

**FACTORS AFFECTING PERFORMANCE OF SUPPLY CHAIN MANAGEMENT
AMONG PUBLIC RESEARCH INSTITUTION IN KENYA**

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**A RESEARCH PROJECT SUBMITTED TO THE SCHOOL OF MANAGEMENT AND
LEADERSHIP IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE
AWARD OF DIPLOMA IN SUPPLY CHAIN MANGEMENT OF THE MANAGEMENT
UNIVERSITY OF AFRICA.**

MAY, 2023

DECLARATION

Declaration by the Student

This research is my original work and has not been presented for a degree in any other university. No part of this research may be reproduced without the prior permission of the author and/ MUA university.

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Declaration by the Supervisor

This research project has been submitted for examination with my approval as the University supervisor.

Sign

Date.....

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ABSTRACT

Various institutions have adopted Supply Chain Management as a tool to help in learning them. The purpose of this study was on factors affecting performance of supply chain management among public research institutions in Kenya a case a case study of Jomo Kenyatta University of agriculture and technology. The study was guided by the following specific objectives; (1) to establish the effect of data sharing, (2) to determine the effect of customer demand and (3) to determine the effect of inventory control policy supply chain management at Jomo Kenyatta University of Agriculture and Technology. A descriptive research design was chosen because it was easier to collect accurate, objective data from selected area. The study was based on factors affecting performance of supply chain management among public research institutions in Kenya, using stratified random sampling. The study used primary data which was obtained by the use of the questionnaire with close ended questions was administered by the researcher to each of the respondents using drop and pick later method. Data obtained was analyzed by use of descriptive methods such as mean, variance and standard deviation. Thereafter data was then presented in form of frequency tables and figures.

The following are the key findings from the study it was clear that customer demand formed a key pillar in improving the institution mode of operation. In addition to this inventory review permitted real-time updates of inventory counts, which made it easier to know when to reorder items to replenish inventory. Finally, Making data available and sharing it with the partners, an organization can speed up the flow of data within SC, improve productivity and effectiveness and decrease the response to the market time.

CHAPTER ONE

1.0 Introduction

This section presents a background of the Study review, a Statement of the Problem as well as objectives of the Study. It further looked into research Questions, the Significance of the Study as well as Scope of the Study.

1.1 Background of the Study

Supply chain management (SCM) has emerged as a key area of study globally. It entails analyzing the way various institutions look into their operations from supply to satisfying the demand of their customers most efficiently while keeping the whole process as economical as possible (Chauhan & Singh, 2019). Supply chain management has seen increasing adoption in various institutions due to its pivotal role in running them. The research sector functions as a worldwide supply chain that incorporates technological use, domestic and international transportation, material handling, and exploration. This is through various reforms that are aimed at improving quality as well as service delivery outcomes to the consumers. This is simply because competition in the use of resources has been stiff compelling institutions to align themselves to remain in the market. It also enhances transparency as well as accountability in the management of resources. The success of an institution depends on how efficiently its supply chain is managed. An institution's reputation can be enhanced by reducing the likelihood of issues with stakeholders in the supplier chain management while emphasizing the production of high-quality and sustainable products. Different institutions tend to have a given unique supply chain structures (Kano et al., 2019). Therefore, to reduce inefficiency factors and ensure smooth operations different actors should have to be aware of the impact to achieve better performance in the whole supply chain structure that is highly dynamic in its operations. This is through the establishment of effective supply chain departments in research institutions. The supply chains that add the most value for customers with the lowest cost in the chain make up the winning network of the individual institution. In Kenya, in the service industries, including research institutions, efficient supply chain management is essential for effective resource utilization and customer satisfaction.

1.2 Statement of the Problem

Over the past decade, there has been an growing emphasis on supply chain management as a vehicle through which companies can achieve competitive advantage in marketplaces (Li & Chen,

2019). For any institution to have a financial breakthrough it ought to have effective as well as efficient supply chain management (SCM). These always must be observed due to the effect they cause on the customers as well as the process in general (Sodhi, & Tang, 2021). Failed supply chain management can lead to wasteful use of resources due to inefficiencies experienced in the process. This has resulted in continuous public outcry about failed supply chain management in various public research institutions. Since supply chain management is a process that involves various stakeholders there has been a lot of dissatisfaction as it is way below the expected standard (Öztürk, & Yildizbaşı, 2020). Public research institutions in Kenya are not exceptional they are faced with similar issues. Supply chain structure when well-articulated with data sharing to meet customer demand while observing inventory control policy in public institutions has enhanced supply chain management thus improving the standards. All eyes are focused on our research institutions to set a role model to the world in coming up with various innovations within limited resources. This has forced the institutions to go back to their drawing board on what to improve and the area that has been identified is improving the supply chain management to cut down the cost of production to achieve efficiency (Yadav, & Singh, 2020). despite this SCM contribution, little research has been done focusing on factors affecting its operation. SCM is an integration of activities as well as stakeholders any effect trickles down to the end affecting the outcome (Hsu et al.,2022).

The issue of inefficiency culminated with a lack of direction in supply chain management has been a thorn in the flesh in various public institutions in Kenya. This has resulted in various issues as protocols are not followed and many malpractices have been witnessed in various levels of supply chain management. in addition to these the overall efficiency has ended up being compromised (Fourie, & Malan,2020). Whenever existing supply chain management is available many tend to stick to a manual way of relaying data thus losing the intended smooth flow of data. Any effect of supply chain management affects the whole process. As research institutions are now looking for how to integrate decisions across supply chain functions, across geographically dispersed facilities, and across time, facts-based supply chain management is crucial. The question that lingers in our mind is what are the factors that affect the performance of supply chain management in civic organizations in Kenya?

1.3 Objectives of the Study

The general objective of the study was to examine the factors affecting the performance of supply chain management among public research institutions in Kenya.

1.3.1: Specific Objectives

The specific objectives were as follows:

- i. To establish the effect of data sharing on supply chain management at Jomo Kenyatta university of agriculture and technology.
- ii. To determine the effect of customer demand on supply chain management at Jomo Kenyatta university of agriculture and technology.
- iii. To determine the effect of inventory control policy on supply chain management at Jomo Kenyatta University of agriculture and technology.

1.4 Research Questions

The study attempted to answer the following questions:

- i. ii. To what extent does data sharing affect the supply chain at Jomo Kenyatta University of agriculture and technology?
- ii. To what extent does customer demand affect supply chain management at Jomo Kenyatta University of agriculture and technology?
- iii. To what extent does inventory control policy affect supply chain management at Jomo Kenyatta University of agriculture and technology?

1.5 Significance of the Study

The study is of significance to research organization managers when they will be expressing their supply chain management policies. The Government of Kenya and its Supervisory body will find this study useful to enable them to understand the effect of various factors in the supply chain of research institutions and thus formulate policies that are not negatively affecting the sector.

In addition to these, institutions have laid down decisions regarding their future and how to make the greatest decisions for the betterment of the institution. Therefore, to aid managers in getting up-to-date data this study will be of great input.

The findings of this research will be of useful reference to other researchers or for further research in the same field. This study will also increase the existing body of knowledge on supply chains, particularly in research institutions where little or no research has been done.

1.6 Scope of the Study

The study will be done at Jomo Kenyatta University of agriculture and technology one of the research institutions in Kenya. The study is relevant as it will seek to determine the factors that are affecting the performance of supply chain management among public research institutions in Kenya.

Jomo Kenyatta University of Agriculture and Technology is located 35km North -East of Nairobi on the Nairobi -Thika Highway in a town called Juja, Kiambu county Kenya. The beautiful JKUAT grounds are expansive with plenty open space filled with a wide diversity of trees and ornamental plants. It offers a tranquil environment conducive to research and academic quests. The study will focus on the Directorate of Research Services which is charged with the responsibility to formulate, administer, and roll out relevant research policy guidelines.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter deliberates the effect of Supply Chain Management in Organizations including the Public Sector. It looks into the encounters in SCM performance and then provides a summary of the main items and categorizes the knowledge gap. The chapter also presents the Conceptual Framework that shows the relationship between SCM practices and business performance.

2.1 The Concept of Supply Chain Management

In order to achieve market, share and profit, several institutions have recently been required to have competitive advantages over other organizations of a similar nature. The key to this competition is how firms develop processes to produce goods and services that outperform those of their rivals in terms of quality, cost, and turnaround time. As a result, an efficient and effective strategy is required to compete in business across various industries. Supply chain management being crucial in its objective of satisfying the target customers has looked into the process keenly (Pakurár et al., 2019).

With operating costs increasing in many areas, research institutes are under a burden to reduce the charges of continuing operations. This has forced various research institutions to examine supply chain management and assess operational costs (Sulaeman, Waluyo, & Ali, 2019). It does this by looking at the many activities that take place throughout the process. It is important that the flow is not impeded or impeded so that the data mechanism works transparently and connectivity is not lost. The implementation of supply chain management reduces operating costs along the chain, ensures research quality, and ultimately helps deliver value to consumers in terms of product availability and speed of service. You must follow this. Likewise, this enables institutions to demonstrate accountability and efficiency. Kenya, like other countries, has undertaken extensive work in its public research sector to ensure that it meets international standards. For example, SCM has evolved from its rudimentary stages during the colonial and postcolonial era to a dynamic and regulated system that rivals international standards. According to Makiva (2021), the 2010 Constitution provided the basis for establishing a government procurement policy based on

fairness, equity, transparency, competition and cost-effectiveness, as Article 227 provided the basis for the formation of a new government procurement policy for the SCM profession.

Therefore, to ensure that research facilities are properly run, the research department needs a proper SCM department that can spearhead the much-needed efficiency. Continuous evaluation is essential to ensure that managers, from senior to junior staff, are properly mentored and well-trained to do the right thing. This is because SCM involves managing complex flows of data, materials and funds across multiple domains within and between organizations. All aimed at achieving overall system performance. However, measuring SCM performance is a major topic among researchers and plays a major role in providing organizational direction (Okeagu et al., 2021).

2.2 Theoretical Review

2.2.1 Public Interest Theories of Regulation

Public Interest Theory Regulating for the benefit of society as a whole, rather than regulating for specific benefits. She argues that the regulation is intended to protect and benefit the public. According to this theory, regulatory bodies serve the interests of society rather than their own personal interests (Weisbrod, Handler, & Komesar, 2021). According to this theory, the government is supposed to act as a neutral arbitrator. H. Act for the benefit of society as a whole, not for the benefit of a particular group. The most valuable thing that organizational stakeholders always care about is organizational sustainability. Institutional sustainability has three dimensions, social, environmental and economic, all of which are related.

Hooghe and Marks (2019) recognized two of his assumptions regarding public interest theory. First, the market is likely to fail if left alone, and second, the cost of government regulation is zero. In addition, Benton et al. (2019) Regulation is often provided in response to public demands to change inefficient or unfair market and business practices. It does not always work well and therefore requires supervision and oversight. Ranchordás (2019) argues that regulation, past and present, mostly follows crises or public discord. The public interest theory suggests that regulations are introduced by regulators and rationally introduced to protect the public interest, not the interests of regulators or other individuals (Ocaklı, et al., 2021).

2.2.2 Resource-Based View

Resource-based views are essential for strategic management. It emphasizes the fact that a company's internal capabilities create competitiveness, and this primarily requires company capabilities and diverse resources. In fact, it is the use of these resources that adds value to the company. Resource-based views are based on different concepts (Kristoffersen et al., 2021).

First, the inputs to the production process are determined by the resources that form the basic unit of analysis (Oberle et al., 2019). Most resources have very low competitive value when used individually. Therefore, both collaboration and coordination of different categories of resources are required to achieve competitive and productive activities. Strategic capabilities can come from resource clusters. What an organization does effectively and better than its competitors defines its capabilities (Qiu et al.2020).

Furthermore, the skills that are embedded in the cumulative skills and knowledge practiced through organizational processes enables the entity to not only coordinate its functions but also leverage its assets. A company's capabilities are based on its resources. A company's most important competitive advantage comes from its resources (Khan, Yang & Waheed, 2019).

To achieve long-term success, most companies must excel in several aspects of value creation, including: Insight into dynamic customer needs, rapid response to technological advances, development of innovative products, efficient and rapid response to problems.

A focus on the dynamics of company behavior has replaced the logic of product and position strategies. This was achieved by the need for versatility and excellence. This means that the process of coordinating assets and resources to obtained capabilities is the most important element of the strategy. Successful companies strategically invest in infrastructure and processes that bridge resources and go beyond common functional divisions (Miethke et al., 2021).

The more time and complexity required to turn a collection of resources into a skill, the less likely competitors will copy the resulting work. On the other hand, if a capability is too complex, it is more difficult to transfer or achieve within the organization that developed it. In addition, we also have core competencies. This includes several aspects that contribute significantly to customer value. This includes expertise, resources, skills, skill sets and other processes. In this case, a unique competitive position is achieved from core competencies. The

Core Competency results are broadly applicable across a wide range of products and market categories, providing a gateway to future markets. And since core competencies are strengthened with use, rather than worn out or degraded over time, companies should not get involved in anything but their core competencies (Eizaguirre, García-Feijoo , and Laka, 2019)

A company that does something special has competencies, and competitors have consistently applied core competencies to widen the gap in value-creating skills and capabilities. Changing and unpredictable expectations about what will be valued for a particular purpose at any given time create creative tension. Valuable resources, skills, and abilities are developed through past actions and evolve over time. As such, they are said to be path dependent. The resource-based view focuses on an organization's ability to help it achieve sustainable competitive advantage in its market and industry by developing the right strategies. An inside-out perspective is strengthened based on the ability to see the organization as an organization with resources and capabilities that can be configured to give it a competitive advantage.

In other words, how you compete in the external environment is determined by your internal capabilities. In some cases, both the creation of new markets and the creation of value for consumers can be a direct result of organizational capabilities (Zhang et al., 2020). Resources are the inputs an organization needs to carry out its activities. A case of organizations with different levels of performance in the same industry can result from different usage of resources. Organizations get no value from resources that are not used within the organization. Value only comes after resources are used productively. Resources can be classified as either tangible or intangible (Silva, & Oliveira, 2020).

2.2.3 Theory of Efficiency

Economic efficiency is the use of resources in a way that maximizes their use in the production of goods and services. Economic efficiency is achieved when all items and means of production are distributed or allocated to their most profitable uses and waste is eliminated or minimized. It is about the effective and fair allocation of resources. An economy is said to be economically efficient if changes made to make one agent better make a second agent worse. This state is known as the efficient state from Pare (Arbolino et al., 2021). Firm A is considered more efficient than firm B if it produces more output than firm B given the same level of economic resources and technology. Efficiency is used to compare what should be produced at actual levels with what is currently being produced.

Economists use efficiency to determine how well an economy performs given the available resources relative to the actual level at which it is designed to perform. Analysts use this approach to assess and analyze government powers and streamline the connection between government and the private sector. It is used to evaluate existing policies and compare them to new initiatives for change (Tiep et al., 2021).

First, economists use the concept of perfectly competitive markets when classifying justifications. Perfectly competitive markets are characterized by a large number of profit-maximizing firms, a large number of utility-maximizing consumers, and demand and price forces per market.

Behavior of economic agents in markets free of government interference can result in Pareto efficient allocations. That is to say, if the market is allowed to function on its own, the level of production will be efficient and cannot make others better without making others worse. While it is likely to increase the profits of farmers, it can also reduce the profits of producers (O'Connor, & Wilson, 2021). It helps economists identify aspects of market failures that violate basic assumptions of perfect markets. This leads to inefficiencies in production and consumption. An example is a monopoly market where the monopoly produces a small amount of goods and charges a very high price because it is the only producer in the market.

Similarly, it helps analysts address issues such as equitable allocation of resources, political and economic participation, and equity in resource allocation. A perfectly competitive market is an example of a general equilibrium model. That is, the prices of the inputs and outputs of all factors clear the market (Alquist, Bhattarai, & Coibion, 2020). Some critics argue that the economic approach to efficiency oversimplifies the issue of efficiency. Addressing efficiency effectively requires consideration of factors such as human dignity, economic opportunity and political participation.

The general equilibrium is usually static, but the real world is highly dynamic. Because prices and consumer needs are constantly changing with the introduction of new technologies in production. However, an overall balance helps policy analysts realize social welfare gains (Mercure et al., 2019). Consumers consume different types of products ordered according to their preferences in order to maximize their utility. Consumers choose the level of consumption that is best achievable for their income. That is, the highest point where the consumer indifference curve touches the budget line and has an equal slope.

2.2.4 Network Theory

The network theory, also known as the network perspective in the literature (Brodie et al. , 2019), which primarily focuses on value creation through interorganizational relationships. Key ideas in network theory include strong and weak ties. Strong ties and loose ties refer to businesses that are connected closely, as their names imply (Reinhold, 2019). For supply chains, each type has some advantages. It describes, explains, and forecasts relationships between related entities. Since supply chains are essentially a type of network, network theory has the potential to reveal intriguing facts about chains.

Organizational supply chains are, however, exposed to a variety of risks as supply chain networks spread across a wide range of industries and regions. The network perspective has been applied to supply chains in particular industries or nations as well as studies of supply chains on a global scale (Gereffi, 2019). A more comprehensive theory of how organizations interact in a network environment is provided by network theory (NT). The dynamics of network environments are highlighted, and the impact of partner-partner relationships on an organization's operations is acknowledged (Prataviera et al., 2021).

Network theory asserts that a network resource view aids managers in creating numerous realistic assessments of each node resource and its business impact. This is done by emphasizing the concept of strong and weak ties. According to network theory, which emphasizes the idea of strong and weak ties, having a clear understanding of the network's resources can help managers make numerous accurate assessments of each node's resources and their potential effects on the company's operations. The theory can also be used to investigate the persistence and trust in bilateral relationships. Employing a network approach, businesses create supply chains that make use of factors like strong ties to increase reliability and weak ties to increase flexibility and control responsiveness (Gereffi, 2019). The NT also has implications for supply chain innovation because it shows how to manage and implement network-wide knowledge-sharing mechanisms.

2.3 Empirical Literature

2.3.1 The effect of data sharing on supply chain management

Data sharing is arguably the biggest performance driver in SC. Data connects various SC partners and enables coordination of activities. Data is essential to daily operations at every stage of SC. Data systems enable companies to rapidly offer a wide variety of customized products to customers and understand their customers' changing tastes and preferences (Xu et al., 2019). Continuous,

timely and qualitative sharing of new data with key individuals helps managers make better decisions and improves performance. Sharing data in SC provides many benefits, including: B. Reduced bullwhip effect, better coordination between different activities, better decision-making, and reduced SC uncertainty (Xu et al., 2019). By providing and sharing data with partners, organizations can accelerate the flow of data within SC, improve productivity and effectiveness, and reduce time to market. Data exchange thus gives SC partners a competitive advantage. Data exchange reduces SC uncertainty and reduces the need for safety stock. Ojha et al., (2019) studied the impact of data sharing in deviant SCs and found that data sharing reduced costs by an average of about twenty percent.

2.3.2 The effect of customer demand on supply chain management

Customer demand patterns are one of the environmental factors that affect SC performance. In most industrial situations, demand is uncertain and difficult to predict. When customer demand fluctuates significantly, members of the SC send highly volatile order patterns to relevant upper tier members. This can cause SC to amplify order variance (called the bullwhip effect). Variability in customer demand also leads to increased manufacturing capacity and inventory costs for manufacturers (Pilgrimienė et al., 2020). From a common demand generator, constant, seasonal, seasonal uptrend, seasonal It generates various demand patterns, such as a downward trend. Temporary demand requires significantly higher safety stock than steady demand (Ziarnezy, Mönch, & Uzsoy, 2019). Greater visibility of player inventory and consumer demand patterns will enable the player to formulate improved and efficient operational plans at all levels of his SC, resulting in reduced SC inventory costs. Inventory benefits are particularly sensitive to fluctuations in demand, the level of service provided by suppliers, and how out of sync the order and production cycles are.

2.3.3 The effect of inventory control policy on supply chain management

Inventory management means that businesses have the right merchandise on hand to avoid stockouts, prevent shrinkage and ensure proper bookkeeping. According to Muchendepi et al. (2019) There must be an economic equilibrium between the costs sustained and the costs saved by storing the material. There are two basic decisions he must make for each item held in his inventory. These decisions relate to the timing of the item order and the size of the item order. Inventory management mechanisms therefore involve deciding “when” and “how much” to order.

You have two inventory systems with independent needs: a periodic review system and an ongoing review system. In the periodic check system, the inventory status is checked periodically (at the check time) and the appropriate quantity is ordered. Regular inventory checks therefore involve counting and recording inventory at specific times (Bhattacharya, 2021). For example, a retail store with a regular inspection policy might count inventory at the end of each month. Regular inventory reviews allow business owners or managers to spend less time analyzing inventory counts and more time for other aspects of business operations. However, it may not provide accurate inventory counts for high-volume companies. Owners or managers must make assumptions about inventory counts during the inventory review period. This can make it difficult to determine when an item needs to be backordered. It can also reduce the accuracy of your accounting. However, in continuous review systems, reviews are often performed continuously (after each transaction) and a fixed quantity of items is ordered when the inventory line reaches a backorder level. Continuous inventory checks, also known as constant checks, involve systems that track each item and update inventory counts whenever an item is removed from inventory. Continuous inventory checks allow for real-time inventory count updates, making it easy to know when to reorder items to replenish inventory (George, & Pillai, 2019). This method of checking inventory also facilitates accurate bookkeeping as inventory systems can generate real-time cost of goods sold. The main drawback of this type of inventory management is the implementation cost. Barcode scanners, inventory software, and computer systems are all needed to maintain ongoing inventory control.

Inventory policies that consider inventory position for the sake of ordering (either order determination or order size) are called inventory line-based policies, and policies that do not consider inventory position are called non-inventory line-based policies. Will be your inventory position over time is your inventory and inventory on order minus backorders. Here, inventory means quantity that is immediately available to meet demand, on-order means quantity that has not yet arrived, and backorder means demand that cannot be fulfilled (Agrawal, & Jia, 2019).

2.4 Summary of Literature Review

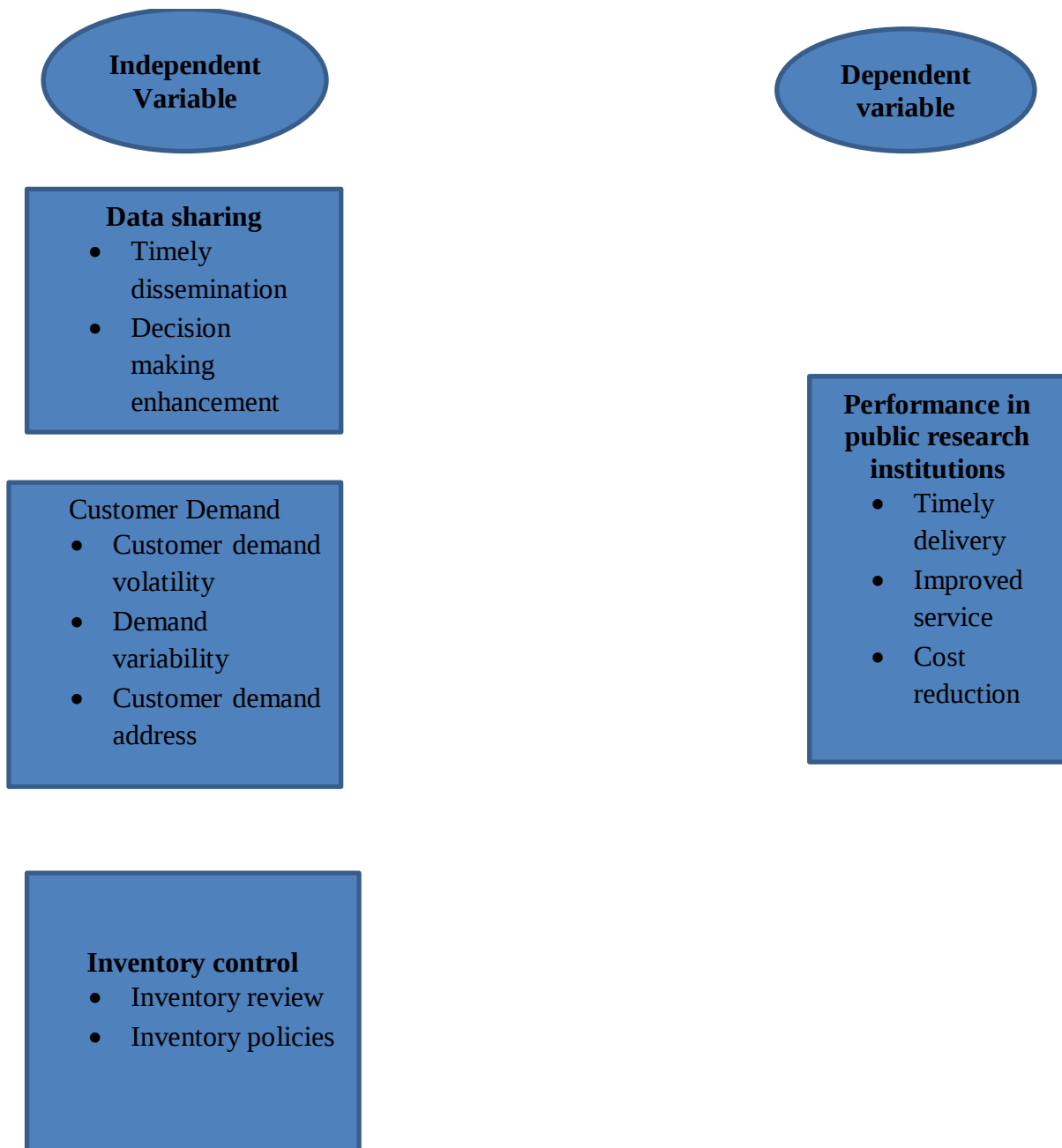
Supply chain performance is affected by many factors. Some of the factors identified in the current research are supply chain structure, inventory management policies, data sharing, and customer demand. The bullwhip effect in the supply chain increases as the complexity of the supply chain structure increases in the process. The inventory management policies used in your supply chain play an important role in your supply chain performance. Data sharing is the number one

performance driver in the supply chain. Continuous data sharing helps managers make better decisions and improves supply chain performance. Large fluctuations in customer demand increase supply chain bullwhip effects and storage costs. Forecast accuracy has a significant impact on supply chain performance. Shorter lead times support efficient operations throughout the supply chain. Longer review periods should be selected to reduce inventory costs throughout the supply chain. Optimal selection of parameters for all factors improves supply chain performance.

2.5 Conceptual Framework

On this study the conceptual framework comprises the association between independent variable and dependent variables.

Figure 1: Conceptual Framework



CHAPTER THREE

3.0 Introductions

This section discusses study methodology which was utilized while undertaking this research. Other areas covered under this section include the research design, study area, target population of the research, sampling method and sample size of the population, study tools, validity and reliability and other methods used to achieve the purpose of the study.

3.1 Research Design

Bryman & Bell, (2011) argued that research design is the detailed strategy that a researcher utilizes as a guide while organizing his/her study activities. Through this strategy, a researcher is capable of providing detailed arrangements on how the study is conducted. Therefore, to meet the purpose of the research, the investigator used a descriptive research design.

3.2 Study Area

Located 35km North -East of Nairobi on the Nairobi -Thika Highway in a town called Juja, Kiambu county is the Kenya Jomo Kenyatta University of Agriculture and Technology. It offers a serene environment conducive to research and academic pursuits. The study will focus on the Directorate of Research Services which is charged with the responsibility to formulate, administer, and roll out relevant research policy guidelines.

3.3 Target Population

For the researcher to achieve the intended purpose, the study targeted 220 members of staff who were working in JKUAT under various levels of research and were engaged in research within the university. The reason why these were selected as the participants in this study is because they are always in touch with the research faculty and had an idea on how the research system operated. As illustrated in table 3.1 a detailed dispersal of the target population.

Table 3.1:Target population

Category	Target population	Percentage of Total (%)
Top Level management	28	12.7
Middle Level management	70	31.8
Lower level management	122	55.5
Total	220	100

3.4 Sampling size and Sampling Procedure

The strategy that a researcher decided to use in order to enable him/her to obtain the required sample to study from the larger population is here referred to as a sample design. Stratified random sampling technique was used to determine the sample size. Bhardwaj 2019) refers to stratified random sampling as one where the target group is first divided into two or more sets referred to as strata and then simple random selection is made within each stratum. The nature of these system(s) is informed by the reason that the population of the study is heterogeneous as it varies in distribution across the sub-sectors.

The target sample was 10% of the population. According to Mishra et al. (2019) and Kothari (2004) a sample size of 30% is satisfactory for a descriptive study which has a trivial population. The target samples will be 220 employees of 30% which will be 66 employees to be targeted as noted in table 3.2.

Table 3.2:Sample size

Category	Target population	Sample size
Top Level Management	28	8
Middle Level Management	70	21
Lower Level Management	122	37
Total	220	66

3.5 Data collection and Procedure

The data that was utilized during this investigation was basically primary data that was gathered using questionnaires. The questionnaires used were issued out to all participants. The questions on the questionnaire were well structured questions. The survey was grouped into two parts, with the initial part containing background data and the other part focused on both the specific and main objective of the study. The outcome from questionnaires were categorized in Likert scale format in order to clearly capture all the variables that were studied relating to factors affecting performance of supply chain management among public research institutions in Kenya.

3.6 Validity and Reliability

To define validity it focused on how accurate the data obtained captures its intended measure however to ensure the content validity the questionnaire were subjected to a pilot test to evaluate the weakness in the formulation and of the questionnaire. A pilot test was undertaken to ensure generalizability; a representative sampling of the population was drawn from 22 representatives which is 10% of the sampled population. On the other hand reliability focused on the measure of the consistency of an idea. The aim of the dependability is to decrease the errors and prejudices in the study (Bull et al., 2019).

3.7 Data analysis & Presentation

The primary data obtained was compiled, sorted, and edited in order to ensure that it was accurate and clean after which it was classified and coded into specific sheets after which it was analyzed and presented through tables and graphs.

3.8 Ethical Considerations

To ensure that anonymity and confidentiality were ascertained the researcher employed use of codes to represent the respondents instead of names and data. In addition to this the researcher requested for permission to administer questionnaires while to ensure confidentiality further the questionnaire and interview guides did not require the respondents to indicate their names on.

Besides these, it was made clear to the respondents that it was a voluntary exercise and the data given in the process should be to the best of their knowledge and above all no soliciting of money was expected before, during and after the process. The data shared after processing was to be available in public domain and no person was to be marginalized along the line of race, gender and even position.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 introductions

This chapter presents outcomes and analysis of data obtained during the study. It entails research findings, data analysis, as well as interpretation. The findings are presented in form of tables and figures. Furthermore the analyzed data was grouped under subjects that reflected the research objectives.

4.2 Response Rate

To realize the purpose of the study a total of 66 survey questionnaires were run to the sampled respondents, out of which approximately 60 questionnaires were filled properly and returned. This resulted to an overall successful response rate of 90.9%. It is projected that generally whenever we obtained 50% as a response rate or more it is considered satisfactory. Similarly, Mugenda and Mugenda, (2003); and Babbie, (2015) elaborated that return rates of 50% are sufficient to analyze and publish, 60% is good and 70% is outstanding to work with. Findings are as shown in table 4.3.

Table 4.3:Response Rate

Response	Total	Percent
Returned	60	90.9%
Unreturned	6	9.1%
Total	66	100%

Source Primary data (2023)

4.3 Demographic Characteristics

4.3.1 Gender

The gender of participants who pay tax is of essence when it comes to level of compliance. The findings are indicated in table 4.4. It was revealed that 53.3 % belonged to male by gender while the remaining that is 46.7% were female by gender.

Table 4.4: Gender Distribution

Sex	Freq.	Percent
Male	32	53.3
Female	28	46.7
Total	60	100.0

Source: Primary Data (2023)

4.3.2 Age Bracket

In order to establish the age category of the respondents they were requested to indicate their age bracket. The outcomes are as shown in table 4.5. It was clear that about 36.7% were in 26-33 category, while 33.3% of the respondents were between the ages 34-41 years. In addition to these 15.0% were under age bracket of between 42 and 49 years while 10.0% were between 18 and 25 years. Furthermore, 5.0% had worked having more than 50 years. This means that about 80% of the research was conducted by individual aged between 26 and 41 years. This is the most active segment in the population structure.

Table 4.5: Age Bracket

Age Bracket	Freq.	Percent
18-25 years	6	10.0
26-33 years	22	36.7
34-41 years	20	33.3
42-49 years	9	15.0
Above 50 years	3	05.0
Total	60	100.0

Source: Primary Data (2023)

4.3.3 Duration Worked in the Organization

The respondents were requested to specify the period they had worked in the organization. Results in table 4.6 indicated that about 26.7% of the respondents had toiled for 6-10 years, while around 25% had served for 1-5 years. On the other hand, 13.3% had been in the research between 16-20 years. Similarly, 13.3% had served for more than 20 years. Further 21.7% had worked for 11-15 years. This means that over 50% of respondents in these research departments had worked for a period of between six and twenty years.

Table 4.6:Duration Worked

Duration (Years)	Freq.	Percent
1-5	15	25.0
6-10	16	26.7
11-15	13	21.7
16-20	8	13.3
More than 20	8	13.3
Total	60	100.0

Source: Primary data (2023)

Descriptive Effects

This division presents the descriptive outcomes of the factors affecting performance of supply chain management among public research institutions in Jomo Kenyatta University of agriculture and Technology (J.K.U.A.T) in Kenya. These factors include: data sharing, customer demand and inventory control policy. Measures of central tendency as stated earlier were adopted; Mean measures the exceedingly representative value in a set of values while the standard deviation (STD) illustrates how far from the mean the range is. Finally, the arrangement in this section was based on the aims of the research.

4.3.1 The effect of data sharing

Table 4.7: Data sharing effect

Statement	SA	A	N	D	SD	$\sum fi$	$\sum fiwi$	$\sum fiwi$
	5	4	3	2	1			$\sum fi$
Timely dissemination of data through sharing connects various SC partners and allows them to coordinate activities in university.	44	6	5	3	2	60	267	4.5
The university has a well-developed data system that allows it to get a high diversity of tailored products to clienteles rapidly and to understand the changing customer's tastes and preferences.	42	2	6	4	6	60	250	4.2
The university constant allotment of new data with key persons in a appropriate and qualitative manner help managers in better decision making, resulting in improved performance.	10	36	1	3	10	60	213	3.6
Data sharing is important in SCs as it offers many aids such as reduced bullwhip effect, better management among numerous events, taking better decisions and reduced worries in SCs.	4	4	42	4	6	60	176	2.9

From the data shown on table 4.7 it showed that Timely dissemination of data through sharing connects various SC partners and allows them to coordinate activities in university recording a

mean of 4.5 and was given more weight, the university having a well-developed data system that enabled it to get a high diversity of tailored products to clienteles quickly and to recognize the changing customer's tastes and preferences registered a mean of 4.2. on the other hand, the university continuous sharing of innovative data with key individuals in a timely and qualitative manner helped managers in better decision making, resulting in improved performance with a mean of 3.6 while Data sharing is important in SCs as it offers many aids such as reduced bullwhip effect, better coordination among various actions, taking better decisions and reduced fears in SCs got a mean of 2.9.

4.3.3 The effect of customer demand

Table 4.8:Customer Demand

Statement	SA	A	N	D	SD	$\sum f_i$	$\sum f_i w_i$	$\frac{\sum f_i w_i}{\sum f_i}$
The university addresses Customer demand that sends a greatly variable order pattern to the associated member in the upper stage, which results in amplification of order variance.	24	10	8	10	2	60	206	3.4
Customer demand instability also results in high capacity and inventory costs on the university	4	46	4	3	3	60	225	3.8
Compliance to the increased visibility of user demand array for the players reduces SC inventory costs by allowing the players in evolving better and efficient operations plans at each stage in the SC.	48	8	2	1	1	60	281	4.7

The demand linked aids are	8	4	30	16	2	60	180	3.0
particularly sensitive to demand inconsistency, the service level delivered by the supplier, and the point to which the order and assembly cycles are out of phase.								

From the data revealed on table 4.8 it showed that the university addressed customer demand that sent a highly variable order pattern to the associated member in the upper stage, which resulted in amplification of order variance with a mean of 3.4 while customer demand volatility resulted in high capacity and inventory costs on the university registering a mean of 3.8,.

4.3.4 The effect of inventory control policy

Table 4.9:inventory policy

Statement	SA	A	N	D	SD	$\sum f_i$	$\sum f_i w_i$	$\sum f_i w_i$
	5	4	3	2	1			$\sum f_i$
Adequate inventory review decreases the time a manager employs analyzing inventory counts, which permits more time for other aspects of managing the company.	30	6	10	12	2	60	230	3.8
Inventory evaluation allows real-time updates of inventory counts, which can make it easier to know when to reorder items to restock inventory.	8	5	36	6	5	60	185	3.1
Inventory guidelines consider inventory position for placing guidelines.	1	2	50	4	3	60	174	2.9
Inventory policy promote on hand as well as on-order. On-hand means the degree instantly accessible to meet demand, on-order means the quantity yet to reach, and backorder means demand that could not be	3	40	7	5	5	60	211	3.5

met in the earlier periods supports Supply Chain activities.

From the data shown on table 4.9 it showed that the university had an adequate inventory review that reduced the time a manager spent analyzing inventory counts, that endorsed more time for other features of running the institution had a mean of 3.8 and was given more weight, Inventory review that permitted real-time updates of inventory counts, which made it easier to know when to reorder items to restock inventory registering a mean of 3.1, Inventory policies measured inventory point for placing orders with a mean of 2.9 and Inventory policy promoted on hand as well as on-order registered a mean of 3.5. On-hand meant the quantity immediately available to meet demand, on-order meant the quantity yet to arrive, and backorder meant demand that could not be met in the earlier period's supported Supply Chain activities.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.0 Summary of findings

5.1.1 The effect of data sharing

The study suggested that, making data accessible and sharing it with the associates, an institute can speed up the movement of data within SC, increase efficiency and effectiveness and decrease the answer to the market time. Thus, data allotment brings competitive advantage for SC partners. On the other hand, in an organization where information sharing is the custom, not only do groups save time with admittance to other teams' knowledge, but they can also command better research as they can swiftly see knowledge gaps.

5.1.2 The effect of customer demand

From the study it was clear that customer demand formed a key pillar in improving the institution mode of operation. According to Boone et al. (2019) organizations use consumer demand predictions and data to appraise their pricing, proceeds and plans when selling products or services. Obedience to the bigger reflectivity of consumer demand design for the players decreases SC inventory charges by allowing the players in mounting improved and efficient operations tactics at each stage in the SC.

5.1.3 The effect of inventory control policy

The study established that Inventory review allows real-time updates of inventory counts, which make it easier for the manager to know when to reorder the items to restock inventory in the company.

5.2 Conclusions

5.2.1 The effect of data sharing

Data sharing is the major driver of performance in the supply chain. Continuous allocation of data helps managers in better judgment making, which progresses the performance of the supply chain

5.2.2 The effect of customer demand

Larger demand for a product or service opens up the firm with the opportunity to grow the company, getting more workers on board and growing capacity to match the demand. On the other hand, oversupply and low demand forces businesses to contract, laying off staff and closing factories. As customers' demands increase a strategic response. Therefore, meeting the expectation of the customer elevates an organization to a higher level.

5.2.3 The effect of inventory control policy

From the study it is clear that inventory control policy has ensured the right amount of supply is available in an organization thus saving the operational cost. Furthermore, a close tab on the movement of inventory can make or break your business and that's why institution has always emphasized on effective inventory management. Similarly, striking a balance between the demand and supply is extremely crucial for research organizations, thus, inventory management provides aid in better planning and ordering of stock items.

5.3 Recommendations

From the above deductions, the following recommendations were arrived at:

The research organizations should frequently improve on their way of Data sharing so as to keep up with the ever changing research atmosphere. They should enhance their stock control policy so as to enhance real time reordering while replenishing the inventory.

5.4 Suggestions for further Studies

Due to some limitations of this study, the following recommendations for future study were reached at. The present study used only publicly sponsored research institutions, future studies should consider increasing their room to include other private research organizations.

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APPENDICES

Appendix I: Research Questionnaire

Kindly fill the questionnaire to the best of your understanding by ticking or filling in the space(s) provided. The data obtained shall be kept confidential and used purely for academic purpose.

PART A: GENERAL DATA

1. Gender (Male) (Female)
2. Age A. (18-25) B. (26- 33) C. (34-41) D. (42-49) E. (50 and above)
3. How long you worked in this organization?
1 – 5 years [] 11- 15 years [] More than 20 years []
6- 10 years [] 16 – 20 years []
4. Indicate the degree of agreement or disagreement with the following data by ticking the appropriate box: Use a scale of 1 – 5 where 1 -strongly disagree, 2- disagree, 3 -neutral, 4- agree , 5- strongly agree.

a) Data sharing	1	2	3	4	5
I. Timely dissemination of data through sharing connects various SC partners and allows them to coordinate activities in J.K.U.A.T.					
II. The university has a well-developed data system that enables it to get a high diversity of tailored products to customers rapidly and to understand the changing customer's tastes and likings.					
III. The university unceasing sharing of new data with important persons in a appropriate and qualitative manner aid managers in improved decision making, resulting in better performance.					
IV. Data sharing is important in SCs as it offers many paybacks such as reduced					

bullwhip effect, better harmonization among various activities, taking better decisions and reduced fears in SCs.					
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5. Indicate the degree of agreement or disagreement with the following data by ticking the appropriate box: Use a scale of 1 – 5 where 1 -strongly disagree, 2- disagree, 3 -neutral, 4- agree, 5- strongly agree.

b) Customer demand	1	2	3	4	5
I. The university addresses Customer demand that sends a highly variable order pattern to the associated member in the upper stage, which results in amplification of order variance.					
II. Customer demand volatility also results in high capacity and inventory costs on the university.					
III. Compliance to the increased prominence of consumer demand pattern for the players reduces SC inventory costs by enabling the players in developing improved and efficient operations plans at each level in the SC.					
IV. The demand related benefits are particularly sensitive to demand variability, the service level provided by the supplier, and the degree to which the order and production cycles are out of phase.					

6. Indicate the level of agreement or disagreement with the following data by marking the appropriate box: Use a scale of 1 – 5 where 1 -strongly disagree, 2- disagree, 3 -neutral, 4- agree , 5- strongly agree.

c) Inventory control policy	1	2	3	4	5

I.	Acceptable inventory review reduces the time a manager devotes in analyzing inventory counts, which permits more time for other aspects of running the organization.					
II.	Inventory evaluation permits real-time updates of inventory counts, which can make it easier to know when to reorder items to restock inventory.					
III.	Inventory procedures consider inventory position for placing orders					
IV.	Inventory policy promote on hand as well as on-order. On-hand means the quantity instantly available to meet demand, on-order means the quantity yet to reach, and backorder means demand that could not be met in the earlier periods resulting to improved SC					

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