

**SUPPLIER RELATIONSHIP MANAGEMENT ON INVENTORY  
MANAGEMENT AND THE PERFORMANCE OF SUPERMARKETS IN  
MOMBASA COUNTY, KENYA**

**BY**

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**A RESEARCH THESIS SUBMITTED TO THE SCHOOL OF BUSINESS AND  
ECONOMICS, DEPARTMENT OF MARKETING AND LOGISTICS IN  
PARTIAL FULFILLMENT OF THE REQUIREMENT FOR AWARD  
OF THE DEGREE OF MASTER OF SCIENCE IN  
LOGISTICS & SUPPLIES MANAGEMENT**

**MOI UNIVERSITY**

**2022**

## DECLARATION

### Declaration by the Student

This thesis is my original work. It has not been submitted to any other institution or college for academic purposes for an award of a diploma or degree.

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## **DEDICATION**

I dedicate this work to several members of my family; first, my dad, the late Joel Muga who would do anything to take me to school. To my late mother Mrs. Risper Muga who introduced me to business at a tender age. To my siblings who make me sound like a great achiever. To my wife Olivia who cheers me on when I am thinking of quitting and to my children who share in my low and high moments.

## **ACKNOWLEDGEMENT**

This work owes its success to several persons who dedicated time and expert guidance to see it to this point. I am grateful to my Supervisors Dr. Stanley Kavale and Dr. Zurah Mohammed for guiding and advising every stage of the way. I would like to extend my thanks to the Moi University Coast Campus fraternity for all the support provided and the enabling environment.

## ABSTRACT

Organizational performance comprises real results or outputs compared to inputs and are a measure of how well organizations attain their desired goals. Kenyan retail outlets are facing fierce competition and rivalry and their performance is not guaranteed. Due to their business model, supermarkets strengths lie in their supply chain management practices, the center of which is inventory management. This study sought to establish supplier relationship management on inventory management practices and performance of supermarket outlets in the Mombasa County, Kenya. The study specific objectives were to establish the effects of inventory audit management practice, lean inventory management practice, inventory forecasting management practice and inventory process automation management practice on the performance. The theories underpinning this study were the theory of constraints, the Lean Theory, Balanced Score Card Theory and the Economic Order Quantity Model. The study used an explanatory research design to address the research problem. The target population was 136 supermarket outlets operating in Mombasa County as at December 2020. The study adopted a stratified sampling technique, with the help of Neyman allocation sample formulae the study used a sample of 101. The unit of analysis was the supermarket outlets while the unit of observation was the supermarket outlet managers. Primary data was collected using structured questionnaires with Likert type 5- point scale. A pilot study was carried on 14 supermarkets and reliability and validity was tested. Descriptive and inferential statistics were generated. Correlation analysis and multiple linear regression model were used to establish the relationship between the independent, moderating and the dependent variables. From the results, all the predictor and moderator variables were positively and significantly correlated with performance. Inventory audit management practice ( $r=.537$ ,  $p=.000$ ), lean inventory management practice ( $r=.287$ ,  $p=.008$ ), inventory forecasting management practice ( $r=.412$ ,  $p=.000$ ), inventory process automation management practice ( $r=.527$ ,  $p=.000$ ) and supplier relationship management ( $r=.441$ ,  $p=.000$ ). The multiple linear regression results showed that all the independent variables were positively and significantly related with the dependent variable. Inventory audit management practice ( $\beta=.351$ ,  $p=0.000$ ), lean inventory management practice ( $\beta=.257$ ,  $p=0.007$ ), Inventory forecasting management practice ( $\beta=.325$ ,  $p=0.000$ ) and inventory process automation management practice ( $\beta=.339$ ,  $p=0.036$ ). The moderated linear regression results showed that supplier relationship management positively and significantly moderated the relationship between Inventory audit management practice ( $\beta=.245$ ,  $p=0.006$ ) and inventory automation process management practice ( $\beta=.122$ ,  $p=0.033$ ) and performance of supermarket outlets in Mombasa county. Supplier relationship management did not significantly moderate the relationship between lean inventory management practice ( $\beta=.062$ ,  $p=0.434$ ), and inventory forecasting management practice ( $\beta=.070$ ,  $p=0.440$ ). The study concluded that inventory audit, lean inventory, inventory forecasting and inventory process automation positively significantly affect performance of supermarkets. Further, supplier relationship management positively moderates the relationship between inventory audit and inventory process automation management practice. The study recommends supermarket outlet managers to engage in effective inventory practices and supplier relationship management to improve on the performance of supermarket outlets in Mombasa County. Policy makers and government authorities should focus on both automation and reshoring to allow for more flexible adjustment to changing demand, mitigating firms' risks in the event of a pandemic or other external shocks. Further studies were recommended to be done in other parts of the country to get a further understanding of the relationships under the study. Further, a similar study should be done in other sectors of the industry especially the manufacturing sector.

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**ABBREVIATIONS**

|              |   |
|--------------|---|
| <b>EDI:</b>  | Electronic Data Interchange             |
| <b>EOQ:</b>  | Economic Order Quantity                 |
| <b>GDP:</b>  | Gross Domestic Product.                 |
| <b>IM:</b>   | Inventory Management                    |
| <b>IS:</b>   | Information Systems                     |
| <b>POS:</b>  | Point of Sale                           |
| <b>RBV:</b>  | Resource Based View Theory              |
| <b>RFID:</b> | Radio Frequency Identification          |
| <b>ROA:</b>  | Return on Assets                        |
| <b>ROI:</b>  | Return on Investment                    |
| <b>SC:</b>   | Supply Chain(s).                        |
| <b>SCM:</b>  | Supply Chain Management                 |
| <b>SKU:</b>  | Stock Keeping Unit                      |
| <b>SPSS:</b> | Statistical Package for Social Sciences |
| <b>SRM:</b>  | Supplier Relationship Management        |
| <b>TOC:</b>  | Theory of Constraints                   |
| <b>VMI:</b>  | Vendor Managed Inventory                |

## OPERATIONAL DEFINITION OF TERMS

**Cycle counts:** Refers to the process of counting inventory items available in physical locations. Depending upon the nature of inventory, number of transactions and the value of items, cycle count can be carried on periodically or perpetually (Hugos, 2018).

**Demand Forecasting Inventory Management Practice:** This is the prediction of demand that reduces bias to over-produce or under-produce which would lead to incremental cost and waste in the supply chain (Barrow, & Kourentzes, 2016).

**Firm Performance:** An assessment of how performance is on three specific areas of firm outcomes: financial, market performance, and customer value added (Wheelen & Hunger, 2012).

**Inventory Audit Management Practice:** Refers to the process of cross-checking a company's financial & inventory records against actual inventory levels to ensure all physical goods are recorded accurately. Inventory audits don't have to be done by auditors. (Christopher, 2016).

**Inventory Forecasting Management Practice:** Means estimating a future event or condition which is outside an organization's control and provides a basis for inventory planning (Barrow & Kourentzes, 2016).

**Inventory Management Practice:** It is the process of consistently having the optimal amount of raw materials for transformation and finished products available in order to deliver them rapidly to meet a customer's inventory requirement in a competitive manner (Bowersox, Closs & Cooper., 2010).

**Inventory Process Automation Management Practice:** Use of technology dealing with the application of mechatronics and computers for the production of goods and services and in inventory management (Qrunfleh & Tarafdar, 2014).

**Lean Inventory Management Practice:** Refers to a business model that emphasizes on meeting customers' expectations by delivering quality products at the least cost when required. Stocks are therefore kept at lowest possible levels and only when necessary, otherwise Just in Time (JIT) principle is practiced (Eroglu & Hoter, 2011).

**Supermarket Outlet:** Self-service shop offering a wide variety of food, beverages and household products, organized into sections. It is larger and has a wider selection than earlier grocery stores, but is smaller and more limited in the range of merchandise than a hypermarket or big-box market (Mauri, 2003).

**Supplier Relationship Management:** Strategically planning for, and managing, all interactions with third party organizations that supply goods and/or services to an organization in order to maximize the value of those interactions. It entails creating closer, more collaborative relationships with key suppliers in order to uncover and realize new value and reduce risk (Omuosh, 2020).

## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.0 Overview**

This chapter presents the background of the study, the statement of the problem, the research objectives, the research hypotheses, the significance of the study, and finally the scope of the study.

#### **1.1 Background of the Study**

Organizational performance involves analyzing a company's performance against its objectives and goals. In other words, organizational performance comprises real results or outputs compared with intended outputs (Omuosh, 2020). Organizational performance focuses on shareholder value performance, financial performance, market performance and human resource performance. Financial performance refers to measuring a company's operations and policies in monetary terms. This can be indicated by looking at its return on assets and return on investment. We can also gauge its financial performance by measuring value added. Market performance measures how well a company or product performs in the marketplace. In other words, whether a product's market share has risen, if product upgrades helped boost sales, and customer satisfaction. Shareholder value performance looks at how much a company enriches its shareholders (Peter, 2016).

Organizational performance measures can be both in terms of quantitative as well as qualitative, and it is achieved by the efforts of individual employee and departments (Zehir et al. 2016). Moreover, the success of an organization is based on their performance that is how well an organization achieves its objectives. Organizational performance means the effectiveness of an organization in the achievement of their

desired goals. Moreover, organizational performance plays a vital role in the existence of any kind of organizations such as profit-making organizations and non-profit making organizations (Achieng, Paul, & Mbura, 2018). Organization performance becomes a significant indicator for organizations in the attainment of their objectives or goals in both developed and developing economies in small medium enterprises as well as in big organizations. Organization performance is a factor that determines how well an organization achieves its objectives (Elsayed & Wahba, 2016).

Performance is a multidimensional concept that defines the success of a business as well as its level of achieving business objectives. Traditionally firms consult measures of performance like annual sales and firm size. Factors such as efficiency and effectiveness may be added to these two dimensions later. Financial performance is in most cases measured using profitability as adopted by (Peter, 2016), liquidity ratios (Wheelen & Hunger, 2012), working capital ratios (Omuosh, 2020), Total Assets ratio and Return on Investments as used by (Achieng, Paul, & Mbura, 2018). The study adopted profitability as a measure of financial performance in supermarkets through a direct comparison of supply cost and revenue generated by retail outlets over the time of study.

Supplier relationship management (SRM) is the discipline of strategically planning for, and managing, all interactions with third party organizations that supply goods and/or services to an organization in order to maximize the value of those interactions (Herrmann & Hodgson, 2001). It entails creating closer, more collaborative relationships with key suppliers in order to uncover and realize new value and reduce risk. In highly developed supplier development practices, time and accurate information is vital to decision-making and eventually to performance. As a result, sharing top secret



information with suppliers is seen to correlate positively with the organization's general business performance. Incorporating suppliers in the product design course gives them the chance to work with purchasers to discover areas that can most efficiently and effectively be undertaken, thus mounting purchasing performance. In addition, it has been supported that training suppliers enhances supplier performance (Hugos, 2018). Therefore, it should be anticipated that the execution of highly developed supplier development would develop the supplier performance and/or capacities, and ultimately, progress the buyer's purchasing performance.

Inventory audit systems provides information that support management of products and equipment. Active and reliable information are important for an efficient and effective operating environment (Ishfaq & Raja, 2019). Developing strong controls to protect organizational products is quite important. An inventory audit practice ensures accountability of organizational products. A successful inventory monitoring involves the detailed management of up to date records of the goods stored in the organization's warehouse. Nsikan, Etim & Ime (2015), established that inventory audit practices improve operational performance of an organization through enhancing efficiency in capital utilization and increased service level. Institutions that implement inventory audit frameworks are able to handle material shortages, product stock outs, and component pile up. Poor management of inventories affect's an institution's operations by piling finances on goods which could be used to other profitable ventures for the organization. Inventories help an organization to continue smoothly in activities such as customer service, production and distribution processes (Nsikan *at al*, 2015)

Lean inventory management is achievable by manufacturers redesigning their routing manufacturing, rethinking how they keep inventory, or even removing a process from

their manufacturing that isn't necessary (Isaksson & Seifert, 2014). This is important as holding inventory can cost as much as 25-30% more than the unit's actual value. And not only will practicing lean inventory improve your business's performance, but it'll provide more value to your customers too. Lean inventory management is the calculated approach to increasing the value of an organization's inventory by identifying and eliminating waste left behind from manufacturing and inventory handling activities. Thus, with lean inventory, the organization can figure out and eliminate their excess inventory and only store what they need in a specific time frame.

Inventory forecasting, also known as demand planning, is the practice of using past data, trends and known upcoming events to predict needed inventory levels for a future period (Leenders & Fearon, 2012). Accurate forecasting ensures businesses have enough product to fulfill customer orders and do not spend too little or too much on inventory. Essential data elements required for accurate inventory forecasting include: current inventory levels, outstanding purchase orders, historical trend lines, forecasting period requirements, expected demand and seasonality, maximum possible stock levels, sales trends and velocity and customer response to specific products. The main formulae or methods for successful inventory forecasting are trend, graphical, qualitative and quantitative.

With software automation and integrated hardware, such as barcodes and scanners, warehouse management can efficiently monitor stock levels (Achieng, Paul, & Mbura, 2018). This control system can also perform other essential tasks, including; determining and maintaining reorder points, managing customer order deliveries, Inventory item fulfillment, Inventory tracking, integrating established systems and monitoring real-time data. This tedious process can be completed solely by an inventory

system, enhancing supply chain management and efficiency with increased operation speed and accuracy. Automated inventory management streamlines standard stock procedures using advanced software, requiring less employee intervention and time investment. Much of research has focused the relationship between inventory management practices and their influence on performance of organizations and little has been done to look into the moderating effect of supplier relationship on the relationship between inventory management and the performance. The study settled on the variables; inventory audit, lean inventory, inventory forecasting and inventory process automation on performance as they provided the best fit for the model and gave accurate relationship between the study variables.

### **1.1.1 Global Performance of Supermarkets**

The first wave in the global supermarket 'revolution' occurred in more affluent South American countries (Brazil, Argentina and Chile), northern central Europe and East Asia (excluding Japan and China) in the 1990s while the second covered Mexico, Central America, South Africa (SA), Southeast Asia and south-central Europe. The third wave hit India, China, poorer Latin and Central America, and Eastern Europe in the 1990/2000s. The most recently documented fourth wave involved eastern and southern Africa, and other South Asian countries. This expansion was characterized by lucrative performance which since then has attracted more investors into the industry (Reardon & Hopkins, 2006). Global supermarket food products sales generated revenue in excess of \$1.70 trillion by 2015. Market growth has been driven by the rising importance of consumerism. Since supermarkets first appeared in the US, they have been rolled out all over the globe, with supermarket chains securing their place at the top of the world's retail chain. Due to the effects of the economic recession, the number of consumer visits to supermarkets has fallen over recent years (Olbrich, Jansen &

Hundt, 2017). Currently the UK is undergoing a sustained period of retail growth, with the high level of consumer confidence witnessed in previous years holding up (Ferne, Sparks, & McKinnon, 2010).

North America is the largest region in the global supermarkets and hypermarkets market, accounting for 31% of the market in 2019. Western Europe is the second largest region accounting for 26% of the global supermarkets and hypermarkets market. The global supermarkets and hypermarkets market declined from \$2456.2 billion in 2019 to \$2435.8 billion in 2020 at a compound annual growth rate (CAGR) of -0.9%. The decline is mainly due to economic slowdown across countries owing to the COVID-19 outbreak and the measures to contain it. The market is then expected to recover and grow at a CAGR of 5% from 2021 and reach \$2815.9 billion in 2023 (Das Nair & Chisoro, 2019). Over the five years to 2020, industry participants have benefited from a strengthening domestic economy and rising disposable income levels, which have enabled consumers to purchase more premium goods. The industry has also benefited from growing demand for all-natural and organic products over the past five years. Despite various economic factors that have supported industry revenue growth, rising competition and changing consumer preferences have posed a threat to many operators, forcing them to generate revenues in a declining manner (Basker & Noel, 2013).

A supermarket revolution has occurred in developing countries in the past two decades. First, the record shows that the rapid growth observed in the early 2000s in China, Indonesia, Malaysia, and Thailand has continued, and the 'newcomers' India and Vietnam have grown even faster. Although foreign direct investment has been important, the roles of domestic conglomerates and even state investment have been significant and unique. Asia's supermarket revolution has exhibited unique pathways

of retail diffusion and procurement system change. There has been ‘precocious’ penetration of rural towns by rural supermarkets and rural business hubs, emergence of penetration of fresh produce retail that took much longer to initiate in other regions, and emergence of Asian retail developing-country multinational chains (Readon, 2011).

Retailing in India is one of the pillars of its economy and accounts for 14 to 15 percent of its GDP. The Indian retail market is estimated to be US\$ 450 billion and one of the top five retail markets in the world by economic value. India is one of the fastest growing retail markets in the world, with over 1.2 billion people. The retail market has been the subject of some profound changes over the recent past. The mix of social and economic conditions which prevailed in the 1980s triggered the arrival of a much more discerning consumer, driven not just by value for money but also increased selectivity and a demand for higher quality shopping environments (Oodsing & Laosiritaworn, 2017).

In the past two decades, southern African countries have experienced rapid growth and spread of supermarket chains. Several factors account for the spread, including rising urbanization, increasing per capita income, greater economies of scale and scope, and more efficient procurement and distribution systems. The past two decades have seen the beginning of the fourth wave of the global ‘supermarket revolution’ occurring mainly in eastern and southern African countries (Reardon & Hopkins, 2006). The spread of supermarkets in Africa has, until recently, been through foreign direct investment (FDI) emerging from larger African economies (Das Nair, 2018). The first African countries to experience growth of supermarkets were South Africa and Kenya, followed by a ‘second round’ in Zimbabwe, Zambia, Namibia, Botswana, Swaziland, Mauritius, Mozambique, Angola and then Uganda and Tanzania. Ghana and Nigeria

are also seeing supermarket growth, although independent retailers and wet markets still dominate. In East Africa, Kenya is the most highly developed in terms of existence of supermarkets. The Kenyan supermarket division is composed of diverse categories of local and international chains. The bulk of supermarkets are in Nairobi. Supermarkets in Kenya mushroomed from upper income suburbs in large cities to middle class and poorer consumer markets. The spread of supermarkets then advanced into Uganda, Tanzania, Rwanda and South Sudan (Madechawo, 2018).

### **1.1.2 An Overview of Kenya's Supermarket Outlets**

Retailing is a distribution channel function, where one organization buys products from supplying firms or manufactures them and then sells these directly to consumers. Kenya's retail market is attracting increased interest from local and international investors as witnessed through expansion of local stores, entry of international retailers and increased construction of malls. The structure of the supermarket outlet sector in Kenya has followed trends in major economies in Europe and Asia. Patibandla (2012) the retail sector can be classified into three categories. The first, "ready-to-go", comprises several subcategories in which determined retailers can build positions immediately because ease of sourcing, and consumer acceptance have reached a level that permits the exploitation of advantages of scale and range. These ready-to-go sectors include dry groceries (grains and cereals, packaged foods, toiletries, and household items), electronics, certain kinds of men's clothing, and music, and shopping malls a good example being the format of Two Rivers mall in Nairobi (Arasa & Achuora, 2021).

Dry grocery is particularly attractive because of the proliferation of brands and products which have helped improve retail margins on two levels: they're package-goods, hence

suppliers must match retailer's better terms to obtain shelf space, and secondly, they practice what up market supermarkets like Tusksys in Nairobi central business district do such as attracting customers with frozen foods and offering a superior range of goods. They can also offer discounts because of their increased margin spread. The second category of retailing, "shape/adapt", includes live groceries ("fresh groceries"), women's clothing, do-it-yourself products, fast food, and furniture. Retailers in these sectors must invest substantially to shape the supply chain and persuade consumers to change their buying behavior. Good examples being, Mr. Price and Victoria Furniture. The third category of retail segments, "wait and watch", comprises the undeveloped sector that provides no immediate opportunity for retailers. Pharmacy products and retail liquor products are two examples of such sector (Gatutha & Namusonge, 2020).

Kenya's retail sector is still among the most attractive for long-term investors in sub-Saharan Africa with an expansion rate of 30% despite cash flow challenges that have left giants on the brink of collapse. The interest is largely fueled by the sector's growth. It has outperformed the economy in the last five years due to rising households' disposable income. Growth of supermarkets in Kenya can be attributed to such factors as increased urbanization; a growing middle class and its changing lifestyles; and market liberalization that has led to increased competition in the sector (Ndigwa & Moronge, 2019). The supermarket is not a new concept in Kenya, having had the first store of its kind in the 1960s. A lot of changes have been experienced in Kenya's retail sector. Many new foreign as well as local investors are establishing retail chains or supermarkets in Kenya (Njoroge, 2015).

Kenya's retail sector has experienced tremendous new entrants as well as threats of exit by some major players in the recent years. The market was valued at KSH 1.8 trillion

in 2017 according to a survey conducted by Proctor and Gamble and is projected to increase substantially by approximately 10% annually over the next 10-15 years (Kimotho, 2017). According to Nielsen report, Kenya's formal retail penetration is 30% making it the second highest in Africa, after South Africa's 60% which has served as an incentive for foreign retailers. Over 20 notable local and international retailers have aggressively penetrated the Kenyan market within the last 6 years, including, Carrefour, Shoprite and Game of France and South Africa, respectively, supported by a widening middle class and provision of high quality spaces in line with international standards as well as infrastructure (Ndigwa & Moronge, 2019).

## **1.2 Statement of the Problem**

Performance of supermarket outlets is of paramount importance to the global economy as well as the Kenyan economy as they ensure availability of goods to the general public as and when it is needed therefore fulfilling time, place, possession and form utility (Ellickson, 2016). The retail industry, contributes up to 30% of the employment in formal and informal establishments in Kenya. However, the industry has of late faced challenges. Kenya's retail industry has in the recent past experienced fluctuations in performance. A report by Cytonns (2016) indicated that despite the potential in the industry, regional retail malls are able to yield up to only 11.7% returns. Similar statistics are reported by African Consumer Insights report (2016) that the market share / penetration rate of retail chains is still low at a figure between 25% - 30%. Poor performance of the retail outlets in Kenya contributed to a decline in GDP to 1.5 percent in the year 2008 from 7.0 percent achieved in the year 2007. The GDP rose to 2.7 percent in the year 2009 and a further increase of 5.8 percent in the year 2010. However, this growth declined to 4.4 percent in the year 2011 (KNBS, 2012). This has seen the contribution of the retail sector to the GDP progressively decline; standing at 8.0



percent in 2014 and further declining to 7.5 percent as at 2015 (Irungu & Wanjau, 2017).

More recently, one of the biggest supermarkets that has dominated the Kenyan market for more than 10 years, Nakumatt, collapsed with debts estimated to be upwards of Sh15 billion. Tuskys supermarket collapsed a year ago. Some of the reasons cited for the failure were poor supplier relationship management that led to high debts on the suppliers. These negative trends in performance of the retail chains are linked to structural inefficiencies in the supply chains as suggested by firm-level analysis based on data from the Census of Industrial Production and the World Bank's Enterprise Survey (2014). One of the critical challenges facing supermarket outlets is the inventory practices as inventory management is an area which requires increased attention because inventories account for more than 70 percent of the total costs of retail chains (Omuosh, 2020). Shortages of stock are occasionally attributed to long procurement procedures, occasional shortages in the market, lack of sufficient funds with which to purchase new supplies, unwillingness of suppliers to supply retail outlets due to delayed payments, inadequately trained staff in the inventory management section and the inadequacies of the retail outlets stock management system (Anny, Shalle & Oduma, 2015).

Even though firms are aware of the importance of inventory management, there are several barriers that still hinder implementation of this. The bull whip effect, improper stock control systems, limited skills and capability of personnel in this area have been mentioned as barriers to successful inventory management (Naliaka & Namusonge, 2015). Gatutha & Namusonge, (2020) found out there is a significant and positive relationship between the competitive strategies and performance of Supermarkets in

Nairobi City, the study did not focus on supply chain. Arasa & Achuora, (2021) found out that e-inventory management system and activity-based costing system has positive influence on performance of supermarkets while lean inventory management systems had no significant influence on the Performance of Supermarkets in Nairobi County, Kenya, the study did not show how supplier relationship as a moderator affect the relationship. Ndigwa & Moronge, (2019) found out that consignment inventory and electronic data interchange had a positive correlation with performance in retail chains in Kenya, the study did not show how supplier relationship as a moderator affect the relationship. Achieng, Paul & Mbura, (2018), found inventory categorization, inventory modeling and Inventory planning positively affected the performance of retail outlets in Nairobi County, the study did not show how supplier relationship as a moderator affect the relationship. Mulandi & Ismael, (2019) established that just-in-time inventory system and material requirement planning have positive and significant relationship with performance, the study did not show how supplier relationship as a moderator affect the relationship. From the reviews used in this study, scholars have not addressed the moderator effect of supplier relationship on the relationship between inventory management and the performance of supermarkets in Mombasa County. The study filled the identified information gaps and made a contribution by proving the effect of supplier relationship as a moderator in the relationship between inventory management practices and the performance of supermarket outlets in Mombasa County, Kenya.

### **1.3 Objectives of the Study**

This study was guided by both the general and the specific objectives.

#### **1.3.1 General Objective**

The general objective of this study was to examine the moderating effects of supplier relationship management on the relationship between inventory management practices and the performance of supermarket outlets in Mombasa County, Kenya.

#### **1.3.2 Specific Objectives**

The specific objectives of the study were;

- i. To determine the effect of inventory audit management practice on the performance of supermarket outlets in Mombasa County, Kenya.
- ii. To establish the effect of lean inventory management practice on the performance of supermarket outlets in Mombasa County, Kenya.
- iii. To evaluate the influence of inventory forecasting management practice on the performance of supermarket outlets in Mombasa County, Kenya.
- iv. To assess the effect of inventory process automation management practice on the performance of supermarket outlets in Mombasa County, Kenya.
- v. To examine the moderating effect of supplier relationship management on the relationship between inventory management practices and supermarket outlet performance in Mombasa County, Kenya.

## 1.4 Hypotheses

The study hypotheses were;

- H<sub>01</sub>:** Inventory audit management practice has no significant effect on the performance of supermarket outlets in Mombasa County, Kenya.
- H<sub>02</sub>:** Lean inventory management practice has no significant effect on the performance of supermarket outlets in Mombasa County, Kenya.
- H<sub>03</sub>:** Inventory forecasting management practice has no significant effect on the performance of supermarket outlets in Mombasa County, Kenya.
- H<sub>04</sub>:** Inventory process automation management practice has no significant effect on the performance of supermarket outlets in Mombasa County, Kenya.
- H<sub>05</sub>:** Supplier relationship management has no significant moderating effect on the relationship between inventory audit management practice and performance of supermarket outlets in Mombasa County, Kenya.

## 1.5 Significance of the Study

The study findings will also help policy makers in improving the retail industry and supply chain practices in the country. This can be done through comparing with other markets and formulating policies that facilitate trade and business within the country.

Policy makers will find this study useful in guiding their policy formulation roles.

The results provided additional insight and further evidence on the importance of the inventory management on Supermarket outlet performance. To Managers of supermarket outlets, this study provided information and tools to enable them manage their inventories better in order to achieve competitive strength and better returns for the investors.

Further, the study was of significance to researchers as it fills existing gaps in the field of supply chain and retail industry. The study contributes towards a framework for further research and therefore of importance to future scholars and researchers who can use it as a source of reference. Furthermore, Researchers in the future will be provided with local information of inventory management practices and strategies with respect to the modern supermarket outlet industry in Kenya.

### **1.6 Scope of the Study**

This study was on the moderating effect of supplier relationship management on the relationship between inventory management practices and performance of supermarket outlets in Mombasa County, Kenya. The target population was 136 supermarket outlets in Mombasa County. The unit of analysis was the supermarket outlets while the unit of observation was the managers of the supermarket outlets. The study was carried out in December 2021 and it covered four aspects of Inventory Management practices; Inventory Audit practice, Lean inventory management practice, Inventory forecasting practice and Inventory process automation practice and supplier relationship management as the moderating variable.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.0 Introduction**

This chapter consists of literature review and it covers a review of the concepts, the theoretical framework, empirical review, research gaps, conceptual framework and the summary.

#### **2.1 The Concept of Organization Performance**

Wheelen & Hunger (2012) posit that performance is the outcome of all of the organization's operations and strategies. The organization's performance is the appraisal of prescribed indicators or standards of effectiveness, efficiency, and environmental accountability such as productivity, cycle time, regulatory compliance and waste reduction. It is the result of all of the organizations' operations and strategies. Performance measurement is usually carried out using a performance measurement system, which consists of several individual measures. The most commonly used model is the Balanced Scorecard (BSC). Others include; the Performance Prism and the Performance Pyramid. The measures for the performance measurement system chosen are based on an organization's vision and strategy (Kaplan & Norton, 1992). Measures are chosen to measure success factors from different points of view, such as that of the customer, employees, business processes and financial success, as well as from the point of view of past, current and future performance. This way, different aspects of an organization's performance can be measured and managed. Organizational performance can be measured in various ways. These may include but not limited to sales growth rate, market share, productivity and profitability (Peter, 2016). Organizational performance comprises of three distinct areas of company results: Financial performance, commodity market performance and shareholder return and

may essentially be a reflection of changes in the market size or financial conditions rather than sales figures alone. An organization's performance in respect to competitors can be measured by its share in the market (Ahmad & Zabri, 2018).

## **2.2 The Concept of Inventory Management Practice**

Inventory management entails all the unified management of those internal activities associated with the acquisition, storage, issue, use and internal distribution of inventory used in the production and provision of services. It is the activity of determining the rate, quantities and the procedures of materials to be stocked in an organization and regulation of receipts and issues of those stocks (Atnafu, & Balda, 2018).

### **2.2.1 Concept of Inventory Audit Practice**

An inventory audit refers to the process of cross-checking a company's financial & inventory records against actual inventory levels to ensure all physical goods are recorded accurately. Inventory audits don't have to be done by auditors (Govind, Luke & Pisa, 2017). Auditing inventory activities involves monitoring and evaluating stock activities such as buying, storage, movement of stock and the usage of finished and work in progress goods. This enables the organization to ensure availability of goods when they are needed for use within the organization functions. The basic role of inventory audit is to coordinate products throughout the procurement process. Inventory management involves the coordination of all activities within the organization storage department and the activities involved in the movement of goods within the organization. Inventory audit systems provides information that support management of products and equipment. Active and reliable information are important for an efficient and effective operating environment (Ishfag & Raja, 2019). Developing strong controls to protect organizational products is quite important. An inventory audit

practice ensures accountability of organizational products. A successful inventory monitoring involves the detailed management of up to date records of the goods stored in the organization's warehouse. Nsikan, Etim & Ime (2015), established that inventory audit practices improve operational performance of an organization through enhancing efficiency in capital utilization and increased service level. Institutions that implement inventory audit frameworks are able to handle material shortages, product stock outs, and component pile up. Poor management of inventories affect's an institution's operations by piling finances on goods which could be used to other profitable ventures for the organization. Inventories help an organization to continue smoothly in activities such as customer service, production and distribution processes (Nsikan et al., 2015). The purpose of the inventory audit function is to support the business activities to optimize customer service, inventory costs and operating cost. An inventory audit practice enhances the performance of the procurement function (Wild, 2017). This is because managers will be able to point out areas that need improvement. Inventory control is exercised through inventory audits and cycle counts. An inventory audit essentially comprises of auditing the books stocks and transactions and matching physical stocks with the book stock.

Inventory audit is a popular concept among accounting and inventory management practitioners. Inventory audit ensures timely and adequate identification and evaluation of inventories (Hugos, 2018). Inventory audits reduce inventory losses and ensure inventory accuracy. Inventory audits enable an organization evade risks associated with inventory such as; inadequate and inappropriate inventory, unnecessarily high inventory levels, inaccurate and incomplete inventory records, poor inventory security and obsolete inventory (Ishfag & Raja, 2019). It is important to audit aspects such as costs incurred in internal inventory control practices and



systems. It is also important to audit the level of compliance with organizational and industrial procurement practices. Inventory control practices must be in line with organizational strategic direction and internal procurement and stores objective (Saro, Keitany & Rop, 2021).

### **2.2.2 The Concept of Lean Inventory Management Practice**

The term 'lean' refers to a systematic approach to enhance value in an organization's inventory by eliminating excessive waste of materials, and performing tasks with minimum effort and time through continuous improvement. Lean production is carried out from the perspective of the client, or customer who will be purchasing the product or service. Lean inventory is a concept practiced by firms looking to reduce as much waste as they possibly can from their manufacturing processes (Eroglu & Hofer, 2011). Waste may include leftover materials, waiting times from bottlenecks or transportation of an item. Lean inventory management is achievable by manufacturers redesigning their routing manufacturing, rethinking how they keep inventory, or even removing a process from their manufacturing that isn't necessary. This is important as holding inventory can cost as much as 25-30% more than the unit's actual value. And not only will practicing lean inventory improve your business's performance, but it'll provide more value to your customers too. Lean inventory management is the calculated approach to increasing the value of an organization's inventory by identifying and eliminating waste left behind from manufacturing and inventory handling activities. Thus, with lean inventory, the organization can figure out and eliminate their excess inventory and only store what they need in a specific time frame (Isaksson & Seifert, 2014).

The Lean inventory management practice was inspired by the Toyota Production System (TPS) synonymous with Just-In-Time inventory system, and designed to improve overall customer value. The Toyota Production System identified seven kinds of wastes that can impact productivity and product quality; Overproduction, Waiting, Transporting, Processing, Inventory, Motion and Defects. Lean inventory management techniques are mainly built upon five principles; Value, Flow, Pull, Responsiveness and Perfection. The main benefits of lean inventory management include; better product quality, shorter lead times, eco-friendly and sustainable business practices, boosted employee morale, and increased profits (Keitany & Riwo-Abudho, 2014).

### **2.2.3 The Concept of Inventory Forecasting Practice**

Inventory forecasting is calculating the amount of inventory necessary for future periods. It factors replenishment data such as timing, availability and delivery speed—also known as lead time. Replenishment is the stock required to meet inventory forecasts based on inventory goals, supply and demand. Inventory forecasting, also known as demand planning, is the practice of using past data, trends and known upcoming events to predict needed inventory levels for a future period (Leenders & Fearon, 2012). Accurate forecasting ensures businesses have enough product to fulfill customer orders and do not spend too little or too much on inventory. Essential data elements required for accurate inventory forecasting include: current inventory levels, outstanding purchase orders, historical trend lines, forecasting period requirements, expected demand and seasonality, maximum possible stock levels, sales trends and velocity and customer response to specific products. The main formulae or methods for successful inventory forecasting are trend, graphical, qualitative and quantitative. The expert tasked with forecasting chooses the best method based on known stocking issues,

personal insights, feedback from sales, customer input, mathematical analysis and market research (Harshitha, 2017).

#### **2.2.4 The Concept of Inventory Process Automation Practice**

Inventory process automation is a modern process that uses advanced technology to manage inventory within the supply chain. With software automation and integrated hardware, such as barcodes and scanners, warehouse management can efficiently monitor stock levels. This control system can also perform other essential tasks, including; determining and maintaining reorder points, managing customer order deliveries, Inventory item fulfillment, Inventory tracking, integrating established systems and monitoring real-time data. This tedious process can be completed solely by an inventory system, enhancing supply chain management and efficiency with increased operation speed and accuracy. Automated inventory management streamlines standard stock procedures using advanced software, requiring less employee intervention and time investment. This solution also gives warehouse management access to real-time inventory data when integrated with the other management systems. With this broader scope of warehouse performance, an organization can make accurate data-based inventory decisions (Bowersox, et. al. 2010).

An automated inventory system refers to an inventory system that automates key parts of the inventory management process. Top brick & mortar and ecommerce retailers tend to lean on inventory automation to streamline their fulfillment and supply chain management. These automations can save organizations tons of time and effort while also benefiting their bottom line. An automated inventory management system is a software application that allows wholesalers and distributors to add, edit, delete and

transfer inventory in real time. It allows an organization to pull inventory counts from its suppliers using a data feed that feeds into its website (Closs, Swink & Nair, 2005).

### **2.2.5 The Concept of Supplier Relationship Management**

Supplier Relationship Management (SRM) refers to all the business processes and activities that deal with the entire lifecycle of a supplier for an organization. This includes, but is not limited to, identification, selection, and management of relevant suppliers coupled with a practical evaluation of their performance to ensure they are providing maximum value for the organization's third-party requirements (Christopher, 2016). With the current increased trend of outsourcing non-core processes as well as entering partnership agreements with a critical supplier, supplier relationship management has become crucial for maximizing the value of those alliances and outsourcing deals. Leading organizations worldwide are implementing supplier relationship management frameworks to provide structure, consistency, accountability, and controls over SRM activities. Supplier relationship management is essential to evaluate if the suppliers are performing as per the organizational requirements and to identify areas of improvement while engaging with suppliers throughout their lifecycle. This ensures an organization is deriving the maximum value from the suppliers for the relevant requirement(s), given the resources invested in the suppliers. To get the most out of a supplier's service, it is important to track and measure their performance. With regular communication and feedback, an organization develops a transparent relationship with the supplier, which helps in finding areas of improvements with quick solutions (Achieng, Paul & Mbura, 2018).

Organizations with perfect supplier relationship management practices manage growing supplier base effectively, achieve cost savings and quality control, improving

the organization's supply transparency, track compliance to relevant parameters, successfully evaluate supplier performance, assess and mitigate supplier risk effectively and develop their suppliers for mutual benefit. The SRM process includes identifying the set of business goals and objectives, identifying relevant selection criteria for choosing suppliers, evaluating and selecting suppliers, negotiating and contracting with the selected supplier(s), evaluating supplier performance and crafting strategies to improve supplier management (Bowersox, et. al. 2010).

### **2.3 Theoretical Framework**

A theory is a set of statements or principles devised to explain a group of facts or phenomena especially one that has been repeatedly tested or is widely accepted and can be used to make predictions about natural phenomena. Theories are the analytical tools for understanding, explaining and making predictions about a given subject matter. Theories may be expressed mathematically, symbolically or in common language but are generally expected to follow principles of rational thought or logic. This study was guided by the theory of constraint, lean theory, economic order quantity model and the balanced score card theory. The main theory for the study was lean theory, the theory elaborates on how organizations gain flexibility in their ordering decisions, reduce the stocks of inventory held on site and eliminate inventory carrying costs. From the reviews given attaining a lean supply chain is every organization's goal.

#### **2.3.1 Theory of Constraints**

The theory of constraints (TOC) aims at initiating and implementing breakthrough improvement through focusing on a constraint that prevents a system from achieving a higher level of performance. The TOC paradigm essentially states that every organization should have at least one constraint (Simatupang, Wright & Sridharan,

2014). Collaborating organizations normally share responsibilities and benefits with their upstream and downstream partners in order to create competitive advantage. When all the supply chain's (SC's) partners are integrated and act as a homogenous entity, profit and performance is enhanced throughout the (SC), as a combination of supply and demand. Flores & Primo (2015) affirmed that, with the crescent requirement of the market, the logistic process became more and more complex and with much higher levels of demands, especially when related to achieving a competitive advantage. The competition is not among companies but among the SCs. The main goal of the supply chain manager (SCM) is therefore to reach a solution with optimized profit for all SC's partners; this could only be realized with the help of inventory management since there is often a great disparity between potential benefits and the practice (Hugos, 2018).

Other stakeholders may have developed necessary conditions that should have been met to allow the system to continue operating. The TOC thus encourages managers to identify what is preventing them from moving towards their goals as well as necessary conditions and find solutions to overcome the limitation. Despite the noticeable worldwide performance improvement of logistics, the main problem observed was that logistics activities had not been achieving better results related to profitability and efficiency, because most of the time, each one of them just considered its local constraints (own problems), when they should have been considering all capabilities constraints related to inventory as a whole. The theory of constraints was relevant to this study as it helped in understanding inventory forecasting and its effect on performance of supermarkets in Mombasa.

### **2.3.2 Lean Theory**

Lean theory is an extension of ideas of just in time. The theory eliminates buffer stock and minimizes waste in production process (Green & Inman, 2005). Inventory leanness

positively affects the profitability of a business organization and is the best inventory control tool. Organizations that are leaner than industry average generally see positive returns to leanness (Eroglu & Hofer, 2011). The theory elaborates on how organizations gain flexibility in their ordering decisions, reduce the stocks of inventory held on site and eliminate inventory carrying costs. Scholarly studies indicate that companies successfully optimize inventory through lean supply chains practices to achieve high levels of asset utilization and customer satisfaction leading to improved growth, profitability and market share. Criticism leveled against the theory is that it can only be applicable when there is a close and long-term collaboration and sharing of information between an organization and its trading partners (Isaksson & Seifert, 2014). The lean theory was of significance to this study as it guided in understanding how lean inventory influences performance of supermarkets in Mombasa.

### **2.3.3 Economic Order Quantity (EOQ) Model**

EOQ is one of the models widely used to manage inventory in many industries. EOQ model was developed by Harris in 1913 and is also known as Wilson EOQ model, who critically analyzed the model in detail. It is also known as the point where total inventory costs are minimized. EOQ is the level of inventory that minimizes the total of inventory holding costs and ordering costs (Sremac, Tanackov, Kopicic & Radovic, 2018). The basic EOQ, assumptions that are necessary to calculate EOQ are as follows: That stock holding costs are known, and constant; there is a known, constant ordering cost; the rate of demand is known and constant; lead time cycle is known and constant; the price per unit is constant; the replenishment is made instantaneously, the whole batch is delivered at once and no stock-outs are allowed. One disadvantage of EOQ is that it ignores the need to have buffer stocks, which are maintained to cater for variations in lead-time and demand making it difficult to be observed in practice. The

EOQ model requires that for every item stocked in the stores, there is need to determine the point of order and that of the most cost effective quantity to order. The model assumes that all other variables are constant even though uncertainties are common and regular for all businesses. For example, uncertainty includes change in demand, damage during transportation and delay in delivery. Uncertainty in demand, will therefore force EOQ to be adjusted to buffer against an uncertain business atmosphere (Asif, Farhad, & Byrne, 2016).

Due to uncertainties experienced in the business environment, adjusted economic order quantity is an EOQ model that can be used where fluctuation in demand is a common occurrence. As previously noted regarding the restrictive assumptions of simple EOQ model, the situation that would meet all the assumptions is an ideal. The fact that uncertainty in demand seems to be encountered in most situations, EOQ model should be fixed to cope with this uncertainty (Leenders & Fearon, 2012).

A larger order-quantity reduces ordering frequency, and, hence ordering cost per month, but requires holding a larger average inventory, which increases storage (holding) cost per month (Kumar, 2016). On the other hand, a smaller order-quantity reduces average inventory but requires more frequent ordering and higher ordering cost per month. EOQ model is a very important tool that organizations can also use to ensure that inventory supply does not hit a stock out. The EOQ model helps organizations to reduce inventory management costs by reducing the cost of ordering and holding stock. The study thus used this theory to find out the effect of inventory audit on performance of supermarkets in Mombasa.



### **2.3.4 The Balanced Score Card Theory**

The ultimate goal behind balanced scorecard theory is to measure the factors that create value for an organization and directly influence its ability to prosper. The key four areas are financial, customer, internal, and learning. The goals in the financial perspective should serve as the focus for the goals in all the other perspectives. The kind of financial performance to expect for a given organization are return on investment, profitability, sales growth, revenue, and cash flow. The market firms identify the customer and market segments within which the organization chooses to compete. Typical measurements within this perspective focus on market share, customer retention, customer acquisition, customer satisfaction, and customer profitability. The internal perspective focuses on the processes within the organization that are most critical for attaining customer and shareholder goals (Kaplan & Norton, 1992). In most cases, the objectives and measures of this perspective are developed after the financial and customer perspectives are defined. Typical measurements within this perspective focus on innovation, operations, and post-sale service. The learning perspective focuses on developing objectives and measures to drive learning within an organization. Typically, this perspective considers employee capabilities, information systems, motivation, empowerment, and alignment. The objectives in this perspective drive the success of those in the first three perspectives (Lawrie, Kalff & Andersen, 2006).

An effective balanced scorecard needs a combination of both performance drivers and outcome measures. Without the outcome measures such as profitability, market share, or customer satisfaction, among others, a scorecard does not provide an indication of how well the organization is performing. Without performance drivers, such as objectives that are categorized within the internal and learning perspectives, the organization will not have an indication of whether its strategy is working. Performance

drivers also communicate what steps are required to achieve the strategy. Measures that provide both qualitative information, such as employee satisfaction level, and quantitative information, such as sales amount are key (Ahmad & Zabri, 2018). The balanced score card theory was key in measuring the performance of organizations, in this case the supermarket outlets in Mombasa County, Kenya.

## **2.4 Empirical Review**

This section reviewed literature on inventory audit practice, lean inventory practice, inventory forecasting practice, inventory process automation practice and the Moderating effect of Supplier Management on relationship between Inventory Management Practices and Supermarket Performance.

### **2.4.1 Inventory Audit Management Practice and Supermarket Performance**

The benefits of conducting retail audits are twofold. On the one hand, they serve as a tool for suppliers to ensure that retailers are complying with pre-established agreements on product placement, pricing, and promotion. On the other hand, they allow brands to accurately measure their success in the retail environment. Equally advantageous is the priceless commodity of data that audits provide, though your data is only as good as your method of collecting it. By taking the steps to aggregate quality data from various retail locations over time and comparing results, managers can make actionable decisions that reduce inefficiencies and ultimately drive sales (Govind, et. al. 2017)

Efficient execution of retail supply chain strategy requires an effective management of store inventory. This can be achieved by retail firms investing in technology and business process development (Ishfaq et al. 2016). Improving the quality of inventory records not only ensures proper utilization of available inventory for in- store sales but also for e-commerce orders that retailers are increasingly filling through their stores.

Empirical data has shown that retailers' records of store inventory can be off by up to 30%. If inventory records are not corrected in a timely manner, the discrepancy can affect as many as 65% of items in a store (Wild, 2017). According to estimates by IBM Business Consulting Services, inventory record inaccuracy (IRI) costs retailers more than \$1 billion in lost inventory value each year. The National Retail Federation, in its 2015 annual retail security survey (NRSS), reported that inventory errors result in \$44 billion of lost revenue for US retailers. An ECR Europe study reported a similar statistic that the total cost of inventory errors can be as high as 1.84% of the total annual European retail sales. The inaccuracy of inventory records can be corrected through physical counting of store inventory. However, the high cost and extensive labor requirements had made routine inventory audits an impractical approach for retailers that left them with very few options but to wait on the information from the annual financial audit to correct inventory errors. But such long delays in correcting inventory records offer limited operational benefits resulting in poor store performance (Awino, 2011).

#### **2.4.2 Lean Inventory Management Practice and Supermarket Performance**

This principle is linked with reduced inventories and reduced wastages. The argument is that as inventory is reduced there will be profit improvement due to interest savings as well as a reduction in storage fees, handling and waste. These savings have been estimated by literature to be in the range of 20 -30 percent. Lean inventory Management is getting more and more attention in today's highly competitive environment. The proponents of Lean Inventory system argue that excess inventory will adversely affect the net cash flows of an organization. The hypothesis that lean inventory management practice leads to an improvement in an organization's financial performance was tested. The findings suggest that the higher the level of inventories preserved (departing from

lean operations) by an organization, the lower the rate of return. In conclusion, most of the studies reviewed concentrated on conventional organization level variables such as inventory levels, demand and lead time (Eroglu & Hofer, 2011).

Lean inventory refers to a business model that emphasizes on meeting customers' expectations by delivering quality products at the least cost when required. Lean thinking as the dynamic, knowledge driven and customer focused process through which all people in a defined enterprise continuously eliminate waste with the goal of creating value. Lean is both a concept that can be viewed and implemented at a number of levels and also a commitment process of relentless improvement that can significantly impact upon an organization's health, wealth and competitiveness. Lean can resolve severe organizational problems and additionally can be a powerful approach to gather and unite several change initiatives that are running through. Organizations that adopt JIT system are able to improve their earnings per share as a result of inventory turnover improvement. There is a positive relationship between inventory reduction and productivity growth. Specifically, their findings showed that 10% reduction in inventory is responsible for 1% gain in labor productivity. They concluded that inventory reduction can be considered as an important driver of process improvement. In fact, there is a remarkable positive effect of inventory reduction on organization performance in a JIT context (Leenders & Fearon, 2012).

Inventory reduction improves three measures of organization performance; return on investment, profits, and return on sales and organization performance can be enhanced through reducing inventory as well as quality costs and increasing customer responsiveness. This leads to a positive association between inventory turnover and organization performance expressed by return on assets, return on sales, and cash flow

margin (Eroglu & Hofer, 2011). Organizations may focus more on having lean inventory to maximize on their efficiency and leverage capital which would lead to increased economies of scale that would improve demand coordination. In such cases, they would have superior inventory turnover over their competitors and at the same time hold lower inventory levels. By doing this, organizations can achieve cost advantages through efficient supply chain performance and increase their transactional efficiency (Elking, Paraskevas, Grimm, Corsi & Steven, 2017).

#### **2.4.3 Inventory Forecasting Management Practice and Supermarket Performance**

Inventory forecasting means estimating a future demand and supply of inventory and provides to organizations control and provides a basis for future managerial planning. In today's demand-driven trading supply chain, being successful means finding the right balance between supply and demand, between levels of inventory at different stages of the chain and between availability of materials and operational cost. Reports reveal that a 5% improvement in demand forecasting accuracy correlates to a 10% improvement in order perfection. Forecasting serves as the starting point in major business decisions such as production, finance, marketing, and purchasing. In retail, forecasting is an inventory management and risk reduction tool designed to estimate the future demand of one or more products. The objective of forecasting is to predict product sales, reduce inventory, reduce the bullwhip effect, and reduce stock outs (Barrow & Kourentzes, 2016).

Forecasting accuracy is the difference between forecasted demand and actual demand. Having the ability to accurately predict sales is a major advantage in the business industry. As retail managers continue to face economic uncertainty in a fluctuating competitive market, they have increased their dependence on forecasting models.

Successful retailers are those that improve and sustain customer satisfaction levels by using just-in-time inventory management systems supported by excellent technology. Retailers should use some form of a demand-forecasting model to improve performance, advance business competitiveness and profitability based on accurate inventory records. Leaders use systematic demand forecasts to improve inventory management (Ahmad & Zabri, 2016). An accuracy-first approach to managing inventory may help small businesses avoid financial losses and promote inventory precision in the business operation.

An accurate demand forecast can aid leaders in managing inventory and avoid loss of profits. Identifying best practices ensures an accuracy-first approach to managing inventory and promotes precise inventory replenishment. As a best practice, leaders should maintain sufficient inventory for day-to-day operations while keeping ordering and carrying costs as low as possible (Kontus, 2014). Additionally, leaders should encourage training in inventory planning and demand forecasting to promote the quality of knowledge and skill to operate an inventory management system (Govind et al., 2017). Failure to invest proper resources into forecasting infrastructure and training/development of employees can lead to poor-performance and low profitability in firms. While researchers have not identified a perfect method, findings suggest that the use of forecasting models and investing in the skill development of associates can improve inventory with profitability long-term. Simply put, forecasting work experience is a significant contributor to forecasting success in the retail space (Leenders & Fearon, 2012).

#### **2.4.4 Inventory Process Automation Management Practice and Supermarket Performance**

Companies are continuously seeking to gain competitive advantage through increased use of technological innovations. The modern supply chain relies heavily on technology to meet high performance in meeting the customers and consumers' demand. The supply chain issues that the firms try to automate are in data synchronization, planning and scheduling, real time tracking and reporting. Automation is a technology dealing with the application of mechatronics and computers for the production of goods and services. Automation is broadly classified into manufacturing and service automation. The main reasons why many firms automate is to curb the problems of shortage of labour, high cost of labour, need to increase productivity and to reduce the manufacturing lead-times (Qrunfleh & Tarafdar, 2014). All this put together, it implies that automation leads to lower operational costs and improved customer service. Information System strategy enhances the relationship between Lean and agile supply chain strategy and supply chain performance (Omoush, 2020).

The technology for supply chain management is still evolving with an impact on reduced costs in the back end and increased sales on the front end. Modern retailers are now faced with increased competition and market saturation and are hence forced to increase the efficiency and effectiveness of operations planning and control to maintain market share. Efficient customer response is one of the mechanisms being used globally to improve planning and control by improving collaboration along the supply chain with the objective of maintaining high customer service level and reducing the cost. It has a widespread application and relies on efficient replenishment and high availability of fast moving consumer goods. The Electronic Data Interchange (EDI) systems have suffered from major out of stock that heavily impacted the sales out and profitability of

firms mainly because of inventory and forecasting inaccuracies, in-store processing errors and upstream delivery problems (Mangan, Lalwani & Lalwani, 2016).

Radio Frequency Identification (RFID) is another one of the technologies that have revolutionized the modern retail industry. It uses radio frequency to enable item identification. It offers direct insight into the consumer's buying habits, increases the supply chain efficiency and accuracy. It also reduces the supply chain inventory levels, lead times and stock outs. The use of the RFID can increase the inventory accuracy levels, order accuracy, the product quality, customer service and the collaboration among the supply chain members. Supply chain visibility also leads to improved planning and control along a supply chain. It allows for information sharing that lead to improvement on on-shelf availability by reduced stock-outs and improved planning by achieving greater forecast accuracy. IT is therefore indispensable when it comes to implementing inventory control in the supply chain (Closs, Swink & Nair, 2005).

#### **2.4.5 Supplier Relationship Management, Inventory Management Practice and Supermarket Outlet Performance**

Supplier relationship management (SRM) is the discipline of strategically planning for, and managing, all interactions with third party organizations that supply goods and/or services to an organization in order to maximize the value of those interactions. It entails creating closer, more collaborative relationships with key suppliers in order to uncover and realize new value and reduce risk. SRM is a process involved in managing preferred suppliers and finding new ones whilst reducing costs, making procurement predictable and repeatable, pooling buyer experience and extracting the benefits of supplier partnerships. SRM has been shown to have an impact on performance of organizations as collaboration improves delivery and quality in the electronic industry



in Scotland. SRM brings inventory reduction and stabilization of production scheduling and that the defect rate reduces when supplier participates early in the product development process (Ahmad & Zabri, 2018).

When all the suppliers participate in the product development process, the development time reduces and the result performs better in design process. Expansion from value chain to network of supply chain changes firm's business area and creates new chances for improvements. Collaboration process expands from just information sharing activity to synchronizing planning and execution, combining work flow, venturing new business, sharing resources and so on. For an organization to attain and sustain competitive advantage, it must foster a strong relationship with its suppliers. Collaboration between organizations and their suppliers is necessary for maintaining performance levels. Supplier organization relationship is significant for performance and supplier relationship management enhances productivity of organizations (Maraka, Kibet & Iravo, 2015).

In highly developed supplier development practices, time and accurate information is vital to decision-making and eventually to performance. As a result, sharing top secret information with suppliers is seen to correlate positively with the organization's general business performance. Incorporating suppliers in the product design course gives them the chance to work with purchasers to discover areas that can most efficiently and effectively be undertaken, thus mounting purchasing performance. In addition, it has been supported that training suppliers enhances supplier performance. Therefore, it should be anticipated that the execution of highly developed supplier development would develop the supplier performance and/or capacities, and ultimately, progress the buyer's purchasing performance. Most organizations have realized the importance of

the performance of their suppliers to the establishment and sustaining of their competitive advantage. The supplier needs to have enough capacity to handle an organization's requirements. It is all about how quickly a supplier is able to respond to customer demands, and to other market and supply fluctuations (Awino, 2011). Strategic supplier partnership identifies optimum practices that can facilitate supply chain process alignment and integration. In order to further expedite collaboration, it is necessary to implement the latest collaborative information systems that drive efficiencies, performance, and quality throughout a supply chain. Finally, effective SCM practice has a direct impact on the overall financial and marketing performance of organizations (Omoush, 2020).

## **2.5 Research Gaps**

Several studies have been carried out in the past on the relationship between the inventory turnover and the profitability of an organization. Lazaridis & Tryfonidis (2006) established that there is a significant relationship between the cash conversion period and the gross profit of a company and that profitability of a company increases as the inventory-keeping period decreases. However, in their quest to determine if this is different depending on the industry a firm operates in, Shi, Wood & Jun (2016) studied effective inventory management and how it improves profitability in manufacturing industries, the study was not done on the retail industry. Muthoka & Oduor (2014) found out that there was a strong, negative association on technological strategic alliances and performance in Nakumatt, Tusksys, Ukwala, Naivas, and Uchumi supermarkets, the study did not focus on supply chain. Gatutha & Namusonge, (2020) found out there is a significant and positive relationship between the competitive strategies and performance of Supermarkets in Nairobi City, the study did not focus on supply chain. Arasa & Achuora, (2021) found out that e-inventory

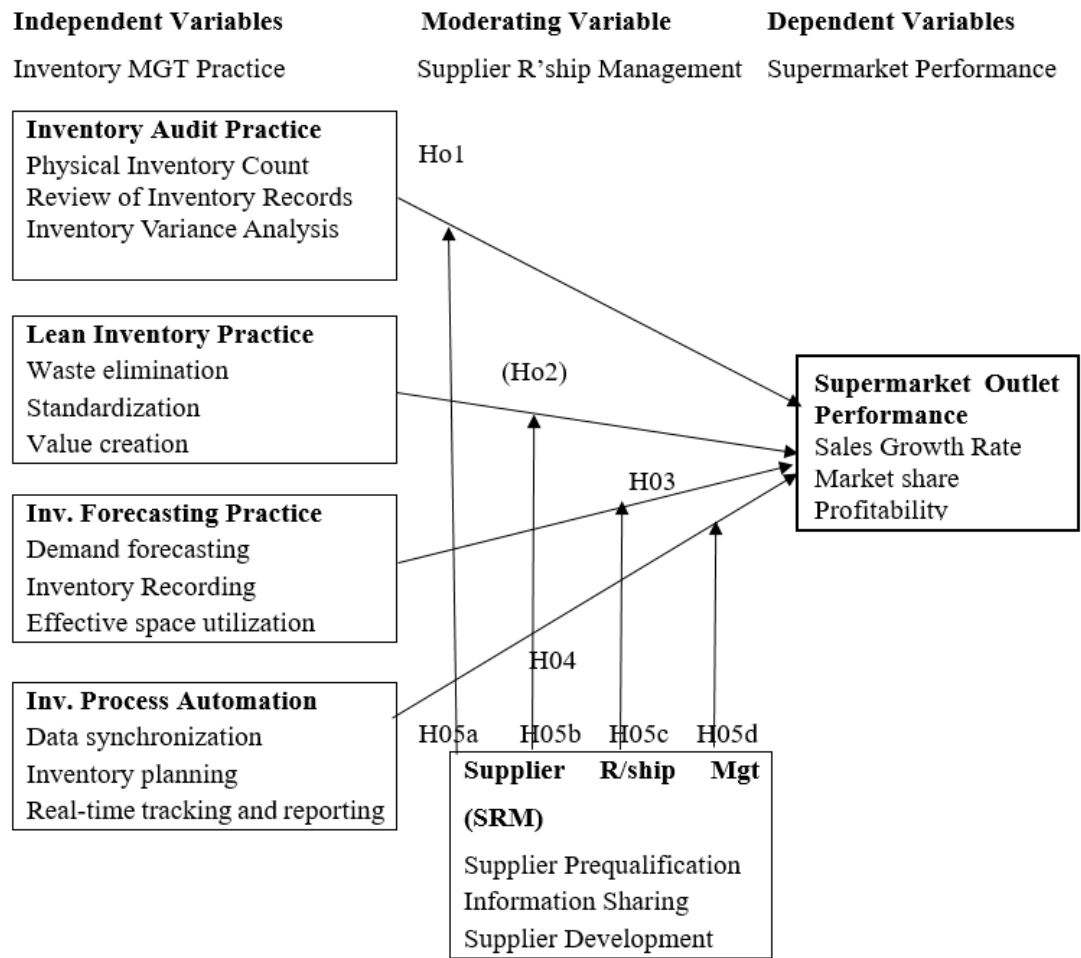
management system and activity-based costing system has positive influence on performance of supermarkets while lean inventory management systems had no significant influence on the Performance of Supermarkets in Nairobi County, Kenya, the study did not show how supplier relationship as a moderator affect the relationship. Ndigwa & Moronge, (2019) found out that consignment inventory and electronic data interchange had a positive correlation with performance in retail chains in Kenya, the study did not show how supplier relationship as a moderator affect the relationship. Achieng, Paul & Mbura, (2018), found inventory categorization, inventory modeling and Inventory planning positively affected the performance of retail outlets in Nairobi County, the study did not show how supplier relationship as a moderator affect the relationship. Mulandi & Ismael, (2019) established that just-in-time inventory system and material requirement planning have positive and significant relationship with performance, the study did not show how supplier relationship as a moderator affect the relationship. From the reviews used in this study, scholars have not addressed the moderator effect of supplier relationship on the relationship between inventory management and the performance of supermarkets in Mombasa County.

## **2.6 Summary**

This chapter covered the literature review. The concepts, the theoretical framework; this study was guided by the theory of constraint, resource-based view theory, lean theory, economic order quantity model and the balanced score card theory. A review of the study variables was done and the variables were; supplier management practice, lean inventory management practice, inventory forecasting practice, and inventory process automation practice. The empirical review, research gaps, the conceptual framework and summary were also included.

## **2.7 Conceptual Framework**

Based on the review of literature regarding the moderating effects of supplier relationship management on the relationship between inventory management practices and supermarkets performance, inventory management as a supply chain driver has for instance been found to exert direct influence on performance (Ambe, 2012). The conceptual framework was derived from theoretical framework of this study; the Theory of Constraints, Resource Based Theory, Lean Theory, Economic Order Quantity Model and the Balanced Score Card Theory. The dependent variable was Supermarket performance while the independent variable was inventory management practices and the moderating variable, Supplier relationship management.



**Figure 2.1 Conceptual Framework**

**Source:** Adopted from Shajema, I. (2018). Modified by author, (2020)

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.0 Introduction**

This chapter outlined the research methodology used when carrying out the study. It presented the research design, the population of the study, sample and sampling techniques, data collection methods as well as data analysis and data presentation methods used in the study.

#### **3.1 Research Design**

Cooper & Schindler (2014) defines a research design as a plan that stipulates the conditions for data collection and its analysis and measurement by a researcher in fulfilling research objectives or answering research questions. This study was carried out using explanatory research design. Explanatory research design seeks to establish relationships between variables. This design is used to establish relationships between inventory audit, inventory forecasting, lean inventory and process automation of the supply chain process. Creswell (2013) asserts that explanatory research design can be used to predict an outcome such as performance of firms. Kothari (2014), notes that explanatory research design may facilitate research to be as efficient as possible yielding maximum information. Explanatory research design provides the collection of relevant evidence with minimal expenditure of effort, time and money. Consequently, explanatory research design was used to investigate the moderating effects of Supplier Relationship Management on the Relationship between Inventory Management Practices and Performance of Supermarket outlets in Mombasa County, Kenya.

### 3.2 Target Population

Target population is described as the total collection of elements about which the researcher wishes to make reference (Cooper & Schindler, 2014). Target population refers to the universe from which the sample is selected (Fisher, 2010). It is basically the universe of people, place or things to be investigated (Saunders, Lewis & Thornhill, 2016). It is a well-defined or set of people, services, elements, and events, group of things or households that are being investigated. The target population for this study is 136 Supermarket outlets in Mombasa County as per Kenya Business Directory, 2020.

**Table 3.1: Target Population**

| <b>Sub-county</b> | <b>Population</b> | <b>Percentage</b> |
|-------------------|-------------------|-------------------|
| Changamwe         | 15                | 11%               |
| Jomvu             | 7                 | 5%                |
| Kisauni           | 23                | 18%               |
| Nyali             | 37                | 27%               |
| Likoni            | 11                | 8.1%              |
| Mvita             | 42                | 30.9%             |
| <b>Total</b>      | <b>136</b>        | <b>100</b>        |

**Source:** Mombasa County Government Licensing Section (2021)

### 3.3 Study Area

The study was carried out in Mombasa County and covered all the registered supermarket outlets in the county.

### 3.4 Sample and Sampling Technique

Sampling is a procedure, process or technique of choosing a sub-group from a population to participate in the study (Cooper & Schindler, 2017). Stratified random sampling allows researchers to obtain a sample population that best represents the entire population being studied by dividing it into subgroups called strata. This method of

statistical sampling, however, cannot be used in every study design or with every data set. The existing sub-groups in the population are more or less populated in the sample. The researcher applied the Neyman allocation sample formulae to calculate the sample size because it is simple to use. The formulae are as follows:

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

Whereby N is the target population, n is the sample size and c is the level of precision and in this study, 95% level of confidence was used which gave 0.05 chance of deviation from the actual.

Therefore:

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

$$n = \frac{136}{1 + 136(0.05)^2}$$

$$n = 101$$

The study sample adopted was 101 supermarket outlets licensed and operating in Mombasa

### **3.4.1 The Unit of Analysis and Unit of Observation**

The unit of analysis is the entity that frames what is being looked at in a study, or the entity being studied as a whole, within which most factors of causality and change exist (Sekaran & Bougie, 2016). In this study, the unit of analysis was the supermarket outlets in Mombasa County while the unit of observation was the supermarket outlet managers. The managers run the supermarkets on daily basis and therefore understand well the inventory needs and processes in those particular supermarket outlets. The study selected supermarket as a focal point of study because merchandise in supermarkets



move more quickly when compared to other organizations hence it's more practical to assess the effectiveness of supply chain and their contribution to performance.

### **3.5 Data Types, Collection and Procedures**

This study collected and used primary data only to address the research problem.

#### **3.5.1 Types of Data**

Primary data is a type of data that is collected by researchers directly from main sources through interviews, surveys and experiments. Primary data are usually collected from the source where the data originates from and are regarded as the best kind of data in research. The sources of primary data are usually chosen and tailored specifically to meet the demands or requirements of a particular research. Primary data has key advantages that make it fit for this study which include that it is specific, accurate, up to date and the researcher has control and ownership of the information (Cooper & Schindler, 2017). For these reasons, primary data was appropriate for this study.

#### **3.5.2 Data Collection Instruments**

This study used a structured questionnaire as the major means of primary data collection. The decision to use structured questionnaire is based on the fact that the tool is considerably easy to understand, easy to complete by the respondents and easy to analyze by the researcher (Burns & Ryman, 2008). Moreover, structured questionnaires are preferred because they ensure a high response rate as they can be distributed to respondents to complete then collected by researcher later (Hair, et al, 2013). Structured questionnaires also offer the possibility of anonymity because subjects' names are not required on the completed questionnaires hence have less opportunity for bias if presented in a consistent manner (Bell, Bryman & Harley, 2018). The structured questionnaires consisted of two main segments, the introduction section which covered

questions on the respondents' general information and the second segment that covered questions about inventory management practices and firm performance. The items in the questionnaire were measured using a Likert scale type ranging from 5-1, where 5 denotes strongly agree, 4 denotes Agree, 3 denotes Moderately Agree, 2 denotes Slightly Agree and 1 denotes Disagree.

### **3.5.3 Data Collection Procedures**

The data collecting process started by acquiring an introduction letter from Moi University that clearly showed the purpose of the study. A research permit from NACOSTI was also acquired prior to data collection. The questionnaires, together with the introduction letter and research permit was distributed through drop-and-pick-later method using trained research assistants. Follow-ups were made via phone calls and emails to ensure that questionnaires were properly completed, hence increased response rate. The filled questionnaires were collected back by the researcher ready to be processed and analyzed. Research validity and reliability was tested.

### **3.6 Pilot Study**

A pilot study, pilot project, pilot test, or pilot experiment is a small-scale preliminary study conducted to evaluate feasibility, duration, cost, adverse events, and improve upon the study design prior to performance of a full-scale research project. A pilot study is used to formulate the design of the full-scale experiment which then can be adjusted (Creswell, 2013). The rule of the thumb suggests that 10% of the target population should constitute the pilot test (Cooper & Schindler, 2017). Therefore, the study used 10% representative of target population for piloting and this translated to 10 supermarkets. The ten supermarkets were randomly selected from a list of supermarkets found in Machakos and Makueni Counties these two counties were selected as they

were more convenient for the researcher. Following the recommendation by Monette, Sullivan & DeJong (2002), the study instrument validity and reliability was tested.

### **3.6.1 Reliability Test**

Cooper & Schindler, (2017) define reliability as a measure of the degree to which a research instrument yields consistent research or data after repeated trials. The researcher used Cronbach's alpha coefficient to test the reliability of the questionnaire. Cronbach's alpha is a measure of internal consistency, that is, how closely related a set of items are as a group. It is considered to be a measure of scale reliability. Bless & Higson-Smith (2005), notes that Cronbach alpha should not be lower than 0.7. The closer Cronbach's alpha coefficient is to 1, the higher the internal consistency and reliability. In this study, all variables had a Cronbach alpha score of 0.7 and above and thus were considered acceptable.

### **3.6.2 Validity Test**

Validity refers to how accurately a method measures what it is intended to measure. If research has high validity that means it produces results that correspond to real properties, characteristics, and variations in the physical or social world. Validity entails the appropriateness, meaningfulness and usefulness of inferences a researcher makes based on the data collected (Sekaran & Bougie, 2016). To ensure content and face validity, the questionnaire was subjected to a thorough examination by the supervisors. The supervisors evaluated the statements in the questionnaire for relevance. Based on their evaluation, the instruments were adjusted appropriately before subjecting it to the final data collection exercise. Furthermore, data obtained from pilot tests was subjected to KMO Bartlett test. According to Smith (2017), Kaiser-

Meyer-Olkin Measure of Sampling Adequacy is a statistic that indicates the proportion of variance in your variables that might be caused by under-lying factors.

### **3.7 Data Processing, Analysis and Presentations**

#### **3.7.1 Data Processing**

Data processing is the conversion of data into usable and desired form. This conversion or “processing” is carried out using a predefined sequence of operations either manually or automatically. It is basically synchronizing all the data entered into the software in order to filter out the most useful information out of it (Sekaran & Bougie, 2016). Once the primary data was received from the field, it was sorted, coded, cleaned, and entered into the computer for analysis using SPSS, thus it was ready for analysis.

#### **3.7.2 Data Analysis Methods**

Data analysis entails the process of analyzing, cleaning, transforming, and modeling data collected in a research with the objective of identifying useful information (Cooper & Schindler, 2014). The data was analyzed using Statistical Package for Social Sciences (24.0). Descriptive statistics such as frequencies, percentages, mean score and standard deviation were generated. Inferential statistics such as correlation Regression Co-efficient, model summary and ANOVA were generated. The study used a Multiple Linear Regression model to test the moderating effect of supplier relationship management on the relationship between supply chain management practices and performance of supermarket outlets. Data was presented in tables. Before moderation, the regression model assumed the following equation;

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where:

**Y**= Performance of supermarket outlets in Mombasa county;

$\alpha$  =Constant;

$\beta_1, \beta_2, \beta_3$  and  $\beta_4$  = regression coefficients;

$X_1$ = Inventory Audit Management Practice

$X_2$ =; Lean Inventory Forecasting Management Practice;

$X_3$ = Inventory Forecasting Management Practice;

$X_4$ = Inventory Process Automation Management Practice

$\varepsilon$ =Error Term.

To test for moderation effect of supplier management, Baron & Kenny (1986) procedures was used. Each of the independent variables was interacted with supplier management as shown in eqn-----2

$$Y = \beta_0 + \beta_1 X_1 * M + \beta_2 X_2 * M + \beta_3 X_3 * M + \beta_4 X_4 * M + \varepsilon$$

Where:

Y = Supermarket Outlet Performance

$\beta_0$  = constant;

$\beta_1 \beta_2 \beta_3 \beta_4$  = regression coefficients;

$X_1$  = Inventory Audit Management Practice;

$X_2$  = Lean Inventory Management Practice;

$X_3$  = Inventory Forecasting Management Practice;

$X_4$  = Inventory Process Automation Management Practice ;

M = Supplier Relationship Management

$\varepsilon$  = error term.

### 3.7.3 Assumptions of the Regression Model

Most statistical tests rely upon certain assumptions about the variables used in the analysis. When these assumptions are not met the results may not be trustworthy (Bell, et. al., 2018). Therefore, before conducting multiple regression analysis, diagnostic

tests such as normality, linearity, homogeneity of variance and multicollinearity were conducted to test conformity of data with statistical assumptions. Normality was tested using Shapiro-Wilk test to confirm distribution of data. Data was assumed to be normally distributed if the p-values or significance values of the dependent variables were less than 0.05 and vice versa (Crowther & Lancaster, 2012). To test homogeneity of variance of the model residuals, a graphical model residuals plot was used, the critical value for homogeneity is 0.05. Linear regression models are fitted based on the assumption of homoscedasticity which is an assumption that the model residuals have equal (constant) variances Guest, (2012). Multicollinearity test was done by the Variance Inflation Factors (VIFs) which was less than 10 and Tolerance greater than 0.1 respectively, thus it was concluded that there exist no multicollinearity (Fisher & Buglear, 2010). Homoscedasticity was tested using Breusch-Pagan test and the results showed homogeneity was not a concern. If the ratio of the largest sample variance to the smallest sample variance does not exceed 1.5, the groups satisfy the requirement of homoscedasticity. Lastly, the assumption of rule of thumb was attained for the sample size as regression analysis covered more than 20 cases per independent variable.

**Table 3.2: Hypothesis testing**

| <b>Objective</b>   | <b>Null Hypothesis</b>  | <b>Type of Analysis</b>                 | <b>Interpretation</b>                          |
|--|---|---|--|
| To establish the effects of Inventory Audit Management Practice on the performance of supermarket outlets in Mombasa County                                  | Ho1: Inventory Audit Management Practice has no significant effect on the performance of supermarket outlets in Mombasa County                      | Pearson Correlation Regression Analysis | If p-value < 0.05, Reject the null hypothesis. |
| To determine the effects of Lean Inventory Management Practice on the performance of supermarket outlets in Mombasa County.                                  | Ho2:Lean Inventory Management Practice has no significant effect on the performance of supermarket outlets in Mombasa County                        | Pearson Correlation Regression Analysis | If p-value < 0.05, Reject the null hypothesis. |
| To establish the effects of Inventory Forecasting Management Practice on the performance of supermarket outlets in Mombasa County                            | Ho3: Inventory Forecasting Management Practice has no significant effect on the performance of supermarket outlets in Mombasa County                | Pearson Correlation Regression Analysis | If p-value < 0.05, Reject the null hypothesis. |
| To determine the effects of Inventory Process Automation Management practice on the performance of supermarket outlets in Mombasa County                     | Ho4: Inventory Process Automation Management Practice has no significant effect on the performance of supermarket outlets in Mombasa County         | Pearson Correlation Regression Analysis | If p-value < 0.05, Reject the null hypothesis. |
| To establish the moderating effect of supplier relationship management on the relationship between Inventory management practice and Supermarket Performance | Ho5:Supplier Relationship Management has no Moderating effect on the relationship between Inventory Management Practice and Supermarket Performance | Pearson Correlation Regression Analysis | If p-value < 0.05, reject the null hypothesis  |

**Table 3.3: Operationalization of Study Variables**

| Variables  | Variable Type | Operationalization  | Measurement Scale |
|--|---------------|---|-------------------|
| Inventory Audit Management Practice              | Independent   | <ul style="list-style-type: none"> <li>Physical Inventory Count</li> <li>Review of Inventory Records</li> <li>Inventory Variance Analysis.</li> </ul> | Five Likert Scale |
| Lean Inventory Management Practice               | Independent   | <ul style="list-style-type: none"> <li>Waste Elimination</li> <li>Standardization</li> <li>Value Creation</li> </ul>                                  | Five Likert Scale |
| Inventory Forecasting Management Practice        | Independent   | <ul style="list-style-type: none"> <li>Demand Forecasting</li> <li>Inventory Recording</li> <li>Effective Space Utilization</li> </ul>                | Five Likert Scale |
| Inventory Process Automation Management Practice | Independent   | <ul style="list-style-type: none"> <li>Data Synchronization</li> <li>Inventory Planning</li> <li>Real-time tracking and Reporting</li> </ul>          | Five Likert Scale |
| Supplier Relationship Management                 | Moderator     | <ul style="list-style-type: none"> <li>Supplier Prequalification</li> <li>Continuous information sharing</li> <li>Supplier development</li> </ul>     | Five Likert Scale |
| Firm Performance                                 | Dependent     | <ul style="list-style-type: none"> <li>Sales Growth</li> <li>Market Share Growth</li> <li>Profitability</li> <li>Customer Satisfaction</li> </ul>     | Five Likert Scale |

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**Source: Researcher (2020)**

### 3.8 Ethical Considerations

The study ensured that the rights of the participants are preserved. The researcher ensured that the research participants were informed about the research intentions and procedures by the aid of the introduction letter and research permit from NACOSTI. The right of anonymity and confidentiality was guaranteed through assurance to the respondents that the study was meant for academic purposes.



## CHAPTER FOUR

### DATA PRESENTATION AND REPORTING

#### 4.1 Introduction

In this chapter, the research results and findings were reported. It covered the response rate, reliability and validity test results, demographic analysis results, descriptive analysis results, correlation and moderated regression analysis results, Model summary results, ANOVA results, hypotheses testing results and a summary of key findings.

#### 4.2 Response Rate

A total of 101 questionnaires were administered to the managers of supermarket outlets in Mombasa County to collect data and a total of 87 questionnaires were found usable for analysis. This translated to a response rate of 86.14% which is sufficient. A response rate of 60 % to 80 % is considered sufficient and above 80% is excellent (Arasa & Achuora, 2020).

**Table 4.1: Response Rate**

| Sample | Responded | Response Rate (%) |
|--------|-----------|-------------------|
| 101    | 87        | 86.14             |

**Source:** Research Data (2022)

#### 4.3 Demographic Data Analysis

This part went out to test the experience of the managers and the age of the supermarket outlets. The results are presented below.

##### 4.3.1 Experience of Managers

From the results, majority of managers (43-49%) had worked in the supermarket outlets between 5 to 10 years thus making this a good pool of experience. This confirms that

the managers had the necessary skills on handling of inventory issues and performance of the supermarkets.

**Table 4.2: Experience of Managers**

|                   | Under 5 year | 5 to 10 years | Over 10 years |
|-------------------|--------------|---------------|---------------|
| Years worked here | 23(26%)      | 43(49%)       | 21(24%)       |

**Source:** Research Data (2022)

#### 4.3.2 Age of Supermarkets Outlets

This part tested the age of the supermarket outlets and the outlets which were less than five years were deemed too young to measure their growth. The study covered supermarket outlets that are five years and above.

**Table 4.3: Age of Supermarket Outlets**

|                           | 5 to 10 years | 10 to 15 years | Over 15 years |
|---------------------------|---------------|----------------|---------------|
| Age of supermarket outlet | 29(33%)       | 35(40%)        | 23(26%)       |

**Source:** Research Data (2022)

From the results, majority of supermarket outlets (35-40%) had been in operation between 10 to 15 years and this confirms that this period was sufficient to measure the performance of the supermarket outlets.

#### 4.4 Validity and Reliability Results

The study conducted a pilot study from 10 supermarkets located in Machakos and Makueni Counties. Data used in pilot study was not used in the analysis and presentation of findings. The data underwent validity and reliability tests and the results were provided below.

#### 4.4.1 Validity Test

In this study, content and construct validity were tested. Content validity refers to the extent to which a measure represents all facets of a given construct (Vakili & Jahangiri, 2018). Subject-matter experts access the measurement tool to give feedback on how well each question measures the construct it intends to measure. The questionnaire was presented to the two supervisors who gave their opinion on changes to implement to measure the intended constructs. Construct validity was also assessed to determine extent an instrument measures the constructs it intends to measure (Heale & Twycross, 2015). In quantitative studies, Factor analysis (FA) is the technique that was used to assess construct validity (Kang 2013).

**Table 4.4: KMO and Bartlett's Test Results**

|  |                    |          |
|--|--------------------|----------|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. |                    | .856     |
|  | Approx. Chi-Square | 1611.109 |
| Bartlett's Test of Sphericity                    | Df                 | 86       |
|  | Sig.               | .000     |

**Source:** Research Data (2022)

Factor Analysis on the data was run and the KMO and Bartlett's statistics were recorded. The analysis enabled the researcher to investigate concepts that could not easily be measured directly. By boiling down a large number of variables into a handful of comprehensible underlying factors, factor analysis resulted in easy-to-understand, actionable data. As seen from the results, the KMO value of 0.856 is well above 0.7 as required (Heal & Tycross, 2015) and also the Bartlett's test statistic is significant ( $p < 0.05$ ). Collectively, it is concluded that the FA procedure was appropriate for the data.

**Table 4.5: Rotated Component Matrix**

| Items  | loading |
|--|---------|
| <b>Inventory Audit Management Practice , IAMPS</b>                             |         |
| In this outlet, we practice physical stock count regularly                     | .771    |
| In this outlet, we periodically reviews its inventory records                  | .750    |
| in this outlet, we carry out inventory variance analysis                       | .863    |
| In this outlet, inventory records usually tally with the physical stock count. | .763    |
| <b>Lean Inventory Management Practice , LIMPS</b>                              |         |
| In this outlet, we get fewer store returns                                     | .763    |
| In this outlet, we have no expiries and obsolescence                           | .813    |
| In this outlet, we have fewer or no stock-outs                                 | .836    |
| In this outlet, we do not experience overstocking                              | .873    |
| <b>Inventory Forecasting Management Practice, IFPs</b>                         |         |
| We practice demand forecasting   | .889    |
| We have sufficient stock for every season                                      | .821    |
| We review its forecasting model regularly                                      | .848    |
| We maintain accurate historical data on inventory                              | .881    |
| <b>Inventory Process Automation Management Practice, IPAMPs.</b>               |         |
| We get fewer store returns   | .758    |
| We have no expiries and obsolescence   | .788    |
| We have fewer or no stock-outs   | .842    |
| We do not experience overstocking  | .828    |
| <b>Supplier Relationship Management Practice, SRMPs,</b>                       |         |
| We synchronize data with suppliers   | .897    |
| the system generate instant stock reports                                      | .841    |
| The firm has a real-time tracking and reporting system                         | .865    |
| There are no disputes in quantities and invoices                               | .883    |
| There are established re-order periods and quantities                          | .772    |
| <b>Supermarket Outlet Performance, SOP</b>                                     |         |
| Increased Profits  | .800    |
| Increased Capital  | .884    |
| Increased Sales  | .902    |
| Increased Market Share   | .841    |

**Source:** Research Data (2022)

From the 25 items, the results in Table 4.5 shows that the FA procedure was able to identify five different constructs as theoretically designed, an indication of construct validity (Saunders et. al., 2019). The factor loadings which measures the correlation with the construct, are all high (above 0.5) further indication of construct validity (Shau,

2017). The instrument used demonstrated adequate construct validity. The component matrix results of the FA provide a means of scale construct by combining the items in each component into a scale for descriptive and inferential analysis. In particular, the four items measuring inventory audit practices (IAMP) were combined to form IAMP construct. Similarly, for all other items were treated as such and demonstrated adequate construct validity.

#### 4.4.2 Reliability Test

The study conducted reliability test and the results are shown below;

**Table 4.6: Reliability Test Results**

| Variable                       | Cronbach Alpha Score | Decision |
|--------------------------------|----------------------|----------|
| Inventory Audit practice       | .872                 | Accept   |
| Lean Inventory Practice        | .784                 | Accept   |
| Inventory Forecasting Practice | .887                 | Accept   |
| Inventory Process Automation   | .819                 | Accept   |
| Supplier Relationship Practice | .709                 | Accept   |
| Supermarket performance        | .860                 | Accept   |

**Source:** Research Data (2022)

From the results, all the constructs had a Cronbach Alpha score of above 0.7 and therefore all the constructs were deemed reliable and ready for further analysis.

#### 4.5 Descriptive Results

The study further generated descriptive statistics and the results of the mean (and standard deviation), skewness and kurtosis of inventory management practices, supplier relationship management and supermarket outlets performance study variables were presented in Table 4.7 below.

**Table 4.7: Mean, Standard deviation Kurtosis and skewness of study variables**

|                 | N         | Mean      | Std. Deviation |           | Kurtosis  |           | Std. Error |
|-----------------|-----------|-----------|----------------|-----------|-----------|-----------|------------|
|                 | Statistic | Statistic | Statistic      | Statistic | Statistic | Statistic |            |
| Inventory Audit | 87        | 2.9084    | .81750         | .513      | .053      | .511      |            |
| Lean inventory  | 87        | 2.9391    | .77851         | -.487     | -.453     | .511      |            |
| Inventory       | 87        | 3.7454    | .89445         | .685      | -.003     | .511      |            |
| Forecasting     |           |           |                |           |           |           |            |
| Process         | 87        | 3.6293    | .52808         | -.521     | 1.418     | .511      |            |
| Automation      |           |           |                |           |           |           |            |
| Supply Relation | 87        | 4.0805    | .53983         | -.222     | .130      | .511      |            |
| Supermarket     | 87        | 3.5747    | .78976         | -.576     | .777      | .511      |            |
| Performance     |           |           |                |           |           |           |            |

**Source:** Research Data (2022)

Mean scores provides the average of the responses and the standard deviation provides the statistics showing the deviations of the responses from the mean. The low standard deviations show high consensus and high values indicates low consensus. The skewness and Kurtosis statics provides the means to assess whether the data conforms to univariate normal distribution. Zero skewness and kurtosis is the ideal case (Cain, Zhang, & Yuan, 2017).

As seen from the results, inventory audit management practice had a mean of 2.91 (rounded off to 3- Moderately Agree, SD=.81750) meaning the managers moderately agreed that inventory audit management practice moderately affect performance of supermarket outlets. The data on audit inventory management practices has a slight positive skew (0.513) and positive Kurtosis (0.053). Inventory audit improves operational performance of organization (Nsikan, et. al. 2015).

Similarly, the results show that lean inventory management practice had a mean of 2.94 (rounded off to 3- Moderately Agree, SD=.77851) meaning the managers moderately agreed that lean inventory management practice moderately affect performance of

supermarket outlets. The distribution of the responses showed a slight negative skew (-0.487) and slight Kurtosis (-0.453) an indication of no significant deviation from univariate normality. Practicing lean inventory improves business performance and provides more value to customers (Isaksson & Seifert, 2014).

Further, the results show that inventory forecasting management practice had a high mean of 3.75 (rounded off to 4 – Agree SD=0.89445) meaning the managers agreed that inventory forecasting management practice affect performance of supermarket outlets. The skewness (0.685) and Kurtosis (0.003) obtained shows that the distribution of the data is normal distribution. Inventory forecasting in retail business like supermarkets enables the management of the business to plan for future demand and do appropriate replenishment plan. Accurate forecasting ensures continuous supplies which improves store performance (Harshitha, 2017).

Also the results show that process automation management practice has a mean of 3.63 (rounded off to 4-Agree, SD=0.52808) meaning the managers agreed that process automation management practice affect performance of supermarket outlets. The low Skewness (-.521) and Kurtosis (1.418) values indicates normal distribution. Supermarkets that automate their processes seeks to increase service delivery, increase service quality as well as containing costs by standardizing the process. Inventory automation leads to lower operational costs and improves customer service- the precursor to firm performance (Omuosh, 2020).

Results further show supplier relationship management has a mean of 4.08 (rounded off to 4 -Agree, SD= 0.5398) meaning the managers agreed that supplier relationship management affects performance of supermarket outlets. The low Skewness (-.222) and Kurtosis (1.30) values indicate that the distribution of the data conforms to a normal

distribution. In retail business, the close relation ensures constant supply of goods and services. With constant supplier communication and feedback, transparent relationships grow which lead to increased mutual performance (Achieng, et al. 2018).

Finally, results show that performance of supermarket outlets has a mean of 3.58 (rounded off to 4- Agree,  $SD=0.7897$ ), meaning the managers agreed that supermarkets in Mombasa recorded positive performance in the period under study. This means the supermarket outlets recorded either increased revenue, increased profits or increased capital. The low Skewness (-.576) and Kurtosis (.777) values indicate that the distribution of the data conforms to a normal distribution. A positive performance in retail business is indicative of higher continued survival, growth and sustainability.

#### **4.6 Correlation Analysis Results**

Correlation analysis was conducted to test the relationship between the study variables and the results were presented in table 4.8. The results show that all the inventory management practices showed positive correlation with supermarket outlet performance as theoretically expected meaning that supermarket outlets with effective inventory management practices are associated with superior performance.

In particular, inventory audit management practice (IAMPS) has the highest association with supermarket outlet performance (SOP) ( $r=0.537$ ,  $p<0.000$ ). The correlation is significant as indicated by a p-value of less than 0.05. The significant positive correlation between inventory audit management practice and SOP means that, holding other factors constant, supermarket outlets with consistent inventory audit management practice will perform better than supermarket outlets with weak consistent inventory audit management practice. Regular store audits increase store performance (Ishfaq, & Raja, 2019).



**Table 4.8: Correlation Results**

|        |                     | IAMPS | LIMPS | IFMPS | IPAMPS | SRMPS | SOP |
|--------|---------------------|-------|-------|-------|--------|-------|-----|
| IAMPS  | Pearson Correlation | 1     |       |       |        |       |     |
|        | Sig. (2-tailed)     |       |       |       |        |       |     |
| LIMPS  | Pearson Correlation | .361  | 1     |       |        |       |     |
|        | Sig. (2-tailed)     | .001  |       |       |        |       |     |
| IFMPS  | Pearson Correlation | .425  | .434  | 1     |        |       |     |
|        | Sig. (2-tailed)     | .000  | .000  |       |        |       |     |
| IPAMPS | Pearson Correlation | .424  | .311  | .575  | 1      |       |     |
|        | Sig. (2-tailed)     | .000  | .003  | .000  |        |       |     |
| SRMPS  | Pearson Correlation | .292  | .221  | .280  | .774   | 1     |     |
|        | Sig. (2-tailed)     | .006  | .039  | .009  | .000   |       |     |
| SOP    | Pearson Correlation | .537  | .283  | .412  | .527   | .441  | 1   |
|        | Sig. (2-tailed)     | .000  | .008  | .000  | .000   | .000  |     |

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

b. Listwise N=87

**Source:** Research Data (2022)

It is also noted that inventory process automation management practice (IPAMPS) has second highest association with supermarket outlet performance ( $r=0.527$ ,  $p<.000$ ). The association is significant. These correlation findings imply that, holding other factors constant, supermarket outlets with strong inventory automation process management practice, outperform supermarkets with weak inventory automation process management practice. Inventory automation leads to lower operational costs and improved customer service which leads to improved firm performance (Omuosh, 2020).

Results on inventory forecasting showed that inventory forecasting management practice (IFMPS) had a positive significant association with supermarket outlet performance ( $r=0.412$ ,  $p<.000$ ). The association is significant. These correlation findings imply that, holding other factors constant, supermarket outlets with strong inventory forecasting management practice, outperform supermarket outlets with weak

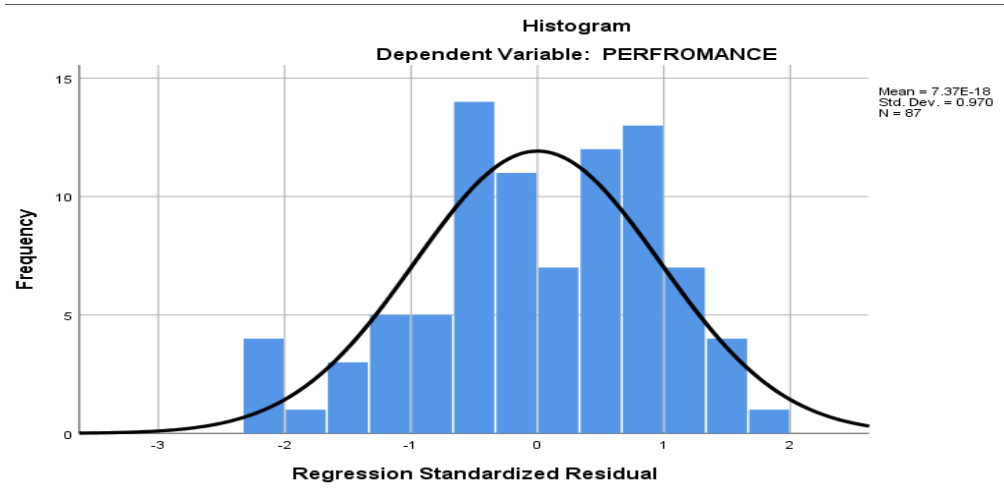
inventory forecasting management practice. Firms use inventory forecasting to improve on inventory management – predict sales, reduce inventory holding, reduce bullwhip effect, and reduce stock outs- this leads to better firm performance (Ahmad & Zabri, 2016). However, lean inventory management practices (LIMPs) has the weakest positive significant association with SOP ( $r = .283$ ,  $p < .008$ ). The significant positive association means that, holding other factors constant, supermarkets with consistent lean inventory management practice outperform their counterparts. In practice, the higher the level of inventory held, the lower the rate of return. Therefore, lean inventory improves return in store outlets (Erogulu & Hofer, 2011).

#### **4.7 Moderated Multiple Regression Analysis**

To perform multiple regression analysis while testing for moderation effects, its assumptions were first tested to ensure the data was sufficient for the analysis.

##### **4.7.1 Moderated Multiple Linear Regression Assumptions Results**

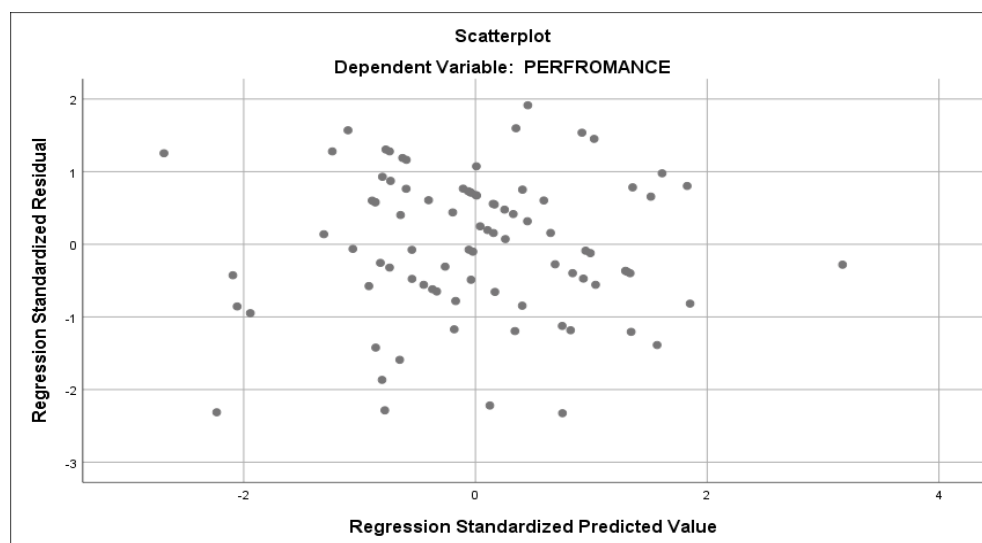
Ordinary least square was used to estimate the regression coefficients for hypothesis testing. As stipulated in chapter three, the OLS assumptions were assessed prior to fitting and adopting the regression results. The study checked the assumptions of normality, linearity, homoscedasticity, and absence of multicollinearity. The normality assumption was assessed using the graphical approach. The histogram of residuals (figure 4.1) has a shape resembling a normal distribution thus concluding that the normality assumption is not significantly violated.



**Figure 4.1: Histogram of regression residuals to test for normality**

**Source:** Research Data (2022)

Under the linearity assumption, it is required that the relation between the independent variables in the model and the dependent variable is linear. The scatter plot of regression residuals against standardized predicted values was generated. As shown in figure 4.2 the plot point has no obvious pattern, there are points equally distributed above and below zero on the X axis, and to the left and right of zero on the Y axis. The linearity assumption is not significantly violated.



**Figure 4.2: Scatter plot of Residuals versus Predicted values, test for constant variance and linearity**

**Source:** Research Data (2022)

Under constant variance Assumption (no Heteroscedasticity), it is assumed that the errors are constant along all values of the dependent variable. A plot of regression residuals against the predicted values is used to check for this assumption. The errors should not show any pattern of fanning out along the range of the dependent variable for the assumption to be met. As shown in figure 4.2, no pattern emerges hence the assumption is met.

Under the multicollinearity assumption, the data does not suffer from multicollinearity issues since no pair of IVs are highly correlated ( $\rho > 0.7$ ). Additionally, the Variance Inflation Factor, (VIF) as one of the famous statistical methods of testing for multicollinearity was deployed. The VIF was computed for each variable to assess multicollinearity. VIF values less than 10 are considered an indication of no significant multicollinearity thus the data did not suffer any multicollinearity issues as shown in table 4.9.

**Table 4.9: Multicollinearity Results**

| Collinearity Statistics |      |       |
|-------------------------|------|-------|
| Tolerance               | VIF  |       |
| Audit                   | .739 | 1.352 |
| Lean                    | .768 | 1.302 |
| Forecasting             | .519 | 1.926 |
| Automation              | .256 | 3.902 |
| Relation                | .358 | 2.791 |

**Source:** Research Data (2022)

#### 4.7.2 Hierarchical Multiple Linear Regression Results

To perform multiple regression analyses while testing for moderation effects, the three step process recommendations by Aiken & West (1991) were followed. Each independent variable raw scale scores were centered in order to reduce multicollinearity

between the interaction terms and the main effect terms (Cronbach, 1987). In order to test the four hypotheses, H0<sub>1</sub>, H0<sub>2</sub>, H0<sub>3</sub> and H0<sub>4</sub>; the four inventory Management practices were simultaneously entered in model 1 as the predictors of supermarket outlets performance in the hierarchical regression procedure. Moderation was done through a standard method of determining whether a moderating effect exists, which entailed the addition of an (linear) interaction term in the multiple regression model.

**Table 4.10: Model Summary**

| Model | Change Statistics |          |                 |          |     |     |               |
|-------|-------------------|----------|-----------------|----------|-----|-----|---------------|
|       | R                 | R Square | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1     | .611 <sup>a</sup> | .373     | .373            | 13.718   | 4   | 82  | .000          |
| 2     | .690 <sup>b</sup> | .476     | .103            | 3.177    | 1   | 81  | .028          |
| 3     | .730 <sup>c</sup> | .533     | .057            | 4.901    | 4   | 77  | .019          |

**Source:** Research Data (2022)

In model 1, the regression analysis predicting supermarket performance from four management practices are significant  $F(4,82) = 13.718$ ,  $p < .000$  and accounted for 37.5% ( $R^2 = .375$ ) variance. Inventory Audit ( $\beta = .351$ ,  $p < .000$ ), Lean Inventory ( $\beta = .257$ ,  $p = .007$ ), Forecast ( $\beta = .325$ ,  $p < .000$ ) and process Automation ( $\beta = .339$ ,  $p = .036$ ) are significant in step1 indicating that the management practices have positive influence on supermarket outlet performance. H0<sub>1</sub>, H0<sub>2</sub>, H0<sub>3</sub> and H0<sub>4</sub> are thus rejected. This is in line with theoretical literature which points out that proper inventory management practices increase firm performance (Achieng, et. al. 2018).

In step 2, the supplier relationship management (potential moderator) was introduced as independent variable as recommended by Aiken & West procedure and the resultant model accounted for significant 10.3% ( $\Delta R^2 = 0.103$ ) more variance,  $\Delta F(1,81) = 3.177$ ,  $p = 0.028$ . The hypothesis H0<sub>5</sub> that supplier relationship management has no significant influence on performance of supermarket outlets is rejected  $p = 0.028$ .

At step 3, (model 3), the interaction terms are introduced to test for the moderation effect of supplier relationship management for testing H05a, H05b, H05c and H05d. From the results (Table 4.11), only two interaction terms are significant; (a) inventory audit management practice \* supplier relationship management product term ( $\beta=.245$ ,  $p=.006$ ) and (b) inventory process-automation management practice\* supplier relationship management product term ( $\beta=.122$ ,  $p=.033$ ) thus H05a and H05d are rejected. However, no evidence found to reject H05b and H05d because the corresponding interaction terms are not significant. Furthermore, it is noted that model 3 is significant  $\Delta F(4,77)=4.901$ ,  $p=0.019$ , the model accounts for 5.7% ( $\Delta R^2 =0.057$ ) of performance variance over and above that accounted for by the four inventory management practice dimensions alone.

The model summary Table 4.10 provides vital model statistics; the R square change and the F change for both model 1 (without the interaction term to assess moderation) and model2 with interaction term. The R square for model 1 is 0.375 meaning that about 37.5% of supermarket outlet performance variance in Mombasa county is accounted for by management practices as well as supplier relationship management. With the interaction term introduced in model 2, the R square is 0.103 indicating that the model with the hypothesized model account for 10.3% of supermarket outlets performance. Therefore, supplier relationship management accounts for 5.3% ( $\Delta R^2 =0.053$ ) of performance variation over and above that accounted for by management practices alone. The F change facilitates the research to conclude if the change from model 1 to moderated model 2 is significant. From the results, this change is significant as indicated by a significant F change  $\Delta F=0.057$ ,  $p=0.019$ . The presence of the moderator in the model therefore increases the proportion of performance of supermarket outlets in Mombasa County. Therefore, in overall, the study concludes that supplier

relationship management enhances the positive effect of inventory management practices and performance of supermarket outlets in Mombasa County. Maraka, Kibet & Iravo (2015) similarly established that in highly developed supplier development practices, time and accurate information is vital to decision-making and eventually to performance.

**Table 4.11 Hierarchical Multiple Regression Results**

| Independent Variable |                     | B    | S.E  | t     | p    | F and R <sup>2</sup>        |
|----------------------|---------------------|------|------|-------|------|-----------------------------|
| <b>Step1</b>         | Audit               | .351 | .096 | 3.659 | .000 | F (4,82) = 13.718<br>P=.000 |
|                      | Lean                | .257 | .099 | 2.596 | .007 |                             |
|                      | Forecast            | .325 | .105 | 3.095 | .000 | R <sup>2</sup> =.401        |
|                      | Automation          | .339 | .152 | 1.730 | .036 |                             |
| <b>Step2</b>         | Audit               | .285 | .113 | 2.519 | .014 | ΔF (1,81)=3.177<br>p=.028   |
|                      | Lean                | .210 | .041 | 5.077 | .000 |                             |
|                      | Forecast            | .140 | .082 | 1.697 | .093 | ΔR <sup>2</sup> =.103       |
|                      | Automation          | .221 | .040 | 5.488 | .000 |                             |
|                      | Relation            | .336 | .119 | 2.824 | .006 |                             |
| <b>Step3</b>         | Audit               | .369 | .095 | 3.865 | .000 | ΔF (4,77) =4.901<br>p=.019  |
|                      | Lean                | .297 | .098 | .304  | .762 |                             |
|                      | Forecast            | .365 | .106 | .895  | .374 | ΔR <sup>2</sup> = 0.057     |
|                      | Automation          | .385 | .253 | .572  | .569 |                             |
|                      | Relation            | .265 | .205 | 1.120 | .266 |                             |
|                      | Audit X Relation    | .245 | .088 | 2.784 | .006 |                             |
|                      | Lean X Relation     | .062 | .079 | .787  | .434 |                             |
|                      | Forecast X Relation | .070 | .091 | .776  | .440 |                             |
|                      | Process X Relation  | .122 | .064 | 1.906 | .033 |                             |

**Dependent Variable; Performance**

**Source:** Research Data (2022)

From the results, the derived models are as follows;

$$Y = \alpha + .351\text{Audit} + .257\text{Lean} + .325 \text{Forecast} + .339 \text{Automation} \dots\dots\dots \text{Model i}$$

$$Y = \alpha + .285\text{Audit} + .210\text{Lean} + .140 \text{Forecast} + .221 \text{Automation} \dots\dots\dots \text{Model ii}$$

$$Y = \alpha + .245\text{Audit} + .062\text{Lean} + .070 \text{Forecast} + .122 \text{Automation} \dots\dots\dots \text{Model ii}$$

#### **4.8 Hypothesis Test Summary Results**

The study finally tested the null hypotheses for decision making purposes. The results are presented as shown below in table 4.12. From the hypotheses it can be deduced that inventory audit management practice, lean inventory management practice, inventory forecasting management practice and inventory process automation management practice have positive significant effect on performance of supermarkets outlets in Mombasa County. Omoush (2020) reported that effective SCM practice has a direct impact on the overall financial and marketing performance of organizations.

From the moderation results, it can be deduced that supplier relationship management has a positive significant moderating effect on inventory audit management practice and inventory process automation management practice. As observed by Qrunfleh & Tarafdar (2014) the main reasons why many firms automate is to curb the problems of shortage of labour, high cost of labour, need to increase productivity and to reduce the manufacturing lead-times. Further, supplier relationship management has a positive insignificant moderating effect on lean inventory management practice and inventory forecasting management practice. Eroglu & Hofer (2011) established that organizations may focus more on having lean inventory to maximize on their efficiency and leverage capital which would lead to increased economies of scale that would improve demand coordination.



**Table 4.12 Summary of Hypothesis Test**

|                  |   | P<br>value | Decision |
|------------------|---|------------|----------|
| H0 <sub>1</sub>  | Inventory Audit management Practice vs. performance of supermarket  | .000       | Rejected |
| H0 <sub>2</sub>  | Lean inventory management practice vs. performance of supermarket   | .007       | Rejected |
| H0 <sub>3</sub>  | Inventory forecasting management practice vs. performance of supermarket  | .000       | Rejected |
| H0 <sub>4</sub>  | Inventory process automation management practice vs. performance of supermarket   | .036       | Rejected |
| H0 <sub>5a</sub> | Supplier Relationship Management moderating effect vs inventory audit management practice and supermarket performance   | .014       | Rejected |
| H0 <sub>5b</sub> | Supplier Relationship Management moderating vs. lean inventory management practice and supermarket performance          | .000       | Rejected |
| H0 <sub>5c</sub> | Supplier Relationship Management moderating effect vs. inventory forecasting management practice and performance        | .093       | Accepted |
| H0 <sub>5d</sub> | Supplier Relationship Management moderating effect vs. inventory process automation management practice and performance | .033       | Rejected |

**Source:** Research Data (2022)

## **CHAPTER FIVE**

### **SUMMARY CONCLUSION AND RECOMMENDATIONS**

#### **5.1 Introduction**

The chapter presents the summary of the findings on the moderating effect of supplier relationship management on the relation between inventory management practices and performance of supermarket outlets in Mombasa County. It further presents the conclusions, recommendations and suggestions for future study.

#### **5.2 Summary of Findings**

The general objective of the study was to investigate the moderating effect of supplier relationship management on the relationship between inventory management practices and performance of supermarket outlets in Mombasa County. Key study findings for both main effect and moderation effect were established.

##### **5.2.1 Inventory Audit Management Practice and Performance**

The study found out a positive significant influence of inventory audit management practice on performance of supermarket outlets in Mombasa County. An indication that inventory audit, measured by the level of effective physical inventory count, review of inventory records and inventory variance analysis are the practices that can promote performance level of supermarket outlets in Mombasa County. A positive significant moderating effect of supplier relationship management on the relationship between inventory audit and performance of supermarket outlets was established. Thus strengthening supplier relationship management through investing in inventory counts and inventory variance analysis is critical in improving performance of supermarket outlets in Mombasa County. The findings underpin the need for an elaborate and efficient inventory audit across all supermarket outlets to increase their performance in

order to survive in the competitive retail business. This is because inventory audits help in the confirmation of the correct valuation of the inventory and thus calculation of the accurate profits. The findings are in line with Ishfaq & Raja, (2019) who noted that proper inventory management practices improve store performance. In a similar way Wild (2017) revealed that records of store inventory can be off by up to 30%. If inventory records are not corrected in a timely manner, the discrepancy can affect as many as 65% of items in a store.

### **5.2.2 Lean Inventory Management Practice and Performance**

The study found a positive significant influence of lean inventory management practices on supermarket outlet performance in Mombasa County. This is an indication that supermarket outlets with skills in determining optimal inventory levels at all times perform better than supermarkets without skills on level of inventory management. When the moderating effect of supplier relationship management was tested, no statistical evidence was found on hypothesized moderation effect of supplier relationship management on the relationship between lean inventory management practice and performance of supermarket outlets in Mombasa County. The results underscore the importance of embracing lean inventory management principles throughout the inventory-intensive organizations like supermarket outlets. The results are as expected because, in inventory-intensive businesses like supermarket outlets, the goal of a lean inventory management principle is to minimize wastes as much as possible which is important in performance of a business. Successful approaches to lean inventory will help supermarket outlets benefit from lean inventory. Keeping good supplier relationship is one of the approaches towards successful lean inventory. Whereas suppliers want to sell as much as possible to supermarket outlets, maintaining a stable, long-term and mutually conducive relationship with clients is critical in the

long run as it improves firm performance (Elking, et. al. 2017). Eroglu & Hofer (2011) established that organizations may focus more on having lean inventory to maximize on their efficiency and leverage capital which would lead to increased economies of scale that would improve demand coordination.

### **5.2.3 Inventory Forecasting Management Practice and Performance**

The study found out that inventory forecasting management practice had a positive significant effect on the performance of supermarket outlets in Mombasa County. This is an indication that supermarket outlets that have superior inventory forecasting systems outperform the ones with inferior inventory forecasting systems. Thus, an investment in inventory forecasting tools can be one of the strategies of revitalizing performance of supermarket outlets. When the moderating effect of supplier relationship management was tested, no statistical evidence was found on hypothesized moderation effect of supplier relationship management on the relationship between inventory forecasting management practice and performance of supermarket outlets in Mombasa County. Barrow & Kourentzes (2016) concluded that inventory management as a tool can increase a company's revenue and decrease unnecessary costs. Ahmad & Zabri (2016) reported that forecasting is useful in prediction of sales, reduction of inventory holding and reduction of stock outs. Leaders use systematic demand forecasts to improve inventory management. An accuracy-first approach to managing inventory may help small businesses avoid financial losses and promote inventory precision in the business operation.

### **5.2.4 Inventory Process Automation Management Practice and Performance**

The study found out that inventory process automation management practice has positive significant effect on performance of supermarket outlets in Mombasa County.

High profits, sales revenues can be achieved with increase investment in inventory automation process. The positive results are in line with expectation and theory that process automation helps improve communication with suppliers, distributors, and customers. It was further found out that supplier relationship management positively and significantly moderates the relationship between inventory process automation management practice and performance of supermarket outlets in Mombasa County. These findings are in support of Omuosh, (2020), who noted that automation leads to lower operational costs and improved customer service which in turn leads to increased supply chain performance. Qrunfleh & Tarafdar (2014) found that many firms automate management practices to curb the problems of shortage of labour, high cost of labour, need to increase productivity and to reduce the manufacturing lead-times

### **5.3 Conclusions**

Based on the findings, this study concluded that; Inventory audit management practice positively and significantly affects performance of supermarket outlets. Inventory audit had a strong correlation with supermarket performance. The study concluded that Lean inventory management practice positively and significantly affects performance of supermarket outlets. Lean inventory also had the weakest correlation with supermarket performance. Furthermore, it was concluded that Inventory forecasting management practice positively and significantly affects performance of supermarket outlets in Mombasa County. The correlation between inventory forecasting and supermarkets was strong and positive. Lastly, Inventory process automation management practice was positively and significantly affects performance of supermarket outlets. Inventory process had a strong positive correlation with supermarket performance. Supplier relationship management positively and significantly moderates the relationship between inventory audit management practice, inventory process automation

management practice and performance of supermarket outlets. The findings are similar to that of Omoush (2020) which reported that effective SCM practice has a direct impact on the overall financial and marketing performance of organizations.

## **5.4 Recommendations**

### **5.4.1 Management Recommendations**

1. Managers of supermarket outlets should embrace inventory audit management practice to improve on performance of supermarket outlets. The government of Kenya should entrench a policy on inventory process automation practice for all supermarket outlets in the industry.
2. Managers of supermarket outlets should work towards sustainable lean inventory management practice so as to improve on supermarket outlet performance. Policy makers and key stakeholders should entrench a policy on information sharing for all supermarket outlets in the industry.
3. Supermarket outlet management should engage inventory forecasting practices so as to improve on supermarket outlet performance.
4. Supermarket outlet management should engage inventory process automation management practices so as to improve on supermarket outlet performance. Managers of supermarkets should embrace supplier relationship management to improve on performance of supermarkets.

### **5.4.2 Policy Recommendations**

1. The onset of COVID pandemic accelerated the already felt problems in supply chain in Kenya and across border, as a result the resilience and dependability of production have become more important, policy makers and government authorities should focus on both automation and reshoring (bringing production back to the country) to allow for more flexible adjustment to changing demand,

mitigating firms' risks in the event of a pandemic or other external shocks. Furthermore, policy makers have an opportunity to resolve the supply chain crisis, develop and strengthen regional value chains through regional pacts. These can ensure that small firms cooperate to reduce transaction costs and benefit from economies of scale.

2. Policy makers should also find ways of financing and supporting local manufacturing for long term production and supply of goods. The country has the capacity to develop manufacturing hubs hence can tap into value chain of opportunities or scale up production when demand rises. The funding policy should be supported by financial institutions.
3. To prepare for the future authorities should prioritize digital infrastructures and supply chain investments. The digitalization of ports and public border agencies is a case in point. Customs automation, pre-arrival data processing, port call optimization and other digital solutions can help speed up importation of goods not produced in Kenya.

### **5.5 Suggestions for Future Study**

This study was on the moderating effect of supplier relationship management on the relationship between inventory management practices and performance of supermarkets in Mombasa County. It suggests that a similar study should be done in other parts of the country to get a further understanding of the relationships under the study. Further, a similar study should be done in other sectors of the industry especially the manufacturing sector. Future research should narrow the analysis of inventory practices to other industry-specific context other than supermarkets to examine whether the practices-performance linkages vary based on the type of the industry. This will

provide a wide understanding of the interplay between the inventory practices, supplier relationship management and performance across industries.

### **5.6 Contribution of This Study to Theories**

The study examined the moderating effect of supplier relationship management on the relationship between inventory management practices and the performance of supermarket outlets in Mombasa County. The study established that supplier relationship management positively and significantly moderates the relationship between inventory audit management practice, inventory process automation management practice and performance of supermarket outlets. The findings support the assumptions of the study main theory of lean theory which elaborates how organizations gain flexibility in their ordering decisions, reduce the stocks of inventory held on site and eliminate inventory carrying costs. Through the findings, it proved that supermarkets and other organizations favour lean supply chain as it enables organizations supply the goods or products to the end customer in the most efficient manner possible, with minimal waste, loss, and with enough flexibility that it can adapt to unexpected delays. Furthermore, the study was based on a case that had not been researched before hence the research makes an original contribution to literature that can be of relevance to scholars and academics in seeking to understand the relationships between the studied variables.



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## APPENDICES

### Appendix I: Introduction Letter

David Odhiambo Muga  
P.O. Box 3735-80100,  
Cell 0721-793822  
Mombasa.,  
15th October, 2021

To Branch Manager  
Supermarket Outlets  
Mombasa County.  
Kenya

Dear Sir/ Madam,

**RE: REQUEST FOR PERMISSION TO CARRY OUT RESEARCH (DATA COLLECION)**

I am a student at Moi University Coast Campus pursuing a Degree of Masters in Logistics and Supplies . Pursuant to the pre-requisite course work, I would like to conduct a research on

**‘THE MODERATING EFFECTS OF SUPPLIER RELATIONSHIP MANGEMENT ON THE RELATIONSHIP BETWEEN INVENTORY MANAGEMENT PRACTICES AND PERFORMANCE OF SUPERMARKET OUTLETS IN MOMBASA COUNTY’.**





Kindly complete the attached questionnaire. Data collected shall be treated with utmost confidentiality and will strictly be used for academic purposes only.

Thanking you in advance as I look forward for your cooperation.

Yours faithfully,

**David Odhiambo Muga**  
**Student, School of Business and Economics**

**Appendix II: NACOSTI Research Permit**

|  |  |
|--|--|
|  <p>REPUBLIC OF KENYA</p>   |  <p><b>NATIONAL COMMISSION FOR<br/>SCIENCE, TECHNOLOGY &amp; INNOVATION</b></p> |
| Ref No: <b>678943</b>  | Date of Issue: <b>06/January/2022</b>  |
| <b>RESEARCH LICENSE</b>  |  |
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| <p><b>This is to Certify that Mr. David Odhiambo Muga of Moi University, has been licensed to conduct research in Kilifi, Kwale, Lamu, Mombasa, Taita-Taveta, Tanariver on the topic: THE MODERATING EFFECTS OF SUPPLIER RELATIONSHIP MANAGEMENT ON THE RELATIONSHIP BETWEEN INVENTORY MANAGEMENT PRACTICES AND THE PERFORMANCE OF SUPERMARKET OUTLETS IN THE COAST REGION, KENYA for the period ending : 06/January/2023.</b></p> |  |
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| Applicant Identification Number<br><b>678943</b>   | Director General<br><i>Walton Muga</i><br><b>NATIONAL COMMISSION FOR<br/>SCIENCE, TECHNOLOGY &amp;<br/>INNOVATION</b>  |
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**Appendix III: Questionnaire****SECTION ONE: GENERAL QUESTIONS**

Kindly complete the questionnaire indicating your response by placing a tick in the brackets against selected choices thus (√)

- (i) For how long in years have you worked in your current capacity?
- |         |     |
|---------|-----|
| Under 5 | ( ) |
| 5-10    | ( ) |
| Over 10 | ( ) |
- (ii) How old in years is your supermarket outlet?
- |         |     |
|---------|-----|
| 5-10    | ( ) |
| 10-15   | ( ) |
| Over 15 | ( ) |
- iv) Do you practice the following inventory management practices? Tick
- |  |     |
|--|-----|
| Supplier Management Inventory Practice           | ( ) |
| Lean Inventory Management Practice               | ( ) |
| Inventory Forecasting Management Practice        | ( ) |
| Inventory Process Automation Management Practice | ( ) |

## SECTION TWO: INVENTORY MANAGEMENT PRACTICES

In this section the study is interested in your view on how your supermarket outlet has fared on performance as a result of a number of Inventory Management Practices. The study wants to know your firm performance in relation to your expectation and in relation to your colleagues in your principal industry. Please rate the following statements carefully and tick the appropriate category.

In a scale of 1-5, where; 1 = Disagree 2 = Slightly Agree 3 = Moderately Agree 4 = Agree 5 = Strongly Agree

### B. Effect of Inventory Audit Practice on Supermarket Performance

In a scale of 1-5, where; 1 = Disagree 2 = Slightly Agree 3 = Moderately Agree 4 = Agree 5 = Strongly Agree

Please indicate with a tick the extent to which Inventory Audit Practice affects the performance of your supermarket outlet

| <b>B. In the last five years or since inception, relative to other firms, our firm has experienced performance that can be attributed to Inventory Audit Practice;</b> | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> |
|--|----------|----------|----------|----------|----------|
| <b>B1.</b> The outlet practices physical stock count regularly   |          |          |          |          |          |
| <b>B2.</b> The outlet periodically reviews its inventory records   |          |          |          |          |          |
| <b>B3.</b> We carry out inventory variance analysis  |          |          |          |          |          |
| <b>B4.</b> Our inventory records usually tally with the physical stock count.  |          |          |          |          |          |
| <b>B5.</b> We have no inventory losses   |          |          |          |          |          |

### C. Effect of Lean Inventory Management Practice on Firm Performance

In a scale of 1-5, where; 1 = Disagree 2 = Slightly Agree 3 = Moderately Agree 4 = Agree 5 = Strongly Agree.

Please indicate with a tick the extent to which **Lean Inventory Management Practice** affect the performance of your supermarket outlet

| <b>C. In the last five years or since inception, relative to other firms, our firm has experienced performance that can be attributed to Lean Inventory Management Practice;</b> | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> |
|--|----------|----------|----------|----------|----------|
| <b>C1.</b> The firm practices demand management  |          |          |          |          |          |
| <b>C2.</b> The firm has in place waste management policies   |          |          |          |          |          |
| <b>C4.</b> We have fewer or no stock-outs  |          |          |          |          |          |
| <b>C5.</b> We do not experience overstocking   |          |          |          |          |          |
| <b>C6.</b> We have no expiries and obsolescence  |          |          |          |          |          |
| <b>C7.</b> We get fewer store returns  |          |          |          |          |          |

### D. Effect of Inventory Forecasting Practice on Supermarket Performance

In a scale of 1-5, where; 1 = Disagree 2 = Slightly Agree 3 = Moderately Agree 4 = Agree 5 = Strongly Agree

Please indicate with a tick the extent to which **Inventory Forecasting Practice** affect the performance of your supermarket outlet

| <b>D. In the last five years or since inception, relative to other firms, our firm has experienced performance that can be attributed to Inventory Forecasting Management Practice;</b> | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> |
|---|----------|----------|----------|----------|----------|
| <b>D1.</b> The firm practices demand forecasting  |          |          |          |          |          |
| <b>D2.</b> We have sufficient stock for every season  |          |          |          |          |          |
| <b>D3.</b> Inventory planning is carried out periodically   |          |          |          |          |          |
| <b>D4.</b> We maintain accurate historical data on inventory  |          |          |          |          |          |
| <b>D5.</b> The firm reviews its forecasting model regularly   |          |          |          |          |          |



### **E. Effect of Inventory Process Automation Practice on Supermarket Performance**

In a scale of 1-5, where; 1 = Disagree 2 = Slightly Agree 3 = Moderately Agree 4 = Agree 5 = Strongly Agree

Please indicate with a tick the extent to which **Inventory Process Automation Practice** affect the performance of your supermarket outlet

| <b>E. In the last five years or since inception, relative to other firms, our firm has experienced performance that can be attributed to Inventory Process Automation Practice;</b> | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> |
|---|----------|----------|----------|----------|----------|
| <b>E1.</b> The firm has synchronized data with suppliers  |          |          |          |          |          |
| <b>E2.</b> We easily access stock reports   |          |          |          |          |          |
| <b>E3.</b> The firm has a real-time tracking and reporting system   |          |          |          |          |          |
| <b>E4.</b> There are no disputes in quantities and invoices   |          |          |          |          |          |
| <b>E5.</b> There are established re-order periods and quantities  |          |          |          |          |          |
| <b>E6.</b> The system can generate instant stock reports  |          |          |          |          |          |

### E. Supplier Relationship Management

In a scale of 1-5, where; 1 = Disagree 2 = Slightly Agree 3 = Moderately Agree 4 = Agree 5 = Strongly Agree

Please indicate with a tick the extent to which Supplier Relationship Management moderates the relationship between Inventory Management Practice and Outlet performance affects the

| <b>E. In the last five years or since inception, relative to other firms, our firm has experienced performance that can be attributed to the moderating effect of Supplier Relationship Management ;</b> | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> |
|--|----------|----------|----------|----------|----------|
| <b>B1.</b> Our firm practices prequalification of suppliers  |          |          |          |          |          |
| <b>B2.</b> The firm continuously shares information with suppliers   |          |          |          |          |          |
| <b>B3.</b> The firm is involved in supplier development  |          |          |          |          |          |
| <b>B4.</b> Supplier Relationship Management has led to less stock returns.   |          |          |          |          |          |
| <b>B5.</b> Supplier Relationship Management leads to better quality products.  |          |          |          |          |          |
| <b>B6.</b> Supplier Relationship Management has eliminated stock outs.   |          |          |          |          |          |
| <b>B7.</b> Supplier Relationship Management has led to accuracy in stock records.  |          |          |          |          |          |
| <b>B8.</b> Supplier Relationship Management to better demand management.   |          |          |          |          |          |

### F. Measurement of Firm Performance

In a scale of 1-5, where; 1 = Disagree 2 = Slightly Agree 3 = Moderately Agree 4 = Agree 5 = Strongly Agree

Please indicate with a tick the extent of **Inventory Management Practices** on the Performance of your supermarket outlet.

| <b>F. In the last five years or since inception, relative to other firms, our firm has experienced</b> | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> |
|--|----------|----------|----------|----------|----------|
| <b>F1.</b> Increased Profits   |          |          |          |          |          |
| <b>F2.</b> Increased Capital   |          |          |          |          |          |
| <b>F4.</b> Increased Sales   |          |          |          |          |          |
| <b>F5.</b> Increased Market Share  |          |          |          |          |          |

*Thank very much you for your cooperation.*

### Appendix VI: List of Supermarkets in Mombasa County

| <b>Supermarket</b>          | <b>Outlets<br/>(Branches)</b> |
|-----------------------------|-------------------------------|
| Naivas Supermarket          | 9                             |
| Chandarana Supermarket      | 5                             |
| Kengeleni supermarket       | 1                             |
| Society Supermarket         | 3                             |
| A One Supermarket           | 4                             |
| Carrefour Supermarket       | 3                             |
| Mombasa Mashalla            | 2                             |
| Kwick Save Supermarket      | 3                             |
| Nihal Mini Supermarket      | 1                             |
| Jambo Matt Supermarket      | 2                             |
| One Stop Supermarket        | 2                             |
| Kassim Mini Market          | 2                             |
| Majestic Mall               | 1                             |
| Asins Supermarket           | 2                             |
| Zola Supermarket            | 1                             |
| Nicks Mini Supermarket      | 1                             |
| Bacchus Supermarket         | 3                             |
| Cornerstone Supermarket     | 2                             |
| Island Supermarket          | 2                             |
| Half London Supermarket     | 1                             |
| Pleasures Quick Supermarket | 1                             |
| Down Town Supermarket       | 2                             |
| Bin Athman Household        | 3                             |
| Nawal Centre                | 1                             |
| Tuskys Bandari              | 1                             |
| Casino Mini Mart            | 1                             |
| My Choice Mart              | 2                             |
| Faraji Supermarket          | 2                             |
| MG Mini Mart                | 1                             |
| Grama Mini Mart             | 1                             |
| Beach Mart & Bubble Park    | 1                             |
| Best Way Supermarket        | 3                             |
| Changamwe Supermarket       | 2                             |
| Burnley Supermarket Majengo | 1                             |
| Ashford Mini Mart           | 2                             |
| Ngooni Supermarket          | 1                             |
| Bafagih Majengo             | 1                             |
| Shan E Punjab Supermarket   | 1                             |
| Kibokoni Mini Mart          | 1                             |

|                              |            |
|------------------------------|------------|
| Miritini Grocers             | 2          |
| Mwanasheria Mini Mart        | 1          |
| Carlos Mini Mart             | 1          |
| Trinity Mart                 | 2          |
| Michigan Stores              | 2          |
| Likoni Grocery Mart          | 1          |
| Sinangoa Mini Mart           | 1          |
| Shee Hassan Mart             | 2          |
| Fuad Mini                    | 3          |
| Zaytoona Grocery Mart        | 1          |
| Bafagih Mart                 | 2          |
| Kanoti Mini Grocers          | 3          |
| Mass Mart                    | 2          |
| Kachizy's Mini Mart          | 2          |
| Glory Grocers                | 1          |
| Al Hilal Supermarket         | 1          |
| Shan – E –Punjab Supermarket | 2          |
| KFI Supermarket              | 1          |
| Diani Complex Supermarket    | 1          |
| Hyper Mini Supermarket       | 1          |
| Zoeb Mini Mart               | 1          |
| Zuberi Super Stores          | 2          |
| Bwenyenye Supermarket        | 1          |
| Kamindi Supermarket          | 1          |
| Junior Mini Mart             | 1          |
| Mona Mart                    | 1          |
| Whispers Mini Store          | 1          |
| Shell Nyali Mini             | 2          |
| Mishomoroni Traders Mart     | 1          |
| Rich Store                   | 1          |
| Jules Stores                 | 1          |
| Quick Save Supermatt         | 2          |
| Mt Kenya Grocery             | 1          |
| Badab Supermarkets           | 2          |
| New Linjok                   | 1          |
| Goldstone Mini Market        | 2          |
| The Kizingo Mini Mart        | 1          |
| Jomba Jomba Mart             | 1          |
| Intercity Mini Mart          | 2          |
| Toms Mini Mart               | 1          |
| <b>Total</b>                 | <b>136</b> |

Source: Kenya Business Directory 2020