AN ASSESSMENT OF INVENTORY MANAGEMENT AND COMPETITIVE ADVANTAGE OF MODERN RETAIL FIRMS IN KENYA

BY

GLADYS NUNGARI KIARIE

UNITED STATES INTERNATIONAL UNIVERSITY-AFRICA

SUMMER, 2017

AN ASSESSMENT OF INVENTORY MANAGEMENT AND COMPETITIVE ADVANTAGE OF KENYAN MODERN RETAIL FIRMS IN KENYA

BY

GLADYS NUNGARI KIARIE

A Project Report Submitted to the Chandaria School of Business in Partial Fulfillment of the Requirement for the Degree of Masters in Business Administration (MBA)

UNITED STATES INTERNATIONAL UNIVERSITY-AFRICA

SUMMER, 2017

STUDENT DECLARATION

I, the undersigned declare that this is my original work and has not been submitted to any other college, institution or university other than the United States International University in Nairobi for academic credit.

Signed: _____   **Date:** _____

      Gladys Nungari Kiarie (ID No. 647584)

This Project has been presented for examination with my approval as the appointed supervisor

Signed: _____   **Date:** _____

      Prof. Peter M. Lewa

Signed: _____   **Date:** _____

      Dean, Chandaria School of Business

ABSTRACT

The purpose of this study was to assess inventory management in relation to competitive advantage of modern retail businesses in Kenya. This study sought to answer the following research questions: What are the challenges on inventory management in modern retail businesses? What are the effects of inventory management on competitive advantage in modern retail business? What are the appropriate inventory management strategies that would ensure sustainable competitive advantage in modern retail business?

The study adopted the descriptive research design on a population of 165 branches of the top five supermarkets in Kenya out of which a sample of 117 branches was studied. The study used stratified random sampling as the sampling technique. Structured questionnaires were administered to all respondents. Prior to the study, a pre-test survey was conducted to test the validity and applicability of the questionnaire. The data collected was analyzed using SPSS and analyzed data presented in frequency tables and figures.

The study established that there was a positive relationship between all three challenges of inventory management and firm's competitive advantage. The three challenges studied are demand variations and uncertainty, inventory management and control, and skills and competencies of the managers. There was also a positive relationship between both on-shelf availability and inventory turnover and firm's competitiveness whereas there was a negative correlation between inventory holding cost and competitiveness. Inventory management strategies on IT, supply chain integration and inventory management and control were also found to be positively related to a firm's competitiveness.

The study concluded that the modern retail firms are aware of the challenges of inventory management in their industry and have put systems in place to counter these. It however noted that despite this, there are still out of stock and non-performing inventory instances in the stores. The study also noted that the firms did not have a fully elaborate inventory management policy and did not fully enforce it in all the branches. It was also concluded that the use of ABC analysis, inventory optimization and inventory strategic planning were key to achieving inventory performance and that IT and supply chain integration enhanced the efficiency and profitability of the firms.

Based on these findings, the study had the following recommendations. First of all, modern retail firms need to create inventory management policies covering all aspects

and ensure full implementation in all their branches. They should also train their inventory managers on technologically-based inventory management systems and policy implementation. The study also recommends that the modern retail firms invest more in IT and technological systems to ensure JIT supply and restocking to improve their on-shelf availability and inventory turnover. System such as RFID would enhance visibility and lead to improved forecasting and information sharing between the different firms along the supply chain.

DEDICATION

To my parents, Douglas and Frashiah Kiarie, for constantly encouraging me to pursue my dreams and become the best I can be. I pray for God's blessings to you and our entire family. May God add you more days on earth to witness His favor upon our family.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF ABBREVIATIONS

IM : Inventory Management

OOS : Out of Stock

RFID : Radio Frequency Identification

ROA : Return on Assets

SCM : Supply Chain Management

SPSS : Statistical Package for Social Sciences

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background of the Problem

Supply Chain Management (SCM) has gained increased focus as one of the critical success factors in gaining of competitive advantage. The operation strategy of a firm determines the action plan on SCM (Naliaka & Namusonge, 2015). Changes in the current turbulent business environment have made it increasingly important to reduce cost and provide better customer service as key strategies to win in the long term. Globalization has led to increased complexity due to increased competition because of reduced barriers. On the other hand, customers have become more aware and demanding about prices, substitutes and quality (O'Marah, 2015). The advancements in technology have led to more opportunities and have paved way to new product, process and business model innovations (Palomero & Chalmeta, 2014). This has led to increased risk levels and complexity of the supply chain.

Supply chain management and inventory management (IM) was used interchangeably in the past but this has changed in the recent years. IM is now recognized as a discipline under supply chain management together with manufacturing operations, purchasing, transportation and physical distribution (Rajwinder, Sandhu, Metri, & Kaur, 2010).Lambert (2001) defines SCM as an all-encompassing discipline that involves all integrated activities that bring the product to the market and satisfies the customer's need and aims at linking all the partners from the manufacturers, distributors to the retailers until the product reaches the customer. These activities are cost drivers in an organization and would affect its profitability and competitive advantage. It is therefore the aim of any firm to minimize the cost to efficiently and sustainably meet demand.

Several key themes in supply chain management have emerged over time. There is need for a shift from push demand to pull demand where inventory flow results from actual consumer demand. Customers have become central in the when, what and how goods are delivered as well as by whom. There is now an increased role of technological systems to manage the supply chain. Firms are now focusing on the core activities and there is increased outsourcing for the non-core to field specialists. Inventory management and elimination of waste in the supply chain has also become a key theme in SCM (Fernie, Sparks, & McKinnon, 2010).

1

Inventory management is both a science and an art of ensuring that just enough inventory is held by the organization to meet demand (Heizer , Render, & Munson, 2016). The main objective of IM is to inform managers how much to re-order, when to re-order, how frequently products should be reordered and the minimum safety stock required. Ogbo, Okenanma & Ukpere (2014) notes that an effective inventory management ensures that inventory is held at the right place, at the right time and at the desired quantities. It also involves setting of replenishment cycles, forecasting, valuation, available space for inventory, quality management, managing returns and defective goods and demand forecasting (Lau & Snell, 2006).

Excessive inventory results to additional holding costs and hence increased operational costs affecting the bottom line of the organization. Inventory management results to faster inventory turnover hence cash management (Lysonns & Gillingham, 2003). On the other hand, out of stocks result to lost sales and poor customer service which impact the top line of the firm. Miller (2010) acknowledges that the profitability of a business is affected by the inventory management systems and controls operationalized by the organization. An effective inventory management system enables the firm to minimize any complexities encountered and anticipated in planning or execution and controlling of resources. By improving the inventory management system, a firm can greatly improve the top and bottom line of the business. In most cases, inventory is the largest contributor to the working capital and operational cost of a company and hence should be given great emphasis by firm management.

Inventory management is one of the key factors for a firm's competitiveness especially in modern retail. Its complexity increases with the number of store keeping units, the degree of varying demand and the complexity of the supply chain. It is almost impossible to have goods arriving where needed at the exact time when the need for them arises. Fluctuation in demand at the different levels and unreliability of a supply chain could cause firms to hold inventory to cushion them from going out of stock in case of delayed deliveries. Other times, organizations hold inventory for price protection, to gain quantity discounts or to achieve less ordering costs. Whereas these could be beneficial reasons to hold inventory, it causes incremental costs to the company (Muller, 2011). It is therefore of great importance for a firm to have proper inventory management systems that ensure that the right levels of inventory are held to achieve the desired service levels at minimum cost.

Out of stock levels in retail stores are quite frequent. This not only affects the sales and conversion of inventory to cash, but also affects the service levels of the store. In the modern retail industry, the unavailability of product does not only result to immediate sales misses, but is also a major reflection of poor quality. Firms therefore tend to hold excess inventories while avoiding the poor service levels and lost sales. The excess inventories on the other hand can cause unnecessary costs to the firm (Salam, Panahifar, & Byrne, 2016). Noel & Jeff (2001) notes that in today's competitive retail environment, delivering high quality service can be treated as the basic retailing strategy. The retail service quality is characterized by the quality of interaction, the physical environment quality and the outcome quality. The physical environment quality includes the presence and quality of the goods being consumed (Brady & Cronin, 2001). This indicates that lack of product on shelf affects the service quality of a retailer and eventually affects ability to attract retail customers.

It is common to find the retailers leveraging their suppliers in responsibility for actual management of the inventory at the stores that they supply through vendor-managed inventory arrangements (Rungtusanatham, Rabinovich, Ashenbaum, & Wallin, 2007). Inventory in a retail firm could be in the headquarters warehouse, in the backroom of the branches, in-transit between supplier to warehouse or warehouse to branch or at the shelf. Inventory management would ensure that the retailer is in control of the levels of inventory at these stages. There has been extensive research on inventory management models and strategies and specifically for the modern retail firms. Since inventory management has been established as a core item in the operation strategy, efforts should be made to incorporate the firm-appropriate inventory models and strategies to ensure sustainable competitive advantage.

The retail business has been growing at a fast pace especially in the developing countries. In the 1990s, there was a shift of focus in the direction of international growth from orientation on developed markets to the emerging markets by retailers based in Europe (Alexander &Marcelo, 2002). In Kenya specifically, we have seen the growth of the retail industry in the past few years with the formal retail reaching penetration rates of between 25 to 30 percent. The average value of a shopper's basket has also increased by 67% in the last five years, placing Kenya as the fastest growing retail market (KPMG, 2015). There is an increase in both the supply of retail space with the many malls now available in major towns and cities in the country. The expansion and growth has resulted to greater

complexity in managing the supply chain and poses a risk if the firms are not able to adapt and come up with inventory management strategies for the larger firms.

Entry of new competitors in Kenya, both local and foreign firms has been one of the key changes in the industry in the recent past. Some firms have also exited due to increased rivalry in the sector, changes in the offerings and use of technology in more areas than in the past. E-commerce has also grown significantly in the retail market with Kenya being one of the most technologically advanced countries in the continent. Platforms such as Jumia, Killimall, and Olx amongst others have made a great impact on how customers shop and are a major change in the retail business (KPMG, 2015). There is pressure on the brick and mortar retail stores to reduce their operating cost to remain competitive in the future as they compete with the e-commerce firms whose business models ensure that they don't hold any inventories. Ensuring that the right inventory levels of each product are held at the right place is hence a key issue for the brick and mortar firms to achieve the operational goals and ensure their long-term survival in the retail space.

1.2 Statement of the Problem

Inventory management is critical in ensuring competitive advantage of a firm through improving the top and bottom lines of a company (Miller, 2010). It aims at achieving a balance of not holding too much stock hence tying up capital and incurring costs in storage, spoilage, pilferage and obsolescence and the ability to avail goods whenever and where they are needed and in good quality so as not to lose sales and incur further costs. Even though companies 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).

There have been numerous studies on operations strategies and their effect on organizational performance. Research by Lowson (2005) established that there is a clear correlation between the application of these strategies and achievement of strategic and tactical goals of firms over a long period. Inventory management has been found to play a key role in service levels in retail supply chains (Asif, Farhad, & Byrne, 2016). The success of modern retailers in growth rate, profitability and market expansion is largely

4

determined by the role and incorporation of logistics and inventory management in the corporate strategy (Abrahamsson & Rehme, 2010).

Other studies have been carried out to assess the impact of inventory management on organizational performance. Ogbo & Onekanma (2014) found that organizations benefited from inventory control management by achieving reduced operational costs and improved sales effectiveness. The study also established that there exists a relationship between operational feasibility, utility of inventory management in customer related issues and the cost effectiveness technique used to enhance the return on investment of the company. The study recommended further research on the impact of personnel training and use of advanced technology to firm's inventory control success.

In Kenya, a case study of Safaricom on influence of inventory management practices on organization's competitiveness has been carried out by Kamau and Kagiri (2015). The study concluded that inventory management practices affect profit maximization, customer satisfaction and market share growth of a firm and hence affects its competitiveness. Specifically, inventory shrinkage, inventory investment and turnover affected the competitiveness of Safaricom Ltd. The study recommended that increasing forecast accuracy and use of a vendor managed inventory system would lead to lower out of stock incidences, lower costs and increased customer service levels. The study recommended use of an inventory management practice that tackles issues of information management, bull whip effect and employee skills and attitudes (Kamau & Kagiri, 2015). It however did not explore the impact of these issues to the competitiveness of the firm.

Naliaka & Namusonge (2015) explored inventory management and its role on competitive advantage of manufacturing firms. The study also identified IT, inventory control systems and inventory management practices as key factors impacting a manufacturing firm's competitiveness. The study recommended similar research in other sectors to ascertain whether these findings were universal. A study carried out in India by Rajwinder et al. (2010) showed that the retailers know that competitive advantage is greatly impacted by supply chain practices but they do not match their supply chain practices with organizational performance. The study did not however delve into showing the impact of the supply chain practices on a firm's performance.

The issues arising are lack of understanding on the impact of the challenges such as the Bull whip effect, inventory control and employees' capabilities and attitudes on the

competitive advantage of a firm. There is also need to understand if IT, inventory control systems and practices that were identified in the manufacturing industry would still be relevant in the retail industry. This study was aimed at bridging the existing knowledge gap and giving more insight on the overall impact of inventory management on the competitive advantage in the modern retail industry. The study focused on assessing the different challenges faced by retail firms on inventory management, the effects of inventory management on its competitive advantage and looked into inventory management strategies that would be appropriate for the modern retail industry.

1.3 Purpose of the Study

The purpose of the study is to assess inventory management in relation to competitive advantage of modern retail businesses in Kenya.

1.4 Research Questions

1.4.1   What are the challenges on inventory management in modern retail businesses?

1.4.2 What are the effects of inventory management on competitive advantage in modern retail business?

1.4.3   What are the appropriate inventory management strategies that would ensure sustainable competitive advantage in modern retail business?

1.5   Significance of the Study

1.5.1 Managers of Modern Retail Firms

In the increasingly competitive environment the retail firms are currently operating in, it is important to have operation strategies that ensure sustainable competitive advantage. It is therefore important that the managers of the firms come up with effective operational strategies. The findings of this study will provide the managers in the modern retail firms with information and tools to enable them to manage their inventory better to achieve cost savings, better customer service and better operating capitals for their firms. The study will evaluate top firms in the industry hence it will give insights on the inventory management strategies in place and their effect on the firms' competitiveness. This will result to greater focus on optimizing inventories, managing replenishment and use of technology in these to achieve minimum costs and customer satisfaction. This will hence assist in operation strategy formulation, implementation and evaluation.

1.5.2   Researchers and Academicians

The study will add to the existing knowledge about inventory management strategies by applying internationally tested strategies to the Kenyan context. This will be useful to researchers in the future as it will provide local information of inventory management models and strategies with respect to the modern retail industry in Kenya. This could be used to compare with other markets or to improve on the current research on inventory management.

1.5.3   Investors in the Modern Retail Firms

The study will analyze the challenges in the modern retail business in Kenya and suggest inventory management strategies and models that are useful for optimum operations. This would be useful information to future investors that would either like to get into the retail industry locally or entry from other markets.

1.6 Scope of the Study

This study will be use the descriptive research design. It will study the top five supermarket chains in Kenya which have cumulatively a total of 165 branches. The reviewed studies will focus on assessing the challenges faced in inventory management in modern retail businesses on demand planning, order management and operationalizing inventory management strategies. The study will then determine the effect of inventory management has on competitive advantage, focusing on its effect on cost of doing business versus maintaining desired service and levels and propose the most effective inventory management strategies for use in modern retail businesses.

1.7 Definition of Terms
1.7.1 Demand Forecasting

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 (Feng-Jenq, 2013).

1.7.2   Bullwhip Effect

This refers to the distortion of demand information among members of a supply chain that causes inventory mismatch. Small variances in the demand downstream may cause high variances in volumes ordered upstream (Panda & Mohanty, 2013).

1.7.3 Supply Chain Visibility

Supply chain visibility is the capability of the members of a supply chain to share on-time accurate data on logistical details such as inventory quantities, demand and transport costs (Hendricks & Singhal, 2005).

1.7.4 Service quality

Service quality is the comparison of the customer's expectations and perceptions on the product, reliability, responsiveness, assurance and empathy (Rema & Biswajit, 2015).

1.8 Chapter Summary

This chapter focused on the introduction of inventory management in the context of supply chain management strategies. It noted the importance of inventory management especially in the modern retail industry. The key changes in the modern retail industry in Kenya were also captured and relevance of study to the managers of retail firms, future investors and researchers. Complexity of the supply chain with the growth of the retail industry necessitates that operational strategies such as inventory management to be applied. It stated that the purpose of the study is to assess inventory management in relation to competitive advantage of modern retail businesses in Kenya. The scope of the study was stated to be top five supermarkets in Kenya and the study was noted to be significant to managers in the retail firms, academicians and investors into the retail business. The next chapter is concerned with literature review where the identified objectives will be considered individually. Thereafter, chapter three will outline the research methodology and step by step procedure that was used to collect and analyze research data on this study.

CHAPTER TWO

2.0LITERATURE REVIEW

2.1 Introduction

This chapter focused on literature review concerning the challenges, strategies and effectiveness of inventory management in firms and narrowed down to modern retail firms. The reviewed literature has shown advancement on inquiry of inventory management policies, theories and strategies and the modern retail firms' adaptation of these. Research on IM strategy in retail industry has focused on demand forecasting, development of an effective IM policy, usage of innovation and technology in managing inventory and the integration of full supply chain from manufacturers to retailers.

2.2 Challenges Faced by Modern Retail Firms in Inventory Management

The modern retail industry has grown to be one of the major drivers of the economy in countries across the different continents in the world. In USA, about $3 trillion out of the $10trillion economy is on modern retail whereas the worldwide retail sales are valued at $7 trillion (Sunita & Dipti, 2012). Kenya has not been left behind with the retail sector growing by about 30% in the past decade (Neven, Reardon , Chege , & Honglin, 2006). There has been a tendency to move away from only supplying food items to providing an 'all under one roof' solution to the consumers (Neven & Reardon, 2004). This has resulted to increased complexity in retail management and with the entry of international firms and online retailing platforms, firms have had to relook into strategies needed to achieve competitive advantage (Gennady & Elena, 2015).

Kot, Grondys and Szopa (2011) noted that efficient supply chain management involves ensuring high customer service quality at minimal costs which is achieved through efficient inventory management. Modern retail firms are faced by a major challenge in providing quality service due to the many different types of products that they stock and the varied demand to each type of product (Gennady & Elena, 2015). Modern retail firms are aware of the importance of inventory management but issues such as bull whip effect, lack of effective inventory control systems and limited skills and capability of personnel often hinder effective implementation in the firms (Naliaka & Namusonge, 2015).

Supply chain management is not fully implemented in most local modern retailers. The Kenyan supply chain is more dependent on middlemen unlike in the developed countries where it is more dependent on the retailers (Kamau & Kagiri, 2015). This

overdependence can be linked to lack of power in retailers where most manufacturers mostly use other channel members such as distributors and wholesalers hence reducing the bargaining power of the retailers (Sarma, 2000). Industry competitiveness has been identified by Olivares and Cachon (2009) as a major issue in inventory management. In their research, Gaur, Fisher and Raman (2005) found that gross margin management, capital investment intensity and sales surprise are also key challenges experienced by retailers.

2.2.1 Demand Variation and Uncertainty

Fisher (2013) stated that there is a limitation to the accuracy of human judgment on the demand of new products in the retail sector and this had been confirmed by many industry experts as a key cause of concern. Demand, process and supply uncertainty are the main sources of uncertainty in the supply chain which often results to carrying higher inventories. Demand uncertainty results from inaccurate forecast or un-predictable demand and is an integral dimension of environmental dynamism (Nahmias, 2008).

Demand planning continues to be an enigma for many supply chain professionals. With increasing number of skus, more demanding customers and price pressure increase the complexity of the planning environment (Cuneyt, Brent, & Matthew, 2012). There are reduced planning horizons leaving the planners to have very little time to adjust to demand variations. It gets more complicated when the retailers attempt to manage the inventory levels and accuracy by use of multiple shipping points. The phenomenon where the orders to the supplier have a large variance than the sales to the buyer and this amplify upstream the supply chain is called a bullwhip effect (Yao, Brent , Matthew, & Adriana, 2015).

Past literature yields inconsistent conclusions of presence and prevalence of this effect in the retail sector. Cachon et al. (2007) used quarterly, industry level data to prove that the bullwhip effect is more prevalent in the lower level of the product and temporal aggregation. His conclusion was that retailers smoothen rather than amplify the demand variance while on the other hand manufacturers, distributors and wholesalers amplify the variance. However, Bray and Mendelson (2012) aggregated data on a lower level that proved that the bullwhip effect affects all industries across the supply chain. Dooley et al. (2010) on the other hand argued that even though retailers may amplify the variance

during normal economic conditions, they use inventory holding to reduce effect during economic shocks.

Ettouzani and Yates (2012) contributed that the bullwhip effect can either result from rational or irrational reactions to the demand fluctuations in the market. Managers' inability to fully understand the impact of the ordering policies as they respond to demand stock outs may result to an even higher variance. This effect makes it more difficult for upstream firms to plan manufacturing therefore leading to increased risks of supply for the firms downstream such as the retailers and even though firms have used integration efforts to reduce this effect, few have succeeded (Jin, Fawcett, & Fawcett, 2013). Lee (2010) noted that taming the bull whip effect remains a critical task for most companies.

On-shelf availability in the retail industry has been studied for more than forty years but there are still significant out of stocks across many retailers' stores. This is mainly caused by inadequate space allocation, wrong ordering policies and routines and lack of experienced personnel (Aastrup & Kotzab, 2010). This is true even for Wal-Mart despite being one of the leading innovators and implementers on logistical operational excellence. With increase in use of technology, the demand predictability has increased but it has not eliminated the issue entirely (Dudley, 2013).

2.2.2 Inventory Management and Control

An inventory management policy is required for a retail business to thrive. A successful inventory policy is one that guides the stores on how much to order, the reorder points, and the optimum replenishment cycles. For this to work, demand planning and forecasting is needed and required safety stocks should be defined (Gumus & Guneri, 2007). To maintain competitive edge in a world that has higher variability in demand, retailers would need to have an appropriate inventory policy to ensure that they do not run out of stock and hence loss of sales (Ettouzani & Yates, 2012). Variability in demand also leads to overstock which leads to higher costs and lower inventory turnover (Shockley & Turner, 2015).

Inventory valuation and control is critical for the retailers. Issues such as inadequate stock, pilferage, undersupply, wastages and damages could result to improper inventory valuation and losses to the company (Haribhai-Pitamber & Dhurup, 2014). In the traditional inventory management systems, there was an assumption that the inventory recorded and the actual physical inventory was equal but in the real world, this hardly is

the case. Inventory inaccuracy is common in the warehouse and in the backroom as well as from the shelf (Rekik, 2010). This could either result from shrinkage, misplacement or transaction errors. After investigating 370,000 skus, DeHoratius and Raman (2008) reported that about 65% of inventory records in retail stores did not match the physical amount being held. In fact, about 20% of the records differed from the physical count by six or more times. Many investigations have been done to determine the cause of the discrepancies. Rekik (2010) found that shrinkage accounted to the main cause of inventory inaccuracy.

Warehouse management is one of the key enablers in executing inventory management. It increases operational efficiency while ensuring cost reduction. The key performance indicators to impeccable warehouse operations are quality, flexibility, agility and reliability. Its design, layout and capacity assessment synchronizes the demand and supply gap and ensures a smooth operation flow. Technology, by use of the warehouse management system has been used in the recent past to ensure inventory management and control through inventory record accuracy (Ferdoush, Mahadi, Mamun, & Zurina, 2014).

2.2.3 Competencies and Skills of Supply Chain Management

An effective and efficient supply chain is critical to the success of an organization and often proves difficult to replicate competitive advantage. A good supply chain improves customer service while reducing costs and surpassing the variability across the supply chain (Drake, 2012). The significant and rapid changes in supply chain management in the recent years have changed the ways in which individual firms operate their business and have pushed for more integration amongst firms. These changes require that the supply chain member firms move from a reactive mode to a planning mode (Daniel & Amrik, 2013). The focus is no longer on risk avoidance but is rather on risk management. Firms are no longer hoarding information from each other but are now sharing to maximize the individual benefit. Managerial relationships are no longer transactional but managerial where decision making is now involving all supply chain members (Giunipero, Handfield, & Eltantawy, 2006).

Supply chain professionals need to transform from a transactional role to a strategic and planning task. Giunipero et al. (2006) identified that supply chain members are building strategic relationship for strategic cost reduction and members are now integrating their systems to achieve this. Murphy and Poist (2007) carried out an investigation on 83 skills

in business skills, logistics and management skills. Their findings were that management skills were most important, followed by logistics and business skills. This suggests that supply chain managers should be managers first and logisticians second. Giunipero et al. (2006) researched on the skills required by supply chain professionals. He stated that they should have team building skills such as leadership, decision making and influencing. They should have strategic planning skills, communication, technical skills and broader financial skills. These skills ensure that the supply chain professional can create a strategic plan and lead the team to execute it to achieve competitive advantage for the firm.

Supply chain finance has been identified as one of the under-researched areas of supply chain management. One of the main challenges that have been identified is the lack of knowledge and information among supply chain managers about this. More and Basu (2013) identifies that lack of knowledge and practice of supply chain finance is a major barrier to optimizing an organization's working capital.

Fawcett et al. (2010,) states that 'a supply chain manager must be a cross-functionalist, a choreographer who focuses on the end goal and understands each detail, a coach who encourages individuals to act as a team, and a champion who establishes relationships vertically and horizontally, thus enabling the smooth transition of changes'. There is increased demand for the supply chain managers whereas the demand is low (Cottrill, 2010). Ashley, Nachiappan and Angappa (2016) acknowledged that there is need for firms' top management to understand how capabilities of the supply chain managers affect the performance of the organization. They need to develop their supply chain managers' skills and competencies and nurture them to ensure competitive advantage.

2.3 Inventory Management and Competitive Advantage

The business environment today is very dynamic and has high level of turbulence which puts firms under pressure to continuously improve and innovate to remain relevant in the market. There is need for firms to be masters of fast response to challenges and increase their reliability and convenience. Reduction of operation costs and increasing productivity is one of the key things that a firm needs to do (Walker, Bovet, & Martha , 2000). Porter (1985) outlined that a firm could gain competitive advantage by gaining a cost advantage or creating a basis of differentiation, or both.

A firm performs many different activities such as design, production, marketing and distribution of products. Coordination and management of these activities to ensure that the firm demands a higher value than its costs creates a competitive advantage for the firm (Porter, 1985). Organizations' value chains aim at increasing sales, reducing cost, satisfying customers' needs, coordination of sharing of information and use of management philosophies such as Just in time (JIT) and lean production (Rajwinder, Sandhu, Metri, & Kaur, 2010). Selldin and Olhager (2007) outlined that cost is an important performance measure for price competition. He also asserted that speed of delivery, reliability and product mix resulting from differentiation are important determinants of a company's superior performance over its competitors.

Firm competitiveness has been known to be affected by the supply chain management strategies employed. Return on investment, sales, profit margin and overall competitiveness were found to be key areas affected by this strategy in a study by Vivek and Ravindran (2009) in their study of small scale industries in India. Singh, Sandhu, Metri and Kaur (2010) developed hypotheses relating supply chain practices and their effect on firm competitiveness and overall performance. They looked at competitiveness in the context of inventory management, customer service and satisfaction and profitability and how these affect the market performance of the firm and financial performance of a firm.

The role of logistics in a modern retail firm is to create profitability, to support market growth and expansion through provision of operative excellence. This is the ability of a firm to customize its operations to increase agility and leanness to increase its efficiency and effectiveness to attain its strategic goals (Abrahamsson & Rehme, 2010). Ferry et al.(2007) noted that lack of a comprehensive inventory management in a supply chain often results to excess inventories leading to increased holding costs, lost revenues through lost sales, ineffective transportation, poor customer service and bull whip effect (Giannoccaro, Pontrandolfo, & Scozzi, 2003). The level of integration of execution of retail inventory management with the rest of the firm's operations and the segment competition strategies greatly affect the competitiveness of the firm. This is because inventory management drives the overall firm operational performance (Eroglu & Hofer, 2011).

The key performance indicators related to cost are the inventory holding costs, the value of unusable stock, value of unaccounted stock and the average response cost. The quality performance indicators are rate of out of stock, order fill rate, rate of inventory accuracy, order entry accuracy, stock wastage due to expiration and adequate plan in place for predictable change in demand. Key performance indicators related to the response time is the order entry time, order turnaround time and order lead time. In productivity, rate of inventory turnover, inventory velocity and the percentage of orders placed through an electronic system are the key performance indicators (Aronovich, et al., 2010).

2.3.1 Inventory Management Cost and Competitive Advantage

Inventory management is one of the major challenges of supply chain management. Production and distribution of products ought to be at the right quantities, at the right time and in the right location to minimize the inventory management cost (Routroy & Kodali, 2005). A firm's inventory level should be planned in a way that balances the cost while ensuring desired levels of customer service. Hita and Gupta (2009) acknowledged that a firm's inventory costs comprise of the purchasing costs, ordering costs, inventory carrying costs and the shortage costs. Key task for an organization's management is to establish an inventory policy that will ensure the minimum total cost from the four individual costs.

Inventory holding costs can amount to between 20-40% of the value of the inventory (Gumus & Guneri, 2007). The inventory carrying costs are realized in four different ways namely capital costs, inventory service costs, storage costs and inventory risk costs. The capital cost comes about with the investment on inventory and is the opportunity loss due to the return on investment of this fund in an alternate way. Inventory service costs comprise of the cost of hiring, insurance and taxes on inventory. In terms of storage, rent or investment on warehouses, back room and shelf space results to a cost. The staffing cost and all other related storage costs are considered here. There are risk costs that come about with the inventory. This includes obsolescence, shrinkage or pilferage, damages and relocation costs (Samak-Kulkarni & Rajhans, 2013). It is therefore evident that the inventory carrying costs play are a huge part of the retailer's cost.

Shortage costs are those related to damages, expiries and losses resulting from shrinkage. In retail industry, different categories have different rates of shortage but shrinkage amounts to the highest contributor of the three. Retail shrinkage is the value of inventory

15

that is lost to the company through theft or fraud by customers, suppliers, and staff or through an administrative error. Sydney and Nathan (2007) recognized that shrinkage is a major retailing cost and that in the UK and the US, it results to approximately 2% of the total sales revenue of the retailer. They concluded that to reduce shrinkage, a retailer should have high stock turnover, high density of the sales staff and customers and many pay-points. Few retailers understand the extent of how shrinkage affects them and how best they can target security efforts to minimize it.

It is evident from the above that there are huge costs that are associated with inventory. Retailers that manage to minimize their costs can gain cost advantage over their competitors. By doing so, they can manage to price lower to compete at price points or can price at the same price points to enjoy higher profits which are then ploughed back to create better value for the shopper (Gennady & Elena, 2015).

2.3.2 On-Shelf Availability and Competitive Advantage

On-shelf availability is a critical customer service feature in the retail stores and is in most times traded-off against inventory carrying costs (Grant, 2012). Shelf out of stock (OOS) has been a major challenge in retailing for many years and despite the initiatives designed to improve on-shelf availability such as efficient customer response (ECR), use of technologies such as radio-frequency identification (RFID) and analysis of point of sales data, it has improved but is not yet fully eliminated (Aastrup & Kotzab, 2010). Aspects of service that could impact on a customer's decision to buy a product in a specific store are the product quality, on-time delivery, after-sale services and availability of exchange and repair services. Giri and Maiti (2014) considered the retail service level as a fraction of demand satisfied by a retailer during his selling period. Their study was to determine if the service level as a non-price competition strategy could affect firm's performance and competitiveness and they found that the level of stock outs in a store would affect its performance.

Retail shopper response to shelf OOS has been investigated with respect to perceived availability, their store satisfaction, behavioral response in terms of brand loyalty and effect on category and store sales (Joachim & Ehrenthral, 2013). According to Corsten and Gruen (2003), there are five ways in which consumers may behave towards in-store out of stock and ECR UK (2004) developed them to determine the proportion of consumers who adopt these patterns. They found that 37% of customers will switch stores

to buy the item in another store, 22% of the customer will delay purchase of the item, 6% will forgo buying the item,16% will pick an item of the same brand but a different size whereas 19% will substitute with another brand. This shows that the store owner would lose sales from 65% of the customers if he is out of stock of the item and have risk of losing the desired margin if the customer down-tiers or switches to another brand. Therefore, on-shelf availability has more criticality for the retailers than it has for the manufacturers and is a critical competitive tool for retailers (Qi, David, & Jorn, 2012).

Shelf OOS has a direct impact on a retailer's performance since it results to lost sales for the store if the shopper decides to delay the purchase, forgo it altogether or purchase in another store. There is a high probability of loss of margins if customer picks a different size or brand as well (Joachim & Ehrenthral, 2013). It is estimated that sales losses caused by shelf OOS is about 4% of sales while retailers spend about 5% on logistics (Sivakumar, 2010) hence if the retailers would avoid the sales loss, they would be able to meet a bigger part of the logistics costs. Frequent stock-outs eventually diminish store and brand loyalty and hence imperil future sales (Zinn & Liu, 2008). They also reduce the profits since overall costs are spread over less sales. Joachim & Ehrenthral (2013) concluded that by reducing shelf OOS, retailers can therefore increase their sales and reduce their costs resulting to better profits in the future.

2.3.3 Effect of Inventory Management on Turnover of Modern Retail Firms

Sawaya and Giauque (2006) stated that inventory represents 40% of the total capital of a business and may represent up to 33% of its assets and 90% of working capital in most companies. Gumus and Guneri (2007) approximated inventory to be 20-60% of total assets in a manufacturing firm. Inventory turnover rate refers to the amount of time that inventory takes before it is sold to a customer and converted into cash. In their study on demand uncertainty and inventory turnover performance on retail firms, Gulsah, Alper and Esra (2016) concluded that demand uncertainty has a significant effect on the rate of inventory turnover.

Levy and Weitz (2009) applied the strategic profit model with respect to operational performance measurement in retail firms to show that they can achieve improved return on assets (ROA) by following strategic directions. Retail firms 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, firms can achieve cost advantages through efficient supply chain performance and increase their transactional efficiency (Shockley & Turner, 2015).

In the second case, if a firm generates higher gross margins by stocking and selling a more diverse portfolio, it would result to a lower turnover strategy that would result to superior profit versus competition (Yang, Xiao, & Shen, 2009). Fisher and Raman (2010) defined this as the 'service level' effect of an inventory policy using the classic Newsvendor problem. In most cases, the retailer puts more focus on profit outperformance by providing a better superior merchandizing offering whereas the inventory management strategy results to average service levels due to higher cost of shortage.

Several studies have been carried out in the past on the relationship between the inventory turnover and the profitability of a firm. Lazaridis and Tryfonidis (2006) established that there is a significant relationship between the cash conversion period and the gross profit of a company. Further to this, Garcia-Teruel and Martinez-Solano (2007) found 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, Sekeroglu and Altan (2014) studied different firms in three different industries. They argued that whereas there was a relationship between inventory management and profitability in the eatables industry, there was none in the wholesale and retail industry. This study will further explore this relationship in Kenya's modern retail context to establish if inventory management does affect profitability of the firm.

2.4 Inventory Management Strategies and Competitive Advantage

Inventory management and control strategies are becoming increasingly important to the retailers. The traditional inventory management technologies can no longer meet the supply and demand discrepancies due to the increased variability (Juhwen & Wu, 2013). IM strategies can vary across retailers and linking these to the firm profit performance has been a big challenge in the past. Several studies have been carried out that show that there should be a holistic view and shift from logistics being only a part of the operational effectiveness to it being a critical part of the corporate strategy for overall effectiveness (Paiva, Roth, & Fensterseifer, 2008). Mats and Jakob (2016) found that in leading

companies, SCM plays a role of high operational excellence, reduced costs and high flexibility to any market changes. It is therefore linked directly to the corporate strategy of the firm such as higher profitability, diversification, market defense and growth strategies. In retail businesses, logistics is in the core of the business and has also a central role in the strategy of the firm.

The risk associated with strategic errors is high in today's retail environment and Lowson (2005) states that with its complexity and dynamism, any competitive success must be closely linked to an effective operational strategy. Wantao and Ramakrishnan (2012) defined a good retail operations strategy as one that reduces cost, increases quality, delivery and quality. Under conditions of high uncertainty, companies tend to increase interactions with the suppliers to manage outcomes of these uncertainties (Paulraj & Chen, 2007). Companies should increasingly leverage on their suppliers and full supply chains. They would get the benefit of improved quality, better service delivery, reduced costs or a combination of all these (Kannan & Tan, 2006). Integration of the supply chain is therefore a vital component of retail operational and corporate strategy in today's world.

Wantao and Ramakrishnan (2012) argued that technology can assist a company to gain significant strategic advantage by improving the speed of delivery, reliability and quality. He further explains that this benefit is achieved if the firm aligns IT applications to its operational strategy. They however stated that many manufacturing and service firms do not achieve full benefit from IT applications due to economic factors and lack of sufficient support from the top management. This cannot be achieved by having IT applications alone, an effective inventory management policy need to exist and the organization needs capable employees to achieve full advantage.

2.4.1. Inventory Management Policy and Control

An inventory management policy defines the procedure to determine which products should be stocked, the quantities to be ordered, the replenishment cycles and act as a guide to monitor and control the amount of inventory held. It entails a lot of planning and control. Planning looks at determination of an ordering policy that has the quantities that will be ordered and how often orders should be placed. The Pareto principle of ABC analysis is often used to put classifies skus especially in large firms (Jay & Barry, 2008). This is because there are limited resources to manage each of them at equal emphasis. It

classifies skus from the very important (A) to the least important (C). The traditional method allowed for classification by annual dollar value, but this has been improved in the recent studies to put into consideration the lead time length and variability, inventory holding cost, variability of supply, durability and demand distribution among others (Ramanathan , 2006).

The classification done on the skus enables a firm to establish different inventory management policies on determining the inventory holding, re-order points, length of the replenishment cycles and the inventory controls needed. Inventory control entails following the standard procedure that was set up in the planning stage to achieve a certain objective. Activities in inventory control involve monitoring stock levels periodically or continuously (Naliaka & Namusonge, 2015). Inventory control as defined by Miller (2010), is the control of supply of products, supervision of their storage and their accessibility that ensures correct levels of inventory always. Naliaka and Namusonge (2015) noted that it is of paramount necessity that an organization installs and executes a proper inventory management system and policy.

Decisions on inventory largely depends on the on-ground inventory, the forecasted demand, the length of the lead time, variation of the lead time, ordering costs, shortage costs and inventory holding costs. Several inventory optimization programs such as Just in Time, Vendor Managed Inventory, Collaborative planning, Forecasting and Replenishment and Efficient Consumer Response and their application in different industries have been studied in the past (Olov & Ralf, 2014).

A retailer's inventory policy is not defined solely by the retailer. The case and pack sizes are decided by the manufacturer and often affects the minimum order quantities by a store. These influence the store operations in two ways; larger cases reduce the number of replenishments needed hence longer cycles and secondly larger packs occupy larger shelf space per pack hence creating room for back room (Ketzenberg & Fergusson, 2008). Shelf-space allocation is decided upon less frequently and is largely controlled by the merchandizing department. Utilization of space directly affect the operational costs and hence the profitability of the firm. Cuneyt, Brent and Mathew (2012) in their study on backroom effect on retail operations, suggest that the store managers should have a balanced IM policy that reduces reorder points and lowers total costs by balancing on shelf and back room storage.

2.4.2 Adaptation of IT in Inventory Management

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 (Vasilia & Socrates, 2013). In their research on impact of Information Systems (IS) strategy to supply chain management and firm performance, Sufian and Monideepa (2014) found that IS strategy enhances the relationship between Lean and agile supply chain strategy and supply chain performance. They also showed a positive association of supply chain performance and that of the firm and therefore proved that the IS strategy affects the firm's performance.

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. (Lukas & Claire, 2014). 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 (Roussos, 2008). It has a widespread application and relies on efficient replenishment and high availability of fast moving consumer goods. Atali, Lee and Ozer (2006) however noted that the ECR 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.

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 (Lukas & Claire, 2014). 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, stock outs and shrinkage. Mohsen (2012) notes that 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 benefits that lead to improvement on on-shelf availability

by reduced stock-outs and improved planning by achieving greater forecast accuracy (Caridi, 2010). IT is therefore indispensable when it comes to implementing inventory control in the supply chain.

2.4.3. Integrated Supply Chain Management

Flynn et. al. (2010) defines supply chain integration as the extent of integration of activities, functions and processes of an organization to those of other supply chain partners such as the suppliers, distributors and customers. Internal integration between functions ensures strong relationships between purchasing and management of raw materials, production, logistics and demand planning (Naslund & Hulthen, 2012). External integration occurs between traders and can either be forward integration which entails physical flow of goods from suppliers to manufacturers and finally to customers or backward integration where information and data flows from customers to the suppliers (Schoenherra & Swink, 2012).

Retail firms need to not only manage their resources and capabilities but they should depend on those of the suppliers for them to successfully respond to customer needs (Kibbeling, Bij, & Weele, 2013). The ability to integrate and coordinate activities carried out beyond the firm but within the supply chain is crucial to satisfying the needs of the customers (Green, Whitten, & Inman, 2012). Kim (2006) points out that supply chain integration helps coordinate inter-organizational information flow through adopting IT and can lead to integration of the firm's perspective with the rest in the supply chain. Simone, Jose, Ana Maria and Guillermo (2014) found that supply chain integration has a positive influence on the performance of SMEs.

Retail logistics has evolved from a period of no control whatsoever, to a purely instrumental vision and finally a managerial outlook. These different ages are identifiable from the changes in inventory location in the supply chain (Gilles & Jacques, 2001). Integration in the supply chain involves sharing both product and product information across the members of the supply chain. This leads to reduced bullwhip effect and supply chain costs (Kazim, 2007). His study indicated that many large retailers in the US had implemented this or were planning to.

The retail industry has also evolved from the traditional brick and mortar model to online retailing and megastores with the evolution bringing about a power shift from manufacturers to the retailers leading to a change in supply chain strategies (Randall,

Gibson, Defee, & Williamns , 2011). Modern retail firms now need to match their demand and supply ordering and distribution cycles to the different product life cycles to reduce waste, ensure quality service and achieve optimal inventory levels (Gorton, Sauer, & Supatpongkul, 2011). Studies have shown that in the retail industry, predictable product availability matters more to consumers than price-based or brand-based competition. The visibility achieved in retail level is much higher than that achieved up stream by the manufacturers since the retailers are nearer to the final consumers (Barrat & Oke, 2007).

Supply chain integration is of great importance where the retailers feed the information upstream and impact on supplier forecasting, distribution and product innovation. When operating perfectly, it ensures optimal inventory holding and costs in the supply chain enhancing performance to all the supply chain partners (Thomas , Davis-Sramek, Esper, & Murfield, 2014). Veera et. al. (2015) found that supply chain management practices such as information sharing, agreed vision and goals and supply strategic partnership have significant effects on supply chain integration. Further, the study concluded that supply chain integration plays an important role in enhancing supply chain performance.

A study in Europe firms found that supply chain integration leads to increased firm's operational performance and the cost and efficiencies are highly affected by the degree of integration. The study also concluded that collaboration between suppliers and retailers had improved in inventory management, customer relationship management and supply chain design. Information sharing has however not been taken up by most players (Prabir, Byoung, Tage, & Lars, 2005). The optimal integration would be one where the supply chain partners integrate strategies, planning and control activities, processes and organization and resource flows such as material, finances, information and knowledge (Cunlu, Angappa, & William , 2015).

2.5 Chapter Summary

This chapter sought to carry out a literature review on the specific objectives that had been set in chapter one. One of the key learnings was that for a retail firm, supply chain management strategy directly impacts the performance and competitive advantage of the firm. The effect of cost and inventory turnover on the profitability of the firm was studied. Shelf out of stock was also highlighted as a key contributor to long term competitiveness of the firm. Firms are not always able to achieve this as because of

challenges such as the demand variations per item and per store, inventory planning and control and supply chain management skills and competencies in the firm. The literature reviewed suggested several strategies that a firm can employ to ensure that it stays competitive. This includes strategizing and implementing an inventory management policy, using IT to efficiently deliver the policy and sharing information with supply chain members through supply chain integration. In chapter 3, the research methodology that was used to carry out the study is discussed in detail.

3.0 RESEARCH METHODOLOGY

3.1 Introduction

This chapter stipulated procedure and techniques that were used by the study to collect and analyze the research data. The research design as well as the population studied is described in detail. The chapter also states the sample size and the sampling design. The data collection, research procedure and data analysis methods that were used are defined here and a chapter summary is given at the end.

3.2 Research Design

Cooper and 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 descriptive research design. It helps to answer the questions of what, where, what, who and how in association to the research question. It examines the current state of a situation, aims to explore correlation between two or more phenomena (Carrie, 2007). Cooper and Schindler (2014) further explained that descriptive research design is useful when seeking to understand relationship between the dependent and independent variables.

This study explored the challenges encountered by modern retail firms in Kenya. This was done through a survey administered through questionnaires. A survey is a research strategy that involves data collection from a population in a structured manner (Lewis, Saunders, & Thornhill, 2009). Use of questionnaires ensured anonymity and to the respondents and reassured them on confidentiality. This was a quantitative study which entailed questions that sought to investigate the relationship between the dependent and independent variables. The independent variables were inventory management policies, demand variation, management skills and competencies and adaptation of IT in inventory management whereas the dependent variable was modern retail competitiveness under the categories of cost reduction, profitability and turnover.

3.3 Population and Sampling Design

3.3.1 Population

A population is an entire group of people, events, or things that are of interest to a researcher and which he launches an investigation on (Murthy & Bhojanna, 2008). The target population of this study was all branches in the top five supermarkets in Kenya as defined by the 2012 Kenya's Retail Food Sector Report by the Global Agricultural Information Network (GAIN). This was determined by their annual food sales for the Kenyan outlets only for the 2011 calendar year.

3.3.2 Sampling Design

A sampling design is a technique used by a researcher to identify and select primary data for analysis with the purpose to answer the research objectives effectively (Murthy & Bhojanna, 2008). To ensure fair representation of the different types of supermarket stores found in Kenya, this study used stratified random sampling design.

3.3.2.1 Sampling Frame

A sampling frame is a list of all items or people forming a population from which a sample is drawn (Lewis, Saunders, & Thornhill, 2009). This study used the top five supermarkets in Kenya as defined by GAIN in the 2012 Kenya's Retail Food Sector Report. This sampling frame was beneficial in ensuring that the retail firms studied have several branches to sufficiently address the research objectives.

Table 3.1: Stratification of the Population

Type of Store	No. of Branches	%
Hypermarket Stores	33	20%
Wide-Shallow Product Assortment Stores	101	61%
Narrow-Deep Product Assortment Stores	31	19%

3.3.2.2 Sampling Technique

Saunders et al. (2009) defines a sample as a part of the larger population that can be studied and the findings can be generalized to the rest of the population. A sampling technique is the method that is used to select a sample (Cooper & Schindler, 2014). This study adopted the stratified random sampling which is used when the sub-groups of the population are heterogeneous. This ensured that the subgroups within the population were

represented and accounted for effectively. The clusters used were based on product factors classifications which are: narrow/deep product assortment, wide/shallow product assortment and hypermarkets.

3.3.3.3 Sample Size

A sample size is a set of elements picked from the population being studied from which information is obtained. A researcher first identifies the appropriate sample size before planning and designing which data collection method would be suitable in that specific case. Murthy and Bhojama (2008) noted that a sample size is a function of the population variation and the error term that is allowed for the study. The sample size in this study was computed using Cooper and Schindler's formula provided below, where N is the size of the population, n is the sample size and e is the error. An error term of 5% was accounted for hence providing 95% confidence level.

Formula:

$n = N / 1 + N (e)^2$

$= 165 / 1 + 165 (0.05)^2$

n = 117 branches

Table 3.2: Sample Size Distribution

Type of Store	Population	Sample Size
Hypermarket Stores	33	15
Wide-Shallow Product Assortment Stores	101	82
Narrow-Deep Product Assortment Stores	31	20

3.4 Data Collection Methods

Primary data was collected by use of structured questionnaires and analyzed using SPSS. The decision to use a questionnaire was because it offers a higher response rate and large amount of information can be collected from a large sample in a short period. It is also easy to understand and easy to use hence can even be self-administered in the absence of the researcher (Burns & Ryman, 2008). The questionnaire used close-ended questions and a 5-point Likert scale with options ranging from strongly agree to strongly disagree. The questionnaire was administered to all respondents and was divided into four major segments. The first part had questions on respondents' general information. The second

part tackled challenges faced on inventory management, third part tackled effect of inventory management on competitive advantage and fourth part tackled the inventory management strategies used to ensure competitive advantage.

3.5 Research Procedures

The questionnaire was developed based on the research questions outlined in chapter one. A pre-test was then conducted to test the validity of the questionnaire and identify possible problems before data collection commenced. Respondents of the pilot test were excluded from the subsequent data collection. The questionnaire was then reviewed based on the information obtained from the pretest. A cover letter outlining the purpose of the study and assuring confidentiality, anonymity and commitment to share copies of the findings of study was prepared. This ensured high response rate from the respondents. The cover letter was shared with the respondents and questionnaires administered. Follow up was made through emailing and telephone calls to ensure that the respondents read, understood and gave their responses.

3.6 Data Analysis Methods

The study used descriptive statistics to collect, analyze and tabulate the data. These include frequencies, measures of central tendencies specifically the mean as well as standard deviation as a measure of dispersion. Regression analysis was also conducted using the linear regression equation given below. The Statistical Package for the Social Sciences (SPSS) tool was used to analyze the data and the analyzed data presented in frequency tables and figures.

$Y = a + b X$

Where: Y is the dependent variable

X is the independent variable

a is the co-efficient; value of Y when X is zero

b is the rate of change of the Y for unit change in X

3.7 Chapter Summary

This chapter covered the research methodology that was used to carry out the study. Descriptive research design was adopted for the study where a sample frame of the five top supermarkets was used. A sample of 117 branches out of a population of 165 branches was studied. Stratified sampling was used to ensure a representative sample and data was collected using a structured questionnaire. A pre-test of the questionnaire was conducted before carrying out the actual study. The data collected from the study was then analyzed using SPSS and data presented in frequency tables and figures. The results and findings are presented in the next chapter.

CHAPTER FOUR

4.0 RESULTS AND FINDINGS

4.1 Introduction

This chapter covers the results and findings of the study based on the three research objectives with regards to the data collected from the respondents of the survey. The chapter presented computed descriptive and inferential statistics from the data gathered by use of the questionnaires where the major findings were grouped into four major sub-categories. The first part covers the general information of the respondents. The other three parts cover the research questions: the first looks at the challenges on inventory management in modern retail business, the second is the effects of inventory management on competitive advantage and the third is the appropriate inventory management strategies that would ensure sustainable competitive advantage in modern retail business. The analysis results were presented mainly by use of the frequency tables.

4.2 Response Rate

The questionnaires were distributed to 15 Hyper Supermarkets, 82 Wide-Shallow Product Assortment Stores, and 20 Narrow-Deep Product Assortment Stores via hand delivery for the stores within Nairobi and via email for the stores in other regions or the stores that requested to be left with the questionnaire to fill it later. A total of 117 questionnaires were distributed. The questionnaires return rate was as follows; 10 Hyper Supermarkets, 57 Wide-Shallow Product Assortment stores and 12 Narrow-Deep Product Assortment Stores returned their questionnaires. The remaining 38 respondents did not return the questionnaires. This translates to a 67% response rate which is above the requisite response rate of 65% which is considered the minimum acceptable response rate as per Fox and Bayat (2010). The data obtained from the sample is therefore sufficient to draw conclusions on the study.

Table 4.1: Response Rate

Category	Target	Number Returned	Percentage
Hyper supermarkets	15	10	66.7%
Wide-Shallow Product Assortment Stores	82	57	69.5%
Narrow-Deep Product Assortment Stores	20	12	60.0%

4.3 General Information

The study used the socio-economic and demographic factors of gender, age, work experience, level of education, and position in management.

4.3.1 Gender of Respondents

Table 4.2 below shows the gender distribution of the respondents. Male respondents were the majority (86.3%) versus the female (13.7%). This implies that the management of the retail industry in Kenya is male dominated. The constitution of Kenya advocates that women should be at least 30% of the population. The retail industry seems to be still less than halfway there.

Table 4.2: Gender of the Respondents

Gender	Frequency	Percentage
Male	63	86.3%
Female	16	13.7%
Total	**79**	**100.0%**

4.3.2 Age of the Respondents

Table 4.3 below shows that 38% were between the ages of 21 to 30 years, 41.8% of the respondents were between the age of 31 to 40 years while 20.3% were between the age of 41 to 50 years. This indicates that the study had majority of the management being youthful and of 40 years and below. This is in line with the population pyramid of the country where majority of the working population is between these age groups.

Table 4.3: Age of the Respondents

Age Group	Frequency	Percentage
21 to 30 years	30	38.0%
31 to 40 years	33	41.8%
41 to 50 years	16	20.3%
Total	**79**	**100.0%**

4.3.3 Respondents' Work Experience

The study findings revealed that majority of the respondents, 44.3%, had a work experience of between 1 to 5 years, 26.6% had a work experience of between 6 to 10 years whereas 29.1% had over 10 years of work experience as indicated in Table 4.4. This finding suggests that majority of the respondents had moderate working experience and hence could be relied upon to give informed responses to the questionnaires.

Table 4.4: Respondents' Work Experience

Experience	Frequency	Percentage
1-5 years	35	44.3%
6-10 years	21	26.6%
Over 10 years	23	29.1%
Total	**79**	**100.0%**

4.3.4 Respondents' Level of Education

The study findings were that the majority (80%) of the respondents had a Bachelor's degree while the remaining 20% had a Master's degree. We can therefore conclude that the respondents have sufficient educational qualifications for the study to conclude that they understand well and are qualified to comment on issues regarding inventory management.

Table 4.5: Level of Education

Degree	Frequency	Percentage
Bachelor's degree	63	80%
Master's degree	16	20%
Total	**79**	**100%**

4.3.5 Respondents' Management Level

The study findings in table 4.6 below show that majority of the respondents 58.2% were senior managers in the stores while 41.7% of the respondents held positions in Middle-level management. This implied that the study respondents were very well versed with the issues surrounding inventory management in the stores as they were in positions of authority.

Table 4.6: Respondents' Management Level

Management Level	Frequency	Percentage
Senior management	46	58.2%
Middle level management	33	41.8%
Total	**79**	**100.0%**

4.4 Challenges of Inventory Management and Competitive Advantage

The first objective of the study was to assess the effect of challenges of inventory management on the competitive advantage of modern retail firms in Kenya. Descriptive statistics for all the elements of challenges of inventory management under demand variation and uncertainty, inventory management and control as well as skills and competencies of the managers were computed as presented in Table 4.7. Further, the inferential statistics regarding to the challenges of inventory management and competitive advantage were also computed to test for the relationship between the two variables.

Table 4.7: Descriptive Statistics on Challenges of Inventory Management

Items	Mean	Std. Deviation
Demand Variations and Uncertainty	**4.39**	**0.63**
The branch has a demand forecast	4.63	0.495
Demand forecast breaks down the SKU forecast for the SKUs that contribute to at least 80% of the revenue	4.04	0.751
Demand forecast is within the allowed accuracy tolerance versus the actual sales out in the past 6 months	4.17	0.565
Suppliers fulfils orders within agreed timelines	4.04	0.859
There is a non-performing inventory in at least one SKU	4.58	0.504
At least one incidence of stock-out has been experienced in the last one month	4.88	0.612
Inventory Management and Control	**3.56**	**0.73**
The firm has an inventory management policy	3.75	.737
The branch fully operates under the firm's inventory management policy	3.88	.947
Inventory management policy of the firm clearly stipulates how to classify SKUs	3.83	.482
Inventory management policy clearly stipulates the branch replenishment cycle	3.21	.588
Inventory management policy gives guidelines on minimum order quantities	3.08	.974
Inventory management policy gives guidelines on determination of skus re-order points	3.58	.654
Skills and Competencies of the Managers	**4.54**	**0.60**
The firm has a supply chain manager	4.75	0.442
The branch has a manager in charge of inventory	3.46	1.062
The manager plays a role in risk management	4.96	0.204
The manager takes part in the strategic planning of the branch	4.87	0.448
The manager has undertaken a management course	4.96	0.204
The manager has technical skills in inventory management	4.42	0.881
The manager defines the inventory management policy of the branch	4.38	0.924

On average, most of the responses were on a positive note on the challenges of inventory management with a mean of 4.16 which shows that the retail industry in Kenya has to a large extent put measures to overcome the challenges in demand variation, inventory control and management and the skills and competencies of the managers. Items under

skills and competencies of the managers had the highest average mean at 4.54 followed by demand variation and uncertainty with a mean of 4.39 and inventory management and control with a mean of 3.56. This gives an indication that even though there is high level of skills and competencies amongst the managers, this is not translating to formulation and execution of an inventory management policy that ensures flawless inventory management and control. The findings also indicate that even if the firms have processes to manage the demand variations and uncertainty, lack of proper inventory management and control policy is hindering the firms from achieving excellence in inventory management.

Inventory management and control had a higher standard deviation at 0.73 as compared to demand variation and control with a standard deviation of 0.63 and skills and competencies of the managers at 0.60. This implied that the respondents were more varied in their responses under inventory management and control than in demand variation and control and skills and competencies of the managers.

4.4.1 Inferential Statistics on Challenges of Inventory Management and Competitive Advantage

A multiple regression was conducted on challenges of inventory management; demand variation and uncertainty, inventory management and control as well as skills and competencies of managers versus competitive advantage as presented in Table 4.8.

Table 4.8: Model Summary of Challenges of Inventory Management

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.293[a]	.051	.154	.648
a. Predictors: (Constant), Demand Variation and Uncertainty, Inventory Management and Control, Skills and Competencies of the Managers.				

Table 4.9: ANOVA of Challenges of Inventory Management

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.551	3	1.517	3.609	.091[b]
	Residual	8.407	20	.420		
	Total	12.958	23			
a. Dependent Variable: Competitive Advantage						
b. Predictors: Demand Variation and Uncertainty, Inventory Management and Control, Skills and Competencies of the Managers						

Table 4.9 shows that there was no statistically significant relationship between the three challenges and the firm's competitive advantage (p = 0.091 > 0.05). The variability of competitive advantage based on the three challenges of inventory management is 3.61%. From Table 4.8, challenges of inventory management explained about 5.1% of competitive advantage of modern retail firms in Kenya. The remaining 94.9% of the variance is explained by other factors and the error term.

Table 4.10: Coefficient of Challenges of Inventory Management and Competitive Advantage

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.381	1.550		.246	.001
	Demand Variation and Uncertainty	.575	.332	.509	1.734	.698
	Inventory Management and Control	.459	.167	.325	2.753	.512
	Skills and Competencies of the Managers	.724	.232	.624	-.105	.918
a. Dependent Variable: Competitive Advantage						

Table 4.10 revealed beta coefficients of 0.509 for demand variation and uncertainty, 0.325 for Inventory management and control and 0.624 for skills and competencies of the managers. The findings indicated that there existed a low positive correlation between inventory management and control and a modern retail firm's competitiveness. Managers' skills and competencies were found to have the highest correlation to firm's competitiveness in comparison to the other two variables. All three variables were found

to have a positive correlation with firm's competitiveness. This indicates that firms should focus on building the skills and competencies of the managers, have good demand forecasting systems coupled with inventory management and control systems and procedures to ensure their competitiveness in the modern retail industry.

The study concluded that all three challenges affect firm's competitiveness in the modern retail industry. Skills and competencies of the managers has the highest impact to firm's competitive advantage, followed by demand variation and certainty. Inventory management and control is the challenge that least affects firm's competitive advantage.

4.5 Effect of Inventory Management on Competitive Advantage

The second objective of the study was to assess the effect of inventory management on the competitive advantage of modern retail firms in Kenya. Descriptive statistics for the elements of inventory management under cost, on-shelf availability and inventory turnover were computed. The inferential statistics on inventory management and competitive advantage were also computed to test for the nature of the relationship coexisting between the two variables.

First the respondents were asked to indicate the percentage of inventory holding cost to the value of inventory. In this regard, majority of the respondents 62 (79%) agreed that the average percentage of inventory holding cost to the value of inventory held in the branch was between zero and 40 percent as presented in Table 4.11. This affirms the study by Gumus and Guneri (2007) where they found inventory holding costs being between 20-40%. This implies that inventory holding costs are a large part of modern retail firms' costs and can therefore largely impact the competitive advantage of the firm if not well controlled and managed.

Table 4.11: Average Percentage of Inventory Holding Cost to the Value of Inventory

Range	Frequency	Percentage
0-20%	33	42%
21% to 40%	29	37%
41% to 60%	7	9%
61%-80%	10	13%
Total	**79**	**100%**

Table 4.12 below shows the mean and the standard deviations of each of the items under inventory management: -

Table 4.12: Descriptive Statistics on Inventory management

Items	Mean	Std. Deviation
Cost	**3.40**	**0.80**
Tracking of the inventory holding costs as a percentage of total inventory held	4.71	0.46
Breaking down and tracking differently the inventory holding costs into shrinkage, damages and relocation cost	2.50	1.06
Inventory management policy ensures we minimize the inventory holding costs	3.25	0.44
Inventory management policy minimizes the branch ordering costs	3.17	1.17
Inventory management policy minimizes the firm's purchasing cost	2.88	0.68
Inventory management policy minimizes the firm's the shortages cost	3.87	0.99
On-Shelf Availability	**3.73**	**0.51**
Branch measures on-shelf availability of the SKUs contributing to at least 80% of our revenue	5.00	0.00
Technology is used to track on-shelf availability	2.87	0.61
Branch values on-shelf availability measure and regards this as a key deliverable for the branch	4.33	0.64
Branch consistently work on improving on-shelf availability	3.67	0.57
Sales increase with increase in shelf availability	3.00	0.30
Profitability increases with increase in on-shelf availability	3.50	0.93
Inventory Turnover	**4.23**	**0.59**
The branch has a high inventory turnover	4.79	0.41
The current inventory days on hand is on target versus the target for the branch	3.75	0.68
The rate of inventory turnover affects our profitability	3.71	0.62
The rate of inventory turnover affects our cost of operations	4.21	0.78
Branch considers inventory turnover as a key success indicator	4.71	0.46

On average, the respondents agreed to elements of inventory management to 'a high extent' with a mean of 3.79. Items under inventory turnover had the highest average mean of 4.23; this implies that the respondents identified more with the effect of inventory turnover to the competitiveness of the firm as compared to on-shelf availability with a mean of 3.73 and inventory holding cost at 3.40.

Responses under cost were spread from the mean at 0.80 standard deviation compared to inventory turnover at 0.59 and on-shelf availability at 0.51. This implied that the responses given by the respondents under cost were more varied compared to similar responses given under inventory turnover and on-shelf availability. The study concluded that inventory turnover was viewed to largely impact competitive advantage of the firms. Cost was viewed to have the least effect on competitive advantage of the firms but the responses to this were more varied. This implies that the firms' management might be underestimating the impact of inventory holding costs to the firms' competitive advantage.

4.5.1 Inferential Statistics on Inventory Management and Competitive Advantage

A linear regression was conducted on inventory management under cost, on-shelf availability and inventory turnover versus competitive advantage as presented in Table 4. 13.

Table 4.13: Model Summary of Effects of Inventory Management

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.123[a]	.037	.561	.275
a. Predictors: (Constant), cost, on-shelf availability and inventory turnover.				

Table 4.14: ANOVA of Effects of Inventory Management

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.449	3	.8163	10.812	.550[b]
	Residual	11.510	20	.5755		
	Total	13.959	23			
a. Dependent Variable: Competitive Advantage						
b. Predictors: Cost, On-shelf availability and Inventory turnover						

Table 4.14 shows that there was no statistically significant relationship between inventory management and competitive advantage (p = 0.550> 0.05). Further, the findings on Table 4.13 revealed that inventory management explained only 3.7% of competitive advantage of top supermarkets in Kenya. The remaining 96.3% of the variance is explained by other factors and the error term. This implied that the inventory management does affect a firm's competitive advantage in the modern retail industry to a small extent.

Table 4.15: Coefficient of Inventory Management and Competitive Advantage

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.833	.635		6.036	.000
	Cost	-.353	.094	-.578	3.745	.901
	On-shelf availability	.647	.221	.460	1.928	.808
	Inventory turnover	.147	.105	1.240	2.396	.778
a. Dependent Variable: Competitive Advantage						

From the result findings in Table 4.15, cost had a beta value of -0.578, on-shelf availability 0.460 and 1.240 for inventory turnover. This implied that there existed a weak negative relationship between cost and competitive advantage where increase in cost leads to reduced competitive advantage. There existed a weak positive relationship between on-shelf availability and competitive advantage which implied that the firm's competitiveness increased with increased availability on shelf. There was a strong positive relationship between inventory turnover and competitive advantage which implied that the competitive advantage of a firm increased with increase in inventory turnover.

4.6 Effect of Inventory Management Strategies on Competitive Advantage

The third objective of the study sought to assess the effect of inventory management strategies on competitive advantage of modern retail firms in Kenya. Descriptive statistics for all the items under inventory management and control, information technology and supply chain integration were computed. Further, inferential statistics on inventory management strategies and competitive advantage were also computed to test for the relationship between the two variables.

Table 4.16 below shows a summary of the means and standard deviations of all the items under inventory management strategies.

Table 4.16: Descriptive Statistics on Inventory Management Strategies

ITEMS	Mean	Std. Deviation
Inventory Management and Control	**3.64**	**0.68**
Branch considers inventory management in its strategic planning	4.92	0.282
Branch uses ABC analysis to classify its SKUs	3.54	0.833
Branch employs different management strategies for different classifications of SKUs	3	1.319
Branch monitors and controls the supply of inventory from the central warehouse and/or suppliers	1.54	0.721
Branch monitors and supervises the inventory storage area and its accessibility	4.87	0.338
Branch has an inventory optimization program	4	0.295
The inventory management policy has both the operational and control measures stipulated	3.58	0.974
Information Technology	**4.04**	**0.62**
There is an automated demand planning and forecasting process	3.38	1.01
There is an automated the order management process	3.12	0.74
IT is used to track, report and monitor inventory	3.67	0.64
IT is used to improve customer service and satisfaction	4.92	0.28
Profitability has increased with increased use of IT	4.00	0.83
Use of IT has led to a reduction in cost of operation	4.92	0.41
RFID is used to increase data visibility and customer habits	4.25	0.44
Supply Chain Integration	**4.11**	**0.52**
Information is shared with suppliers regularly	3.67	0.70
Supplier's input is considered in developing inventory management plans	4.67	0.48
There has been an increase on the level of integration with suppliers in the recent past	3.79	0.66
Increased integration has resulted to increase in demand accuracy	4.08	0.28
There has been an increase in profitability with increased integration	4.21	0.51
The firm is planning further integration in the next 5 years	4.21	0.51

On average, the respondents agreed to inventory management strategies to 'a high extent' with a mean of 3.93. Items under supply chain integration had the highest average mean of 4.11 followed by information technology with a mean of 4.04 and inventory management and control at 3.64. This implied that the respondents agreed more to the elements of supply chain integration as compared to information technology and inventory management and control.

Responses under inventory management and control were spread from the mean at 0.68 standard deviation compared to information technology at 0.62 and supply chain integration at 0.52. This implied that the responses given by the respondents under inventory management and control were more varied as compared to the responses given under information technology and supply chain integration. The study concluded that all three strategies, inventory management and control, IT and supply chain integration affect a firm's competitive advantage in the modern retail industry. Supply chain integration was found to have the largest impact with majority of the firms planning further integration in the next five years to increase the competitive advantage.

4.6.1 Inferential Statistics on Inventory Management Strategies and Competitive Advantage

A multiple regression was conducted on inventory management strategies under inventory management and control, information technology and supply chain integration versus the competitive advantage as presented in Table 4. 17.

Table 4.17: Model Summary of Inventory Management Strategies

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.224[a]	.055	.486	.298
a. Predictors: (Constant), Inventory Management and Control, Information Technology and Supply Chain Integration.				

Table 4.18: ANOVA of Inventory Management Strategies

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	3.188	3	1.063	8.238	.991[b]
	Residual	11.770	20	.059		
	Total	3.958	23			
a. Dependent Variable: Competitive Advantage						
b. Predictors: Inventory Management and Control, Information Technology and Supply Chain Integration.						

Table 4.17 shows that there was no statistically significant relationship between inventory management strategies and competitive advantage (p = 0.991>0.05). Result findings on Table 4.18however indicated that inventory management strategies explained only 5.5% of competitive advantage of top supermarkets in Kenya. The remaining 94.5% of the variance is explained by other factors and the error term. Out of the three independent variables of the study, it was found to have the highest R Square. This showed that the inventory management strategies had a great impact and were seen to be a big contributor to a firm's competitive advantage in the modern retail industry.

Table 4.19: Coefficient of Inventory Management Strategies and Competitive Advantage

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	11.082	1.389		7.978	.000
	Inventory Management and Control	.485	.222	.102	3.985	.671
	Information Technology	.643	.153	.436	2.893	.749
	Supply Chain Integration	.882	.123	.601	.664	.821
a. Dependent Variable: Competitive Advantage						

Table 4.19 above illustrated a beta coefficient of 0.102 for Inventory management and control, 0.436 for Information technology and 0.601 for Supply chain integration. This implied that there existed a weak positive relationship between elements of inventory

management strategies and competitive advantage. Supply chain integration had the strongest positive relationship with competitive advantage whereas inventory management and control had the weakest positive relationship. The study concluded that supply chain integration had the highest impact to a firm's competitive advantage in the modern retail industry.

4.7 Chapter Summary

This chapter presented the results and findings of the effect of inventory management competitive advantage of top supermarkets in Kenya. Descriptive statistics for each of the three independent variables of the research objectives: challenges of inventory management, inventory management and inventory management strategies were computed. Data was summarized in a way that illustrated the mean and standard deviations of each of the items under each of the three independent variables in the study. Multiple linear regression analysis was then conducted for each of the three independent variables versus the competitive advantage.

There existed no statistically significant relationships between competitive advantage and all three independent variables; however, the three independent variables showed weak associations with the dependent variable-competitive advantage. In this regard, challenges of inventory management and competitive advantage had a weak positive association. Inventory management had a partial weak positive and negative association while there existed a weak positive correlation between inventory management strategies and the competitive advantage. Chapter five covers the conclusions reached out in this study, summary and discussions of the findings and recommendations arrived at based on these findings.

CHAPTER FIVE

5.0 DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary and the discussion of the key study findings pertaining to the three study objectives. It also offers the conclusions of the study and recommendations arrived at. The chapter further presents suggestions for further research.

5.2 Summary of the Findings

The general objective of the study was to assess inventory management and its effect on competitive advantage of modern retail firms in Kenya. The study was carried out with an aim of providing possible solutions to enhance optimization of inventory management systems in modern retail firms in Kenya. Specifically, the study sought to establish the effect of challenges of inventory management on competitive advantage of modern retail firms in Kenya, to assess the effect of inventory management on competitive advantage in modern retail business in Kenya and to investigate the effect of inventory management strategies on competitive advantage in modern retail business.

The study used the descriptive research approach, focusing on the population of GAIN's 2012 top five supermarkets in Kenya. Stratified sampling was used to select 117 branches to issue the questionnaire from which 79 responses were received. The data was then analyzed by use of SPSS to conduct descriptive statistics and Analysis of Variance (ANOVA) also conducted to determine statistically significant relationships between the competitive advantage and the various independent variables. The findings were summarized and presented in tables in chapter four.

The study revealed demographic features in the Kenya modern retail industry; that the management is male-dominated and that it is constituted of mostly young people between the age of 21 and 40. The management is also well educated with the minimum education level being a Bachelor's degree and a good number of the managers having a Master's degree. Finally, the study revealed that a larger percentage of the management had less than 10 years of experience in the industry.

The first objective of the study was to assess the effect of challenges of inventory management on competitive advantage of modern retail firms in Kenya. The study established that majority of the respondents agreed that the three elements of challenges of inventory management namely; demand variations and uncertainty, inventory management and control and skills and competencies of the managers, had been identified as challenges in their organizations and they had implemented counter measures. The study further revealed that there existed a positive correlation between challenges of inventory management and competitive advantage though the relationship was not statistically significant at 5 percent level of significance.

The second objective of the study was to establish the effect of inventory management on competitive advantage of modern retail firms in Kenya. The study established that majority of the respondents agreed that the three elements of inventory management; cost, on-shelf availability and inventory turnover had an effect in their organization's performance and competitive advantage. Further, the study revealed that there existed a positive correlation between on-shelf availability and competitive advantage as well as inventory turnover and competitive advantage but a negative correlation existed between cost and the competitive advantage. However, the association was deemed not statistically significant at 5 percent level of significance.

The third objective of the study sought to assess the effect of inventory management strategies on competitive advantage of modern retail firms on Kenya. In this regard, the study established that majority of the respondents agreed that the three elements of inventory management strategies; inventory management control, IT and supply chain integration had been implemented in their organizations to a good extent. Further, the study revealed that there existed a positive relationship between inventory management strategies and competitive advantage. However, the relationship was not statistically significant at 5 percent level of significance.

5.3 Discussion

5.3.1 Challenges of Inventory Management and Competitive Advantage

The first objective of the study was to establish the effect of challenges of inventory management on competitive advantage of modern retail businesses in Kenya. The study identified three key challenges: one of them being demand variations and uncertainty. It is often hard to deal with the changing nature of demand in the retail industry. According to

Fisher (2013), product demand variations and uncertainty in the retail sector has been confirmed by many industrial experts as a key cause of concern affecting its performance. The study's findings were also supported by Jin, Fawcett, & Fawcett (2013) who argued that the effect of demand variation and uncertainty makes it more difficult for upstream firms to plan manufacturing therefore leading to increased risks of supply for the firms downstream such as the retailers and even though firms have used integration efforts to reduce this challenge.

Further, inventory management and control was also revealed as a major determinant to competitive advantage in this study. In this regard, firms ought to have a proper management policy plan on how the firm classifies SKUs, a policy on branch replenishment cycle, a policy on minimum order quantities and a policy on determination of SKUs re-order points. This was in line with an argument by Haribhai-Pitamber & Dhurup (2014) who highly emphasized on inventory valuation and control as a critical challenge in retail business. Issues such as inadequate stock, pilferage, undersupply, wastages and damages could result to improper inventory valuation and losses to the company (Haribhai-Pitamber & Dhurup, 2014).

Skills and competencies of managers was also highlighted as determinant to competitive advantage in this study. In this case, adequacy of technical skills, leadership skills, strategic planning skills and risk management skills by the inventory managers or the supply chain managers was deemed key success of the retail firms. These findings were well supported byan earlier argument by Giunipero et. al. (2006) who declared that skills and competence of the supply chain managers had a direct impact on the performance of the organizations. According to him, the supply chain managers should possess not only the team building skills such as leadership, decision making and influencing but also strategic planning skills, communication, technical skills and broader financial skills were vital to creating strategic plans and leading the team to execute strategic plans to achieve competitive advantage for the firm.

5.3.2 Inventory Management and Competitive Advantage

The second objective of the study sought to establish the effect of inventory management on competitive advantage in modern retail firms in Kenya. In this regard, the study identified three major determinants; cost, on-shelf availability and inventory turnover.

Cost was revealed to have a low negative correlation with competitive advantage. Accordingly, increase in firm's inventory holding costs, inventory associated costs; damages and relocation costs was likely to result to reduced competitive advantage. These findings were in line with findings by Hita and Gupta (2009) who indicated that a firm's inventory costs could work against firms' overall performance. In this case, the organization's management had to play the role of establish an inventory policy that will ensure the minimum total cost from the four individual costs (Hita & Gupta, 2009).

On-shelf availability was also a key determinant of competitive advantage. It was observed to have a low positive association to competitive advantage of retail firms in Kenya. According to Aastrup & Kotzab (2010), on-shelf availability is a major factor and a key performance indicator for all the firms in the retail industry. The findings of the study were further underpinned by Aastrup & Kotzab (2010) who observed that improvement of firms' on-shelf availability through systems such as efficient customer response (ECR), use of technologies such as radio-frequency identification (RFID) and analysis of point of sales data enhanced the firms' competitive advantage.

Inventory turnover was also a major determinant of competitive advantage in retail firms in Kenya. It was observed to have a low positive association with retail firms' competitive advantage. Presence of a high inventory turnover rate, meeting target set for inventory and using the inventory turnover rate as a key performance indicator influenced firms competitive advantage. These findings were in line with the study by Yang, Xiao, & Shen (2009) who established that a firm is only able to generate higher gross margins with high inventory turnover rate resulting to superior profit versus competition. Similarly, Garcia-Teruel and Martinez-Solano (2007) established that the profitability of a company increases as the inventory keeping period decreases.

5.3.3 Inventory Management Strategies and Competitive Advantage

The third objective of the study sought to assess effect of inventory management strategies on competitive advantage of modern retail firms in Kenya. The study in this case identified three key determinants: Inventory management and control, IT and Supply chain integration. All three were observed to have a low positive association with the competitive advantage. Inventory management and control in this case entailed use of ABC analysis and other management strategies to classify the SKUs, use of inventory

optimization programs, monitoring and controlling the supply of inventory from the central warehouse. This was observed to influence competitive advantage of the retail firms in Kenya. These findings were in line with the argument put across by Naliaka & Namusonge (2015) who argued procedural inventory control was key in achieving organizational performance since it involved monitoring of stock levels periodically or continuously. Similarly, Miller (2010) established that control of supply of products, supervision of their storage and their accessibility always ensured correct levels of inventory. Further, Naliaka and Namusonge (2015) emphasized that it is of paramount necessity that an organization integrates a proper inventory management system and policies.

The study further established that majority of the retail firms in Kenya had integrated information technology as an inventory management strategy. In this case, use of IT systems was seen to result to reduction in cost of operation and enhancement of operational excellence. The use of RFID influenced data visibility and enhanced accurate forecasting of customer habits. The findings were in line with those of a study by Mohsen (2012) who established that use of the RFID did increase the inventory accuracy levels, order accuracy, the product quality, customer service and the collaboration among the supply chain members. Further, Caridi (2010) argued that technology allows for information sharing benefits that lead to improvement of on-shelf availability by reduced stock-outs and improved planning by achieving greater forecast accuracy.

In regards to supply chain integration as an inventory management strategy, the study established that most of the firms in the retail industry did share information with the clients and largely considered the input of the suppliers in inventory management. The study established that firms that had embraced supply chain integration had seen an increase in demand accuracy with increased integration and that the firm had seen an increase in profitability. These study findings were in line with an argument by Kim (2006) that supply chain integration helps to coordinate the inter-organizational information flow across the different stakeholders resulting to a seamless flow of activities hence increased profitability.

5.4 Conclusions

5.4.1 Challenges of Inventory Management and Competitive Advantage

The study concluded that all the elements of challenges of inventory management: demand variation and uncertainty, inventory management control and skills and competencies of managers were positively related to retail firm's competitive advantage. Presence of an inventory management policy and its implementation proved to be the challenge that most firms had not overcome. Further, availability of skills by the inventory and supply chain managers had a positive influence on firms' competitive advantage.

5.4.2 Inventory Management and Competitive Advantage

The study made a conclusion that all the elements of inventory management; cost, on-shelf availability and inventory turnover affected a modern retail firm's competitive advantage. However, cost had a negative relationship with retail firm's competitive advantage. In this case, reduction in inventory costs by the retail firms was key in improving the firm's competitive advantage. On the other hand, the retail firm's enhancement ofon-shelf availability and inventory turnover increased their competitive advantage.

5.4.3 Inventory Management Strategies and Competitive Advantage

The study concluded that all the elements of inventory management strategies; inventory management and control, IT and supply chain integration had a positive relationship with retail firm's competitive advantage. Therefore, use of ABC analysis, inventory optimization programs, inventory strategic planning was key in achieving the firms optimal inventory performance. Further, IT integration especially RFID and other inventory control systems enhanced data visibility and inventory forecasting while information sharing was a special part of supply chain integration as far as enhanced profitability was concerned.

5.5 Recommendations

5.5. 1 Challenges of Inventory Management and Competitive Advantage

The firms generally were aware of the challenges of inventory management in the industry and had worked on several counter measures. It was however clear that even with the demand planning efforts and the presence of highly skilled managers, there were

still presence of non-performing skus and stock outs in their firms. It was also notable that the branches did not have fully elaborate inventory management policies and there was no full implementation of the current policies in the branches. In this regard, the study recommends that the modern retail firms should create inventory management policies covering all aspects and ensure full implementation in all their branches to increase their competitive advantage. The study also recommends more training of the inventory managers specifically on technology-based inventory management systems and policy implementation. Training often enables the manager to cope with challenges by ensuring relevance and effectiveness in today's dynamic business environment.

5.5.2 Inventory Management and Competitive Advantage

The different firms in the retail industry need to ensure that they develop a standard inventory management policy for their branches to ensure that the different branches maintain only the recommended stock levels depending on the size of the branch. This will help the retail firms maintain low inventory costs specifically storage costs that constitute a big proportion of the overall inventory costs. To be able to achieve this, these retail firms need to invest in technology-based systems to ensure JIT supply and re-stocking. This would adequately improve on on-shelf availability and inventory turnover.

5.5.3 Inventory Management Strategies and Competitive Advantage

Inventory management and control, IT and supply chain integration strategies were well implemented by the retail firms in Kenya. However, the study recommended the retail industry to fully integrate use of inventory management systems that are technology-based specifically the VMI system for inventory management and control. Such systems are real-time and report a shortage in advance which enables the management to prevent lost sales. The study also recommends that retail firms should invest in RFID and other inventory control systems. This would enhance data visibility and inventory forecasting and improve on information sharing between the different stakeholders reducing redundancy and increasing the firm's profitability.

5.5.4 Recommendation for Further Research

The study did well in trying to establish the effect of inventory management on competitive advantage of the retail firms in Kenya. The study was restricted to the top five supermarket chains as per GAIN 2012. These can be termed as the most successful supermarkets in the country and the study will shed light on the strategies that have

contributed to their success. While the study made useful observations, it opened avenues for future research. In this regard, it would be important to further investigate if the same strategies would apply in the other type of retail stores that do not deal with fast moving consumer goods. Further research on challenges relevant to online stores especially with the great increase in online shopping in the recent years is also recommended and strategies needed to achieve competitive advantage in this type of stores. The study also recommends further research on what other factors greatly affect the competitive advantage of modern retail firms since the three research objectives in this study explains just a very small percentage of what results to competitive advantage in this sector.

REFERENCES

Aastrup, J., & Kotzab, H. (2010). Forty Years of Out-Of-Stock Research -and shelves are still empty. *International Review of Retail,Distribution & Consumer Research, 20*, 147-164.

Abrahamsson, M., & Rehme, J. (2010). The Role of Logistics in Retailers' Corporate Strategy- a Driver for Growth and Customer Value. *Supply Chain Forum: An International Journal, 11*(4), 14-22.

Alexander, N., & Marcelo, S. d. (2002). Emerging markets and the internationalisation of retailing: the Brazilian experience. *International Journal of Retail & Distribution Management, 30*(6), 300-314.

Aronovich, Dana, Tien, M., Collins, E., Sommerlatte, A., & Alain, L. (2010). *Measuring Supply Chain Perfomance: Guide to Key Perfomance Indicators for Public Health Managers.* Arlington.

Ashley, E., Nachiappan, S., & Angappa, G. (2016). The relationship between supply chain manager capabilities and performance: empirical evidence. *Production Planning & Control, 27*(3), 198-211.

Asif, S., Farhad, P., & Byrne, P. J. (2016). Retail supply chain levels: the role of inventory storage. *Journal of Enterprise Information Management, 29*(6), 887-902.

Atali, A., Lee, H., & Ozer, O. (2006). If the inventory manager knew: value of visibility and RFID under imperfect inventory information. *Working paper, Stanford University.*

Barrat, M., & Oke, A. (2007). Antecedents of Supply Chain Visibility in Retail Supply Chains: A Resource-Based Theory Perspective. *Journal of Operations Management, 25*(6), 1217-1233.

Brady, M. K., & Cronin, J. J. (2001). Some New Thoughts on Conceptualizing Perceived Service Quality: A Hierarchical Approach. *Journal of Marketing*, 34-449.

Bray, R. L., & Mendelson, H. (2012). Information transmission and the bullwhip effect: an empirical investigation. *Management Science, 58*(5), 860-875.

Bryman, A., & Bell, E. (2011). *Business Research Methods.* Oxford: Oxford University Press.

Burns, B., & Ryman, A. (2008). *Business Research Methoods and Statistics using SPSS.* Los Angeles: Sage Publishers.

Cachon, G. P., Randall, T., & Schmidt, G. M. (2007). In search of the Bullwhip effect. *Manufacturing and Service Operations Management, 9*(4), 457-479.

Caridi, M. (2010). Measuring visibility to improve supply chain performance: a quantitative approach. *Benchmarking: An International Journal,, 17*(4), 593-615.

Carrie, W. (2007). Research Methods. *Journal of Business & Economic Research*, 65-72.

Cooper, D., & Schindler, P. (2014). *Business Research Methods* (12th ed.). New York: McGraw-Hill Education.

Corsten, D., & Gruen, D. B. (2003). Desperately seeking shelf availability: An examination of the extent, the causes and the efforts to address retail out of stock. *International Journal of Retail & Distribution Management, 31*(12), 605-617.

Cottrill, K. (2010). Are You Prepared for the Supply Chain Talent Crisis? *MIT Center for Transportation and Logistics White Paper*, 1-11.

Cuneyt, E., Brent, D. W., & Matthew, W. A. (2012). The Backroom Effect in Retail Operations. *Production and Operations Management, 22*(4), 915-923.

Cunlu, Z., Angappa, G., & William , Y. C. (2015). A comprehensive Model for Supply Chain Integration. *Benchmarking: An International Journal, 22*(6), 1141-1157.

Daniel, P., & Amrik, S. (2013). Supply chain professionals. *International Journal of Operations & Production Management, 33*(11), 1532-1554.

DeHoratius, N., & Raman, A. (2008). Inventory record inaccuracy: an empirical analysis. *Management Science, 54*(4), 627-641.

Dooley, K. J., Yan, T., Mohan, S., & Gopalakrsihnan, M. (2010). Inventory Management and the bullwhip effect during the 2007-2009 recession: evidence from the manufacturing sector. *Journal of Suppply Chain Management, 46*(1), 12-18.

Drake, M. (2012). *Global Supply Chain Management.* New York: Business Expert Express.

Dudley, R. (2013, January 3). *bloomberg.com* . Retrieved from Wal-Mart struggles to restock shelves as sales slump: http://www.bloomberg.com/news/2013-02-27/wal-mart-s-slowness-stock-shelvesworsens-as-sales-stay-s.html

ECR UK. (2004). *Availability-A UK Perspective.* Watford, UK: IGD.

Eroglu, C., & Hofer, C. (2011). Inventory Types and Firm Perfomance: Vector Autoregressive and Vector Error Correction Models. *Journal of Business Logistics, 32*(3), 227-239.

Ettouzani, Y., & Yates, N. (2012). Examining retail on shelf availability: promotional impact and a call for research. *International Journal of Physical Distribution and Logistics Management, 42*(3), 213-243.

Fawcett, S., Andraski, J., Fawcett, A., & Margnan, G. (2010). The Indispensible Supply Chain Leader. *Supply Chain Management Review, 14*(5), 22-29.

Feng-Jenq, L. (2013). Forecasting the Demand for mobile phone in Taiwan by combined forecasts. *Journal of Statistics and Management Systems, 8*(1), 39-52.

Ferdoush, S., Mahadi, H. M., Mamun, H., & Zurina, H. (2014). Challenges of Warehouse Operations: A Case Study in Retail Supermarket. *International Journal of Supply Chain Management, 3*(4), 63-67.

Fernie, J., Sparks, L., & McKinnon, A. C. (2010). Retail Logistics in the UK: past, present and future. *International Journal of Retail & Distribution Management, 38*(11/12), 894-914.

Fisher, M. L. (2013). Special Issue on Retail Operations. *Production & Operations Management, 22*, 755-757.

Fisher, M. L., & Raman, A. (2010). *The New Science of Retailing.* Boston, MA: Havard Business Press.

Flynn, B. B., Huo, B., & Zhao, X. (2010). The Impact of Supply Chain Integration on Perfomance: A Contigency and Configuration Approach. *Journal of Operations Management, 28*(1), 57-68.

Fox, W., & Bayat, M. (2010). *A Guide of Managing Research* (2nd Edition ed.). Cape Town, SA: Juta and Co. Ltd.

Garcia-Teruel, P., & Martinez-Solano, P. (2007). Effects of Working Capital Management on SME profitability. *International Journal of Managerial Finance, 3*(2), 164-177.

Gaur, V. M., Fisher, L., & Raman, A. (2005). An Econometric Analysis of Inventory Turnover Perfomance in Retail Services. *Management Science, 51*(2), 181-194.

Gennady, I., & Elena, M. (2015). Intangible Assets and Competitive Advantage in Retail: Case Study from Russia. *Asian Social Science, 11*(12), 38-45.

Giannoccaro, I., Pontrandolfo, P., & Scozzi, B. (2003). A fuzzy echelon approach for inventory supply chains. *European Journal of Operational Reseacrh*, 185-196.

Gilles, P., & Jacques, C. (2001). Period changes and Inventory Management: the Three Ages of Retail Logistics. *Supply Chain Forum: An International Journal, 2*(2), 58-67.

Giri, B. C., & Maiti, T. (2014). Service competition in a supply chain with two retailers under service level sensitive retail price and demand. *International Journal of Mnagement Science and Engineering Management, 9*(2), 133-146.

Giunipero, L. C., Handfield, R. B., & Eltantawy, R. (2006). Supply management's evolution: key skill sets for the supply manager of the future. *International Journal of Operations & Production Management, 26*(7), 822-844.

Gorton, M., Sauer, J., & Supatpongkul, P. (2011). We Markets, Supermarkets and the 'Big Middle' for Food Retailing in Developing Countries: Evidence from Thailand. *World Development, 39*(9), 1624-1637.

Grant, D. B. (2012). *Logistics Management.* Harlow, UK: Pearson.

Green, K., Whitten, D., & Inman, A. (2012). Aligning marketing strategies throughout the supply chain to enhance performance. *Industrial Marketing Management, 41*(6), 1008-1018.

Gumus, A. T., & Guneri, A. F. (2007). Multi-echelon inventory management in supply chains with uncertain demand and lead times:literature review froman optimal research perspective. *Journal of Engineering Manufacture*, 1553-1570.

Haribhai-Pitamber, H. U., & Dhurup, M. (2014). Inventory Control and Valuation Systems among Retail SMEs in a Developing Country: An Exploratory Study. *Meditteranean Journal of Social Sciences, 5*(8), 81-88.

Heizer , J., Render, B., & Munson, C. (2016). *Principles of Operations Management: Sustainability and Supply Chain Management.* New Jersey: Pearson Prentice Hall, Education Inc.

Hendricks, K. B., & Singhal, V. R. (2005). An empirical analysis of the effect of supply chain disruptions on long-run stock price perfomance and equity risk of the firm. *Production Operations Management*, 35-52.

Hira, D. S., & Gupta, P. K. (2009). *Operations Research .* New Delhi, India: S. Chand and Company Ltd.

Jay, H., & Barry, R. (2008). *Operations Management* (9th ed.). Upper Saddle River, NJ: Pearson Prentice Hall.

Jin, Y., Fawcett, A. M., & Fawcett, S. E. (2013). Awareness is not enough: commitment and perfomance implications of supply chain integration. *International Journal of Physical Distribution and Logistics Management, 43*(3), 205-230.

Joachim, C. F., & Ehrenthral, W. S. (2013). An examination of the causes for retail stock-outs. *International Journal of Physical Distribution & Logistics Management, 43*(1), 54 - 69.

Juhwen, H., & Wu, S. (2013). Coordinating supplier-retailer using multiple common replenishment epochs with retailers' choices. *Journal of Industrial Engineering and Management, 6*(2), 441-455.

Kamau, L. W., & Kagiri, A. W. (2015). Influence of Inventory Management Practices on Organizational Competitiveness: A Case Study of Safaricom Kenya Ltd. *International Academic Journal of Procurement and Supply Chain Management, 1*(5), 72-98.

Kannan, V., & Tan, K. (2006). Buyer-supplier relationships: the impact of supplier selection and buyer-supplier engagement on relationship and firm performance. *International Journal of Physical Distribution & Logistics Management, 36*(10), 755-775.

Kazim, S. (2007). Exploring the benefits of vendor managed inventory. *International Journal of Physical Distribution & Logistics Management, 37*(7), 529-545.

Kenya National Bureau of Statistics. (2015). *Economic Survey 2015.* Nairobi, Kenya: Kenya National Bureau of Statistics.

Ketzenberg, N., & Fergusson, M. (2008). Managing slow-moving perishables in the grocery industry. *Porduction Operation Management, 17*(5), 513-521.

Kibbeling, M., Bij, H., & Weele, A. (2013). Market orientation and innovativeness in supply chains: supplier's impact on customer satisfaction. *Journal of Product Innovation Management, 30*(3), 500-515.

Kim, S. (2006). Effects of supply management practices, integration and competition capability on performance. *Supply Chain Management: An International Journal, 11*(3), 241-248.

Kot, S., Grondys, K., & Szopa, R. (2011). Theory of Inventory Management Based on Demand Forecasting. *Polish Journal of Management Studies, 3*, 148- 156.

KPMG. (2015). *The African Consumer and Retail.* Nairobi, Kenya: KPMG.

Lambert , D., & Terrance, L. (2001). Supply Chain Metrics. *International Journal of Logistics Management, 9*(2), 1-19.

Lau, A., & Snell, R. (2006). Structure and growth in small Hong Kong enterprises. *International Journal of Entrepreneurial Behaviour & Research, 2*(3), 29-47.

Lazaridis, J., & Tryfonidis, D. (2006). Relationship Between Working Capital Management and Profitability of Listed Companies The Athens İnventory Exchange. *Journal of Financial Management and Analysis, 19*(1), 26-35.

Lewis, P., Saunders, M., & Thornhill, A. (2009). *Research Methods for Business Students* (5th ed.). England: Pearson Education.

Lukas, P., & Claire, M. (2014). Achieving sustained competitive advantage by integrating ECR, RFID and visibility in retail supply chains: a conceptual framework. *Production Planning & Control, 25*(7), 548-571.

Lysonns, K., & Gillingham, M. (2003). *Purchasing and Supply Chain Management.* New Jersey: Prentice Hall.

Mats, A., & Jacob, R. (2016). The Role of Logistics in Retailers′Corporate Strategy-a Driver for Growth and Customer Value. *Supply Chain Forum: An International Journal,, 11*(4), 14-22.

Miller, R. (2010). *Inventors Control: Theory and Practice.* New Jersey: Prentice Hall.

Mohsen, A. (2012). Critical Success Factors and Challenges of Implementing RFID in Supply Chain Management. *Journal of Supply Chain and Operations Management, 10*(1), 144-167.

More, D., & Basu, P. (2013). Challenges of Supply Chain Finance. *Business Project Management Journal, 19*(4), 624-647.

Muller, M. (2011). *Essentials of Inventory Management.* NY, USA: American Management Association.

Murphy, P., & Poist, R. (2007). Skills requirement of senior-level logisticians:practitioner perspective. *Supply Chain Management: An International Journal,, 12*(6), 423-431.

Murthy, S., & Bhojanna, U. (2008). *Business Research Methods.* New Delhi: Excel Books.

Nahmias, S. (2008). *Production and Operation Analysis.* New York, NY: McGraw-Hill/Irvin Publishers.

Naliaka, N. W., & Namusonge, G. S. (2015). Role of Inventory Management on Competitive Advantage among Manaufacturing Firms in Kenya: A Case Study of Unga Group Limited. *International Journal of Academic Research in Business and Social Sciences, 5*(5), 2222-6690.

Naslund, D., & Hulthen, H. (2012). Supply Chain Management Integration: A Critical Analysis. *Benchmarking: An International Journal, 19*(4/5), 481-501.

Neven , D., & Reardon, T. (2004). The Rise of Kenyan Supermarkets and the Evolution of their Horticulture Product Procurement System. *Development Policy Review, 22*(6), 669-699.

Neven, D., Reardon , T., Chege , J., & Honglin, W. (2006). Supermarkets and Consumers in Africa. *Journal of International Food & Agribusiness Marketing, 18*(1-2), 103-123.

Ogbo, A. I., Okekanma, V. I., & Ukpere, W. I. (2014). The Impact of Effective Inventory Control Management of Organizational Perfomance: A study of 7up Bottling Company Nile Mile Enugu,Nigeria. *Mediterranean Journal of Social Sciences, 5*(10), 109.

Olivares, M., & Cachon, G. (2009). Competing Retailers and Inventory: An Investigation of General Motors' Delearships in Isolated US Markets. *Management Science, 55*(9), 1586-1604.

Olov, H. I., & Ralf, W. S. (2014). Inventory leanness and the financial performance of firms. *Production Planning & Control, 25*(12), 999–1014.

Paiva, E., Roth, A., & Fensterseifer, J. (2008). 'Organizational knowledge and the manufacturing strategy process: a resource-based view analysis. *Journal of Operations Management, 26*(1), 115-132.

Palomero, S., & Chalmeta, R. (2014). A guide for supply chain integration in SMEs,Production,Planning & Control. *The Management of Operations, 25*(5), 372-400.

Panda, T., & Mohanty, P. (2013). Adoption of Supply Chain Strategies as a Response to Bull Whip Effect: From the Perspective of Indian Retailers. *IUP Journal of Supply Chain Management, 10*(3), 19-38.

Paulraj, A., & Chen, I. (2007). Environmental uncertainty and strategic supply management: a resource dependence perspective and performance implications. *The Journal of Supply Chain Management, 43*(3), 29-42.

Pentico, D. W., & Drake, M. J. (2009). The Deterministic EOQ with partial backordering: A new approach. *Journal of Operational Research, 194*, 102-113.

Porter, M. (1985). *Competitive Advantage: Creating and sustaining superior perfomance.* New York: The Free Press.

Prabir, K., Byoung, C., Tage, S.-L., & Lars, B. S. (2005). Supply Chain Integration:A European Survey. *The International Journal of Logistics, 16*(2), 275-294.

PWC. (2015). Retail Inventory Management: An intricate balancing act. *Workign Capital Management*.

Qi, M., David, B. G., & Jorn, F. (2012). Improving On-Shelf Availability and Out-of-Stocks in Non-food Retail. *Supply Chain Forum: An International Journal, 13*(4), 4-12.

Rajwinder, S., Sandhu, H. S., Metri, B. A., & Kaur, R. (2010). Relating Organised Retail Supply Chain Management Practices, Competitive Advantage and Organizational Perfomance. *The Journal of Business Perspective, 14*(3), 173-190.

Ramanathan , R. (2006). ABC Inventory Classification with Multiple-criteria Using Weighted Linear Optimization. *Computers and Operations Research, 33*, 695-700.

Randall, W. S., Gibson, B. J., Defee, C., & Williamns , B. D. (2011). Retail Supply Chain Management: Key Priorities and Practices. *International Journal of Logistics Management, 22*(3), 390-402.

Rekik, Y. (2010). Inventory inaccuracies in the whole sale supply chain. *International Journal of Production Economics, 5*(2), 3-10.

Rekik, Y. (2010). Inventory inaccuracies in the whole supply chain. *International Journal of Production Economics, 5*(2), 3-10.

Rema, G. S., & Biswajit, S. (2015). Evaluation of retail service quality - a fuzzy AHP approach. *An International Journal, 22*(6), 1058-1080.

Roussos, G. (2008). *Computer communications and networks.* London: Springer.

Routroy, S., & Kodali, R. (2005). Differential evolution algorithm for supply chain inventory planning. *Journal of Manufacturing Technology Management, 16*, 7-17.

Rungtusanatham, M., Rabinovich, E., Ashenbaum, B., & Wallin, C. (2007). Vendor-owned inventory management arrangements in retail: An agency theory perspective. *Journal of Business Logistics, 28*(1), 111-135.

Salam, A., Panahifar, F., & Byrne, P. (2016). Retail supply chain service levels: the role of inventory storage. *Journal of Enterprise Information*, 887-902.

Samak-Kulkarni, S. M., & Rajhans, N. R. (2013). Determination of Optimum Inventory Model for Minimizing Total Inventory Cost. *Chemical, Civil and Mechanical Engineering Tracks of the 3rd Nirma University International Conference on Engineering* (pp. 803-809). Ahmedabad: Elsevier Ltd.

Sarma, M. K. (2000). Some Issues in Retail Management in India. *The Journal of Business Perspective*, 35-40.

Sawaya, J., & Giauque. (2006). *Production and Operations Management.* Orlando FL: Harcout Brace Jovanovich iNC.

Schoenherra, T., & Swink, M. (2012). Revisiting the Arcs of Integration: Cross-Validations and Extenstions. *Journal of Operations Management, 30*(1), 99-115.

Sekeroglu, G., & Altan, M. (2014). The Relationship between Inventory Management and Profitability: A Comparative Research on Turkish Firms Operated in Weaving Industry,Eatables Industry, Wholesale and Retail Industry. *International Journal of Social, Behavioral, Educational, Economic, Business and Industrial Engineering, 8*(6), 1699-1703.

Shockley, J., & Turner, T. (2015). Linking Inventory efficiency,productivity and responsiveness to retail outperfomance: empirical insights from US retailing segments. *Production Planning and Control, 26*(5), 393-406.

Simone, R. D., Jose , R. F., Ana Maria, M. T., & Guillermo, D. (2014). The Role of Supply Chain Integration in the Relationship between Market Orientation and Performance in SMEs. *International Journal of Business Science and Applied Management, 9*(2), 16-29.

Singh, R., Sandhu, H., Metri, B., & Kaur, R. (2010). Relating Organized Supply Chain Management Practices, Competitive Advantage and Organizational Perfomance. *The Journal of Business Perspective*, 173-189.

Sivakumar, N. (2010). *Strategic Issues for Retail CEOs.* PricewaterhouseCoopers.

Sufian, Q., & Monideepa, T. (2014). Supply chain information systems strategy: Impacts on supply chain performance and firm performance. *International Journal of Production Economics, 147*, 340-350.

Sunita, S., & Dipti, W. (2012). Growth and Challenges of Retail Industry in India: An Analysis. *Asia Pacific Journal of Marketing and Management Review, 1*(1), 1-14.

Sydney, D. H., & Nathan , C. P. (2007). A statistical investigation of inventory shrinkage in a large retail chain. *The International Review of Retail, Distribution and Consumer Research, 17*(2), 101-120.

Thomas , R., Davis-Sramek, B., Esper, T., & Murfield, M. (2014). Attribution Effects of Time Pressure in Retail Supply Chain Relationships: Moving from 'What' to 'Why'. *Journal of Business Logistics, 35*(3), 225-240.

Vasilia, P. P., & Socrates, M. J. (2013). RFID technology in supply chain management: a review of the literature and prospective adoption to the Greek market. *Global Journal of Engineering Education, 15*(1), 61-68.

Veera, P. K., V.G.R., C., & Muhammad, A. B. (2016). Supply Chain Pracices and Perfomance: The Indirect Effects of Supply Chain Integration. *Benchmarking: An International Journal, 23*(6), 1445- 1471.

Vivek, N., & Ravindran, S. (2009). An Empirical Study on the Impact of Supplier Perfomance on Organizational Perfomance: A Supply Chain Perspective. *South Asian Journal of Management, 61*(3), 61-70.

Walker, B., Bovet, D., & Martha , J. (2000). Unlocking the Supply Chain to Build Competitive Advantage. *International Journal of Logistics Management, 11*(2), 1-8.

Wantao, Y., & Ramakrishnan, R. (2012). Managing strategic business relationships in retail operations: evidence from China. *Asia Pacific Journal of Marketing and Logistics, 24*(3), 372-393.

Yang, D., Xiao, T., & Shen, H. (2009). Pricing, Service Level and Lot Size Decisions of a Supply Chain with Risk-averse Retailers: Implications to Practitioners. *Production Planning & Control, 20*(4), 320-331.

Yao, H. J., Brent , D. W., Matthew, A. W., & Adriana, R. H. (2015). Masking the Bullwhip effect in retail: the influence of data aggregation. *International Journal of Physical Distribution & Logistics Management, 45*(8), 814-830.

Zinn, W., & Liu, P. C. (2008). A comparison of actual and intended consumer behaviour in response to retail stockouts. *Journal of Business Logistics, 22*(1), 141-159.

APPENDICES

APPENDIX A: COVER LETTER

UNITED STATES INTERNATIONAL UNIVERSITY-AFRICA

P.O. BOX 14634-00800
NAIROBI
DATE: 3rd Dec 2016

Dear Respondent,

I am a graduate student at United States International University-Africa pursuing a Master's degree in Business Administration. As partial fulfilment of the course, I am conducting a research to assess inventory management and its effect on competitive advantage of modern retail firms in Kenya. I am pleased to inform you that your organization has been selected to participate in this research.

The findings of this study will be shared with all participants and it will provide insights to the management of your organization on how to overcome inventory management challenges, show the effects of inventory management on competitive advantage of the company and finally suggest inventory management strategies that will ensure sustainable competitive advantage of the company.

The information provided by all respondents will be treated with high confidentiality and anonymity; your organization's name will not appear anywhere in the report. Kindly spare 20 minutes to complete the attached questionnaire.

Sincerely,

Gladys Nungari Kiarie

MBA Student – Researcher

USIU

APPENDIX B: QUESTIONNAIRE

The purpose of this questionnaire is to investigate the effect of inventory management on competitive advantage of the top supermarkets in Kenya. Please respond by selecting the option that best represents your view and filling in any other information where required.

PART A: General Information

1. What is your gender?

   Female   ( )   Male ( )

2. What is your age?

   Below 20 years ( )   20 to 30 years ( )

   31 to 40 years   ( )   41 to 50 years ( )

3. How long have you worked for your organization?

   Below 1 year ( )   1 to 5 years ( )   6 to 10 years ( )   Above 10 years ( )

4. What is your highest education level?

     Secondary Certificate   ( )   Certificate   ( )

     Diploma   ( )   Bachelor's Degree   ( )

     Master's Degree   ( )   Doctorate   ( )

Other (Specify) ………………………….

5. What is your level in the organization?

     Senior Management   ( )   Middle Level Management

     Junior Management   ( )   Other (Specify)……

6. Have you done any specialized training to your role?

   Yes   ( )   No   ( )

PART B: CHALLENGES ON INVENTORY MANAGEMENT

7. What is your level of agreement with the below statements concerning the challenges in inventory management in your firm? The below scale is applicable:

1 = Strongly Disagree   2 = Disagree   3 = Neutral   4 = Agree   5 = Strongly Agree

CHALLENGES ON INVENTORY MANAGEMENT	1	2	3	4	5
Demand Variation and Uncertainty					
Our branch has a demand forecast					
Our demand forecast breaks down the sku forecast for the skus that contribute to at least 80% of the revenue					
Our demand forecast is within the allowed accuracy tolerance versus the actual sales out in the past 6 months					
All our suppliers fulfil orders within agreed timelines					
Our branch has non-performing inventory in at least one sku					
Our branch has had at least one incidence of stock-out in the last one month					
Inventory Management					
Our firm has an inventory management policy					
Our branch fully operates under the firm's inventory management policy					
Our firm's inventory management policy clearly stipulates how to classify skus					
Our firm's policy clearly stipulates the branch replenishment cycle					
Our firm's policy gives guidelines on minimum order quantities					
Our firm's policy gives guidelines on determination of skus re-order points					
Skills and Competencies of Managers					
Our firm has a supply chain manager					
Our branch has a manager in charge of inventory					
The manager plays a risk management role					
The manager takes part in the strategic planning of the branch					
The manager has undertaken a management course					
The manager has technical skills in inventory management					
The manager defines the inventory management policy of the branch					

PART C: INVENTORY MANAGEMENT AND COMPETITIVE ADVANTAGE

Effects of Cost on Competitive Advantage

8. What is the average percentage of inventory holding cost to the value of inventory held in the branch?…………….

9. What is the average percentage of shrinkage cost to the total branch sales?………….

10. What is your level of agreement with the below statements concerning the challenges in inventory management in your firm? The below scale is applicable:

1 = Strongly Disagree   2 = Disagree   3 = Neutral   4 = Agree   5 = Strongly Agree

	1	2	3	4	5
Our branch tracks the inventory holding costs as a percentage of total inventory held					
Our branch breaks down and tracks differently the inventory holding costs into shrinkage, damages and relocation costs					
Our inventory management policy ensures we minimize the inventory holding costs					
Our inventory management policy minimizes the branch ordering costs					
Our inventory management policy minimizes the firm's purchasing cost					
Our inventory management policy minimizes the firm's the shortages cost					

Effects of On-Shelf Availability

11. What is your level of agreement with the below statements concerning the challenges in inventory management in your firm? The below scale is applicable:

1 = Strongly Disagree   2 = Disagree   3 = Neutral   4 = Agree   5 = Strongly Agree

	1	2	3	4	5
Our branch measures on-shelf availability of our skus contributing to at least 80% of our revenue					

Our branch uses technology to track on-shelf availability					
Our branch values on-shelf availability measure and regards this as a key deliverable for the branch					
Our branch consistently work on improving on-shelf availability					
There are increased sales when the shelf availability is high					
There is increased profitability with increase in on-shelf availability					

12. On average, what is the percentage of sales is lost due to shelf stock-outs in your branch?........................

Effects of Inventory Turnover

13. What is your inventory as a percentage of your total assets? ………………

14. What is your level of agreement with the below statements concerning the challenges in inventory management in your firm? The below scale is applicable:

1 = Strongly Disagree   2 = Disagree   3 = Neutral   4 = Agree   5 = Strongly Agree

	1	2	3	4	5
Our branch has a high inventory turnover					
The current inventory days on hand is on target versus the target for the branch					
The rate of inventory turnover affects our profitability					
The rate of inventory turnover affects our cost of operations					
Our branch considers inventory turnover as a key success indicator					

PART D: INVENTORY MANAGEMENT STRATEGIES

15. What is your level of agreement with the below statements concerning the challenges in inventory management in your firm? The below scale is applicable:

1 = Strongly Disagree   2 = Disagree   3 = Neutral   4 = Agree   5 = Strongly Agree

INVENTORY MANAGEMENT STRATEGIES	1	2	3	4	5
Inventory Management and Control					
Our branch considers inventory management in its strategic planning					
Our branch uses ABC analysis to classify its skus					
Our branch employs different management strategies for different classifications of skus					
Our branch monitors and controls the supply of inventory from the central warehouse and/or suppliers					
Our branch monitors and supervises the inventory storage area and its accessibility					
Our branch has an inventory optimization program					
Our inventory management policy has both the operational and control measures stipulated					
Information Technology					
Our firm has automated the demand planning and forecasting process					
Our firm has automated the order management process					
Our firm uses IT to track, report and monitor inventory					
Our firm uses IT to improve customer service and satisfaction					
Our firm's profitability has increased with increased use of IT					
The use of IT has led to a reduction in cost of operation					
Our firm uses RFID to increase data visibility and customer habits					
Supply Chain Integration					
Our firm shares information with its suppliers regularly					
Our firm considers supplier's inputs in its inventory management plans					
Our firm has increased the level of integration with its suppliers in the recent past					
Our firm has seen an increase in demand accuracy with increased integration					
Our firm has seen an increase in profitability with increased integration					
Our firm is planning further integration in the next 5 years					

APPENDIX C: LIST OF TOP FIVE SUPERMARKETS

Retail Name and Outlet Type	Ownership Type	2011* Food Sales	No. of Outlets	Locations	Purchasing Agent Type
Nakumatt Holdings Ltd Hypermarkets (14) Supermarkets (17) Convenience stores (5)	Local	$270 million	37	Kenya (30); Uganda (4); Rwanda (2) ; and Tanzania (1)	Local suppliers and importers
Tuskys Ltd Hypermarkets (7) Supermarkets (20) Convenience Stores (9)	Local	$169 million	36	Kenya (32); and Uganda (4)	Local suppliers and importers
Uchumi Ltd Hypermarkets (9) Supermarkets (15)	Local	$104 million	26	Kenya (20); Uganda (5); and Tanzania (1)	Local suppliers and importers
Naivas Ltd Hypermarkets (5) Supermarkets (15) Convenience Store (1)	Local	$106 million	21	All stores are in Kenya	Local suppliers and importers
Ukwala Ltd Supermarkets (14)	Local	$45 million	14	All stores are in Kenya	Local suppliers and

Data source/Notes: Direct communication with the retail chains' management

*Annual Food Sales Figures account for Kenyan Outlets only, operational in 2011 calendar year

APPENDIX D: TIME SCHEDULE

ACTIVITY	DATES
Proposal Writing	Sept-Dec 9th
Proposal Corrections	9th Jan – 30th Jan
Data Collection	1st Feb – 17th Feb
Data Entry	20th Feb – 6th March
Data Analysis	6th March – 20th March
Report Writing	20th March – 17th March
First Submission	18th April
Final Submission	28th June

APPENDIX E: BUDGET

ITEM	COST
Travel	10,000
Printing and Binding	9,000
Phone Expenses	2,000
Miscellaneous	3,000
Total	**24,000**