EFFECT OF INVENTORY MANAGEMENT ON FINANCIAL PERFORMANCE OF COMMERCIAL AND SERVICE FIRMS LISTED AT THE NAIROBI SECURITIES EXCHANGE

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DECLARATION

I, the undersigned, declare that this is my original work and has not been presented to any institution or university other than the University of Nairobi for examination.

Signed: _____Date: _____

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D63/7039/2019

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

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To God, the provider of life, health and wealth.

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DEDICATION

This research project is dedicated to my father, for his encouragement and support throughout my life and during the entire period of my study as well as successful completion of this course.

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LIST OF ABBREVIATIONS

ANOVA	Analysis of Variance
CBK	Central Bank of Kenya
CMA	Capital Markets Authority
DEA	Data Envelopment Analysis
GDP	Gross Domestic Product
NSE	Nairobi Security Exchange
ROA	Return on Assets
ROE	Return on Equity
ROS	Return on Sales
SPSS	Statistical Package for Social Sciences
TCE	Transaction Cost Economics
UNCTAD	United Nations Conference on Trade and Development
VIF	Variance Inflation Factors
VMI	Vendor Management Inventory
WCM	Working capital management

ABSTRACT

Inventory management is crucial in organizations since a simple misstatement can have an impact on the profits reported: A misstatement of the balances in inventory directly impacts the profits reported since an inadequacy in inventory can mean a failure to meet outstanding sales and production requirements; a high level of inventory levels that causes poor flow of cash and financial losses; incorrect recording of the movements in inventory resulting in lack of awareness of the inventory position of a business causes a failure to meet customer requirements; inadequate security over inventory resulting in losses, theft or misappropriation and obsolete inventory held or erroneously being supplied to clients, results in financial losses and damages company reputation. The study's objective was assessing effect of inventory management on performance of NSE listed commercial and service firms. The population for the research was all the 11 NSE listed commercial and service firms. Predictor variable in this research was inventory management operationalized as the ratio of cost of goods sold to average inventory in a given year. The control variables included liquidity given by current ratio, firm size given by natural log of total assets and management efficiency given by total revenue to total assets per year. Financial performance was the response variable given by return on assets. Secondary data was for five years (January 2015 - December 2019) annually. Descriptive cross-sectional design was used in analysis of the study variables. Analysis was made using SPSS software. Findings produced R-square value of 0.284, meaning that 28.4 percent of changes in financial performance among commercial and service firms is the result of variations in the chosen independent variables while 71.6 percent variation in financial performance of NSE listed commercial and service firms was the result of other factors which are not highlighted. This research showed independent variables had a moderate association with firm's performance (R=0.533). ANOVA findings showed that the F statistic was substantial at 5% with $p<0.05$. This showed that the overall model was appropriate in establishing the relation between the variables. Findings also showed that inventory management, liquidity and management efficiency have a positive and statistically substantial influence on performance of the NSE listed commercial and service firms. Firm size was statistically insignificant in this study. This recommendation is that NSE listed commercial and service firms should focus on approved techniques of inventory management, enhance liquidity positions and management efficiency as these three have a significant influence on their financial performance.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

According to Hossain (2015) a good management of inventory results in productive release of capital. Inventory management involves the management of operations, logistics, supply chain management, the technology systems and the programmed software needed to manage inventory. The management of inventory involves the coordination, control, utilization and purchase of materials. Additionally it involves obtaining the required inventory at the right place and time and in the required quantity since it has a direct connection with production. The implication of this is that firm profitability is directly or indirectly impacted by inventory management (Muhayimana, 2015).

The study was pegged on a number of theories like the transaction cost economic theory, trade-off theory and operating cycle theory which have explained how inventory turnover impacts the financial performance (FP) of entities. The transaction cost economic theory states that the standard function of an entity is to lower costs on the understanding that the costs spur firm growth and incorporate other activities (Pandey, 2010). The trade-off model indicates that entities determine their optimal cash holding level on the basis of a comparison between marginal cash holding costs and advantages. A heavy investment in currents assets will certainly give the firm a low ROA because an over investment in current assets does not yield enough revenues (Drury, 2005). The operating cycle theory concentrates on managing working capital and its components (Nwanko, 2005).

Commercial and service industry is important in growth and development of the Kenyan economy since it enables creation of employment opportunities, increasing

the Gross Domestic Product (GDP) and proceeds from foreign exchange for the major period post-independence (UNCTAD, 2018). Commercial and service firms listed firms and other listed firms have faced a myriad of issues in the recent past that has brought about the debate on innovative practices among these firms. Kenya Airways, Uchumi and Deacons have all faced troubles recently and therefore need to assess factors that can help improve their performance. Despite the introduction of Vendor Managed Inventory (VMI) as a strategy towards managing inventory, listed commercial and service firms still struggle to adopt the concept of VMI as a strategic means to lower costs of managing inventory and increase the profit margin (Cytonn Investments, 2019).

1.1.1 Inventory Management

Guariglia and Mateut (2010) define inventory management as a business management component covering the planning and inventory control. Inventory management refers to methods used to organize, hold and replenish stock. The main purpose is to keep the inventories at an optimum level, without stockouts or excess (Mathuva, 2013). Mpwanya (2005) states that inventory management involves supervising non-capitalized assets and items of stock. Being a supply chain management component, inventory management involves supervising how goods move from manufacture to warehousing and finally to points of sale.

Additionally, inventory control is crucial since firms will ensure proper management of assets and stock and that an accurate demand forecasting is kept to avoid unplanned procurement. This will be helpful to the firm to execute successful procurement processes matching the forces of demand and supply (Brigham & Gapenski, 2013). Agus and Noor (2010) note that forecasting demand assists the organization in

lowering their operational costs, increasing efficiency and timely delivery of goods and services. This assists the organization to make plans for future demand by meeting the growing demands of customers. This greatly improves customer satisfaction because of the quality of goods and services being offered.

The inventory turnover ratio is a crucial measure of the efficient management of a company's inventory while earning revenue from it. It is given by the quotient of the cost of goods and the average inventory. Normally, a higher ratio is more preferable since it shows the generation of more sales from a given amount of inventory. Alternatively, for given sales, utilization of a lower amount of inventories improves the ratio. At times, a very high ratio could translate to loss of sales, since inventory is inadequate than demanded. It is crucial to make a comparison of the ratio to the industry ratio to determine if proper inventory management is being done by the company (Manasseh, 2007). This study will operationalize inventory management by utilizing the inventory turnover ratio.

1.1.2 Financial Performance

This is as defined by Almajali, Alamro and Al-Soub (20120 as a firm's ability to achieve the range of set financial goals such as profitability. FP is a degree of the extent to which a firm's financial benchmarks has been achieved or surpassed. It shows the extent at which financial objectives are being accomplished. As outlined by Baba and Nasieku (2016) FP show how a company utilizes assets in the generation of revenues and thus it gives direction to the stakeholder in their decision making. Nzuve (2016) asserts that the health of the bank industry largely depends on their FP which is used to indicate the strengths and weaknesses of individual banks. Moreover, the

government and regulatory agencies are interested on how banks perform for the regulation purposes.

The focus of FP is majorly on items that directly alter the statements of finance or the firm's reports (Omondi & Muturi, 2013). The firm's performance is the main external parties' tool of appraisal (Bonn, 2015). Hence this explains why firm's performance is used as the gauge. The attainment level of the objectives of the firm describes its performance. The results obtained from achieving objectives of a firm both internal and external, is the FP (Lin, 2008). Several names are given to performance, including growth, competitiveness and survival (Nyamita, 2014).

Measurements of FP take different forms that have to be consolidated. Ngatia (2012) stated that Return on Assets (ROA), firm size, Return on Equity (ROE) and Return on Sales (ROS) as performance measures. Carter (2010) measured FP by means of Tobin's Q and ROA while Wang and Clift (2009) used ROA and ROE. Efficiency measures such as total asset turnover ratio, fixed asset turnover and Data Envelopment Analysis (DEA) are also used in measuring performance. The most widely known measurements of performance is ROA; hence, in this study listed commercial and service firm's performance will be calculated using this measure. ROA indicates the profitability of the companies in relation to its total assets (Mwangi & Murigu, 2015).

1.1.3 Inventory Management and Financial Performance

A balance needs to be struck between profitability and liquidity and this is a critical issue in both the management of inventory and working capital. Raheman and Nasr (2007) state that firms exist to maximize profits and by doing so, attempts should be made for the preservation of liquidity. For a company to gain bumper profits, working

capital should be minimized and if liquidity is the goal, then the levels of working capital should be raised but the consequence of this is that the level of sales and profitability would be reduced. Excess liquidity is an indication of unused or idle funds that do not generate any revenues. The existence of excess capital is harmful to the company since such idle funds do not generate revenue and subsequently results in a fall in prices of shares (Smith 1980).

Inventory management is crucial in organizations since a simple misstatement can have an impact on the profits reported: A misstatement of the balances in inventory directly impacts the profits reported since an inadequacy in inventory can mean a failure to meet outstanding sales and production requirements; a high level of inventory levels that causes poor flow of cash and financial losses; incorrect recording of the movements in inventory resulting in lack of awareness of the inventory position of a business causes a failure to meet customer requirements; inadequate security over inventory resulting in losses, theft or misappropriation and obsolete inventory held or erroneously being supplied to clients, results in financial losses and damages company reputation (Bedard & Wright, 2000).

Inventories are the largest components of current assets. Because of the large amounts inventory that is held by companies a substantial amount of financing is allocated to them. It is therefore necessary for firms to manage inventory efficiently and effectively in avoidance of unrequired investment. Reducing ‘excess’ inventory has a favorable effect on the FP of an entity (Pandey, 2010). The maintenance of a high level of inventory helps in the reduction of costs incurred to supply products and cushions the firm against price variations resulting from adverse macroeconomic conditions (Salawati, 2012).

1.1.4 Commercial and Service Firms Listed at the Nairobi Securities Exchange

The NSE which was founded in 1954 is responsible for the listing of firms and issuing of securities bought and sold by individual and institutions both local and foreign through the services of stockbrokers or dealers. It is the fourth-largest in the sub-Saharan Africa. It focuses in the exchange of securities issued by the Government and listed firms. The mandate of NSE is to oversee its members and provide a trading platform for the listed securities. The NSE provides the main hub for trading in the secondary market. It provides a trading floor which though available is not commonly in use after being replaced by the automated trading system. Through a wide area network, members trade at the comfort of their offices. The system is efficient, transparent and can handle large volumes of transactions at the same time (NSE, 2019).

Commercial and service sector refers to a category of enterprises that provide services to commercial and retail customers. There are currently 11 firms listed under this category namely: Express limited, Nation Media Group, Kenya Airways; Standard Group, TPS Eastern Africa, Scan Group, Uchumi Supermarket, Deacons, Sameer Africa, Longhorn Publishers and Nairobi business ventures (NSE, 2020). Commercial and service industry is crucial in growth and development of the Kenyan economy since it creates job opportunities, increasing the GDP and foreign exchange proceeds for the major period post-independence (UNCTAD, 2008). The contribution of the sectors in the economy has been significant, rising from 55 percent in 1980 to 65 per cent by 2016 in the total wage employment (CBK, 2017). The service sector's contribution to the Kenyan economy is crucial in maintaining trade balance.

According to UNCTAD (2008), the annual exports from services is approximately 50% for period since 1980.

Firms in the commercial and service sector listed at the NSE have been performing differently. While firms like Standard group, Nation media group and TPS Eastern African have posted good results, others like Kenya Airways, Uchumi and Sameer Africa have performed dismally (Njoroge, 2019). While the reason for some firms' failure to perform dismally may be due the nature of the environment they are working in and that is not under the control of the management or board, studies have shown a significance link between inventory management and the performance of these companies. A survey report by Cytonn Investment (2019) indicated that despite the introduction of Vendor Managed Inventory (VMI) as a strategy towards managing inventory, listed commercial and service firms still struggle to adopt the VMI concept as a strategy for the reduction of the costs of managing inventory realize a higher profit margin.

1.2 Research Problem

Agha (2014) noted that for a business to be sustainable, efficient management of inventory is a requirement and that the greater the amount of profits earned by a firm, the better it is seen as earning a greater amount of money on capital investment. Agus and Noor (2006) note that evaluation of the impact that various inventory levels have on an organization is crucial in adopting the most optimal method of managing inventory. In a similar study, Githendu et al., (2008) note that many firms have operating and financial issues due to the selection of an inappropriate method of managing inventory or lack sufficient information regarding the effective implementation of such methods. Failure to select an appropriate inventory

management system or in the integration of relevant information in the implementation process leads to poor organizational performance. Bicheno (1996) states that organizational growth is dependent on positive consistent performance.

Commercial and service firms listed firms and other listed firms have faced a myriad of issues in the recent past that has brought about the debate on inventory management practices among these firms. For example, the recently published huge losses posted by Kenya Airways, the near collapse of Uchumi supermarket and the delisting of Deacons as a result of bankruptcy (Koriata, 2020). The firms' adoption of VMI has been low and this has led to increased inefficiencies in managing inventory. The firms need to focus on innovative ways of managing inventory which would mitigate against some of the risks of holding excess or inadequate inventory and in essence improve FP (Cytonn Investments, 2019).

Different empirical studies have been directed on the influence of inventory management on performance but the findings have been inconsistent. Nsikan, Etim and Uduak (2015) in their study found out that scientific methods of managing inventory assist in addressing material shortages more effectively, managing product stock outs, components pile up and related costs; however, the limitation of the study was to firms manufacturing consumer goods (flour milling firms) operational in Lagos, Nigeria. Muhayimana (2015) was specifically interested in firms manufacturing consumer goods that demonstrated that inventory management techniques aid in reduction of costs and in meeting customer demands. The study done in relation to the Rwandese market. Ponsian et al., (2014) found out that an inverse association exists between liquidity and profitability in which a low liquidity had a positive impact on profitability.

Locally, Mohamed (2014) studied the association amongst inventory management and FP of Garissa County; Murunga (2017) studied how the management of inventory impacts performance of business outlets in Mandera County; Achieng (2018) sought to explain the influence of inventory management practices on retail outlets' performance in Nairobi City County; Kilonzo, Memba and Njeru (2016) investigated how performance of firms funded by the Kenyan government venture capital is affected by inventory management. From the studies reviewed, there exist conceptual, contextual and methodological gaps. Conceptually, there is no unanimity on the influence of inventory management on FPs, where some studies found a direct relationship existing between inventory management and FP others found existence of a negative relationship between these same variables. Contextually, most of the previous studies have focused on other sectors leaving a gap on listed commercial and service firms. Methodologically, most previous local studies utilized primary data and measured inventory management using a likert scale. The current study intended to bridge these research gaps by answering the research question; what is the effect of inventory management on FP of commercial and service firms listed at the NSE?

1.3 Research Objective

The study objective was to assess how inventory management influence financial performance of commercial and service firms listed at the NSE.

1.4 Value of the Study

This study's results will create a deeper understanding of inventory management theories and practices. It will also add to the already documented information regarding the association that inventory management has on FP of entities and also fill the gap on this relation between variables that will be beneficial to future researchers.

The study is beneficial to the commercial and service firms in understanding the linkage between the two variables which is essential in having a sound team of inventory managers with a wide array of perspectives essential for financial success and building trust among company stakeholders.

To the government and key policy formulators, the study will be beneficial in aiding the formulation of policies and procedures that would steer commercial and service firms in adopting inventory management practices that would improve their efficiency which in turn will improve sector performance.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This section reviews theories that lay the foundation for the study. Additionally, previously conducted empirical studies on this study and related areas will be discussed. Other relevant sections will include the determinants of FP and a conceptual framework showing the association between study variables.

2.2 Theoretical Framework

Key theories that explain the study phenomena will be presented. The theoretical reviews covered are the transaction cost economic theory, and operating cycle theory trade-off.

2.2.1 Transaction Cost Economic Theory

The theory was formulated by Williamson (1975) and Coase (1937) who stated that fims can allocate resources more efficiently than the market (a bargaining system). Additionally, the theory states that the primary function of the firm is to lower the costs and understanding them will be beneficial to firms to expand thereby incorporating other activities. The theory makes a reference to the transaction as the standard unit by which it is evaluated and argues that reducing transactional costs will be essential in examining companies.

The theory can thus be knowing the limitations existing between firms and the market and an arrangement of company transactions. In determining the maximum amount of inventory a balance between the costs and benefits associated with a certain level of inventory should be determined. Ordering costs and carrying costs are included in the costs associated with holding inventory. Ordering costs related to purchases of

inventory, that comprise of costs of preparing a purchase form, receiving, examining and registering goods accepted (Pandey, 2010).

Contrarily, the carrying costs of inventory includes costs of maintaining the inventory and arises due to the storage costs of the inventory together with its opportunity costs. Several reasons exists for high and low amounts of inventory which depends on the activities of a business. A crucial reason for managing inventory is the costs associated with it as described in the theory of Transaction Cost Economics (TCE) (Emery & Marques, 2011). The theory relates to this study since it recognizes that companies need to reduce costs to improve their performance and this can be done by lowering the level of inventory held.

2.2.2 Trade-off Theory

The theory by Myers (1984) explains how a firm determines its optimum cash holding level which is by comparing the advantages of holding cash and marginal costs. A heavy investment in currents assets will result into a lower ROA for the firm because an overinvestment these assets will not yield adequate revenue. The most important goal for the firm is not only the maximization of profits but also the maintenance of positive liquidity at all times. Efforts to raise profits by lowering liquidity would be harmful to the entity (Shin & Soenen, 1998).

Advocates of the theory have supported the assumptions surrounding the existence of an imperfect market which exhibits high levels of information asymmetry. Additionally, they illustrate the ability of the theory to elaborate on the existence of of an optimal liquidity level that lowers costs of financing while maximizing benefits to the firms (Leary & Roberts, 2010; Hennessy & Whited, 2005; Strebulaev, 2007; Sheikh & Wang, 2011) . Critics of the theory have alternatively opposed the

assumption of a positive relation between liquidity and performance stating that it is an inadequate static model (Awan & Amin, 2014: Chen & Chen, 2011: Frank & Goyal, 2003). It is crucial to note that the theory elaborates the concept of risk and return in finance by stating that firms determine their optimal liquidity level by comparing marginal cost and benefits.

The firm should agree on the level of assets to be maintained on the basis of all factors related to the day-to-day operations of the entity. In this case, the conservative risk-return trade-off which means a lower risk for low returns can be used or an aggressive working capital policy which means a higher risk high returns (Carpenter & Johnson, 1983). Knowing that rank correlation on profitability has an inverse relation with liquidity, the conclusion from this is that a rise in the liquidity level may lower profitability (Pandey, 2010). The model will be helpful in this study since it will aid in understanding and explaining why the listed commercial and service firms need strike a good balance amongst liquidity and profitability. Managing this trade-off is essential to making good inventory management decisions.

2.2.3 Operating Cycle Theory

Operational cycle theory was developed from works of Weston and Brigham (1979). This theory is based on the firm's operational cycles. It recommends that the liquidity flow concept is produced by expanding the stability of potential liquidation esteem extent to include remuneration justification measures of a firm's operating activities. The incorporation of records receivables and stock turnover measure in operating cycle gives a clearer liquidity outlook management than reliance on the current as well as analysis of dissolvability's proportion markers. Records receivable turnover is a points out the quantity of times in which the normal receivables venture of a firm is

converted into money. Alterations of credit as well as accumulation strategy openly impact the normal exceptional debtors adjust put up regarding a company's annual deals (Weston & Brigham, 1979).

Operating cycle is given by adding day's stock exceptional period to sales outstanding days. Average outstanding accounts receivable balance to the company’s yearly sales is directly affected by any change in credit and collection policy. Increase in credit sales leads to rise in receivables which results to lower receivables turnover and an extended receivable collection period which implies reduced level of liquidity. Higher present and basic analysis proportion is brought out in an unavoidable manner by the choice those outcomes in a company putting up bigger normal receivable speculation over a more drawn out day and age (Richards & Laughlin 1980).

The operating cycle hypothesis is criticized by Richards and Laughlin (1980) on the premise of neglecting liquidity necessities enforced on a company when measuring present liabilities commitments. However, this theory has relevance to this study for its idea that effective inventory management will ensure smooth operating cycles which in turn enhance FP.

2.3 Determinants of Financial Performance

The firm’s performance can be impacted by components either outside or within the organization. The internal factors include inventory management, management efficiency, dividend decisions, liquidity of the firm, leverage, firm size, organization culture among others. External factors are outside the management influence. They include factors the firm has little influence over but should formulate strategies to handle them (Athanasoglou, Brissimis & Delis, 2005).

2.3.1 Inventory Management

This constitutes business capital that is used in daily activities. It determines if a business entity has sufficient flow of cash to meet short term operational needs. An efficient management of inventory levels raises a firm's liquidity thereby ensuring that its short term needs are met and sufficient investment in profitable opportunities is made knowing that the interests on financing of inventory is a carrying cost which lowers company profitability. The tradeoff is the factor which requires to be addressed (Pandey, 2010).

Inventories require financing and the interest associated with this financing is considered a cost which lowers the profitability associated with a company. Also, having low liquidity carries consequences such as lost sales resulting from shortages in inventory. This may cause a business to be bankrupt resulting to insolvency. Therefore, the crucial requirement is the maintenance of an optimal working capital level which balances financial strength requirements with satisfactory investment, which is investing idle cash without lowering liquidity. Hirigoyen (1985) notes that overtime the relation between profitability and liquidity can be positive.

2.3.2 Firm Size

The amount of economies of scale earned by a firm is dependent on its size. The bigger the firm, the lower the average production scale and the more the efficiency in operating activities resulting from large economies of scale that the firm generates is high. Despite their size, large firms may lose control of their strategic and operational activities by their management which may ultimately cause a decline in their efficiency (Burca & Batrinca, 2015).

Larger firms command a big market power and can engage in more diversification. They are also more likely to suffer from organizational slack in case the business experiences boom. Size of the firm is a large determinant of the amount of investments of cash flow that can be made. In determining this size of the firm, the number of its workers, property held and sales volume are the critical elements taken into account (Almajali, 2012).

2.3.3 Firm Liquidity

Liquidity is the extent to which a firm is able to fulfil its debt obligations that are due in one year using cash and its equivalents. These are assets which are short term in nature and are easily convertible to cash. Liquidity arises from the ability of managers to accomplish commitments falling due to creditors deprived of resulting to the liquidation of financial assets (Adam & Buckle, 2003).

Liargovas and Skandalis (2008) stated that, firms can utilize liquid assets to finance operations and invest in the case where external financing is unavailable. Companies with high liquidity are able to cope with unpredicted emergencies and cash demands that may arise. Almajali et al. (2012) stated that the liquidity of a firm may have highly impact on firm efficiency; thus, firms should work towards raising their current assets level while lowering liabilities. However, Jovanovic (1982) stated that high liquidity levels may be harmful to a firm.

2.3.4 Management Efficiency

This is a crucial internal qualitative element that is used to measure and determine the operational efficiency of a firm. Management's capability to efficiently use its resources, increase their funding and efficiently use funds are examples of ways in which management efficiency will be assessed (Kusa & Ongore, 2013).

Management efficiency being a determinant of the operational efficiency is a qualitative measure demonstrated through staff quality, how effective and efficient internal controls are, organization-wide discipline and management systems' effectiveness (Athanasoglou, Sophocles & Matthaois, 2009). Management quality is influential to operating expenses which in effect influences the firm's bottom line hence management efficiency substantially influences efficiency of firms (Kusa & Ongore, 2013).

2.4 Empirical Review

Research has been done locally, regionally and internationally in support of the association between inventory management and performance, but have yielded contradicting results.

2.4.1 Global Studies

Nsikan, Etim and Uduak (2015) undertook an investigation on effect of inventory management practices on firms' performance. Particularly, their aim was to establish the inventory management practices applied by flour milling manufacturing firms and how the practices impacted operational performance. In the study a total of five firms were chosen in which a selection of one hundred and fifty respondents was made to provide answers to the questions posed in the study. The findings from the study indicated that excluding the large assembly firms, many medium-sized flour milling companies utilize the scientific inventory management models. However, a majority of the inventory management methods were based on the changing demands of customers, current industrial practices, a forecast of estimates, and production capacity. The study also showed that firms that use scientific inventory management

methods are more efficient in empowering superior performance through reduction in capacity, service improvement and shorter lead time.

Muhayimana (2015) studied the contribution that inventory management techniques have on the proper management of manufacturing firms. The preferred company for the study was Sulfo Rwanda Ltd, a company engaging in the manufacture of consumer goods in Kigali City. The purposive sampling methodology was used to make sure that only the individuals with the relevant information in regards to the research study were included in the sample. A total of fourteen respondents were chosen using the sampling method. From the study it was found that practices of inventory management a substantial influence on firm's performance, especially in lowering costs. The study further discovered that inventory management helps firms in meeting the demands of customers more efficiently since cases of inability to meet the demand of customers is lowered.

Vipulesh (2015) studied how inventory management impacted firm performance. The goal of the study was to establish how inventory management impacts performance of firms in India. The study relied on secondary data from a variety of sources. From the data collected, inventory turnover was correlated to the firm's profitability using the correlation concept. The findings of the study showed that firms in the manufacturing industry should install the optimal techniques for managing inventory or make efforts to improve their asset turnover. Additionally, through a different analysis, it was resolved that inventory turnover ratio has a correlation with the net profit of the firms. It was hence concluded that inventory management has an impact on the financial position of firms.

Kaushik and Shauhan (2019) investigated the relation between WCM and firm performance of firms in India from 2008 to 2016. The study also captured the role that financial constraints have in the above relationship. The findings showed that a substantial negative relation existed between the net trade cycle, number of accounts receivable period and inventory days on the FP of firms in India while a positive relation was found with the accounts payable period. The Inclusion of financial constraints in a study of the variables produced mixed results.

Altaf and Ahmad (2019) examined the relation between working capital financing and firm performance and sampled 437 non-financial companies in India. Additionally, the study examined the impact that financial constraints had on working capital financing and performance. The study relied on secondary data for a total of 437 non-financial companies in India obtained from capitaline database, for a period of 10 years (2007 to 2016). A two-step generalized method of moments technique was used to analyze the data. Findings showed an inverse relation between working capital financing and firm performance. Additionally, the researchers also found that companies with sufficient capital can choose to finance their working capital needs using short-term debt.

2.4.2 Local Studies

Wamugo, Kosimbei and Muathe (2014) studied the effects of WCM on profitability of Non-Financial Companies. A census of 42 NSE listed companies was taken. The data was derived from the NSE hand books for 2006 to 2012. Feasible Generalized Least Square regression showed that a positive substantial relationship existed between ROA and return on equity resulting from an aggressive financing policy. The limitation of this policy was the failure to segregate their findings for every industry.

What favors manufacturing firms may not necessarily favor the commercial and service companies owing to the nature of their business.

Kilonzo et al. (2016) determined the effect that inventories management had on FP of firms funded through capital venture by the government of Kenya. The data was collected using a structured questionnaire. Data analysis was done using descriptive statistics which included standard deviation, percentages and mean, correlation analysis, and regression analysis. ANOVA tested the model significance. The study revealed that although inventory management and performance are positively related, the association is not significant. However, the study found that more work is needed on inventory management more so in areas of managing obsolete inventory and the review and adoption of solid inventory management policies.

Oduori (2017) sought to establish effect of working capital levels on firm value of listed agricultural manufacturing companies in Kenya. The study embraced a descriptive research design on a population of interest for this study was seven listed agricultural manufacturing companies that were in operation during the period 2012 to 2016. The study found out that the variations in the three determinants of working capital levels explained the changes in the firms' value by 69.3% depicting the model as statistically significant and therefore concluded that there existed significant association between the working capital levels and firms' value of listed agricultural manufacturing companies in Kenya. Also, working capital levels had a positive and important effect on value of the firm in agricultural manufacturing industry.

Awunya (2017) studied WCM effect on FP of firms quoted at the NSE both commercial and service. Financial statements of 9 commercial and service firms that had obtained a listing at NSE were collected for five years (2012-2016) with 45

observations. Descriptive and linear regression analysis method was used to analyze data. The WCM policies that were part of the analysis included current liabilities, current assets and total assets in respect to ROA. The findings of the study indicated that both conservative investment policy and aggressive financing policy was insignificantly but positively related to profitability while leverage was negatively but significantly related to profitability. In addition, firm size and profitability had an insignificant positive relationship. This study did not address the how liquidity and firm value are related which is the focus of the current study.

Awuondo (2018) studied the working capital management methods used by firms in the construction and allied sector with a listing at the NSE, to ascertain how working capital management approaches influence the market value (Tobin`s Q). The study was a correlation design that applied secondary quantitative panel data set from 5 firms listed in the sector from 2010 to 2016. The findings of the study showed that firms listed in the sector used varied degrees of working capital investment and financing methods that had a substantial impact on their market value as given by Tobin`s Q. The first model showed a substantial negative relation between Tobin`s Q and the magnitude of aggressive working capital investment methodology. The second model showed a positive relation between Tobin`s Q and extent of aggressive working capital financing method.

2.5 Summary of Literature Review and Research Gaps

Several theoretical frameworks have attempted to explain the expected relation between inventory management and FP. The theories reviewed are; transaction cost, operating cycle and trade-off theory. A number of the key influencers of FP have also

been explored. Various studies have been done both globally and locally on inventory management and performance and findings reviewed in this chapter.

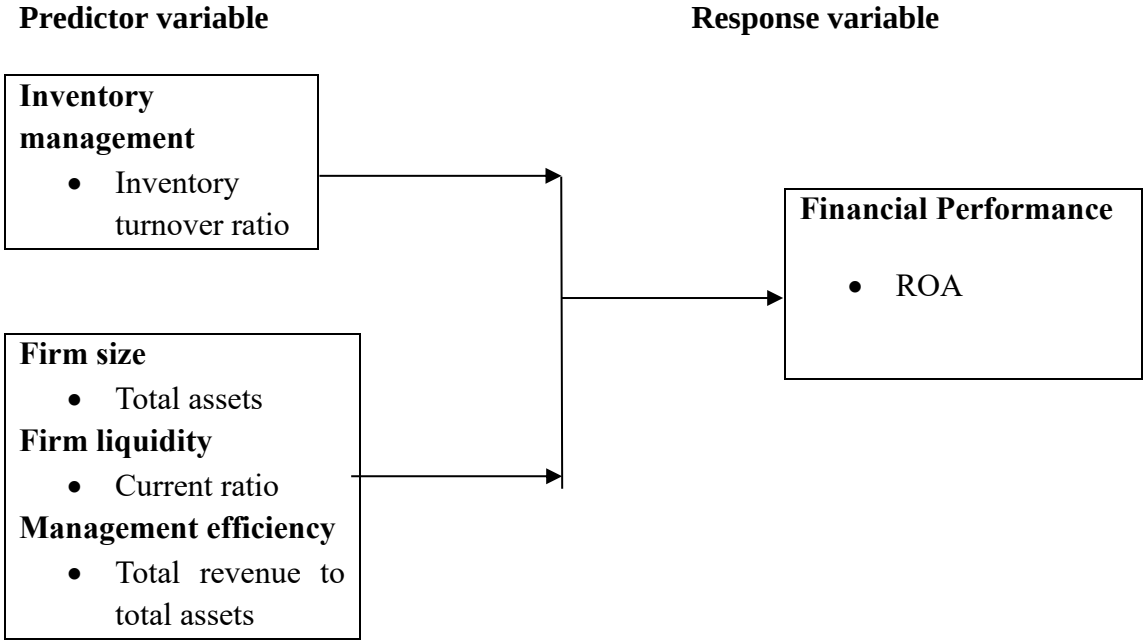
From the review, it is notable that most researchers have focused on the influence of working capital management on accounting profitability measures. The few studies on the relation between inventory management and performance have arrived at contradictory findings. Kilonzo et al. (2016) determined the effect of inventories management on FP of firms financed by venture capital from the government. The study discovered that inventory management although inventory management is positively related to performance, the association is not significant. This contradicts with the findings by Muhayimana (2015) who studied the contribution that inventory management techniques had on FP of manufacturing firms using a case of Sulfo Rwanda Ltd. Findings were that these practices have a substantial impact on firm's performance, more so on the lowering of costs.

Further, most of these studies have been done in different countries and different sectors. This provides more gap on the context of commercial and service firms listed at the NSE since the current study is interested on the interaction amongst inventory management and FP among commercial and service firms. Additionally, the reviewed studies measured the direct relation between the variables which require additional studies on how an interactive regression model can be utilized in determining the interactions between the variables.

2.6 Conceptual Framework

The model below illustrates the expected association between the variables. The predictor variable for the study will be inventory management measured by inventory turnover ratio on an annual basis. The control variables will be firm size, liquidity and management efficiency. The dependent variable will be FP as given by ROA.

Figure 2.1: The Conceptual Model



Source: Researcher (2020)

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

In determining the effect of inventory management on FP, a research methodology was essential to outline the manner in which the study was carried out. The section outlines the design, population, the data collection method and analysis methods.

3.2 Research Design

A descriptive design was used for this purpose. The aim of this type of study was determining the how, what and where of a situation (Cooper & Schindler, 2008). This design was applicable for the study because the researcher sought to describe the nature of affairs as they are (Khan, 2008). The fact that the researcher of this study has insight on the area under examination but sought more knowledge regarding the relationship between the variable being studied made this research design suitable. Moreover, descriptive research purpose to provide an authentic and correct variable representation being studied and this assist in getting response to the study query (Cooper & Schindler, 2008).

3.3 Population and Sample

Burns and Burns (2008) define population as the number of all of the observations of interest within a particular collection such as people or events as described by an investigator. The population was the entire 11 commercial and service firms listed as at 31st December 2019 (see Appendix I). Because of its small population, no sampling was conducted.

3.4 Data Collection

Published annual financial reports of the commercial and service firms listed in NSE

were drawn from Capital Markets Authority (CMA) and individual firm's annual reports between January 2015 and December 2019 and provided secondary data which was recorded in a data collection sheet. The specific data obtained included inventory, cost of goods sold, total assets, current assets, current liabilities, total expenses and net income, total revenue and total operating expenses.

3.5 Data Analysis

SPSS version 23 was used in data analysis. The researcher quantitatively presented the findings through use of tables and graphs. Descriptive statistics such as measures of central tendency, percentages and dispersion were used in reporting the data. Inferential statistics included; multiple regressions, Pearson correlation, coefficient of determination and ANOVA.

3.5.1 Diagnostic Tests

The study undertook several diagnostic tests to assess the applicability of the research structure. The study first assessed for normality through the Kolmogorov-Smirnov and Shapiro-Wilk tests of the residuals where in both tests, a non-important result (a p factor of greater than 5%) was deemed an indication for normality. The study also assessed for multicollinearity using the tolerance and the variance inflation factors (VIF) where a tolerance figure of greater than 0.2 or a VIF of more than 10 was an indication of the presence of multicollinearity. Additionally, the study assessed for heteroskedasticity using the Levene test and the plotting of residual graphs and assessed for serial correlation (autocorrelation) using the Durbin Watson test where a value of between 1.5 and 2.5 indicated that there exists no auto-correlation (Khan, 2008).

3.5.2 Analytical Model

The model below was used:

$$Y= \alpha+ \beta_1X_1+\beta_2X_2+\beta_3X_3+ \beta_4X_4 +\varepsilon.$$

Where: Y = FP given by annual return on assets which is net income divided by total assets

α =y intercept of the regression equation.

β_1, β_2, β_3, β_4 =are the regression coefficients

X_1 = Inventory management given by quotient of cost of goods sold and average inventory

X_2= Firm size given by natural log of total assets

X_3= Firm liquidity given by current assets divided by current liabilities

X_4= Management efficiency measured as the ratio of total revenue to total assets

ε =error term

3.5.3 Tests of Significance

Parametric tests were carried out by the researcher to establish how significant the model and variables are. The F-test was used in the determination of the relevance of the model given by Analysis of Variance (ANOVA) while a t-test determined statistical relevance of individual variables.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND FINDINGS

4.1 Introduction

The chapter presents analysis of data from CMA to establish how inventory management influence commercial and service firms' FP. Using descriptive statistics, correlation and regression findings were illustrated on tables as shown in sections below.

4.2 Descriptive Analysis

This analysis gives the average, maximum, minimum as well as standard deviation of the variables for the study. Table 4.1 illustrates statistics for the variables. SPSS was used in the analysis from (2015 to 2019) for all the 11 commercial and service firms whose data was obtained. The values are below.

Table 4.1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
ROA	53	-430.1221	.2018	-8.176719	59.0736527
Inventory management	53	.0000	113.1155	45.054581	32.6704476
Firm size	53	5.1575	8.2602	6.751153	.7008693
Liquidity	53	.0827	2.9022	1.332106	.7634157
Management efficiency	53	.0000	.8165	.286208	.2174313
Valid N (listwise)	53				

Source: Research Findings (2020)

4.3 Diagnostic Tests

The data collected was subjected to diagnostic tests. The study presumed a 95% confidence or 5% level of significance so as to make variable deductions on the data adopted. Diagnostic tests were useful for ascertaining the falsity or truth of the data. Therefore, the nearer to 100% the confidence interval, the more accurate the data used

is presumed to be. In this case, the tests conducted were normality test, Multicollinearity test, heteroskedasticity tests and autocorrelation.

4.4.1 Normality Test

This test was done using the Kolmogorov-Smirnov test. The threshold was that, if the probability higher than 0.05, there is normal distribution in the data.

Table 4.1: Normality Test

	Kolmogorov-Smirnova		
	Statistic	**df**	**Sig.**
ROA	0.486	53	0.234
Inventory management	0.326	53	0.112
Liquidity	0.408	53	0.207
Management efficiency	0.394	53	0.179
Firm size	0.272	53	0.063

Source: Research Findings (2020)

The findings above indicated that data was normality distributed since the p values were more than 0.05. Therefore, the null hypothesis of normal distribution was accepted meaning the researcher failed to reject the null hypotheses.

4.4.2 Multicollinearity Test

William et al. (2013) defined this property as the presence of correlations between the predictor variables. VIF was used to test for this property. Field (2009) argued that VIF values above 10 confirm the existence of this property.

Table 4.2: Multicollinearity Test

Variable	**VIF**	**1/VIF**
Inventory management	1.30	0.771
Liquidity	1.27	0.785
Management efficiency	1.02	0.978
Firm size	1.20	0.833

Source: Research Findings (2020)

The findings in Table 4.3 show the VIF results which were found to be lower than and 10 and therefore according to Field (2009) there was no presence of Multicollinearity.

4.4.3 Heteroskedasticity Test

The error process can be Homoskedastic in cross-sectional units, but have different variance across units: otherwise known as group wise Heteroscedasticity. The hettest command calculates Breuch Pagan for group wise Heteroscedasticity among residuals. According to the null hypothesis; $\sigma^2_i = \sigma^2$ for i =1...Ng, where Ng is the cross-sectional units.

Table 4.4: Heteroskedasticity Test

Modified Wald test for group wise heteroskedasticity in fixed effect regression model
H0: sigma(i)^2 = sigma^2 for all i
chi2 (53) = 314.92
Prob>chi2 = 0.0763

Source: Research Findings (2020)

Findings in Table 4.4 show that the null hypothesis of Homoskedastic error has not been rejected shown by the p-value of 0.0763.

4.4.4 Autocorrelation Test

Because of the biases in standard errors caused by serial correlation makes the results less efficient, the Breusch-Godfrey test for autocorrelation was adopted which identifies serial correlation in the idiosyncratic error term in a model.

Table 4.5: Autocorrelation Test

Wooldridge test for autocorrelation in panel data H0: no first-order autocorrelation
F(1, 52) = 0.336
Prob> F = 0.6240

Source: Research Findings (2020)

From the Table 4.5 above, the null hypothesis of no serial correlation is not rejected because the p-value is substantial (p-value = 0.6240).

4.5 Correlation Analysis

Assessment of the relation among variables is completed using correlation analysis. The Pearson correlation was used in establishing how commercial and service firms' performance and the variables (inventory management, liquidity, firm size and management efficiency) are related.

The findings showed that inventory management, liquidity and management efficiency positive but weakly correlated with the commercial and service firms' FP given by (r = .008, p = .952; r = .021, p = .881; r = .019, p = .891) in that order. Firm size exhibited a positive substantial correlation with firm FP shown by (r = .319, p = .020).

Table 4.6: Correlation Analysis

		ROA	Inventory management	Firm size	Liquidity	Management efficiency
ROA	Pearson Correlation	1				
	Sig. (2-tailed)					
Inventory management	Pearson Correlation	.008	1			
	Sig. (2-tailed)	.952				
Firm size	Pearson Correlation	.319*	-.259	1		
	Sig. (2-tailed)	.020	.061			
Liquidity	Pearson Correlation	.021	-.014	-.123	1	
	Sig. (2-tailed)	.881	.922	.381		
Management efficiency	Pearson Correlation	.019	-.040	.039	-.348*	1
	Sig. (2-tailed)	.891	.778	.784	.011	

*. Correlation is significant at the 0.05 level (2-tailed).
b. Listwise N=53

Source: Research Findings (2020)

4.6 Regression Analysis

Variables against which performance was regressed were; inventory management, liquidity, firm size and management efficiency. Analysis was at 5% significance.

Critical value given by F – table was compared with the figure from the regression. The findings are below.

Table 4.7: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.533[a]	.284	.225	.1945397	2.328

a. Predictors: (Constant), Management efficiency, Firm size, Liquidity, Inventory management
b. Dependent Variable: ROA

Source: Research Findings (2020)

R square shows changes in the response variable resulting from variations in predictor variables. From results in table 4.7 above, R square was 0.284, a revelation that 28.4% variations in FP of commercial and service firms stems from variations in inventory management, liquidity, firm size and management efficiency. Alternative variables outside the model account for 71.6% variations in FP. Additionally findings showed that the independent variables exhibited moderate relationship with FP as evidenced by a 0.533 correlation coefficient (R).

Table 4.8: Analysis of Variance

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.721	4	.180	4.764	.003[b]
	Residual	1.817	48	.038		
	Total	2.538	52			

a. Dependent Variable: ROA
b. Predictors: (Constant), Management efficiency, Firm size, Liquidity, Inventory management

Source: Research Findings (2020)

The significance figure is 0.003 that is lower than p=0.05. This indicates the model was sufficient in estimating how inventory management, liquidity, firm size and management efficiency influence FP of NSE listed commercial and service firms.

R- square was used in indicating the direction of the relation between variables. The p-value under sig. column indicated how significant the relation between the response and the predictor variables are. The 95% confidence, implies a p-value lower than 0.05. Consequently, a p-value that is higher than 0.05 shows an insignificant relationship between the predictor and response variable. Results are below

Table 4.9: Model Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.889	.282		-3.155	.003
	Inventory management	.079	.037	.138	2.112	.036
	Liquidity	.152	.038	.524	3.973	.000
	Firm size	.185	.139	.182	1.326	.191
	Management efficiency	.089	.039	.283	2.271	.028

a. Dependent Variable: ROA

Source: Research Findings (2020)

From the findings, with the exception of firm size, the other variables produced positive substantial values (high t-values, $p < 0.05$). Firm size produced positive but weak value as shown by a p value of higher than 0.05.

The equation below was determined:

$Y = -0.889 + 0.079X_1 + 0.152X_2 + 0.089X_3$

Where,

Y = FP

X_1= Inventory management

X_2= Liquidity

X_3= Management efficiency

From the model, the constant = -0.889 shows that if the variables (inventory management, liquidity, firm size and management efficiency) were at zero, performance would be -0.889. A unit increase in inventory management, liquidity or

management efficiency would increase in FP by 0.079, 0.152 and 0.089 respectively while firm size was insignificant.

4.7 Discussion of Research Findings

The study's intent was assessing how inventory management influence performance of NSE listed commercial and service firms. Inventory management was the dependent variable given by cost of goods sold divided by average inventory. The control variables were liquidity given by current ratio, management efficiency given by total revenue to total assets and firm size given by debt to assets ratio. FP was response variable given by ROA.

The Pearson correlation coefficients showed that firm size has a positive substantial correlation with performance. Inventory management exhibited a positive but not substantial relation with performance of NSE listed commercial and service firms. The study also showed a positive but not substantial correlation between firm size and management efficiency with performance of NSE listed commercial and service firms.

The summary showed that the predictor variables: inventory management, liquidity, firm size and management efficiency explains 28.4% changes in response variable given by R^2 which implies that different factors outside the model explain 71.6% of variations in performance. The model was sufficient at 95% confidence with F-value at 4.764. This confirms that it was sufficient in predicting and explaining how the variables relate.

Findings concur with Muhayimana (2015) who studied the contribution that inventory management techniques have on the proper management of manufacturing firms. The preferred company for the study was Sulfo Rwanda Ltd, a company engaging in the

manufacture of consumer goods in Kigali City. The purposive sampling methodology was used to make sure that only the individuals with the relevant information in regards to the research study were included in the sample. A total of fourteen respondents were chosen using the sampling method. From the study it was found that practices of inventory management a substantial influence on firm's performance, especially in lowering costs. The study further discovered that inventory management helps firms in meeting customer needs more efficiently since cases of inability to meet customer needs is lowered.

The findings are also in line with Vipulesh (2015) who studied how inventory management impacted firm performance. The goal of the study was to establish how inventory management impacts performance of firms in India. The study relied on secondary data from a number of sources. From the data collected, inventory turnover was correlated to the firm's profitability using the correlation concept. The findings of the study showed that firms in the manufacturing industry should install the optimal techniques for managing inventory or make efforts to improve their asset turnover. Additionally, through a different analysis, it was resolved that inventory turnover ratio has a correlation with the net profit of the firms. It was hence concluded that inventory management has an impact on the financial position of firms.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter summarizes the findings, conclusion, and limitations encountered in the investigation. It also recommends policies that will be useful to policy formulators in improving the expectations of listed commercial and service firms in achieving improved performance. Additionally, will give suggestions for future researchers.

5.2 Summary of Findings

The objective of this research was to assess how inventory management influence FP of NSE listed commercial and service firms. The selected variables for investigation included inventory management, liquidity, firm size and management efficiency. A descriptive cross-sectional design was selected for this purpose. Secondary data was sourced from CMA and analyzed using SPSS. Annual data for 11 commercial and service firms for five years was obtained from the commercial and service firms' reports.

From correlation analysis, firm size had a positive substantial correlation with FP of commercial and service firms. Inventory management exhibited a positive but not substantial association with FP of NSE listed commercial and service firms. The research also showed a positive weak correlation between liquidity, management efficiency and FP of NSE listed commercial and service firms.

From the results of regression analysis, R square was 0.284, a revelation that 28.4% variations in performance of NSE listed commercial and service firms stems from variations in inventory management, liquidity, firm size and management efficiency.

Other factors outside the model account for 71.6% of the changes in FP. Results showed a moderate correlation between the selected predictor variables and commercial and service firms' FP (R=0.533). Findings from ANOVA test showed that the F computed at 5% significance was higher than the critical value while the p value was 0.003 implying that the model was statistically substantial in predicting how the four selected independent variables impact performance of NSE listed commercial and service firms.

Regression results show that when all variables (inventory management, liquidity, firm size and management efficiency) were at zero, performance would be -0.889. A unit increase in inventory management, liquidity or management efficiency would increase in FP by 0.079, 0.152 and 0.089 respectively while firm size was not found to be statistically significant.

5.3 Conclusion

Findings show that the listed commercial and service firms' FP is significantly influenced by inventory management. The study shows that a unit increase in this variable substantially increases performance of commercial and service firms. Firm liquidity had a positive substantial relation to performance and hence increasing liquidity improves performance to a significant extent. The study also showed that management efficiency was statistically significant in determining FP and hence the study concluded that management efficiency heavily impacts performance of the selected firms. Additionally it was found that firm size has a positive but weak influence on FP hence concluding that firm size is not a significant determiner of firm size.

The conclusion is that the variables selected; inventory management, liquidity, firm size and management efficiency notably impact performance of the selected firms. These variables have a notable impact on the FP of commercial and service firms given that the p value in ANOVA is less than 0.05. The fact that that selected variables explain 28.4% variations in performance implies that 71.6% of variations in FP of commercial and service firms are as a result of other factors not considered in the model.

This study agrees with the findings of Kilonzo et al. (2016) who determined the effect that inventories management had on FP of firms funded through capital venture by the government of Kenya. The data was collected using a structured questionnaire. Data analysis was done using descriptive statistics which included standard deviation, percentages and mean, correlation and regression analysis. ANOVA tested the model significance. The study revealed that although inventory management and performance are positively related, the association is not significant. However, the study found that more work is needed on inventory management more so in areas of managing obsolete inventory and the review and adoption of solid inventory management policies.

This study also agrees with Oduori (2017) who sought to establish effect of working capital levels on firm value of listed agricultural manufacturing companies in Kenya. The study embraced a descriptive research design on a population of interest for this study was seven listed agricultural manufacturing companies that were in operation during the period 2012 to 2016. The study found out that the variations in the three determinants of working capital levels explained the changes in the firms' value by 69.3% depicting the model as statistically significant and therefore concluded that

there existed significant association between the working capital levels and firms' value of listed agricultural manufacturing companies in Kenya. Also, working capital levels had a positive and important effect on value of the firm in agricultural manufacturing industry.

5.4 Recommendations

Findings showed that the relation between inventory management and FP is positive and substantial. Recommendations for policy change include: NSE listed Commercial and service firms should invest on best techniques of inventory management to enhance FP. The study also recommends that listed commercial and service firms should lay infrastructure as well as purchase technological equipment that are needed to fast-track adoption of inventory management. This would help them to avoid the challenges associated with management of inventory such as under or over investment in inventories. This would thus help increase their competitiveness both locally and internationally and in essence boosting their performance.

The study showed a positive relation between FP and liquidity. The recommendation is that a thorough assessment of listed commercial and service firm's liquidity position should be carried out to make sure the companies are operating at sufficient liquidity levels thereby improving FP. The reason is that liquidity is highly important as it impacts firm operations.

Management efficiency had a substantial positive impact on performance of NSE listed commercial and service firms. The recommendation is that commercial and service firms should develop best talent management strategies to ensure attraction and retention of talented and dedicated employees as this will go a long way in enhancing FP. Some of the talent management practices they should pay keen

attention are workforce planning, recruitment, learning and development and employee rewards and compensation.

5.5 Limitations of the Study

This study focused on some factors that are hypothesized to influence performance of NSE listed commercial and service firms. Specifically, the study focused on four explanatory variables. In reality however, other variables are likely to influence FP of firms some which are internal such as financial leverage and corporate governance while others are not under the control of management such as economic growth exchange rates, balance of trade, and unemployment rate among others.

The study adopted the analytical approach which is highly scientific. The research also disregarded qualitative information which could explain other factors that influence the association between inventory management and performance of commercial and service firms. Qualitative methods such as focus group discussions, open ended questionnaires or interviews can help develop more concrete results.

The research concentrated on 5 years (2015 to 2019). It is not certain whether the findings would hold for a longer time frame. It is also unclear as to whether similar outcomes would be obtained beyond 2019. In completing the analysis of the data, multiple linear regression model was used. Because of the limitations involved when using the model like misleading findings from a change in variable FP, the researcher cannot generalize findings accurately. With the addition of data into the model, the model may produce different findings.

5.6 Suggestions for Further Research

The study's focus was on how inventory management influence performance of NSE listed commercial and service firms and relied on secondary data. A similar study

based on primary data collected by in depth questionnaires and interviews on all the 11 NSE listed commercial and service firms would be sufficient in complimenting this study.

This study did not consider all the factors influencing FP of NSE listed commercial and service firms and hence recommends that additional studies be made on variables like growth opportunities, industry practices, age of the firm, political stability and other macro-economic variables. By determining the influence of these variables on performance, the policy formulators will implement an appropriate tool that will impact performance.

The research only focused on the commercial and service firms listed at the NSE. The study's recommendations are that additional investigations be carried out on other firms operating in Kenya. Future studies can also focus on how inventory management influence other aspects other than FP such as firm value, operational efficiency, dividend payout among others.

The attention of this study was drawn to the latest five years because it was the readily available information. Subsequent studies may cover big time frame like ten or twenty years which can be very impactful on this study by either complementing or disregarding the findings of this study. The advantage of a longer study is that it will enable the researcher to capture effects of business cycles such as booms and recessions.

Finally, this study was based on a multiple linear regression model, which has its own limitations such as erroneous and misleading results resulting from a change in variable FP. Future researchers should focus on other models like VECM in exploring the various relations between inventory management and FP.

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APPENDICES

Appendix I: Commercial and Service Firms Listed at the NSE

1. Atlas Development and Support Services
2. Express Ltd
3. Kenya Airways Ltd
4. Longhorn Kenya Ltd
5. Nation Media Group
6. Scangroup Ltd
7. Standard Group Ltd
8. TPS Eastern, Africa (Serena) Ltd
9. Uchumi Supermarket Ltd
10. Deacons (East Africa)
11. Nairobi Business Ventures

Appendix II: Research Data

Company	Year	ROA	Inventory management	Firm size	Liquidity	Management efficiency
Express	2019	-0.2247	99.1788	5.5064	0.6187	0.8165
	2018	-0.2507	107.3421	5.5562	0.5974	0.5144
	2017	-0.2550	91.9857	5.5793	0.8521	0.5295
	2016	-0.1358	75.0833	5.6453	1.1256	0.4197
	2015	-0.0484	69.2236	5.6794	0.5926	0.2391
TPS	2019	0.0102	67.2350	7.2455	0.4338	0.2560
	2018	0.0068	51.2933	7.2427	1.0792	0.2181
	2017	0.0076	45.1787	7.2300	1.6347	0.1629
	2016	-0.0177	50.5165	7.1991	1.0404	0.1247
	2015	0.0172	47.6923	7.2025	0.8038	0.0348
Scan Group	2019	0.0357	53.1126	7.1591	2.0699	0.2365
	2018	0.0372	60.3101	7.1386	2.2816	0.0141
	2017	0.0305	52.7312	7.1299	2.3779	0.0221
	2016	0.0221	72.6699	7.0958	2.7557	0.2429
	2015	0.0438	17.9194	7.1233	2.4602	0.1798
Longhorn Publishers Limited	2019	0.0718	21.6896	6.3816	1.2090	0.0605
	2018	0.0638	19.0319	6.2692	1.3700	0.4567
	2017	0.0540	18.0527	6.2711	1.6456	0.6456
	2016	0.0915	13.5676	5.8384	1.5002	0.6042
	2015	0.1266	25.1866	5.8765	2.3867	0.6121
KQ	2019	-0.0553	49.9679	8.1356	0.2160	0.8117
	2018	-0.0626	0.0000	8.1692	0.3649	0.5988
	2017	-0.1908	0.0000	8.1922	0.4073	0.6589
	2016	-0.1878	0.0000	8.2602	0.5021	0.6398
	2015	-0.0200	0.0000	8.1722	0.4648	0.6294
Nation Media	2019	0.0944	35.1663	7.0491	1.9536	0.0057
	2018	0.1193	32.3681	7.0539	2.0223	0.2672
	2017	0.1343	69.5608	7.0854	2.0727	0.2726
	2016	0.1631	71.6611	7.1037	2.0954	0.2747
	2015	0.2018	99.2913	7.0772	2.3651	0.3414
Standard Group	2019	0.0559	34.7405	6.6699	0.9120	0.3769
	2018	-0.0473	102.0060	6.6493	0.8469	0.1996
	2017	0.0451	83.9800	6.6439	1.1693	0.2519
	2016	-0.0665	100.9947	6.6390	0.9537	0.1449
	2015	0.0538	27.6695	6.6129	1.2192	0.1746
Sameer	2019	-0.2673	22.7557	6.4129	0.9038	0.0058
	2018	0.0271	18.9752	6.4727	1.5485	0.4094
	2017	-0.1229	83.6312	6.5173	1.5805	0.2166
	2016	-0.0012	3.6545	6.5742	2.2050	0.3170

Company	Year	ROA	Inventory management	Firm size	Liquidity	Management efficiency
	2015	-0.0235	5.2334	6.5863	2.5238	0.0000
Atlas Development and Support Services	2019	0.0266	17.8668	7.0075	0.9903	0.0415
	2018	0.0129	28.6338	6.9670	1.0299	0.1184
	2017	0.0224	59.8411	6.9870	1.0054	0.0786
	2016	0.0237	86.8249	6.9537	1.0562	0.3178
	2015	0.0435	113.1155	6.9113	1.1994	0.1621
Uchumi	2017	-0.9823	11.1066	6.6362	0.0827	0.2897
	2016	-0.7197	18.1389	6.6992	0.2587	0.2735
	2015	-0.6129	16.7006	6.8071	0.3431	0.1038
Deacons (East Africa) PLC	2019	-430.1221	43.2395	5.1575	1.2285	0.2560
	2018	-0.5426	27.6553	6.1911	0.8003	0.2181
	2017	-0.1218	21.0187	6.3583	1.6445	0.1629
	2016	0.0405	16.3157	6.3955	2.9022	0.1247
	2015	0.0296	26.7783	6.2927	2.8984	0.0348