automatic procurement uses software that eliminates people from different procurement procedures and includes financial problems (Harland, 2012). View is the key to lean purchasing. Providers must "see" the activities of their customers and consumers must be able to "check" the operations of their providers. Lean procurement can do the following: eliminate barriers to opening information flow into a supply chain; provide a perspective of a change in inventory in real time; convert the supply chain from 'push' to Pull demand.

### 2.3.4 Lean warehousing practices

Lean storage involves the elimination in storage of superfluous procedures and waste (Lambert, 2012). Collection, storage, replenishment, picking, packing and transportation are typical storage functions (Harland, 2012). Lean storage is an essential component of LSCM that may reduce distribution waste, increase space use, increase productivity, and meet increasing customer requirements (Ackerman, 2007). Ackerman and Bodegraven (2007) state that warehouses have two components: time and space management. It stated that the warehouse was utilized in this environment to manage and currently is used in conjunction with advancements in the capacity to provide and enhance customer service.

### 2.3.5 Lean Supplier’s Transportation Practices

Lambert states that leaning suppliers may react to shifts (2012). Their prices are frequently less expensive because of their poor efficiency, and their quality has improved to such an extent that no following connection test is necessary. Lean suppliers produce on time and continuously improve culture (Jusko & Jill 2007). Companies must engage suppliers to develop lean suppliers. They should encourage suppliers to change somewhat and engage

them in lean operations. This helps them to solve issues and save money. In response, they may assist their suppliers and establish ever lower pricing objectives and enhance quality objectives (Halldorsson, Kotzab, Mikkol, & SkjoettLarsen, 2007). E-procurement and automated procurement are some lean procurement methods.

### 2.4 Competitive Advantage Measurement

Porter (1985) claims that competition plays an important part in the success or failure of any company. He defines competitive advantage as the favorable position held by an organization that allows it to be more profitable than its rivals in the same industry**.** There are three generic strategies of dealing with the above competitive forces. The Cost leadership strategy involves tight control on costs so that an organization can produce at lower costs than its competitors. It is expected that by lowering costs, the firm can earn higher profit margins. The differentiation strategy involves creating products or services that can be considered unique in the industry. This strategy allows a firm to earn above average returns because it creates a defensible position for the firm against competitive rivalry and also creates customer loyalty. The focus strategy is made up of 2 variants which are differentiation focus and cost focus. This strategy, in general, involves focusing on a narrow segment and serving it extremely well. The cost focus variation aims to achieve cost benefit in its target market. On the other side, the emphasis on differentiation aims to differentiate its target niche (Chairman, 2008)

### 2.5 Challenges Faced in Implementation of Lean Management Practices

Lean manufacturing concepts are realistically relevant to the service industry, but lean service implementation has to be carried out differently due to the environment within which service operations operate. Preceding studies highlight a range of challenges in implementation of lean management practices. For example, according to Seidel, Saurin, Marodin and Ribeiro (2017), resistance to change is a significant factor impacting lean implementation in

companies. This is mostly due to improper change management techniques and inability to shift corporate culture to implement new tools. This forces organizations to ensure that managers are visible and directly connected to the new structures that enable active participation of all involved employees (Chauhan & Singh, 2012).

The structure of the service operations makes it difficult to readily identify client requirements. In addition, multi-site businesses like banks find it challenging to apply lean principles in all sectors owing to their complicated monitoring and monitoring of progress in each sector (Young & McClean, 2008). Financial ability amidst cost cutting measures adopted by companies is also another challenge. Funding is important to take care of expenses such as material resources, human resources, technical utilities, consulting and employee training which all vital elements for lean implementation (Achanga, Shehab, Roy & Nelder2006), Moreover, variability of services has forced organizations to adopt agile thinking as a solution to deal with the customer demand variability challenge (Hines& Rich, 2004).

### 2.6 Empirical Literature Review and Knowledge Gaps

Umarali &Amal (2017) studied how operational performance was affected by lean practices and the results showed a positive impact on operational performance by lean success factors. Other lean waste control tools, staff knowledge and participation as well as visual management have also contributed significantly to Indian lean manufacturing success. Muchiri (2017) found out that parastatals had adopted lean supply chain strategies and aligned them to their corporate strategy and these practices had significantly contributed to the performance and created a competitive advantage focusing on efficiency and effectiveness. Another research by Rucha (2018) showed that quality management, cost management, customer orientation and waste management connect favorably to business success and

studied lean practices and business performance for port-centered (3PL) third-party logistics firms in Kenya.

Pratanna (2015) examined how hospitals in Thailand have adopted lean management practices such as continuous improvement (kaizen). The paper investigated lean and organizational commitment in the medical sector. The results indicated that the necessary resources of operational performance in a healthcare setting include human resource management, a focus on patient movement from one stage to another and social capital. The significance of lean management techniques in the service sector was analyzed by Ahlstrom (2004). The study showed the principles of lean practices which may be integrated in the service sector to enhance its performance. Nonetheless, Ahlstrom (2004) indicated that without adequate allocation of resources and proper implementation the benefits cannot be realized. This empirical literature review shows that lean practices can be well executed in service organizations to improve performance. However, their application to the entire organization and effect on an organization's performance has not been clearly outlined. The research thus aimed at evaluating the implementation of lean management techniques to commercial banks in Kenya and their impact on operational metrics.

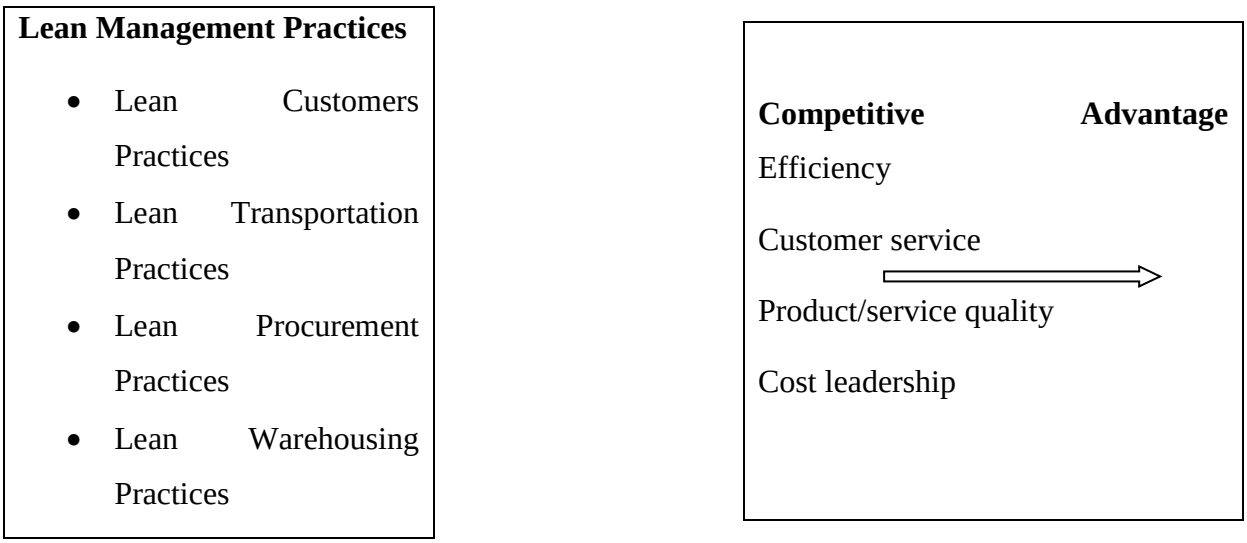
Muchiri (2017) found out that parastatals had adopted lean supply chain strategies and aligned them to their corporate strategy and these practices had significantly contributed to the performance and created a competitive advantage focusing on efficiency and effectiveness. Another study by Rucha (2018) has shown that quality management, cost management, customer guidance and waste management have been favorablely related to the operating success of Kenya's port-based (3PL) third party logistics company when evaluating lean practices and operating performance. Furlan, Vinelli & Dal Pont (2011) evaluated the effect of 266 plants in nine countries in three industries on operational performance on JIT and

TQM complementarity. The researchers also examined the impact of HRM in improving the interdependence of JIT and TQM. This study assessed manufacturing firms with over 100 employees and the findings found that there was complementarity between JIT and TQM and that HRM was able to play a role in this complementarity (Furlan et al. 2011).

### 2.7 Conceptual Framework

A conceptual framework serves as the study's foundation, showing how the variables flow and interact. According to Myers (2011), a conceptual framework visually describes the basic constructions of the variables to be examined as well as the connections among those variables. The independent variable is the lean management techniques, including lean consumers, lean transport procedures, sleek warehousing methods, lean warehouse practices and lean provider practices.

**Figure 2.2: Conceptual Framework**




**Source: Researcher, (2022)**

# CHAPTER THREE

# RESEARCH METHODOLOGY

## 3.1 Introduction

This chapter explains the research method utilized in the study. The program covers research design components, including research engineering, population research, data collecting and analysis. The analysis and submission procedures of the collected data are also assessed.

## 3.2 Research Design

The effect of lean management practices and competitive advantage was investigated using a cross sectional descriptive research design. The design was appropriate as not only is it accurate, but also highly precise as it entails the careful description of events in a detailed and well-planned manner. Descriptive research designs help in the identification of the where, what, who, when and how of phenomena.

## 3.3 Population of the Study

A population consists of many items with similar characteristics used for deduction (Kothari, 2011). The research included 32 pharmaceutical manufacturing firms in Kenya. The research included pharmaceutical companies in Nairobi Kenya. Because the population was not too big, a census was carried out. A total of 32 pharmaceutical firms operating in Nairobi, Kenya was involved in this study as chosen in the PPB report (2020).

## 3.4 Data Collection

The study adopted questionnaire as data collection instrument. The questionnaires were given to the procurement, operations and transportation managers. The questionnaire comprised of three parts where the first part collected data on the demographic information. The second part was on lean management practices and the third parts was competitive advantage. A good

questionnaire is a critical method to come up with a wide variety of information from a large sample size which is easier to analyze (Kothari, 2011)

### 3.5 Data Analysis

Questionnaires was revised for consistency after data collection was considered complete. To clean up the data and discover any inconsistencies in the responses, as well as input specific numerical values for further investigation, editing, tabulation, and coding were employed. Descriptive statistics were used to review the data that contain central (mean) and dispersion measurement trends (variance and standard deviation). Tables were used to show the results. The association between the variables was established using the multiple linear regressions model below:

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + e$

Where: Y is Competitive Advantage

$\beta_0$ is the model 's constant $\beta_1$ to $\beta_5$ are the regression coefficients

$X_1$ = Lean Customers Practices $X_2$ = Lean Transportation Practices

$X_3$ = Lean Procurement Practice $X_{4=}$ Lean Warehousing Practices

$X_{5=}$ Lean Suppliers Practices variables

E=Error Term

**Table 3.1 Operationalization of Study Variables**

| Variable | Indicator | Measurement / Scale |
|---|---|---|
| Lean Management Practices | • Lean Customers Practices<br>• Lean Transportation Practices<br>• Lean Procurement Practices<br>• Lean Warehousing Practices<br>• Lean Suppliers Practices | 5-point likert type scale (Interval) |
| Competitive Advantage | • Efficiency<br>• Customer service<br>• Product/service quality<br>• Cost leadership | 5-point likert type scale (Interval) |

# CHAPTER FOUR

# RESEARCH FINDINGS AND DISCUSSIONS

## 4.1 Introduction

This chapter addressed various findings of study such as response rate, reliability tests, background information of respondents, descriptive statistics, analysis involving correlation and regression. The chapter further presents discussion of findings.

## 4.2 Response Rate

The response rate was presented as indicated;

**Table 4.1 Response Rate**

| Category | Frequency | Percentage |
|---|---|---|
| Response | 28 | 88 |
| Non-Response | 4 | 12 |
| **Total** | **32** | **100** |

**Source: Research Data (2022)**

The presentation of findings shown on table 4.1 addressed the response rate in which 32 questionnaires were issues and 28 questionnaires were well attended to and returned. However, 4 questionnaires were not returned. This was represented by 88% of returned questionnaires and 12% for non-response. This is justified by Mugenda and Mugenda (2003) who recommended that a response rate of 50% is good to warrant final analysis, a response rate of 60% is considered acceptable, still a response rate of over 70% is considered as excellent. Going by the current response rate of 88%, it was considered to be very good for final analysis and presentation.

### 4.3 Pre-Testing Results of Research Study

In order to evaluate the reliability status of data collection instrument adopted, a pilot study was carried out. The study undertook the reliability test results by using the Cronbach's Alpha that is used to measure and determine internal consistency of items. Cooper and Schindler (2013) indicated that Cronbach Alpha measures range that is between 0-1, therefore, when the Cronbach Alpha has a score between 0-0.6 it shows the instrument reliability is low whereas a score of 0.7 and above an indication that the reliability and internal consistency is high.

**Table 4.2 Cronbach Alpha Reliability Tests**

| **Variables** | **Number of Items** | **Cronbach Alpha Values $\alpha > 0.7$** | **Recommendations** |
|---|---|---|---|
| Lean Management Practices | 17 | 0.989 | Reliable |
| Competitive Advantage | 13 | 0.978 | Reliable |
| Challenges of Implementing Lean | 5 | 0.941 | Reliable |

**Source: Research Data (2022)**

The study provided the results in which lean management practices had a coefficient of [0.989] while competitive advantage had [0.978] and lastly, challenges of implementing lean practices had [0.941]. Therefore, all the variables had an internal consistency measurement above 0.7. The findings showed that all the variables were reliable considering that they were over 0.7.

### 4.4 Background Information of Respondents

The study addressed the demographic of respondents who participated in this research exercise. This was evaluated as gender, education level, work experience and the age.

#### 4.4.1 Gender of Respondents

Respondents were expected to show their gender. The summary was provided as shown;

**Table 4.3 Gender of Respondents**

| Category | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Male | 16 | 57.1 | 57.1 | 57.1 |
| Female | 12 | 42.9 | 42.9 | 100.0 |
| Total | 28 | 100.0 | 100.0 | |

**Source: Research Data (2022)**

The presentation shown on table 4.3 constituted the gender response. It was noted that 57.1% of respondents were male whereas 42% were female respondents. The analysis implied that there was fair representation of both gender in this analysis.

#### 4.4.2 Age of Respondents

The study sought to establish the age of respondents involved in the research exercise.

**Table 4.4 Age of Respondents**

| Category | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| 18-25 years | 2 | 7.1 | 7.1 | 7.1 |
| 26-33 years | 4 | 14.3 | 14.3 | 21.4 |
| 34-41 years | 7 | 25.0 | 25.0 | 46.4 |
| 42-49 years | 4 | 14.3 | 14.3 | 60.7 |
| 50 years and above | 11 | 39.3 | 39.3 | 100.0 |
| **Total** | **28** | **100.0** | **100.0** | |

**Source: Research Data (2022)**

Table 4.4 provides presentation on age of respondents involved in this study. The study findings showed that 18–25-year-old were 7.1%. The analysis also showed that 14.3.0% of

respondents were between the age of 26-33 years whereas 34-41 years were 25%. The response further showed that 14.3% of respondents were between the age of 42-49 years as those over 50 years were 39.3%. The analysis showed that majority of respondents were between the ages of 34-41 years and those over 50 years. This was considered a mature respondent who may handle this exercise with attentions it requires.

### 4.4.3 Working Experience of Respondents

The study sought to establish the working experience of respondents of respondents involved in the research exercise.

**Table 4.5 Working Experience of Respondents**

| Category | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| less than 1 year | 1 | 3.6 | 3.6 | 3.6 |
| 1-4 years | 3 | 10.7 | 10.7 | 14.3 |
| 5-8 years | 3 | 10.7 | 10.7 | 25.0 |
| 9-11 years | 12 | 42.9 | 42.9 | 67.9 |
| 12 years and over | 9 | 32.1 | 32.1 | 100.0 |
| **Total** | **28** | **100.0** | **100.0** | |

**Source: Research Data (2022)**

The presentations shown on Table 4.5 addressed the working experience of respondents involved in this study. The analysis revealed that a total of 3.6% of respondents was represented by those with 1 year work experience. A total of 10.7% of respondents were represented by those with 1-4 years of work experience. Those respondents with a working experience of 5-8 years were represented by 10.7% whereas 42.9% of respondents were represented by those respondents with 9-11 years. Lastly, 32.1% of respondents were represented by those respondents with over 12 years work experience in pharmaceutical firms.

### 4.4.5 Education Level of Respondents

The presentation addressed highest education level of respondents who participated in this research exercise.

**Table 4.6 Highest Education Level of Respondents**

| Category | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| O-level | 0 | 0 | 0 | 0 |
| Diploma level | 5 | 17.9 | 17.9 | 17.9 |
| Bachelor's degree | 16 | 57.1 | 57.1 | 75.0 |
| postgraduate degree | 4 | 14.3 | 14.3 | 89.3 |
| other qualification | 3 | 10.7 | 10.7 | 100.0 |
| **Total** | **28** | **100.0** | **100.0** | |

**Source: Research Data (2022)**

Table 4.6 constituted study findings on education level of the participants involved in the study. From the analysis, there were no respondents with only O-level of education. However, a total of 17.9% of respondents had diploma level of education, a total of 57.1% of respondents had bachelor's degree whereas 14.3% of respondents had postgraduate level as 10.7% of respondents had other qualification. Going by the majority of respondents with bachelors' postgraduate and also diploma graduates, it was revelation that the learned work force was considered suitable to work in the pharmaceutical companies.

## 4.5 Analysis of Variables

### 4.5.1 Lean Management Practices

The analysis of data was aimed at establishing the extent to which lean management practices were adopted at pharmaceutical companies in Kenya. The Lean Management Practices were measured using Lean Customers Practices, Lean Transportation Practices, Lean Procurement Practices, Lean Warehousing Practices and Lean Suppliers Practices. Therefore, the findings were shown on the table 4.7.

**Table 4.7 Lean Management Practices**

| **Lean Customer Practices** | | **SD** | **D** | **N** | **A** | **SA** | **mean** | **Std Dev** |
|---|---|---|---|---|---|---|---|---|
| Customer needs are established | % | 14.3% | 7.1% | 14.3% | 28.6% | 35.7% | 3.64 | 1.41 |
| | F | 4 | 2 | 4 | 8 | 10 | | |
| Only what will satisfy the customer is delivered | % | 10.7% | 17.9% | 7.1% | 39.3% | 25.0% | 3.50 | 1.34 |
| | F | 3 | 5 | 2 | 11 | 7 | | |
| Lean customer practices has ensured cost and waste reduction | % | 3.6% | 7.1% | 7.1% | 50% | 32.1% | 4.00 | 1.01 |
| | F | 1 | 2 | 2 | 14 | 9 | | |
| **Lean Transportation Practices** | | | | | | | | |
| Firm use automatic monitoring devices on processes | % | 25.0% | 17.9% | 32.1% | 14.3% | 10.7% | 2.67 | 1.30 |
| | F | 7 | 5 | 9 | 4 | 3 | | |
| Firm uses modern machines on its process to reduce cost | % | 7.1% | 7.1% | 3.6% | 35.7% | 46.4% | 4.0 | 1.21 |
| | F | 2 | 2 | 1 | 10 | 13 | | |
| Firm has updated inventory that ensure flow of product | % | 10.7% | 7.1% | 3.6% | 39.3% | 39.3% | 3.89 | 1.31 |
| | F | 3 | 2 | 1 | 11 | 11 | | |
| Lean transformation practices has ensured cost and waste reduction | % | 3.6% | 3.6% | 10.7% | 32.1% | 50.0% | 4.21 | 1.03 |
| | F | 1 | 1 | 3 | 9 | 14 | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Lean Procurement Practices** | | | | | | | | |
| Firm has sound replenishment models to pull consumption for its product | % | 21.4% | 39.3% | 3.6% | 25.0% | 10.7% | 2.64 | 1.36 |
| | F | 6 | 11 | 1 | 7 | 3 | | |
| The firm gives suppliers feedback on quality and delivery | % | 14.3% | 7.1% | 3.6% | 17.9% | 57.1% | 3.96 | 1.50 |
| | F | 4 | 2 | 1 | 5 | 16 | | |
| Lean procurement practices has ensured cost and waste reduction | % | 10.7% | 7.1% | 3.6% | 32.1% | 46.4% | 3.96 | 1.34 |
| | F | 3 | 2 | 1 | 9 | 13 | | |
| **Lean Warehousing Practices** | | | | | | | | |
| Firm efficiently utilizes its space and machine | % | 17.9% | 3.6% | 3.6% | 14.3% | 60.7% | 3.96 | 1.57 |
| | F | 5 | 1 | 1 | 4 | 17 | | |
| Firm stores what is needed and required by the firm | % | 7.1% | 7.1% | 14.3% | 39.3% | 32.1% | 3.82 | 1.1 |
| | F | 2 | 2 | 4 | 11 | 9 | | |
| Lean warehousing practices has ensured cost and waste reduction | % | 21.4% | 3.6% | 3.6% | 42.9% | 28.6 | 3.53 | 1.50 |
| | F | 6 | 1 | 1 | 12 | 8 | | |
| **Lean Suppliers Practices** | | | | | | | | |
| There is close collaborations with supplier | % | 17.9% | 10.7% | 3.6% | 7.1% | 60.7% | 3.82 | 1.65 |
| | F | 5 | 3 | 1 | 2 | 17 | | |
| Supplier are directly involved in the new product development | % | 46.4% | 25.0% | 7.1% | 10.7% | 10.7% | 2.14 | 1.40 |
| | F | 13 | 7 | 2 | 3 | 3 | | |
| Firm has integrated its system with the suppliers | % | 28.6% | 17.9% | 3.6% | 50.0% | 0% | 2.75 | 1.35 |
| | F | 8 | 5 | 1 | 7 | 7 | | |
| Lean Suppliers practices has ensured cost and waste reduction | % | 14.3% | 3.6% | 3.6% | 21.4% | 57.1% | 4.03 | 1.45 |
| | F | 4 | 1 | 1 | 6 | 16 | | |

**Source: Research Data (2022)**

The study findings presented on Table 4.7 showed findings in which the study revealed that through lean management practices, the customer needs were established. This was indicated by 35.7% of respondents who strongly agreed and 28.6% who agreed to the statement and affirmed by (mean= 3.64, Std dev=1.41). The study established that only what will satisfy the customer is delivered as indicated by 25.0% of respondents who were strongly agreeing with the statement and 39.3% of respondents who agreed. This was in line with (mean=3.50, std dev=1.34). The study findings implied that majority were in agreement. The presentation also established that through practicing of lean management, the lean customer practices has ensured cost and waste reduction as shown by 32.1% of respondents who strongly agreed and 50% of respondents who agreed. This was equated to (mean=4.00, std=1.01). Implying that majority were in support of the statement.

The study further addressed the influence of lean transportation aspects in relations to competitive advantage. From the responses obtained, it was established that firms use automatic monitoring devices on processes, this is shown by 32.1 of majority were undecided and 25% among the other majorities strongly disagreed. This indicated that not all firms are using monitoring devices. This was supported by (mean=2.67, std=1.30). The responses also showed that firm uses modern machines on its process to reduce cost. This statement was supported by 46.6% of respondents who strongly agreed and 35.7% of respondents who agreed as affirmed with (mean=4.00, std 1.21). The study found that firm has updated inventory that ensure flow of product, this was highly supported by 39.3% of respondents that strongly agreed and 39.3% of respondents that agreed as well. This was represented by (mean=3.89, std 1.31). The analysis showed that lean transformation practices has ensured

cost and waste reduction in the pharmaceutical organization as noted by (mean=4.21, std=1.03).

The analysis was undertaken in relations to lean procurement practices and their influence on competitive advantage of pharmaceutical firms. The results showed that firm has sound replenishment models to pull consumption for its product, this were not supported by 39.3% of disagreed combined by 21.4% who strongly disagreed. Going by the majority, it showed that respondents were not in support as depicted (mean=2.64, std=1.36). Further analysis showed that the firm gives suppliers feedback on quality and delivery. This was strongly agreed upon by majority of respondents constituting 57.1% and 17.9% who agreed as well. This was shown by (3.96, std=1.50). The study further showed that lean procurement practices has ensured cost and waste reduction in those pharmaceutical firms as revealed by 46.4% of respondents who strongly agreed and 32.1% of respondents who agreed. This was represented by (mean=3.96, std=1.34).

The other analysis addressed the influence of lean warehousing on competitive advantage of pharmaceutical firms. In regards to the analysis, it was found that firm efficiently utilizes their space and machine. This was highly supported by 60.7% of respondents who strongly agreed and 14.3% of respondents who agreed as well. This was equivalent to (mean=3.96 std=1.57). The study also established that this firm store what is needed and required by the firm. This was supported by 39.3% of respondents who agreed and 32.1% of respondents who disagreed. The responses were affirmed by (mean=3.82, std=1.10. It was further noted that lean warehousing practices has ensured cost and waste reduction as signified by 42.9% of agreed with 28.6% of respondents who strongly agreed. From the analysis, it was a representation of (mean=3.53, std=1.50).

The presentation of findings was generated from studies that sought to establish the influence of lean Suppliers Practices on competitive advantage among pharmaceutical firms. From the analysis, it was deduced that there are close collaborations with suppliers as supported by 60.7% of respondents strongly agreed, together with 7.1% that were agreed, this was shown by (mean=3.82, std=1.65). The study found that supplier is directly involved in the new product development, from the responses, majority strongly disagreed to the statement with a percentage response of 46.4% whereas 25.0% disagreed as well. This was shown by (mean=2.14, std=1.40). The analysis revealed that firm has integrated its system with the suppliers as strongly supported by 50.0% of respondents. This had (mean=2.75, std=1.35). Lastly, it was established that lean suppliers' practices have ensured cost and waste reduction. This response was supported by majority 57.1% who strongly agreed and 21.4% of respondents who agreed. This was an indication that lean suppliers' practices has ensured cost and waste reduction.

### 4.5.2 Competitive Advantage

The analysis of data was aimed at establishing the practices relationship of lean management and competitive advantages among pharmaceutical companies in Kenya. The competitive strategies were measured using Efficiency, Customer service, product/service quality and cost leadership. Therefore, the findings were shown on the table 4.8.

**Table 4.8 Competitive Advantage**

| Competitive Advantage | | SD | D | N | A | SA | mean | Std Dev |
|---|---|---|---|---|---|---|---|---|
| **Efficiency** | | | | | | | | |
| Increased flexibility | % | 7.1% | 17.9% | 3.6% | 46.4% | 25.0% | 3.64 | 1.25 |
| | F | 2 | 5 | 1 | 13 | 7 | | |
| Improved delivery | % | 10.7% | 3.6% | 7.1% | 7.1% | 71.4% | 4.25 | 1.37 |
| | F | 3 | 1 | 2 | 2 | 20 | | |
| Improved manufacturing process | % | 32.1% | 17.9% | 7.1% | 25.0% | 17.9% | 2.78 | 1.57 |
| | F | 9 | 5 | 2 | 7 | 5 | | |
| **Customer service** | | | | | | | | |
| Our firm has customer management system in place | % | 3.6% | 7.1% | 14.3% | 53.6% | 21.4% | 3.82 | 0.98 |
| | F | 1 | 2 | 4 | 15 | 6 | | |
| Customer relationship is encouraged in our firm | % | 3.6% | 3.6% | 10.7% | 39.3% | 42.9% | 4.14 | 1.00 |
| | F | 1 | 1 | 3 | 11 | 12 | | |
| Our firm has a call center for our customers | % | 46.4% | 28.6% | 3.6% | 10.7% | 10.7% | 2.10 | 1.39 |
| | F | 13 | 8 | 1 | 3 | 3 | | |
| Our customers decisions are taken into firms major decision-making process | % | 14.3% | 3.6% | 10.7% | 32.1% | 39.3% | 3.78 | 1.39 |
| | F | 4 | 1 | 3 | 9 | 11 | | |
| **Product/service quality** | | | | | | | | |
| Proper inventory management eliminates errors in our firm | % | 21.4% | 7.1% | 3.6% | 35.7% | 32.1% | 3.50 | 1.55 |
| | F | 6 | 2 | 1 | 10 | 9 | | |
| Systems are well maintained to keep accurate information | % | 39.3% | 32.1% | 14.3% | 10.7% | 3.6% | 2.07 | 1.15 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | F | 11 | 9 | 4 | 3 | 1 | | |
| There is reduction in wastages of our products during handling. | % | 7.1% | 10.7% | 3.6% | 64.3% | 14.3 % | 3.67 | 1.09 |
| | F | 2 | 3 | 1 | 18 | 4 | | |
| **Cost Leadership** | | | | | | | | |
| Continuously reducing cost across the value chain. | % | 10.7% | 14.3% | 3.6% | 25.0% | 46.% | 3.82 | 1.44 |
| | F | 3 | 4 | 1 | 7 | 13 | | |
| Utilizing knowledge from previous experiences. | % | 3.6% | 7.1% | 3.6% | 17.9% | 67.9 % | 4.39 | 1.10 |
| | F | 1 | 2 | 1 | 5 | 19 | | |
| Increase in automation and outsourcing. | % | 17.9% | 60.7% | 3.6% | 7.1% | 10.7 % | 2.32 | 1.18 |
| | F | 5 | 17 | 1 | 2 | 3 | | |

**Source: Research Data (2022)**

The presentation provided on Table 4.8 was about aspects of competitive advantages emanating from lean practices in pharmaceutical firms. In the responses, it was established that there is increased flexibility when lean management practices are observed. This showed that 46.4% of respondents strongly agreed and 25.0% of respondents agreed as symbolized by (mean=3.64, std=1.25). The analysis revealed that lean practices has enabled promoted Improved delivery as depicted by a percentage response of 71.4% who strongly agreed and 7.1% of respondents who agreed. This was in line with (mean=4.25, std=1.37). The analysis also revealed that lean practices in organizations improved manufacturing process, a combination of 32.1% of respondents who strongly disagreed and 17.9% who disagreed is a revelation that there was no major improvement in manufacturing process. This is depicted by (mean=2.78, std=1.57).

The study further sought to address the influence of customer service as a competitive advantage. It was noted that the pharmaceutical firms have customer management systems in place. From the responses, it was not that majority being 53.6% strongly agreed to the statement and 21% of respondents agreed. This was equivalent to (mean=3.82, std=0.98). The study found that customer relationship is encouraged in the pharmaceutical firm. As per the responses obtained, 42.9% of respondents were strongly agreeing to the statement and 39.3%

of respondents agreed, this was shown by (mean=4.14, std=1.00). The study also established that firm has a call center for their customers, the responses showed majority strongly disagreed that there was a specific call center in place, as indicated by 46.4% of respondents and 28.6% who disagreed. This is represented by (mean=2.10, std=1.39). The study found that the customers decisions are taken into firms major decision-making process. This statement was in support of a total of 39.3% of respondents and 32.1% of respondents who agreed. This was shown by (mean=3.78, std=1.39.

The analysis further addressed the aspects of lean practices and Product/service quality as a competitive outcome. The study found that proper inventory management eliminates errors in the firm. This was strongly agreed by 32.1% of respondents and 35.7% who strongly agreed. This was shown by (mean=3.50, std, 1.55). The study addressed whether systems are well maintained to keep accurate information. As per responses, it showed that 39.3% of respondents strongly disagreed and 32.1% of respondents disagreed. Going by the majority of respondents, a revelation that systems are well maintained to keep accurate information to enhance competitive advantage. The response showed that there is reduction in wastages of their products during handling agreed by 64.3% of respondents and 14.3% of respondents. This provided (mean=3.67, std 1.09).

The analysis on cost leadership as a form of competitive advantage, there were various responses validating the statements. Therefore, the study established that this organization continuously reduces cost across the value chain. The analysis was shown by 46.0% of respondents who strongly agreed to the statement, still, 25% of respondents agreed. It was therefore confirmed by (mean=3.82, std=1.44). The analysis showed that utilizing knowledge from previous experiences was represented by 67.9% of respondents who strongly agreed and 17.9% who agreed as well. This is depicted by (mean=4.39, std=1.10). The responses on

whether there is increase in automation and outsourcing from lean practices, it was confirmed by 60.7% of respondents who disagreed and 17.9% who strongly disagreed to the statement. Going by the majority of respondents who disagreed, it was a confirmation that there was absence of increase in automation and outsourcing among pharmaceutical firms.

### 4.5.3 Challenges Facing Lean Management Practices

**Table 4.9 Challenges Facing Lean Management Practices**

| Challenges Facing Lean Management Practices | | SD | D | N | A | SA | mean | Std Dev |
|---|---|---|---|---|---|---|---|---|
| Lack of employee training and motivation | % | 10.7% | 10.7% | 3.6% | 14.3% | 60.7% | 4.03 | 1.45 |
| | F | 3 | 3 | 1 | 4 | 17 | | |
| Limited resources | % | 3.6% | 3.6% | 3.6% | 21.4% | 67.9% | 4.46 | 0.99 |
| | F | 1 | 1 | 1 | 6 | 19 | | |
| Lack of broad organization involvement | % | 42.9% | 46.4% | 3.6% | 3.6% | 3.6% | 1.78 | 0.95 |
| | F | 12 | 13 | 1 | 1 | 1 | | |
| Negative attitude from employees | % | 10.7% | 7.1% | 3.6% | 42.9% | 35.7% | 3.85 | 1.29 |
| | F | 3 | 2 | 1 | 12 | 10 | | |
| Misunderstanding of lean | % | 3.6% | 10.7% | 7.1% | 25.0% | 53.6% | 4.14 | 1.17 |
| | F | 1 | 3 | 2 | 7 | 15 | | |

**Source: Research Data (2022).**

The presentation on table 4.9 sought to establish the challenges facing the lean management practices in pharmaceutical firms. The responses provided revealed that lack of employee training and motivation was a contributor to failure to observe lean management practices as supported by 60.7% of respondents and 14.3% of respondents who agreed that it was a challenge. This is shown by (mean=4.03, std=1.45). The study also established that due to limited resources, it hampered the lean management practices as represented by 67.9% of respondents and 21.4% of respondents. This is shown by (mean=4.46, std=0.99). The study sought to establish whether lack of broad organization involvement affected lean practices. Going by the responses, it was noted that 42.9% of respondents strongly disagreed and 46.4%

disagreed as well that there is lack of broad organization involvement. This depicted (mean=1.78, std=0.95). The study findings sought to establish whether negative attitude from employees was a contributing challenge to lean management practices. Going by the responses, 42.9% of respondents agreed and 35.7% of respondents strongly agreed. This is represented by (mean=3.85, std=1.29). The analysis showed whether misunderstanding of lean was a challenge on lean management practices. As noted, 53.6% of respondents were in a strong agreement and 25.0% of respondents agreed as well that misunderstanding of lean is a challenge. This is depicted by (mean=4.14, std=1.17).

### 4.6 Correlation Analysis

#### 4.6.1 Correlation Analysis between Lean Customer Practices and Competitive Advantage

The correlation analysis was carried out by adopting Pearson correlation to establish the strength of relationship between lean customer service practices and competitive advantage in pharmaceutical firms. The resultant outcome were shown on the table 4.9.

**Table 4.10 Correlation Analysis between Lean Customer Practices and Competitive advantage**

| | | | **Competitive advantage** |
|---|---|---|---|
| **Lean Customer Practices** | Pearson Correlation | . | .864** |
| | Sig. (2-tailed) | | .000 |
| | N | | 28 |

**. Correlation is significant at the 0.01 level (2-tailed).

The presentations on table 4.10 indicated that lean customer practices has a strong and positive relationship with competitive advantage based on Pearson correlation coefficient that has an (r) value of 0.864**(84.6%). This was an indication that lean customer practice can be improved if the customer needs are established on time, delivering only is required by the customers and that there is emphasis on ensuring costs and wastes are consistently reduced. Thus, on testing the significance of the relationship at 0.001 level with two tallied test reveals that lean customer practices had a positive statistically significant relationship with competitive advantage among pharmaceutical firms.

### 4.6.2 Correlation Analysis between Lean Transportation Practices and Competitive Advantage

The correlation analysis was carried out by adopting Pearson correlation to establish the strength of relationship between lean transportation practices and competitive advantage in pharmaceutical firms. The resultant outcome was shown on the table 4.10.

**Table 4.11. Lean Transportation Practices and Competitive advantage**

| | | Competitive Advantage | | |
|---|---|---|---|---|
| **Lean Transportation Practices** | Pearson Correlation | | | .768** |
| | Sig. (2-tailed) | . | . | .000 |
| | N | | | 28 |

**. Correlation is significant at the 0.01 level (2-tailed).

The analysis presented on Table 4.11 showed that lean transportation practices had a strong and positive relationship with competitive advantage in pharmaceutical firms in reference to Pearson correlation coefficient that has an (r) value of 0.768**(76.8%). Therefore, this was an indication that lean transportation practice can be improved on condition that the

pharmaceutical firms adopt the use of automatic monitoring devices on processes, firms use modern machines on its process to reduce costs, that the pharmaceutical firms update their inventory that ensure flow of product and lastly, ensure that cost and waste reduction strategies are enforced. Further to this, by testing the relationship at 0.001 level with two tallied test showed that lean transportation practices had a positive statistically significant relationship with competitive advantage among pharmaceutical firms in Kenya.

### 4.6.3 Correlation Analysis between Lean Procurement Practices and Competitive Advantage

The analysis involving correlation was undertaken by using Pearson correlation to establish the strength of relationship between lean procurement practices and competitive advantage in pharmaceutical firms. The results were shown on the table 4.11.

**Table 4.12 Lean Procurement Practices and Competitive Advantage**

| | | Competitive Advantage |
|---|---|---|
| **Lean Procurement Practices** | Pearson Correlation | .778** * |
| | Sig. (2-tailed) | .000 |
| | N | 28 |

**. Correlation is significant at the 0.01 level (2-tailed).

The presentation shown on table 4.12 was about establishing the correlations between the two variables. It was established that lean procurement practices had a strong and positive relationship with competitive advantage in pharmaceutical firms in Kenya based on Pearson correlation coefficient of (r) value of 0.778**(77.8%). The results implied that lean procurement practice could be enhanced on condition that the pharmaceutical firms do adopt a sound replenishment models to pull consumption for its product, that the firm pharmaceutical firm gives suppliers feedback on quality and timely delivery and that cost and waste reduction

approaches are fully adhered to by the personnel concerned. Still, by testing the relationship at 0.001 level with two tallied test showed that lean procurement practices had a positive statistically significant relationship with competitive advantage among pharmaceutical firms.

### 4.6.4 Correlation Analysis between Lean Warehousing Practices and Competitive Advantage

The correlation analysis was carried out by adopting Pearson correlation to establish the strength of relationship between lean warehousing service practices and competitive advantage in pharmaceutical firms. The findings were presented on the table 4.13.

**Table 4.13 Lean Warehousing Practices and Competitive Advantage**

| | | Competitive advantage | |
|---|---|---|---|
| **Lean Warehousing Practices** | Pearson Correlation | 1 | .887** |
| | Sig. (2-tailed) | | .000 |
| | N | | 28 |

The table 4.13 provides presentation that shows lean warehousing practices on procurement practices had a strong and positive relationship with competitive advantage in pharmaceutical firms in Kenya based on Pearson correlation coefficient of (r) value of 0.88.7**(88.7%). The results showed that lean warehousing practice can be improved if the pharmaceutical firm efficiently utilizes its space and machine, on condition that pharmaceutical firm stores what is needed and required by the customers and that lean warehousing practices adopts cost and waste reduction strategies within the firm. In relations to testing the relationship at 0.001 level with two tallied tests, it showed that lean warehousing practices had a positive statistically significant relationship with competitive advantage among pharmaceutical firms.

### 4.6.5 Correlation Analysis between Lean Suppliers Practices and Competitive Advantage

The correlation analysis was carried out by adopting Pearson correlation to establish the strength of relationship between lean supplier practices and competitive advantage in pharmaceutical firms. The resultant outcome were shown on the table 4.14.

**Table 4.14 Lean Suppliers Practices and Competitive advantage**

| | | Competitive Advantage |
|---|---|---|
| **Lean Suppliers Practices** | Pearson Correlation | .817** |
| | Sig. (2-tailed) | .000 |
| | N | 28 |

**. Correlation is significant at the 0.01 level (2-tailed).

The analysis presented on Table 4.14 showed that lean supplier practices had a strong and positive relationship with competitive advantage in pharmaceutical firms in reference to Pearson correlation coefficient (r) value of 0.817**(81.7%). As a result, it was an indication that indication that lean supplier practice could be achieved if the pharmaceutical firms' practices ease of close collaborations with suppliers, if the supplier is directly involved in the new product development. Still lean supplier practices could be made successful if the firms have integrated their system with the suppliers and lasty, being overall, if lean Suppliers practices ensures that there is reduction of wastes and costs associated with operations. From

the study, testing the relationship at 0.001 level with two tallied test showed that lean supplier practices had a positive statistically significant relationship with competitive advantage among pharmaceutical firms in Kenya.

### 4.7 Multiple Regression Analysis

The study used multiple regression analysis to establish the significant relationship between the dependent variable-competitive advantage and other independent variables being Lean Customers Practices, Lean Transportation Practices, Lean Procurement Practice, Lean Warehousing Practices and Lean Suppliers Practices variables.

**Table 4.15 Multiple Regression Analysis Model Summary**

**Model Summary**

| Modell | R | R Square | Adjusted R Square | Std. Error of the Estimate | R Square Change | F Change |
|---|---|---|---|---|---|---|
| **1** | **.956[a]** | **.915** | **.895** | **.40587** | **.915** | **47.112** |

a. Predictors: (Constant), Lean Customers Practices, Lean Transportation Practices, Lean Procurement Practice, Lean Warehousing Practices, Lean Suppliers Practices variables.

b. Dependent variable: Competitive advantage

The study findings generated from the summary model showed that the adjusted R square of 0.895 (89.5%) explains some of the variations established on competitive advantage in the selected pharmaceutical firms which is provided by lean customers practices, lean transportation practices, lean procurement practice, lean warehousing practices and lean

supplier practices variables. As a result, the other percentage remaining might be explained by other factors that were not captured in the model which was contributed by 10.5%

**Table 4.16 Analysis of Variance (ANOVA)**

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| **1** | **Regression** | **38.804** | **5** | **7.761** | **47.112** | **.000[b]** |
| | Residual | 3.624 | 22 | .165 | | |
| | Total | 42.429 | 27 | | | |

a. Dependent Variable: Competitive Advantage

b. Predictors: (Constant), Lean Customers Practices, Lean Transportation Practices, Lean Procurement Practice, Lean Warehousing Practices, Lean Suppliers Practices variables.

The presentation of findings based on the analysis of variance (ANOVA) on table 4.16 shows that the F-static value being 47.112 and P-value of 0.000 implied that the regression model was significant towards predicting the established relationship between the Lean Customers Practices, Lean Transportation Practices, Lean Procurement Practice, Lean Warehousing Practices, Lean Suppliers Practices in pharmaceutical firms. Therefore, it was established that Lean Customers Practices, Lean Transportation Practices, Lean Procurement Practice, Lean Warehousing Practices, Lean Suppliers Practices were statistically acceptable for being used in establishing the prediction on competitive advantage among pharmaceutical firms.

**Table 4.17 Regression Co-efficient**

The table 4.17 shows the coefficient of the variables that were used in this research study and they consisted of Lean Customers Practices, Lean Transportation Practices, Lean Procurement Practice, Lean Warehousing Practices and Lean Suppliers Practices.

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. |
| 1 | (Constant) | .708 | .227 | | 3.111 | .005 |
| | Lean Customers Practices | .243 | .295 | .276 | .824 | .419 |
| | Lean Transportation Practices | .464 | .186 | .483 | 2.489 | .021 |
| | Lean Procurement Practice | -.115 | .207 | -.126 | -.557 | .583 |
| | Lean Warehousing Practice | .231 | .218 | .290 | 1.060 | .301 |
| | and Lean Suppliers Practices | .051 | .202 | .068 | .253 | .802 |

a. Dependent Variable: Competitive advantage

The table 4.17 provides the regression coefficient that answered the regression equation model as follows;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + e$$

$$Y = 0.708 + .243_1 + .464_2 + -.115_3 + .231_4 + .051_5 + e$$

The presentation of this model reveal that from the results, the variable constant was statistically insignificant which was considered to imply that competitive advantage in the pharmaceutical firms could not stand alone in the absence of the other factors identified in the model analysis.

The analysis showed that there was positive and significant relationship between the Lean Customers Practices and competitive advantage among the pharmaceutical firms at (β) 0.243, t=0.824, p value <0.05. From the analysis, the results implied that where there is a unit change in the Lean Customers Practices, it will increase the competitive advantage with 0.243 units when other factors are held at constant.

The study further established that there was positive and significant relationship between the Lean transportation Practices and competitive advantage among the pharmaceutical firms at (β) 0.464, t=2.489, p value <0.05. From the analysis, the results implied that where there is a unit change in the Lean transport Practices, it will increase the competitive advantage with 0.464 units when other factors are held at constant.

From the regression coefficient analysis, the results showed that there was no significant relationship between the Lean procurement Practices and competitive advantage in selected pharmaceutical firms at (β) -0.115, t= -0.557, p value <0.05. From the analysis, the results implied that where there is a unit change in the Lean transport Practices, there will be a decrease in the competitive advantage with -0.115 units when other factors are held at constant.

The results obtained in the study showed that there was positive and significant relationship between the Lean warehousing Practices and competitive advantage among the pharmaceutical firms at (β) 0.231, t=1.060, p value <0.05. From the analysis, the results

implied that where there is a unit change in the Lean warehouse Practices, it will increase the competitive advantage with 0.231 units when other factors are held at constant.

The study findings generated from regression co-efficient model reveal that there was positive and significant relationship between the Lean supplier Practices and competitive advantage among the pharmaceutical firms at (β) 0.051, t=0.253, p value <0.05. From the analysis, the results implied that where there is a unit change in the Lean supplier Practices, it will increase the competitive advantage with 0.51 units when other factors are held at constant.

# CHAPTER FIVE

# SUMMARY, CONCLUSION AND RECOMMENDATIONS

## 5.1 Introduction

This chapter provides the summary of major findings, conclusions, policy recommendations, limitations of the study and suggestions for further research.

## 5.2 Summary of Findings

The study sought to establish the effect of lean customer practices on competitive advantage in the pharmaceutical firms in Kenya. The analysis revealed that majority of respondents agreed that lean customer practices had influence on competitive advantage. It was established that there was positive and significant relationship between the lean customer practices and competitive advantage among pharmaceutical firms with a coefficient value of 86.4 %, a regression coefficient value of 0.243 and a p-value of 0.419. From the analysis, it was noted that there was a significant relationship between the lean customer practices and competitive advantage in pharmaceutical firms. This is in line with findings provided by Umarali &Amal (2017) who studied how operational performance was affected by lean

practices and the results showed a positive impact on operational performance by lean success factors. Other lean waste control tools, staff knowledge and participation as well as visual management have also contributed significantly to Indian lean manufacturing success.

The summary provides findings from a study that sought to establish the influence of lean transportation services on competitive advantage. Going by the majority of respondents, it was found that how transport operations were being carried out were expected to have a significant influence on competitive advantage. It was therefore established that there was positive and significant relationship between the lean transportation practices and competitive advantage among pharmaceutical firms with a coefficient value of 76.8%, a regression coefficient value of 0.464 and a p-value of 0.21. In this analysis, it was established that there was a significant relationship between the lean transportation practices and competitive advantage in pharmaceutical firms.

From the study findings, summary was generated aimed at showing the level of influence of lean procurement practices on competitive advantage. As per majority of respondents, it was found that the roles associated with procurement operations have to be discharged efficiently in order to influence the needed goals on competitiveness. As a result, the analysis revealed that there was a negative and insignificant relationship between the lean procurement practices and competitive advantage among pharmaceutical firms with a coefficient value of 77.8%, a regression coefficient value of -0.115 and a p-value of -0.557. In this analysis, it was established that there was a insignificant relationship between the lean procurement practices and competitive advantage in pharmaceutical firms. The results were however dissimilar with Muchiri (2017) who found out that parastatals had adopted lean supply chain strategies and aligned them to their corporate strategy and these practices had significantly contributed to the performance and created a competitive advantage focusing on efficiency and effectiveness.

The research was aimed at establishing the effect of lean warehousing practices on competitive advantage in the pharmaceutical firms in Kenya. The study findings showed that majority of respondents were in agreement that lean warehousing practices had influence on competitive advantage. It was established that there was positive and significant relationship between the lean warehousing practices and competitive advantage among pharmaceutical firms with a coefficient value of 88.7 %, a regression coefficient value of 0.231 and a p-value of 0.301. From the analysis, it was noted that there was significant relationship between the lean customer practices and competitive advantage in pharmaceutical firms.

The study summary revealed findings from the research that sought to establish the influence of lean supplier services on competitive advantage. As per majority of respondents, the analysis revealed that respondents were in support that organizing suppliers and furnishing appropriate and full information about what to be tendered or supplied will ultimately influence competitive advantage. It was therefore established that there was positive and significant relationship between the lean supplier practices and competitive advantage among pharmaceutical firms with a coefficient value of 81.7%, a regression coefficient value of 0.51 and a p-value of 0.802. In this analysis, it was established that there was a significant relationship between the lean warehousing practices and competitive advantage in pharmaceutical firms.

### 5.3 Conclusion

The conclusion derived from the study revealed that in pharmaceutical firms in order to achieve total competitiveness, the state of customer needs is were expected to be established. Still, the firms were expected to deliver only items that satisfy the customer and that well practices on lean customer practices does reduce costs and wastes.

Inconclusion, the lean transport aspect was also established to have significant influence on competitive advantage. The results obtained provided a revelation that pharmaceutical firms were expected to use automatic monitoring devices on processes. Still, the firms were to use modern machines on its process to reduce cost and that firms had were to update inventory that ensure flow of product that meets expectations of competitiveness in the industry.

The conclusion derived from the study about lean procurement revealed that the firms had to adopt sound replenishment models to pull consumption for its product. Still, the pharmaceutical firms had to identify and give suppliers feedback on quality and delivery dates in order to focus more energy in remaining competitive in the pharmaceutical industry.

The study concluded that in Lean warehouse practices, the pharmaceutical firms were expected to overcome the challenges to remain competitive by efficiently utilizing its space and machine within the houses. The study concluded that for effective utilization of warehouses, firms were expected to store what is needed by the customer and also what is needed by the firms themselves.

The conclusion drawn from the study findings proved that there are close collaborations with supplier while practicing lean supplies. Still, supplier is directly involved in the new product development which gives room for improvement various specification as required by pharmaceutical firms. The study also concluded that in pharmaceutical organization, firms have integrated their system with the suppliers thereby enhancing efficiency operations that support competitive advantage.

### 5.4 Recommendations

The study recommends that the policy makers in pharmaceutical firms should ensure that in lean customer practices, for it to be improved, there is need to improve first, how the customer needs can be timely established. The emphasis should also be made on delivering only what is

required by the customers. The study further recommends that the management should put more emphasis on ensuring costs and wastes are consistently reduced in order to remain competitive in the pharmaceutical industry.

The study recommends that policy makers in pharmaceutical firms have a responsibility to ensure that lean transportation practices are achieved. Therefore, the management should note that the lean transportation practice can be improved on condition that the pharmaceutical firms adopt the use of automatic monitoring devices on processes. The is also need to ensure that the management responsible in those firms consider using modern machines on their process to reduce costs. Still the pharmaceutical firms should also update their inventory that ensure flow of product and lastly, ensure that cost and waste reduction strategies are enforced on a regular basis in order to attain highest competitiveness in the industry.

The study recommends that policy makers in pharmaceutical firms should be at the forefront to ensure that lean procurement practices are met. As a result, the practices can be enhanced on condition that the pharmaceutical firms do adopt a sound replenishment models to pull consumption for its product, that the pharmaceutical firm gives suppliers feedback on quality and timely delivery and that cost and waste reduction approaches are fully adhered to by the personnel concerned in the firms.

The study recommends that policy makers in pharmaceutical firms have a responsibility to institute better lean warehousing practice. Adequate investment should be made on best warehouse management systems, improvement in layout and also safety measures. The study recommends that lean practices should be improved by efficiently utilizes the warehouse space and machine. There is also need to only store what is needed and required by the customers and that lean warehousing practices adopts cost and waste reduction strategies within the firm.

The study recommends that lean supplier practices should be observed. The management of pharmaceuticals should ensure that lean supplier practice is achieved by harnessing ease of close collaborations with suppliers. There need to advocate for supplier direct involvement in the new product development. Still lean supplier practices could be made successful if the firms widely integrate their system with the suppliers and lasty, on overall, the management has to ensure that there is reduction of wastes and costs associated with operations.

### 5.5 Limitations of the Study

The challenge on non-cooperation were initially experienced**.** The researcher experienced some challenges related to cooperation from respondents about answering the questionnaire. Some respondents were also not readily willing to disclose any internal information that they were not permitted to speak about relating Lean Management Practices. However, the researcher overcame this issue by assuring respondents that the study was basically meant for academic purpose, therefore, their participation would be considered as very valuable contribution.

The perception of the respondents was another significant limitation considering that some of the respondents gave the impression that they were not taking the research exercise seriously. Thus, they would have failed to provide sufficient data or provide inaccurate information, which could compromise the data's authenticity and trustworthiness. In order to overcome this limitation, the researcher explained why the study was being conducted and helped the respondents understand what they stand to gain by taking part in the study exercise.

### 5.6 Suggestions for Further Studies

The study majored on lean management practices and competitive advantage among pharmaceutical manufacturing firms in Kenya. The study focused specifically on various selected in regards to lean management and they included Lean Customers Practices, Lean

Transportation Practices, Lean Procurement Practice, Lean Warehousing Practices and Lean Suppliers Practices. Therefore, in order to have an extensive research, other researchers may consider undertaking studies in similar subject but adopt additional lean practices that could also affect competitiveness. Nevertheless, other studies may consider involving other organizations not necessarily in the pharmaceutical industry.

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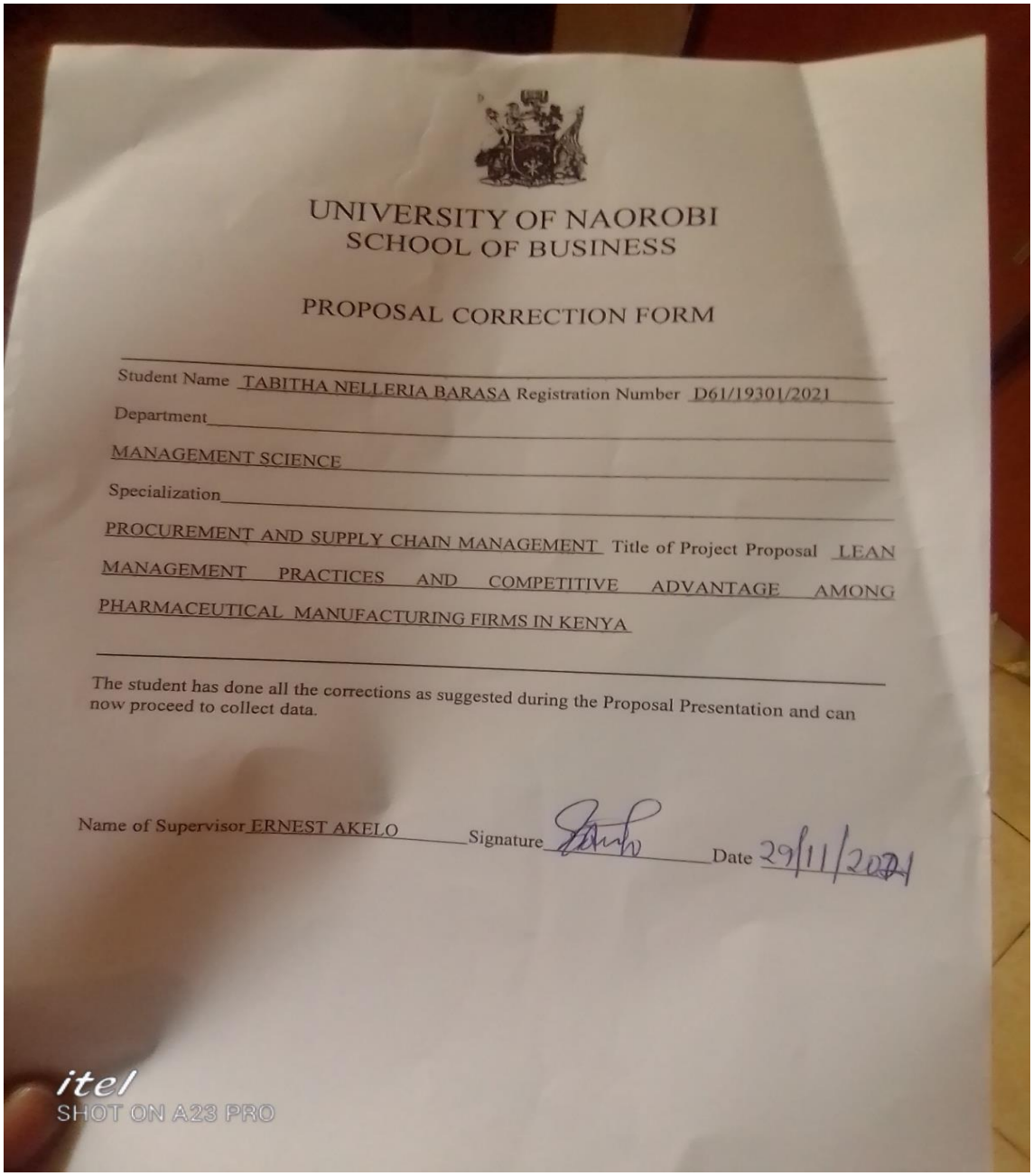
# APPENDICES

## Appendix I: Proposal Correction Form



UNIVERSITY OF NAOROBI
SCHOOL OF BUSINESS

PROPOSAL CORRECTION FORM

Student Name TABITHA NELLERIA BARASA Registration Number D61/19301/2021

Department

MANAGEMENT SCIENCE

Specialization

PROCUREMENT AND SUPPLY CHAIN MANAGEMENT Title of Project Proposal LEAN MANAGEMENT PRACTICES AND COMPETITIVE ADVANTAGE AMONG PHARMACEUTICAL MANUFACTURING FIRMS IN KENYA

The student has done all the corrections as suggested during the Proposal Presentation and can now proceed to collect data.

Name of Supervisor ERNEST AKELO Signature Date 29/11/2021

itel
SHOT ON A23 PRO

**Appendix II: Questionnaire**

The study is based on Lean Management Practices and Competitive Advantage among Pharmaceutical Manufacturing Firms in Kenya

**SECTION A: DEMOGRAPHIC INFORMATION**

**1.** Gender Male [ ] Female [ ]

**2.** What is your age bracket?

**3.** a) 18 - 25 years [ ] b) 26 - 33 years [ ] c) 34 - 41 years [ ]

42 - 49 years [ ] d) 50 years and above [ ]

**4.** For how long have you been working in this Company?

a) less than 1 year [ ] b) 1-4 years [ ] c) 5-8 years [ ] d) 9-11 years

e) 12 years and over [ ]

**5.** Highest level of Education?

0-Level Certificate [ ] Diploma Level [ ] Bachelor's degree [ ] Post graduate [ ]

Other qualifications [ ]

**SECTION B: LEAN MANAGEMENT PRACTICES**

Below is a list of lean management practices. Please tick appropriately the extent to which each of them is practiced in your company.

(1) Strongly disagree (2) Disagree (3) neutral (4) Agree (5) strongly agree as Provided.

| **LEAN MANAGEMENT PRACTICES** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| **Lean Customers Practices** | | | | | |
| Customer needs are established | | | | | |
| Only what will satisfy the customer is delivered | | | | | |
| Lean customer practices has ensured cost and waste reduction | | | | | |
| **Lean Transportation Practices** | **1** | **2** | **3** | **4** | **5** |
| Firm use automatic monitoring devices on processes | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Firm uses modern machines on its process to reduce cost | | | | | |
| Firm has updated inventory that ensure flow of product | | | | | |
| Lean transformation practices has ensured cost and waste reduction | | | | | |
| **Lean Procurement Practices** | **1** | **2** | **3** | **4** | **5** |
| Firm has sound replenishment models to pull consumption for its product | | | | | |
| The firm gives suppliers feedback on quality and delivery | | | | | |
| Lean procurement practices has ensured cost and waste reduction | | | | | |
| **Lean Warehousing Practices** | **1** | **2** | **3** | **4** | **5** |
| Firm efficiently utilizes its space and machine | | | | | |
| Firm stores what is needed and required by the firm | | | | | |
| Lean warehousing practices has ensured cost and waste reduction | | | | | |
| **Lean Suppliers Practices** | **1** | **2** | **3** | **4** | **5** |
| There is close collaborations with supplier | | | | | |
| Supplier are directly involved in the new product development | | | | | |
| Firm has integrated its system with the suppliers | | | | | |
| Lean suppliers practices has ensured cost and waste reduction | | | | | |

**SECTION C: COMPETITIVE ADVANATAGE**

Using a scale of 1 - 5, tick the appropriate answer from the alternatives provided. (1) Strongly disagree (2) Disagree (3) neutral (4) Agree (5) strongly agree

| **COMPETITIVE ADVANATAGE** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| **Efficiency** | | | | | |
| Increased flexibility | | | | | |
| Improved delivery | | | | | |
| Improved manufacturing process | | | | | |
| **Customer service** | **1** | **2** | **3** | **4** | **5** |
| Our firm has customer management system in place | | | | | |
| Customer relationship is encouraged in our firm | | | | | |
| Our firm has a call center for our customers | | | | | |
| Our customers decisions are taken into firms major decision-making process | | | | | |
| **Product/service quality** | **1** | **2** | **3** | **4** | **5** |
| Proper inventory management eliminates errors in our firm | | | | | |
| Systems are well maintained to keep accurate information | | | | | |
| There is reduction in wastages of our products during handling. | | | | | |
| **Cost Leadership** | **1** | **2** | **3** | **4** | **5** |
| Continuously reducing cost across the value chain. | | | | | |
| Utilizing knowledge from previous experiences. | | | | | |
| Increase in automation and outsourcing. | | | | | |

**SECTION D: CHALLENGES FACING LEAN MANAGEMENT PRACTICES**

Please indicate the level of agreeing to which the following challenges affecting implementation of lean management by your firm in Kenya.

(1) Strongly disagree (2) Disagree (3) neutral (4) Agree (5) strongly agree as Provided.

| **Challenges** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| Lack of employee training and motivation | | | | | |
| Limited resources | | | | | |
| Lack of broad organization involvement | | | | | |
| Negative attitude from employees | | | | | |
| Misunderstanding of lean | | | | | |

## Appendix III: List of Pharmaceutical Manufacturers in Nairobi

1. Gesto Pharmaceuticals Limited
2. Aventis Pasteur SA East Africa
3. Pharmaceutical Products Limited
4. Ivee Aqua EPZ Limited
5. Diversey Lever
6. African Cotton Industries Limited
7. Phillips Pharmaceuticals Limited
8. KAM Pharmacy Limited
9. Mac's Pharmaceutical Ltd
10. Beta Healthcare (Shelys Pharmaceuticals)
11. Laboratory & Allied Limited
12. Alpha Medical Manufacturers
13. Bayer East Africa Limited
14. Elys Chemical Industries Ltd
15. Novartis Rhone Poulenic Ltd
16. Bulk Medicals Limited
17. Dawa Pharmaceuticals Limited
18. Pfizer Corp (Agency)
19. Pharmaceutical Manufacturing Co (K) Ltd
20. Universal Pharmaceutical Limited
21. Novelty Manufacturers Ltd
22. Biodeal Laboratories Limited
23. Pharm Access Africa Limited
24. Regal Pharmaceutical Ltd
25. Medivet Products Limited
26. Didy Pharmaceutical
27. Revital Healthcare (EPZ) K
28. High Chem East Africa Ltd
29. Cosmos Limited
30. Glaxo SmithKline
31. Manhar Brothers (Kenya) Ltd
32. Eli-Lilly (Suisse) SA

**(Kenya Association of Manufacturers, 2020)**