SUPPLY CHAIN MANAGEMENT PRACTICES OF AGRICULTURAL SECTOR PARASTATALS IN KENYA

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A research project report submitted in partial fulfillment of the requirements for the award of the Degree of Masters of Business Administration, school of Business of the University of Nairobi

NOVEMBER 2013

DECLARATION

This Research work is my original work and has not been submitted to any University for any award.

Signed …… Date …….

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Supervisor

This Masters Research Report has been submitted with my approval as a University supervisor.

Signed …… Date……...

Nyamwange Onserio

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DEDICATION

To my mother, Patrica

Thank you for taking me to school the first day.

To my father, Jared

Thank you for your love and prayers

To my Wife, Phoebe Ndela

Thank you for being there for me all the time

To my children, Jerryeddy, Oscar and Caleb

Thank you for being very joyful children throughout the period of my study.

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I wish to pass my special thanks to the Sugar Board of Kenya staff that provided me with the required data. It would have not been possible to conduct the data collection, research analysis, and extraction of the final findings if the data was not available in the first place. In my literature review I have cited quite a lot of scholarly publication. Some are from earlier research findings from project done by other MBA students. I have used scholarly papers from a wider academia, these works without which I could not have had a scholarly insight into this research.

Finally I would wish to thank my family and a special friend Hellen Sidi that provided me with materials and encouragement throughout the period I was studying.

ABSTRACT

This study sought to establish the supply chain management practices in the parastatals of the agricultural sector in Kenya, to determine the relationship between supply chain management practices and agricultural parastatals performance and to determine the challenges of implementing SCM practices in agricultural parastatals. A descriptive research design was employed in this study. The population of interest comprised of all 35 parastatals in the agricultural sector in Kenya, a total of 35 managers from the logistics, procurement and finance who was involved in strategy implementation was randomly sampled to represent the entire population. The sample size was preferred because it was equally manageable. A semi-structured questionnaire composed of three sections was used to collect primary data where the respondents were accessed through an interview. A five point likert-type scale was used to measure the extent of partnership strategies with the suppliers. Data was collected and analyzed using SPSS package. Descriptive statistics were used to describe and analyze the extent of effectiveness between the various strategies adopted by the respective companies in the agricultural sector. The study also found that most of the parastatals of the agricultural sector have adopted a written agreement or contract as an integral part of all alliances, adequate information systems linkages exists with customers, clear guidelines and procedures are used for monitoring alliances and that customer relationship are evaluated on the basis of their profitability. The study recommends that the management of the parastatals in the agricultural sector in Kenya should keep up establishing ways to manage their supply chains better as this has a direct influence on performance, this can be done through the practices such as subcontracting.

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LIST OF ABBREVIATIONS

CSCMP	Council of Supply Chain Management Professionals
DCM	Demand Chain Management
EDI	Electronic Data Exchange
SC	Supply Chain
SCM	Supply Chain Management
SCMP	Supply Chain Management Practices
JIT	Just- In- Time
RSCM	Reverse Supply Chain Management
GSCM	Green Supply Chain Management
LISREL	Linear Structural Relations
UK	United Kingdom
US	United States
CRM	Customer Relations Management
GDP	Gross Domestic Product
SME	Small and Medium Enterprises
ANOVA	Analysis of Variance

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

New realms of technology and globalization have created numerous business opportunities to be harnessed and mastered. Effective supply chains provide opportunities to create a sustainable competitive advantage (Tracey, Lim and Vonderembese, 2005). The idea of supply chain management is to evaluate the processes of planning implementation and controlling of material of finished goods all the way to the end-user; the interconnected activities of supply chain begin with a customer order, and complete when the goods are in the hands of the customers. To have these goods to the end user; it requires a network of contributions from the parties involved; retailers, wholesalers, distributors, manufacturers, and raw material suppliers (Waskita 2007). Chopra and Meindl (2001) concluded that the objective of the supply chain is to maximize the overall value of the chain. This concurs with what Siem (2005) has stated, supply chain management (SCM) strives to the right places at the right times for maximum profit.

The focus of SCM appears to be maximizing the chains profitability. One presumption states that as interactions between parties improve, it is expected that outcomes accelerate. Perhaps, this is true in terms of better inventory turnovers, on-time delivery, responsiveness, quality, price reduction, efficiency, and effectiveness in bringing the finished goods into customer's hand. Noting the true gains and potential losses of such interaction among parties involved are very important issue in supply chain management, nonetheless. The core of SCM focuses on production, inventory, distribution, and payment cycles. As a result, the existence of information technologies, and thus, the actual information sharing among parties involved are crucial (Anantadjaya and Nawangwulan, 2006).

The traditional view of supply chain management is to leverage the supply chain to achieve the lowest initial purchase prices while assuring supply. Typical characteristics include multiple partners; partner evaluations based on the purchase price, cost based information, arm length negotiation, formal short term contracts; and centralized

purchasing. Operating under these conditions encourages fierce competition among suppliers, often requiring playing one supplier against the others, and uses rewards or punishment based on the performance. The fundamental assumption in this environment is that trading partners are interchangeable and they will take advantage if they become too important. In addition there is a believe that maximum competition, under the discipline of a free market, promotes a healthy and vigorous supply base which is predicted on the "survival of the fittest" (Siem, 2005).

Under the new paradigm, supply chain management is redefined as a management philosophy instead of just being a set of management processes (Gundlach, Bolumole, Eltantawy, and Frankel, 2006). This integrative alignment has been strengthened with the definition of SCM by the Council of Supply Chain Management Professionals (CSCMP, 2010) that links the supply and demand business functions and processes within and across companies.

1.2 Supply Chain Management Practices in Kenya

The core of supply chain management focuses on production, inventory distribution, and payment cycles. As a result, the existence of information technologies, and thus the actual information sharing among parties involved are crucial (Siem 2005). This requires some key success factors for it to be effective which are referred to as the supply chain management practices.

The supply chain management practices (SCMP) are defined as the approaches applied in integration, managing and coordination of supply, demand and relationships in order to satisfy clients in an effective way (Wong & Johnsen, 2005); as the set of activities undertaken by an organization to promote effective management of its supply chain (Li, Rao, Ragu-Nathan, & Ragu-Nathan, 2005); as tangible technologies that have a relevant role in the collaboration of focal firm with its supplier and clients (Vaart & Donk,2008)

As evident from the ealier studies the SCMP are multidimensional concept, including the downstream and upstream sides of the supply chain. This therefore means, it must have

instruments to measure its effectiveness.Quale (2003) identified 18 different SCMP such as supplier development, e-commerce, new technology, time taken to make order, staff development, leadership, strategy team working, and waste reduction that are essential to improve the competitive position of a firm. (Li et al, 2005) developed a measure of instrument for SCMP. Their instrument had six empirically validated dimensions which included strategic supplier partnership, customer relationship, information sharing, information quality, internal lean practices, and postponement. Burgess, Singh & Koroglu (2006) stated that SCMP should include leadership, intraorganizational relationship, interorganizational relationships; logistics process improvement orientation, business results and outcomes, and information technology. Koh, Dirmabag & Zaim et al (2007) in their study added benchmarking, just- in- time supply and strategic planning to the list.

1.3 Agricultural Sector in Kenya

According to the Central Bank of Kenya latest monthly Economic survey for January 2012, the world economy grew at 3.95% in 2011 compared with 5.1% in 2010, while the economy of Kenya grew by 4.4% in 2011 compared with 5.8% in 2010 with the agricultural sector contributing 21% of the gross domestic product (GDP). This compared with the 2010 to 2011; there has been decline in the total output in the agricultural sector. Due to this, developing the agri-food and agro-industry sectors in sub-Saharan Africa has become a global challenge in order to combat food crises and meet the growing needs of a fast-increasing Population. Massive reinvestment in the agricultural sector is therefore imperative –for governments, producers, and private investors.

Institutions of the agricultural sectors in Kenya like the agri-processing, agri-chemicals and animal health services and products need to improve their outreach to the other stake holders and this can be done through the improvement of the supply chain management. This is the only way the economy can attain the upward trend.

The above institutions are both in the private sector and the public sector. The public institutions which are semi autonomous are called the agricultural parastatals which have been established by the act of parliament (government) and the government has 100%

ownership. According to the agricultural information directory 2008/2009 there is about 30 parastatals in the agricultural sector in Kenya. Some of the supply chain practices in the sector include the use of the economic order quantity systems, the use of agents and distributors, and the application of management systems (El-Dubei and Hokoma, 2011).

1.4 Research problems

In a quest to beat the market instability, firms now are geared beyond the cost advantage. Speed, quality, and flexibility are being emphasized as a means of responding to the need of customers and markets. Firms are experiencing a transformation in which suppliers and customers are inextricably linked throughout the entire sequence of events that bring raw materials from its source of supply, through different value adding activities to the ultimate consumer.

Many businesses parastatal groups operating in emerging markets have multi-businesses linked through supply chain management practices cross-subsidization and are therefore generally viewed as having a complex supply chain management system. In Kenya, most of the parastatals operating from diverse sectors are deemed to have these supply chain management practices. Such multi-business parastatal firms are managed centrally through the central authority. A supply chain management practice of the agricultural sector has myriad challenges of functionality in line with the new approach towards the streamlining of the supplies. As to whether these supply chain practices are effectively adopted in the agricultural sector in Kenya lies with the justification of the management of these parastatals. Given the structural differences in multi-business firms parastatals sector in Kenya, the concept of 'supply chain management practices in agricultural sector needs to be investigated further.

Several researchers have done previous studies in this area. Mwarigi (2007) researched on green supply chain management practices by manufacturing firm in Kenya and found out that awareness of the role of GSCM practices was lacking among locally owned manufacturing firms in Kenya. Consequently, Soo W.K (2008) examined the causal linkages among supply practices and firm performance , from the result of LISREL analysis on small and large manufacturing firms and found that in small firms efficient

supply chain integration may play a more critical role of sustainable performance improvement while in large firms, the close interrelationship between the level of SCM practices and competition capability may have more significant effect on performance improvement. A study by (Kumar, 2011) found that operations performance of service delivery can positively affect customer satisfaction. This service delivery is possible with better managed supply chain. In another local study Okoth (2011) gathered in his survey study of the cement industry in Kenya, the common supply chain practices could be categorized into three; loyalty, capability, and supplier linkages and that the supply chain management leads to a better performance of a company.

Also a study by Otilo (2011) explored the supply chain management practices in cosmetics industry in Kenya and from his analysis of the results, established that there is consistent performance measures used across the supply chain in the cosmetic industry and suppliers are involved in production planning. In contrast, the customers are rarely involved in production planning. He highlighted the major challenges with the implementation of supply chain practices as lack of resources, resistance to supply chain management changes, supplier geographical distance.

This study, sought to answer the following questions; what are the supply chain management practices in the agricultural sector in Kenya? What impact do these SCM practices have on the firm's performance? What challenges do the parastatals have in implementing the supply chain practices?

1.5 Research Objectives

The current study was guided by the following objectives

i. To establish the supply chain management practices in the parastatals of the agricultural sector in Kenya.
ii. To determine the relationship between supply chain management practices and agricultural parastatals performance.
iii. To determine the challenges of implementing SCM practices in agricultural parastatals.

1.6 Value of Study

This study adds on the body knowledge of supply chain management by focusing on the development of the practice in a developing country. Further it adds onto knowledge on the impact of supply chain management practices in the agricultural industry.

The agricultural institutions in Kenya will benefit from this study because the documentation of how the practice of supply chain is carried out in the institutions , the critique of the practice and the documentation of the challenges will offer an impetus to the institutions to devise better ways of practicing the same . The recommendation given will guide them in strengthening the practice in such organizations.

Firms in other industries will also find this study useful as the results will show how the practice of supply chain management is carried out in the agricultural sector and what practices they can borrow from the same.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter presents a review of literature on supply chain management. The chapter is organized as follows; first, a theoretical review on the theories that explain the motivation of supply chain management is made, relationship between supply chain management practices and agricultural sector and challenges of adopting supply chain management practices. Finally, a summary of the literature summarizes the chapter and provides the research gap the present study seeks to bridge.

2.2 Theoretical Review

Quite a number of theories have advanced by various scholars in their studies in supply chain management. These theories include resource based theory, knowledge based theory, strategic choice theory, institutional theory, system theory and the game theory amongst others. Some of these theories especially the cost theory, resource based view; strategic choice theory and the agency theory are presented in this study because they are relevant to the objective of the study. They explain the motivation for instituting SCM practices in the agricultural sector in Kenya.

2.2.1 Strategic Choice Theory

Strategic choice theory emphasizes the role of managers' decision in the organizational outcome (Child, 1972). He traces the origins of strategic choice theory in the works of researchers in the US (Blau, Hage and Aiken, Hal, Lawrence and Lorsh) and UK (Pugh and Woodward). This theory is concerned with decision- making in organizations for achieving the defined goals. The theory seeks to provide answers to some of the aspects of the supply chain management studies such as (ketchen and Hult,2007; direct and indirect effect of supply chain decision making on profitability and stock prices; adaptation of organizational supply chain strategies to organizational lifecycle (Miles, Snow ,Mayer and Coleman,1978); supply chain strategies that can address various organizational strategies(for example , those proposed by Miles, Snow, Meyer and Colemn(1978)(defenders, prospectors, analyzers and reactors), Porter (1980)

(differentiation, cost leadership and focus), walker, and Ruekert (1987)(prospectors, differentiated defenders and low cost defenders), and the conditions that made each of these strategies to be more effective. Ketchen and Hult (2007) considered strategic choice theory as an appropriate theory for describing 'strategic supply chain management' studies. According to these authorities, strategic choice theory focuses on best value selection, can describe; the extent to which 'best value supply chain' models can affect the organizational outcome – in comparison to 'traditional supply chain'; and the extent to which 'best value supply chain models can enact their environment- in comparison to 'traditional supply chain'.

However, unlike "externally focused approaches such as institutional theory" the strategic choice theory focuses on strategies at intra-organizational level to provide certain capabilities such as agility and adaptability (Ketchen and Hult, 2007). This theory is therefore relevant in the study of agricultural sector in Kenya as the choices the managers of agricultural institutions take on what SCM strategies to employ will impact on the performance of the SCM. Indeed, this theory highlights one of the critical practices of having strategic objective shared among the members of the supply chain. Challengingly, to what extent can this take place?

2.2.2 Resource –Based View

Resource –based theory has adequately explained the development of core competencies that can be used to design a better supply chain practices (Barney, 1991; Hamel& Prahalad; Lim Sharkey and Heinrichs, 2006), these practices, in turn improve the competitive position of a firm. The resource based view focuses on how strategic resources provide organization with competitive advantage and superior performance (Barney, 1991), resource based view is another organizational theory that is similar to transaction cost theory, is mostly concerned with economic aspects of the operations in organizations. This theory is relevant for studying firms in the agricultural industry. As it provides more insight into the understanding of value systems in the firms as it emphasizes the importance of knowledge as a production factor in the organizations Firms endowed with better factors of production and competences will perform better in

terms of SCM. More attention has been paid to the application of resources based view in organizational supply chain management during the past decade. Morash and Lynch (2002) employed resources based view in their study of global supply chain capability and performance. In another study Wu, Yeniyurt, Kim, and Cavusgil (2005) illustrated the application of resource based view in the impact of IT on organizational supply chain capabilities and performance. Gold, Sering, and Beske (2009) extended the application of the resource based view to inter-organizational relations of businesses. Furthermore, they applied this relational aspect of resource base view to "supply chain collaboration." However, this view has been criticized for failing to propose strategies for the organizations to acquire the resource required for the growth and achieving competitive advantage. Another criticism to this view is that it is mostly concerned with tangible resources. Despite this, still value added resources which are shared among the supply chain members are a key practice in most organization.

2.2.3 Transaction Cost Theory

The early studies of transaction cost theory as described in the works of Coase et al (1937) had paid little attention to the internal operation of the organization. Williamson (1975, 1981) further expanded the application of transaction cost theory by highlighting the role of transaction cost theory in promoting vertical integration and trust in the organizations. These aspects of transaction cost theory are supporting evidence for the role of supply chain management in organizations. This theory is relevant in the study of supply chain in the agricultural sector in Kenya as it explains that the firms in the agricultural sector can reduce the transaction costs associated with providing services to the farmers. Firms that have a lower transaction cost are therefore able to perform better in terms of their SCM.

Grover and Malhotra (2003) in their well cited study conduct an extensive investigation on the application of transaction cost theory in supply chain management. In their empirical study of 1000 purchasing managers, Grover and Malhotra (2003) concluded that transaction cost applies to organizational supply chain management in four facets: effort, monitor problem, and advantage. The theory applies to the effort to build and

maintain the relationship with suppliers; cost of monitoring the performance of suppliers: resolving the problems that arises in the business relationships; and engagement of suppliers in an opportunistic behavior. This is one of the key practices of an effective supply chain. However, transaction cost theory is primarily concerned with the direct economic factors in organizations and hence fall to address some important aspects of the operation of the organizational supply chain, including personal and human relations among other factors in the supply chain.

2.2.4 Agency Theory

Agency theory seeks to explain relationships between two parties, a principal, and an agent. The principal delegates to the agent his powers to represent, act on behalf, and carry out transaction with a third party. Such a relationship can creates an abuse of powers by the agents and the problems may arise due to agency inefficiency. Agency theory might help us understand under what conditions a supply chain member is likely to attempt to exploit other members.

Further, the theory could guide investigation of the effect of such opportunism on supply chain effectiveness, as well as revealing how opportunism within supply chains can be prevented or minimized. The agency theory was promoted with seminal works of Max Weber (Beckert, and Zafirovski, 2006). The classic view of agency theory- as developed by the works of max Weber *et al* was mostly concerned with the conflict between political master and state officials. This view was built on the foundation of the neoclassical view of organization-that views the organization as black boxes of operations-, where the "relationship between performance and incentives " was over looked (Beckert, and Zafirovski.,2006).

New institutionalism view of organization opened the black box of organizational operations and paved way for contemporary view of the agency theory. In the old institutionalism view, opportunistic behavior based on the rational system view was dominant. However, the new institutionalism view of the organizations, promotes the delegation of responsibilities and operation, through an open system view towards the environment. The agency theory – from the classical or neoclassical perspectives

provides contributions to the understanding of supply chain management. Agency theory has been applied to various activities associated with supply chain management including, outsourcing (Logan, 2000; Loebbecke and Huyskens, 2009,) sourcing (Shook, Adams, Ketchen and Craighead 2009), and supply chain collaboration (Kwon and Suh, 2004). Agency theory is useful in the study of SCM in the agricultural industry as it informs why firms opt to use distributors or agent to supply products.

2.3 Empirical Review

This section reviews literature on supply chain management practices as well as prior empirical studies on supply chain management practices.

2.3.1 Supply Chain Management Practices

SCM practices are viewed from a variety of different perspectives and multi-dimensional concept. Li *et al* (2005) defined SCM practices as the set of activities undertaken in an organization to promote effective management of its supply chain. Donlon (1996) described the SCM practices to include supplier partnership, outsourcing, cycle time reduction, and continuous process flow and information technology sharing. Tan et al (1998) empirically assessed the inclusion of purchasing, quality, and customer relations dimensions to represent SCM practices. Kotzab and Schnedlit (1999) defined SCM practices as a special form of strategic partnership between retailers and suppliers .Tan (2002) also recommended that SCM practices include the flow of materials and information and postponement strategy and mass customization.

Sahay and Mohan (2003) proposed that Supply chain management practices be measured in four dimensions, and they are; alignment between supply chain strategies with business strategies, supply chain integration, partnerships, and information technologies. Min and Mentzer (2004) identified supply chain management practices as a greed vision and goals, information sharing, risks and awards sharing, cooperation, integration of process, long term relationship, and agreed supply chain leadership. Burgess *et al* (2006) stated that supply chain management practices should include leadership, intra-organizational relationships, inter-organizational relationship, logistics, process improvement

orientation, business result s and outcome and IT. Chong *et al* (2009) studied IT collaboration tools and supplier relationships in their study on supply chain practices.

Another concept which has gained attention and extended the supply chain management practices mentioned above is demand chain management (DCM). DCM is defined by Selen and Soliman (2002) as a " set of practices aimed at managing and coordinating the whole demand chain, starting from the end customer needs and links customer and suppliers together into a tightly integrated networks (Frohlick and westbrook,2002). As Hoover et al (2001) stated having competitive products and the right supply chain for the average customer is not enough in the current business environment. The supply chain has to be right for the customer as well. Customer relationships combining with a firm's operation and customers' operation, makes up a demand –supply chain.

Based on the literature above, SCM practices are portrayed from different perspective with a common aim of improving organizational performance. In reviewing and consolidating the literature mentioned, six dimension of supply chain practices emerge, namely strategic supplier partnership, customer relationship, information sharing, IT, training and internal operations (Petrovic-Lazarevic, 2007, Koh *et al* 2007,Li *et al* 2005, Perry and Sohal, 2002) . Although the dimensions included in this capture the major aspects of SCM practices, they cannot be considered as complete. Other factors identified in the literature (supply chain leadership, geographical proximity and supply chain benchmarking) are not included in this research due to the length of survey, and concerns regarding the parsimony of measurement instrument (Li *et al*, 2006).

A strategic supplier partnership is defined as a long – term relationship between the organization and its supplier (Li *et al*, 2005). Companies such as IBM, Toyota, Cisco, and Hewlet Packard have worked closely with their suppliers and moved from "arm's length" relations to "durable arm's length" relations and strategic partnerships (Chong et *al*, 2009). The strategic partnership could involve joint product development and sharing of product demand forecasts. Adopting early supplier involvement, operational activities, such as product development projects, can offer more cost effective design choices, and select best available components and technologies, resulting in smoother production,

improved product quality, and reduction in led time (Tan et al. 2002). Through strategic supplier partnerships, organizations can work closely with suppliers who can share responsibility for the success of the products (Li *et al*, 2005). Such strategic supplier partnerships should enable successful SCM.

Customer relationship management (CRM) is an important component of SCM (Tan et al, 1999) and involves building and maintaining long term relationships with customers (Li *et al*, 2005). Stalk and Hout (1990) stated that maintaining a good customer relationship will enable organizations to be more responsive to customer's needs, thus creating greater customer loyalty, repeat purchase, and willingness to pay premium prices for higher quality products. Customer loyalty and customer satisfaction are the main goal of SCM.

The success of a company's supply chain management depends on the accuracy and speed of the information provided by each business partner (Chong *et al* ,2009) Li *et al* (2006) defined information sharing in the supply chain as the extent to which vital and proprietary information is communicated to the company's supply chain partner. Wal-Mart is an example of successful information sharing practices whereby it s share online summaries of point of sale s data to its close supplier such as Johnson and Johnson and Lever Brothers (Lee *et al* , 2000).

A successful sharing of useful information between the supply chain partners can result in a reduction of inventory and manufacturing cost, better understanding of customer needs and faster response to market changes (Petrovic-Lazarevic.., 2007) .The primary goal of IT in the supply chain is to link the point of production seamlessly with the point of delivery or purchase. The idea is to have information trail that follows the product's physical trail. This allows planning, tracking and estimating lead times based on real data. The data should be accessible in the system from a single point of contact. Managers analyze, plan activities and make decisions based on information from the entire supply chain. Clear communications and quick responses to those communications, are key elements of successful SCM. Information technology (IT) in SCM, such as Electronic Data interchange (EDI), ERP, and customer relation management (CRM)

systems can improve supply chain performance and enable great opportunities, ranging from direct operational benefits to the creation of strategic advantage. A common view is that IT has a profound impact on managing supply chains. Examples of IT in supply chains are providing accurate information and helping supply chain members to share information in real time, improving planning and control of operations for the organizations as well as indirectly increasing customer satisfaction (Spathis and Constantinides, 2004).

Technologies of the internet and the web can enhance effective communication. Software that uses the internet can help members of the supply chain review past performance, monitor current performance and predict when and how much of certain products needs to be produced, however, although IT is an enabler and integrator of SCM, organizations need performance measurements and key practices in place to have an effective system . That as an IT solution for SCM is only as good as the business foundation on which it is built (Kolbusak-McGee, 1998).

2.3.2 Supply Chain Management Practices and Performance in Parastatals in the Agricultural Sector

A framework which identified the relationships between supply chain management practices was empirically tested by Chong et al (2011) operational performance and innovation performance of Malaysian manufacturing and service firms. Data for the study were collected from a sample of 163 Malaysian manufacturing and service firms. The research model was tested using structural equation modeling. The results showed that SCM practices of both the upstream and downstream supply chain have a direct and significant impact on organizational and innovation performance of Malaysian firms. Innovation improvement caused by SCM also resulted in better organizational performance. The findings also revealed that manufacturing and service firms in Malaysian did not have a significant difference in their SCM practices.

Erol *et al* (2010) examined the current state of reverse supply chain management (RSCM) initiative in several Turkish industries. This study was based on an exploratory research regarding RSCM activities of Turkish automotive, white goods electric/electronics, and

furniture industries. The sample consisted of all companies included in the Top 500 industrial enterprises list of the Assembly of the Istanbul Chamber of industry (ISO). The research findings showed that the RSCM initiative in the considered industries were still in a very early stage. Companies' involvement in product returns were mostly due to the legislative liabilities, and system inadequacies wee emphasized as the most important reason for not being able to implement an efficient RSCM.

Wong *et al* (2005) sought to explore SCM practices, and identity practical and theoretical gaps in toy supply chains. This study included a longitudinal and in-depth case study during the past year in an international toy manufacturer, which included qualitative semi- structured interview s and questionnaire with 11 main European toy retailers. The study concluded that there are three main SCM practices for toy retailers in terms of ordering behavior (one –off, JIT , and mixed model), and one dominated SCM practice for toy manufacturers (traditional mass- production or push models). These low responsive practices in the toy supply chain are not caused only by slow knowledge diffusion. SCM know- how is not yet capable of managing such levels of volatility and seasonality. Therefore, explanations of these theoretical gaps and what new theories are required for such extreme volatility and seasonality are exposed.

Awino and Gituro (2009) focused on SCM best practices in large private manufacturing firms in Kenya. They made use of Kaiser Mayer-Olkin (KMO) and Bartlett's Test. A Sample size of 52 large private manufacturing companies, which are the members of Kenya manufacturing Association. To establish SCM best practices, 39 variables were used. The variables were analyzed using factor analysis approach to achieve a simple and meaningful structure. as a result 11 critical factor were established as the best practices: operating policies, linkages within supply chain firms, improved performance ,information technology systems, strategic alliance, performance measures, goal orientation, customer relationship, guideline and procedures, supplier selection and supplier evaluation. When benchmarked, they were found to be universally and practiced globally.

Tracey *et al* (2005) empirically tested the impact of supply chain management capabilities on business performances so as to determine to what degree customer-oriented SCM issues influence competitive position and organizational performance . A rigorous methodology was employed to generate a reliable and valid measurement instrument. Responses from 474 manufacturing managers were utilized to test a causal model using LISREL. The results indicated significant positive relationships exist among three types of SCM capabilities (outside-in, inside –out, and spanning) and business performance (perceived customer value, customer loyalty, market performance, and financial performance)

Kim (2006) examined the causal linkages among supply chain management (SCM) practice, competition capability, the level of supply chain integration, and firm performance. from the results of LISREL analysis on small and large manufacturing firms', the study found that , in small firms efficient SC integration may play a more critical role for sustainable performance improvement , while , in large firms , the close interrelationship between the level of SCM practices and competition capability may have more significant effect on performance improvement . The study concluded that, in early stage the emphasis on system SC integration may be more critical. Once SC integration has been implemented, it may be advisable to focus on SCM practice and competition capability.

Koh *et al* (2007) reported the relationship of the SCM practices of 203 manufacturing small enterprise (SME) categorized into outsourcing and multi-supplier strategy and strategic collaboration/lean practices. Their study revealed a direct impact of these SCM practices on operational performance (e.g., flexibility, reduced production lead time, forecasting, resource planning, cost savings, and reduced inventory level). However, their study was not able to support the impact of SCM practices on organizational performance (e.g., increase in sales; accurate costing; and increase in department, supplier, and customer coordination).This study was conducted to enrich the literature on the measures of supply chain performance in terms of efficiency and effectiveness of the supply chains. The study only focused on smaller manufacturing enterprises and the findings might not

be applicable to conglomerates. Moreover it was done only ones and each year is always unique with the business environment remaining dynamic. This study will provide practitioners with insights on how such measures can be effectively utilized.

2.3.3 Challenges Faced in Adoption of SCM Practices.

Effective SCM hinges more on an understanding of the business processes that must work together. Usually, SCM projects are complex and required outlays of time and money are great (McCormick, 2001).He also noted that large companies are conglomerations of business units and acquisitions across the globe. It may take a longer time to integrate the supply chain of such companies. It is necessary to know how people work together and what kind of information will be exchanged in order to determine which technologies can support these exchanges and the best way to connect them. McCormick speaks of the "Tower of Babel" where every customer uses a different system or standard. Mid-tier companies often lack the resources for requisite technology systems. One must not overlook the human issues; workers may over-inflate forecast or misinterpret inventory information. In addition, one of the first areas to be cut in a budget is SCM (McCormick, 2001).

One of the primary challenges to successful to integration of the SC is securing a reliable internal operation capability. An organization's internal operation is the critical cornerstone in creating superior supply chain performance before embarking on external coordination. To gain competitive advantage over rapid change, internal processes must be flexible in responding to market changes. With SCM a product is pulled through the plant based on customer needs. This requires the flexibility of frequent changes to accommodate mass customization and thus improve customer responsiveness (Lambert and Cooper, 2002). Perry and Sohal (2002) stated that quality and reliability of internal operations in companies will improve operational efficiency and enhance operation performance.

2.4 Chapter Summary

A number of theories have been shown in the literature reviews that have guided the prior studies. The chapter also captured the practices of supply chain management as well

the prior empirical studies done sectorally. The closest study in the cement industry is the one by Onyango (2011) which focused on establishing the SCM best practices in the cement industry in Kenya. The present Papers differs from the former because the later only focused on the parastatals in the Agricultural sector as not the practices in the cement industry can be deemed best practices in for the parastatals in the agricultural sector, secondly ,while the former study employed the factor analysis method ,the present study builds on the same by focusing on the practices relevant in the agricultural sector.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the method that was used to carry out the study. It contains research design used in the study, the target population, data collection and analysis methods and tools.

3.2 Research Design

The study used a descriptive survey design. According to Umasekaram (2003), a descriptive study is undertaken in order to ascertain and be able to describe the characteristics of the variables of interest. Some empirical studies have employed the use of descriptive design in survey studies. Wairegi (2009) used descriptive design in a survey of influence of competitive strategies on performance of oil firms in Kenya, while Wamori (2009) used the design to study survey of pricing studies adopted by manufacturers of fast moving consumers in Mombasa district and its environment. This study aimed at determining supply chain management practices used by agricultural parastatals in Kenya and challenges firms face in adopting the practices.

3.3 Target Population

Hair (2003) defines target population as an identifiable total group or aggregation of elements (people) that are of interest to the researcher and pertinent to the specified information problem. This includes defining the population from which the sample is drawn. the study was limited to the parastatals of the agricultural sector that deals with the primary products from farmers in Kenya .The target population of the study was limited to supply chain managers, procurement managers, logistic managers and finance manager working in the firms, as the study was based on the assumption, the officers had the past and present knowledge of the supply chain management practices and thus were best placed to offer valuable information to the study. According to (Gok, 2008) there are 35 agricultural parastatals in Kenya this study will therefore target all the agricultural parastals in Kenya.

3.4 Sampling Procedure and Sample Size

According to Singleton (1988) sampling design is that part of the research plan that indicates how case are to be selected for observation. The concept of sampling involves taking a fraction of the population, making observations in, this smaller group and then generalizing the findings to the larger population.

The study used simple stratified random sampling technique to identify respondents from each of the organizations targeted by the study, according to Mugenda (2003) a researcher randomly picks the subjects to participate in the study. The subject of this study was limited to supply chain managers, procurement managers, logistic managers and finance manager working in the firm. Therefore the researcher will randomly pick one respondent from each organization from among supply chain, procurement, logistics or finance from all the 35 agricultural parastatals in Kenya making a sample size of 35 respondents.

3.5 Methods of Data collection

Both primary and secondary were collected. Primary data involved first hand information from the representative sample. Primary data was collected using a semi-structured questionnaire from the managers (procurement, manufacturing, and logistics). The questionnaire was divided into three parts, part one contained aspect of the bio data of the parastatals, part 2 contained question on supply chain practices adopted by parastatals in the agricultural sector in Kenya, and part 3 contained questions on challenges that influenced the adoption of SCM practices. A pilot survey was carried out to pre test the validity and credibility of the questionnaire. This was done by administering the questions to three people who were not to be part of the sample population. The questionnaire was then adjusted accordingly for consistency, clarity, and relevance. The questionnaires were sent through the postal addresses, email addresses for the organizations that could not be reached easily. The easily reachable ones, the questionnaire were dropped and picked after a week.

3.6 Data Analysis

After collection of data it was checked for completeness, coded, and entered. The data entered were verified to get rid of any errors before the final analysis was done. Part 2, 3 of the questionnaire was analyzed using factor analysis in order to reduce the factors to only significant ones. This was also to help in testing the validity of measures used in the study.

The demographic data was analyzed using descriptive statistics especially the frequencies and percentages. In order to determine the extent to which firms in the agricultural sector practice SCM, an analysis of questions relating to this section was done using mean scores and standard deviations charts were also used to present the findings where necessary.

The study also used inferential statistics to establish the supply chain management practices of the agricultural sector parastatals; this entailed: factor analysis, coefficient of determination, regression analysis and regression coefficient. The variables were regressed using multiple regression models as shown below and inferential statistics involved use of correlation, analysis of variance (ANOVA). Correlation and regression analysis was run with a scm practices as the independent variable and performance as the dependent variable.

VC = **β0**+ supply chain operations + **β2** supply chain collaborations + **β3** coordination mechanisms + **ε**

Where **β0** is the regression model constant, **β1- β4** are model coefficients and **ε** is the model significance (error margin to be obtained from the F test significance from ANOVA.

The regression was performed to fulfill objective 2, the impact of SCM practices on performance. The results were interpreted based on the r^2, adjusted r^2, and significance of F statistics and the significance of the coefficient of SCM. This whole analysis was aided by statistical package for social sciences (SPSS). The generated quantitative reports were be presented through tabulations, percentages and measures of central tendency while

qualitative were presented in prose. The results of the study were compared with literature review to establish the supply chain management practices used in agricultural sector in Kenya.

CHAPTER FOUR: DATA ANALYSIS, FINDINGS AND DISCUSSIONS

4.1 Introduction

The objectives of the study were to establish the supply chain management practices in the parastatals of the agricultural sector, to determine the relationship between supply chain management practices and agricultural parastatals performance and to determine the challenges of implementing SCM practices in agricultural parastatals, data was coded and analyzed using SPSS, Graphs, pie charts and tables were used to present the data, this chapter thus presents the findings and discussions.

4.2 General Information

The target population to the study was the Managers from finance, logistics and procurement departments from the 35 parastatals in the agricultural sector, out of the 35 Managers targeted 25 (71%) of them Managed to successfully fill and return the question, 10 (29%) of the Managers did not return the questionnaires. This response rate of above 70% is recommended to get a credible data. This can be a representation of the entire target population.

The study sought to establish the length of time that the respondents have been in the organization; from the findings Majority 14 (56%) of the Managers have been in the organization for a period of over five years. 8 (32%) of them had been in the organization for a period of between 1-2 years of service. And 3 (12%) of the Managers have been in the Organization for a period of 3-5 years. This implies that majority of the Managers in the sampled parastatals have stayed in their respective organizations for over 10 years as indicated by the respondents.

The study aimed at inquiring from the respondents about the number of employees that their respective parastatals companies had; from the findings; Majority of the respondents 16 (64%) indicated that their companies had employees of between (120-249), 4 (16%) of

the respondents reported that their companies had employees of between (250-499), 3 (12%) of the Manager respondents reported that their respective companies had between 1-99 employees while 2 (8%) of the Manager respondents reported that their companies had over 500 employees. The findings imply that Majority of the parastatals in the agricultural sector have employees of between 120 to 249 as reported by the majority of the Managers.

The researcher sought to ascertain from the respondents on the average length of time that they had with the suppliers; from the findings Majority of the respondents 8 (32%) reported that they have had contract length of less than 2 years, equally 8 (32%) of the respondents reported that their company have had a contract length of more than 5 years as indicated by the findings. 6 (24%) of the respondents reported that their companies have had 1 year contract with their suppliers as indicated by the findings, Consecutively 3 (12%) of the reported that their respective companies have had less than 4 years of contract with their suppliers. By implication, majority of the companies in the agricultural sector have had contract length with their suppliers for over 5 years as indicated by the findings of the study.

The researcher sought to find out from the respondents the number of suppliers that their respective companies had an operation with on a daily basis; from the findings, Majority of the respondents 9 (36%) reported that their respective companies operates with 1-10 supplies on a daily basis, 7 (28%) of the respondents reported that their respective companies had a daily operation with 31-50 suppliers, 6 (24%) of the respondents reported that their respective companies operates with 11-30 suppliers while only 3 (12%) of the respondents reported that their companies operated on a daily basis with more than 50 suppliers. By implication most of the parastatals in the agricultural sector based in Kenya operates with at least one to ten suppliers on a daily basis as confirmed with findings from the respondents.

The study intended to investigate from the respondents whether their companies have experienced changes in the number of suppliers for the last three years; from the findings, Majority of the respondents16 (64%) reported that there has been an increase in the

number of suppliers for the past years, 6 (24%) of the respondents reported that the number of suppliers in their respective companies have remained the same without any increase, while 3 (12%) of the respondents reported that the number of suppliers in their respective companies have decreased in the past three years. By implication most of the parastatals in the agricultural department have experienced increase in the number of suppliers as shown by the findings from the respondents; this can be attributed to the supply management practices which have been adopted by those companies in their operations.

4.3 Supply Chain Management Practices

Part two of the interview schedule inquired from the respondents the adoption of supply chain management practices by the parastatals in the agricultural sector, objective one of the study was to establish the supply chain management practices in the parastatals this section thus will answer the research question; what are the supply chain management practices in the parastatals in the agricultural sector? The researcher intended to establish from the respondents the adoption of the supply chain practices in their respective organizations;

Table 4.1 Supply Chain Practices

	Mean	Std.Dev
A written agreement or contract is an integral part of all alliance	4.54	0.097
Adequate information systems linkages exist with customers	4.55	0.088
Clear guidelines and procedures used for monitoring alliances	4.53	0.633
Customer relationship are evaluated on the basis of their profitability	4.52	0.633
My firm is aggressively seeks to understand customer requirements	4.29	0.458
Operating goals are consistent among supply chain members	4.29	0.458
Our firm is more loyal to it employees than 3 years ago	4.27	0.466
Customer alliances operate under principles of shared rewards and risks	4.26	0.466
Overall strategies in SCM have improved over past 3 years	4.26	0.466
Information integrated within the firm	4.17	0.453
My firm is flexible in terms of accommodating customer's	4.17	0.453

special request		
Supplier alliances operates under principles of shared rewards and risk	4.17	0.453
More process- oriented performance measure s tracked today than 3 years ago	4.13	0.337
Strategic objectives are closely aligned among members of the supply chain	4.13	0.363
Current information system satisfy supply chain communication requirement	3.79	0.458
Adequate information systems linkages exist with suppliers	3.68	0.458
Clear guidelines and procedures used for creating alliances	3.56	0.466
Employers are more loyal to our organization today than 3 years ago	3.29	0.458
Information systems are highly integrated throughout the SC	3.29	0.458
Supplier performance is closely monitored and is the basis for future business	3.29	0.458
My firm customizes products and /services for important customers.	3.26	0.466
My firm understands the competitive throughout the supply chain	3.26	0.466
Effort of increase inter functional coordination over the past 3 years ago	3.17	0.453
Overall supply chain core capabilities have improved over 3 years	3.13	0.383
Consistent performance measures are used across different functions	2.57	0.453
High level of trust have been established with important customers	2.53	0.433
My firm regularly solicit customer input	2.29	0.458
Significant investments are made in application-specific information systems	2.29	0.458
Middle managers are empowered to make operation decision than 3 years ago	2.26	0.466
Significant investment are made in enterprise –wide information system	2.26	0.466
Supplier are carefully screened and assessed before they are selected	2.26	0.466
More supply chain performance measures are tracked today than 3 years ago.	2.17	0.453
supply chain core competencies improved over past 3 years	2.17	0.453
Value –added resources are shared among SC members	2.17	0.453
adopted a key account approach for managing its best customers	2.13	0.338
Non-management employees are more empowered to make operating decisions	2.13	0.373
The internet is emerging as key tool to manage customers and supply linkages	2.13	0.333

Results of the findings suggests that most of the respondents reported that their respective companies has adopted a written agreement or contract as an integral part of all alliances to a very large extent as shown by a mean score of 4.54, respondents also reported that adequate information systems linkages exists with customers, that clear guidelines and procedures are used for monitoring alliances, that customer relationship are evaluated on the basis of their profitability to a very large extent in their respective companies as shown by a mean score of 4.55, 4.53 and 4.52 respectively.

Other respondents reported that adequate information systems linkages exist with the suppliers in their respective companies to a large extent as shown by a mean score of 3.59, respondents also reported that clear guidelines and procedures are used for creating alliances, that current information systems satisfy supply chain communication requirement, that customer alliances operate under principles of shared rewards and risks and that their respective firms is more loyal to its employees than 3 years ago to a large extent as shown by a mean score of 3.56,3.79, 4.26 and 4.27 respectively.

Also respondents reported that employers are more loyal to their respective organizations today than 3 years ago to a moderate extent as indicated by a men score of 3.29, consequently they too reported that there has been efforts to increase inter functional coordination over the past 3 years, that consistent performance measures are used across different functions, that a common set of operating policies are shared by members of the SC and that high level of trust have been established with important customers to a moderate extent in their respective organizations as indicated by a mean score of 3.17, 2.57,2.53 and 2.54 in each case.

A few of the respondents also reported that Middle managers are empowered to make operation decisions than three years ago to a least extent in their respective organizations as shown by a mean score of 2.26, also others reported that more supply chain performance measures are tracked today than three years ago, that their firms have adopted a key account approach for managing its best customers, that firms solicit

customer input and that non-management employees are more empowered to make operating decisions to a least extent as shown by a mean score of 2.26, 2.17, 2.13 and 2.29 respectively.

4.4 Strategic Partnership with the Suppliers

This section of the interview guide inquired of the respondents on the status of strategic partnership with the suppliers the descriptive statistics of the responses based on the scale is presented in this section;

Table 4.2 Strategic Partnership with the Suppliers

	Mean	Std. Dev
Improving your firm's responsibility	**4.54**	**0.987**
Improving the quality of the products/services	**3.56**	**0.342**
Reducing inventory levels	**2.93**	**0.675**
Improving co-operation and communication	**2.70**	**0.453**

Results of the findings indicates that strategic partnership with the suppliers was most successful in improving firms responsibility as shown by a mean score of 4.54, Others respondents indicated that strategic partnership with suppliers was more successful in improving the quality of the products/services as indicated by a mean score of 3.56 consequently strategic partnership with the suppliers was successful in improving co-operation and communication and in reducing inventory levels as shown by a mean score of 2.70 and 2.93 respectively. By implication most of the parastatals have been considerably successful in most aspects of corporate partnership with their suppliers.

4.5 Management of Supply Chain

This section of the interview guide required of the respondents on how they managed their supply chain, the researcher ascertained this through various aspects of supply chain;

Table 4.3 Management of supply chain

	frequency		percentage	
	YES	NO	YES	NO
Close partnership with suppliers	14	11	56%	44%
Close partnership with customers	16	9	64%	36%
JIT supply	12	13	48%	52%
e- Procurement	16	9	64%	36%
EDI	18	7	72%	28%
Outsourcing	19	6	76%	24%
Subcontracting	20	5	80%	20%
3PL	17	8	68%	32%
Plan strategically	12	13	48%	52%
Supply chain Benchmarking	11	14	44%	56%
Vertical integration	9	16	36%	64%
Few suppliers	18	7	72%	28%
Many suppliers	20	5	80%	20%
Holding safety stock	18	7	72%	28%
Use of external consultants	19	6	76%	24%

Results of the findings indicates that most of the respondents reported that presence of many suppliers and subcontracting are among the best aspect of supply chain management that are working for their respective organizations as indicated by 80% (20) of the respondents in each case. Consequently use of external consultants and outsourcing were also among the best aspects of supply chain management that are working for their respective companies as indicated by 19 (76%) of the respondents respectively. Other respondents indicated that holding safety stock, presence of few suppliers and the use of EDI were among other practices adopted by the parastatals in managing the supply chain as indicated by 7 (72%) of the respondents. Vertical integrations was least adopted by many parastatals as shown by 9 (36%) of the respondents indicating that their companies adopted such aspects in the supply chain management.

4.6 Outcome of Supply Chain Management

This section of the interview guide inquired from the respondents on the outcome of the supply chain management in their respective companies, the researcher accomplished by ascertaining whether it has been somewhat successful, not successful or not successful at

all; the results indicates that majority of the parastatals have been somewhat successful in the supply chain management as shown by most of the respondents 17 (68%), other respondents reported that supply chain management have not been successful in their organizations as shown by 6 (24%) of the respondents while few of the respondents also reported that supply chain management have not been successful at all as reported by 2 (8%) of the respondents (refer to table 4.4)

Table 4.4 Outcome of Supply Chain Management

	frequency	**Percentage %**
Somewhat successful	17	68
Not been successful	6	24
Not successful at all	2	8
TOTAL	**25**	**100%**

The researcher also inquired from the respondents whether their companies have a separate logistic department; the result indicated that most of the parastatals have a separate logistics department as indicated by 19 (76%) of the respondents, consequently the researcher inquired from the respondents whether their respective companies had a clear logistic plan; the results indicates that most of the parastatals have a clear logistic strategic plan as it was reported by 18 (72%) of the respondents.

4.7 Challenges of Adopting SCM Practices

Part 3 of the interview schedule inquired from the respondents on the challenges of adopting SCM practices. The researcher attempted to answer the research question; what are the challenges of adopting the supply management practices?

Table 4.5 Challenges of adopting SCM practices

	Mean	**Std.Dev**
A written agreement or contract is an integral part of all alliance	4.54	0.097
Adequate information systems linkages exist with customers	4.55	0.088
Clear guidelines and procedures used for monitoring alliances	4.53	0.633
Customer relationship are evaluated on the basis of their profitability	4.52	0.633
My firm is aggressively seeks to understand customer	4.29	0.458

requirements		
Operating goals are consistent among supply chain members	4.29	0.458
Our firm is more loyal to it employees than 3 years ago	4.27	0.466
Customer alliances operate under principles of shared rewards and risks	4.26	0.466
Overall strategies in SCM have improved over past 3 years	4.26	0.466
Information integrated within the firm	4.17	0.453
My firm is flexible in terms of accommodating customer's special request	4.17	0.453
Supplier alliances operates under principles of shared rewards and risk	4.17	0.453
More process- oriented performance measure s tracked today than 3 years ago	4.13	0.337
Strategic objectives are closely aligned among members of the supply chain	4.13	0.363
Current information system satisfy supply chain communication requirement	3.79	0.458
Adequate information systems linkages exist with suppliers	3.59	0.458
Clear guidelines and procedures used for creating alliances	3.56	0.466
Employers are more loyal to our organization today than 3 year s ago	3.29	0.458
Information systems are highly integrated throughout the SC	3.29	0.458
Supplier performance is closely monitored and is the basis for future business	3.29	0.458
My firm customizes products and /services for important customers.	3.26	0.466
My firm understands the competitive throughout the supply chain	3.26	0.466
Effort of increase inter functional coordination over the past 3 years ago	3.17	0.453
Overall supply chain core capabilities have improved over 3 years	3.13	0.383
Consistent performance measures are used across different functions	2.57	0.453
High level of trust have been established with important customers	2.53	0.433
My firm regularly solicit customer input	2.29	0.458
Significant investments are made in application-specific information systems	2.29	0.458
Middle managers are empowered to make operation decision than 3 years ago	2.26	0.466
Significant investment are made in enterprise –wide information system	2.26	0.466
Supplier are carefully screened and assessed before they are selected	2.26	0.466
More supply chain performance measures are tracked today than 3 years ago.	2.17	0.453
Overall supply chain core competencies have improved over past	2.17	0.453

3 years		
Value –added resources are shared among SC members	2.17	0.453
My firm has adopted a key a key account approach for managing its best customers	2.13	0.338
Non-management employees are more empowered to make operating decisions	2.13	0.373
The internet is emerging as key tool to manage customers and supply linkages	2.13	0.333

Results of the findings suggests that poor sales operations affects supply chain management in many of the parastatals as suggested by most of the respondents who strongly agreed to this, this was shown by a mean score of 4.56, also customer geographical distance, poor visibility of demand and lack of leverage within the organization of the supply chain were identified by the respondents as some of the factors that greatly affected supply chain management this was shown by a mean score of 4.52, 4.55 and 4.56 respectively.

Consequently ethical responsibility problems in the supply chain, was agreed by the respondents as a factor that affected the adoption of supply chain management (SCM) this was shown by a mean score of 3.56. On the same note lack of interest amongst the supply chain members, lack of management support, major customer pressures, complexities and short product life cycles were a among the challenges that many parastatals faced these were shown by a mean score of 3.78, 3.56, 3.78 and 3.65

However lack of adequate resources to implement supply chain initiatives sufficiently, inadequate supply chain performance measures, completion from other supply chains and short product life cycles were among the factors that respondents were not sure of their implications to the respective organizations this was shown by a mean score of 2.89, 2.56 and 2.67 respectively.

A few of the respondents reported that lack of supply chain management knowledge, supplier geographical distance, dealing with counterfeit goods, supply chain disruptions and political/government influence were some of the factors that did not affect the supply chain management practices in the parastatals as indicated by a mean score of 1.66, 2.45,

2.34, 2.23 and 2.45 respectively. Respondents equally argued that there were no major challenges that affected supply chain management this was indicated by 23 (92%) of the respondents.

4.8 Inferential Statistics

4.8.1 Regression Analysis

In this study a multiple linear regression model was implemented to identify the relationship between the three factor models as independent variables and the dependent variable which is the performance of the parastatals. The researcher applied the statistical package for social sciences (SPSS) to code, enter and compute the measurements of the multiple regressions for the study.

Table 4. 6: Model Summary

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate
1	.760[a]	.577	.559	5.69097

The R column represents the value of *R*, the multiple correlation coefficient. R is considered to be one measure of the quality of the prediction of the dependent variable; Performance of the parastatals in the agricultural sector. A value of 0.760, in this case, indicates a good level of prediction. The 'R square' column represents the R^2 (also called the coefficient of determination), which is the proportion of variance in the dependent variable that can be explained by the independent variables (technically, it is the proportion of variation accounted for by the regression model above and beyond the mean model). In this case avalue 0.577 means that the three model independent variables

explain 57.7% of the variability of our dependent variable, Performance of the parastatals in the agricultural sector.

4.8.2 Analysis of Variance (ANOVA)

The F-ratio in the **ANOVA** table 4.10 tests whether the overall regression model is a good fit for the data. The table shows that the independent variables statistically significantly predict the dependent variable, $F(4, 95) = 32.393$, $p < .0005$ (i.e., the regression model is a good fit of the data).

Table 4.7: Analysis of Variance (ANOVA)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4196.483	3	1049.121	32.393	.001
	Residual	186.555	21	32.387		
	Total	198.089	24			

According to Mugenda and Mugenda (2003), ANOVA is a data analysis procedure that is used to determine whether there are significant differences between two or more groups or samples at a selected probability level. `An independent variable is said to be a significant predictor of the dependent variable if the absolute t-value of the regression coefficient associated with that independent variable is greater than the absolute critical t-value. The regression analysis also yields an F-statistic where if the calculated F-value is greater than the critical or tabled F-value, the prediction will be rejected. In this study, the significance value is .0001 which is less that 0.5 thus the model is statistically significant in predicting supply chain operations, supply chain collaborations and coordination mechanisms.

Table 4.8: Coefficient of determination

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	87.830	6.385		13.756	.000
Supply chain operation	.165	.063	.176	2.633	.010
Supply chain collaboration	.385	.043	.677	8.877	.001
Coordination mechanisms	.118	.032	.252	3.667	.002

The general form of the equation to predict performance of parastatals in agricultural sector in Kenya, from supply chain operations, supply chain collaborations and coordination mechanism is: predicted performance of parastatals of the agricultural sector = 87.83 + (0.165 supply chain operations) + (0.385 supply chain collaborations) + (0.118 coordination mechanisms) Unstandardized coefficients indicate how much the dependent variable varies with an independent variable, when all other independent variables are held constant. The unstandardized coefficient, B_1, for supply chain operations is equal to 0.165. This means that for an increase in staff competency, there is an increase in performance of parastatals of 0.165.

4.9 Discussions of The Findings

Poor sales operations affects supply chain management in many of the parastatals as suggested by Most of the respondents who strongly agreed to this, also customer

geographical distance, poor visibility of demand and lack of leverage within the organization of the supply chain were identified by the respondents as some of the factors that greatly affected supply chain management. This was also confirmed by Koh and Zaim (2010). The results also supported the findings of Chong et al (2011) on the Malaysian manufacturing and services firms on performance.

Most of the parastals of the agricultural sector have adopted a written agreement or contract as an integral part of all alliances to a very large extent, that adequate information systems linkages exists with customers, that clear guidelines and procedures are used for monitoring alliances and that customer relationship are evaluated on the basis of their profitability. The study also revealed that employers are more loyal to their respective organizations today than 3 years ago, consequently there has been efforts to increase inter functional coordination over the past 3 years, equally consistent performance measures are used across different functions, a common set of operating policies are shared by members of the SC and that high level of trust have been established with important customers in their respective organizations. Tracey et al (2005) indicated positive relationships exist between SCM practices and firm's performance.

Strategic partnership with the suppliers was most successful in improving firms' responsibility likewise strategic partnership with suppliers was more successful in improving the quality of the products/services, consequently strategic partnership with the suppliers was successful in improving co-operation and communication and in reducing inventory levels. Therefore most of the parastatals have been considerably successful in most aspects of corporate partnership with their suppliers, from the literature review Tracey et al (2005) supports the importance of strategic partnership.

Presence of many suppliers and subcontracting are among the best aspect of supply chain management that are working for the respective organizations Consequently use of external consultants and outsourcing were also among the best aspects of supply chain management that are working for the respective companies, holding safety stock, presence of few suppliers and the use of EDI were among other practices adopted by the

parastatals in managing the supply chain. Vertical integrations was least adopted by many parastatals in agricultural sector.

The study also revealed that ethical responsibility problems in the supply chain affected the adoption of supply chain management (SCM). On the same note lack of interest amongst the supply chain members, lack of management support, major customer pressures, complexities and short product life cycles were a among other challenges that many parastatals faced.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENATIONS

5.1 Introduction

The chapter provides the summary of the findings from chapter four, and it also gives the conclusions and recommendations of the study based on the objectives of the study. The objectives of this study were to establish the supply chain management practices in the parastatals of the agricultural sector, to determine the relationship between supply chain management practices and agricultural parastatals performance and to determine the challenges of implementing SCM practices in agricultural parastatals.

5.2 Summary of the Findings

On supply chain management practices in the parastatals the study revealed that most of the parastals of the agricultural sector have adopted a written agreement or contract as an integral part of all alliances to a very large extent, that adequate information systems linkages exists with customers, that clear guidelines and procedures are used for monitoring alliances and that customer relationship are evaluated on the basis of their profitability. The study also revealed that employers are more loyal to their respective organizations today than 3 years ago, consequently there has been efforts to increase inter functional coordination over the past 3 years, equally consistent performance measures are used across different functions, a common set of operating policies are shared by members of the SC and that high level of trust have been established with important customers in their respective organizations.

The study also revealed that strategic partnership with the suppliers was most successful in improving firms' responsibility likewise strategic partnership with suppliers was more successful in improving the quality of the products/services, consequently strategic partnership with the suppliers was successful in improving co-operation and communication and in reducing inventory levels. Therefore most of the parastatals have

been considerably successful in most aspects of corporate partnership with their suppliers.

The study also reveals that presence of many suppliers and subcontracting are among the best aspect of supply chain management that are working for the respective organizations Consequently use of external consultants and outsourcing were also among the best aspects of supply chain management that are working for the respective companies, holding safety stock, presence of few suppliers and the use of EDI were among other practices adopted by the parastatals in managing the supply chain. Vertical integrations was least adopted by many parastatals in agricultural sector.

On challenges of adopting the SCM, findings suggests that poor sales operations affects supply chain management in many of the parastatals, also customer geographical distance, poor visibility of demand and lack of leverage within the organization of the supply chain were identified by the respondents as some of the factors that greatly affected supply chain management in the parastatals in agricultural sector. The study also revealed that ethical responsibility problems in the supply chain affected the adoption of supply chain management (SCM). On the same note lack of interest amongst the supply chain members, lack of management support, major customer pressures, complexities and short product life cycles were a among other challenges that many parastatals faced.

5.3 Conclusions

Based on the findings of the study as summarized above the study concludes that most of the parastals of the agricultural sector have adopted a written agreement or contract as an integral part of all alliances to a very large extent, that adequate information systems linkages exists with customers, that clear guidelines and procedures are used for monitoring alliances and that customer relationship are evaluated on the basis of their profitability.

The study also concludes that strategic partnership with the suppliers was most successful in improving firms' responsibility likewise strategic partnership with suppliers was more successful in improving the quality of the products/services, consequently strategic

partnership with the suppliers was successful in improving co-operation and communication and in reducing inventory levels. Therefore most of the parastatals have been considerably successful in most aspects of corporate partnership with their suppliers.

Further the study concludes that presence of many suppliers and subcontracting are among the best aspect of supply chain management that are working for the respective organizations Consequently use of external consultants and outsourcing were also among the best aspects of supply chain management that are working for the respective companies, holding safety stock, presence of few suppliers and the use of EDI were among other practices adopted by the parastatals in managing the supply chain. Vertical integrations was least adopted by many parastatals in agricultural sector.

On challenges of adopting the SCM, the study concludes that poor sales operations affects supply chain management in many of the parastatals, also customer geographical distance, poor visibility of demand and lack of leverage within the organization of the supply chain were identified by the respondents as some of the factors that greatly affected supply chain management in the parastatals in agricultural sector. The study also concludes that ethical responsibility problems in the supply chain affected the adoption of supply chain management (SCM). On the same note lack of interest amongst the supply chain members, lack of management support, major customer pressures, complexities and short product life cycles were a among other challenges that many parastatals faced.

5.4 Recommendations of the Study

The study makes a number of recommendations. The study recommends that the management of the parastatals in the agricultural sector in Kenya should keep up establishing ways to manage their supply chains better as this has a direct influence on performance. This can be done through the practices such as subcontracting.

Secondly, it is recommended that the supply chain management practices established in this study be adopted by services firms in Kenya as they can lead to better firm

performance. Thus manager in other parastatals should incorporate them in order to better manage their supply chains.

Thirdly, the study recommends that IT should be fully developed and utilized by the firms. Firms should formulate policy framework and guidelines, which will facilitate the linkages of the joint SCM variables to ensure efficient and effective utilization of resources within supply chain.

5.5 Limitations of the study

The data collection period took a longer time than was previously envisaged since it was hard to get managers to fill in the questionnaires. It took many visits the firm's premises to finally get the information needed.

Another limitation was that the model explained less than 57.7% of the variance in performance meaning that there are a number of factors which were left out in the study that could improve the predictive power of the model used in the study.

The researcher also encountered other challenges or limitations such as none-cooperation by parastatals managers since it was not easy to convince some of them to fill questionnaires hence not reaching the targeted sample size. However, the researcher assured the respondents of proprietary measures that the findings would be accorded and used only for academic purpose.

5.6 Suggestion for Further Research

The following are some of the areas which need an imperative and comprehensive exploitation;

A detailed replicate of this study should be done to other firms especially the manufacturing sector or the entire firms in the agricultural sector to establish whether the practices are the same.

A detailed study on effects of strategies partnership with the suppliers by parastatals in Kenya to retain customers; need to be done to shade more light on the best partnership strategies that can be applied to enhance the operation of the parastatals in Kenya

A comprehensive study on extent of strategies adopted by private firms in Kenya to retain customers in their respective firms should be done on all private firms to ascertain effective customer participation in the operations of these firms; this will further confirm whether the strategies adopted by these parastatals can gain a competitive edge in the competitive world of business.

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APPENDIX 1: LETTER OF INTRODUCTION

UNIVERSITY OF NAIROBI
SCHOOL OF BUSINESS
MBA PROGRAMME

Telephone: 020-2059162
Telegrams: "Varsity", Nairobi
Telex: 22095 Varsity

P.O. Box 30197
Nairobi, Kenya

DATE 27/7/13

TO WHOM IT MAY CONCERN

The bearer of this letter ZEDEKIA Juma ADHAYA

Registration No. D 61/61183/2011

is a bona fide continuing student in the Master of Business Administration (MBA) degree program in this University.

He/she is required to submit as part of his/her coursework assessment a research project report on a management problem. We would like the students to do their projects on real problems affecting firms in Kenya. We would, therefore, appreciate your assistance to enable him/her collect data in your organization.

The results of the report will be used solely for academic purposes and a copy of the same will be availed to the interviewed organizations on request.

Thank you.

PATRICK NYABUTO
FOR: MBA CO-ORDINATOR
SCHOOL OF BUSINESS

UNIVERSITY OF NAIROBI
SCHOOL OF BUSINESS
27 JUL 2013
P.O. Box 30197 - 00100, NAIROBI

APPENDIX 2: QUESTIONNAIRE

Hallo!

I am **ADHAYA ZEDEKIA JUMA** a student at the University of Nairobi pursuing masters in Business Administration. I'm conducting a research for partial fulfillment of the requirement for the award of the aforementioned masters' degree.

The research seeks to investigate the supply chain management practices of the Agricultural sector parastatals in Kenya. Participation in the research study is absolutely voluntary. Any information you forward will be treated with utmost confidentiality and will not be used for any purpose other than study objectives. Kindly adhere to the guidelines.

PART 1: DEMOGRAPHICS

Kindly answer all the questions by ticking or writing as per your opinion and based on the facts

1. Title of your Job …….

2. How long have you been working in the organization

Years	Tick one only
1-2	
3-5	
Over 5	

3. How many employees does the company have?

Number of employees	Tick one only
1-99	
120-249	
250-499	
Over 500	

4. Which other group of people do you work with apart from farmers …

5. What is your average contract length with suppliers

Years	***Tick one only***
1	
Less than 2	
Less than 4	
More than 5	

6. How many suppliers does your company have for daily operations?

Number of companies	***Tick one only***
1-10	
11-30	
31-50	
More than 50	

7. Has the number of suppliers to your company changed in the last three years? (***Tick one only)***

Same …….. reduced …….. Increased ……

PART 2: ADOPTION SUPPLY CHAIN MANAGEMENT PRACTICES

1. Kindly rate the extent to which the following supply chain practices have been adapted in your firm on a Likert scale of 1-5 where;

(**1**= not at all; **2**= least extend **3**= moderate extend; **4=** large extend; **5**= very large extend).

	Supply Chain Practices	1	2	3	4	5
i	A common set of operating policies are shared by member of the SC					
ii	A written agreement or contract is an integral part of all alliance					
iii	Adequate information systems linkages exist with customers					
iv	Adequate information systems linkages exist with suppliers					
v	Clear guidelines and procedures used for creating alliances					
vi	Clear guidelines and procedures used for monitoring alliances					
vii	Consistent performance measures are used across different functions					
viii	Current information system satisfy supply chain communication requirement					

ix	Customer alliances operate under principles of shared rewards and risks					
x	Customer relationship are evaluated on the basis of their profitability					
xi	Effort of increase inter functional coordination over the past 3 years ago					
xii	Employers are more loyal to our organization today than 3 year s ago					
xiii	Our firm is more loyal to it employees than 3 years ago					
xiv	High level of trust have been established with important customers					
xv	Information integrated within the firm					
xvi	Information systems are highly integrated throughout the SC					
xvii	Middle managers are empowered to make operation decision than 3 years ago					
xviii	More process- oriented performance measure s tracked today than 3 years ago					
xix	More supply chain performance measures are tracked today than 3 years ago.					
xx	My firm is aggressively seeks to understand customer requirements					
xxi	My firm customizes products and /services for important customers.					
xxii	My firm has adopted a key a key account approach for managing its best customers					
xxiii	My firm is flexible in terms of accommodating customer's special request					

xxiv	My firm regularly solicit customer input					
xxv	My firm understands the competitive throughout the supply chain					
xxvi	Non-management employees are more empowered to make operating decisions					
xxvii	Operating goals are consistent among supply chain members					
xxviii	Overall strategies in SCM have improved over past 3 years					
xxix	Overall supply chain core capabilities have improved over 3 years					
xxx	Overall supply chain core competencies have improved over past 3 years					
xxxi	Significant investments are made in application-specific information systems					
xxxii	Significant investment are made in enterprise –wide information system					
xxxiii	Strategic objectives are closely aligned among members of the supply chain					
xxxiv	Supplier alliances operates under principles of shared rewards and risk					
xxxv	Supplier performance is closely monitored and is the basis for future business					
xxxvi	Supplier are carefully screened and assessed before they are selected					
xxxvii	The internet is emerging as key tool to manage customers and supply linkages					
xxxviii	Value –added resources are shared among SC members					

2. If you have strategic partnership with your supplier, how successful is your strategic partnership with suppliers in terms of :

   (**1**= not successful; **2**= less successful **3**= successful 4**=** more successful; **5**= most successful).

Performance	1	2	3	4	5
Improving your firm's responsibility					
Improving the quality of the products/services					
Reducing inventory levels					
Improving co-operation and communication					

3. How do you manage your supply chain? (***Kindly tick all that applies)***

Close partnership with suppliers	
Close partnership with customers	
JIT supply	
e- Procurement	
EDI	
Outsourcing	
Subcontracting	
3PL	
Plan strategically	
Supply chain Benchmarking	
Vertical integration	

Few suppliers	
Many suppliers	
Holding safety stock	
Use of external consultants	
Others specify……..	

4. How successful do you think is your company in managing its supply chain in general? (***Tick one only****)*

Not successful at all

Not successful

Somewhat successful

5. Which of the following do you think that your firm needs to do in order to manage its supply chain better? (***Tick one column only in each case***)

	Improve	Start	Satisfied	Not
Close partnership with suppliers				
Close partnership with customers				
JIT supply				
e- procurement				
EDI				
outsourcing				
Subcontracting				
3PL				

Plan strategically				
Supply chain benchmarking				
Vertical integration				
Few suppliers				
Many suppliers				
Holding safety stock				
Use of external consultants				
Others (specify)				

6. Does your company have a separate logistic department? Yes/No? **(tick one applicable)**

7. Does your company have a clear logistic strategic plan? Yes/No **(tick one applicable)**

PART 3: CHALLENGES OF ADOPTING SCM PRACTICES

Kindly using a scale of 1-5 where;

1= strongly agree, **2**=agree, **3**= neutral, **4** disagree, **5**= strongly disagree, respond to the following statements on the challenges facing your organization in adoption of effective supply chain management practices

		1	2	3	4	5
a	Lack of supply chain management knowledge					
b	Lack adequate resources to implement supply chain initiatives sufficiently					
c	Poor sales operations in planning process					
d	Ethical responsibility problems in the supply chain					
e	Inadequate supply chain performance measures					
f	There is lack of trust among the supply chain members					
g	There is lack of cooperation among supply chain members					
h	Completion from other supply chains					
I	Lack of interest amongst the supply chain members					
j	Customers geographical distance					
k	suppliers geographical distance					
l	Inadequate information systems linkages exist within the supply chain					
m	Conflict among the supply chain members					

n	Lack of top management support					
O	Resistance to supply chain management changes					
p	Poor visibility of demand					
q	Major customer pressures					
r	Complexities in the supply chain					
s	Inconsistent quality supplies					
t	Lack of leverage within the organization of the supply chain					
u	Short product life cycles					
v	Dealing with counterfeit goods					
w	Supply chain disruptions					
x	Political /government influence					
y	Working with smaller pack sizes (customer buy in small quantities several times)					
z	Poor infrastructure					

Has your organization faced other challenges in trying to enhance an effective supply chain management other than the ones mentioned above? Yes/No (**tick one applicable)**

If yes, what are these challenges?

.....
.....
.....

Thank you for taking part in the survey

APPENDIX 3: LIST OF AGRICULTURAL PARASTATALS IN KENYA

LIST OF AGRICULTURAL PARASTATALS IN KENYA

1. AGRICULTURAL DEVELOPMENT CORPORATION
2. AGRICULTURAL FINANCE CORPORATION
3. CHEMELIL SUGAR COMPANY
4. KENYA SEED COMPANY
5. SOUTH NYANZA SUGAR COMPANY
6. COFFEE BOARD OF KENYA
7. MUMIAS SUGAR COMPANY
8. NZOIA SUGAR COMPANY
9. KENYA AGRICULTURAL RESEARCH INSTITUTE
10. KENYA TEA ZONES AND CONSERVATION CORPORATION
11. NATIONAL CERAELS PRODUCT BOARD.
12. SUGAR BOARD OF KENYA
13. COFFEE RESEARCH FOUNDATION
14. HORTICULTURAL CROPS DEVELOPMENT AUTHORITY
15. AGRO-CHEMICAL AND FOOD COMPANY
16. KENYA DAIRY BOARD
17. KENYA MEAT COMMISSION
18. KENYA PLANT HEALTH INSPECTORATE SERVICES
19. KENYA SISAL BOARD
20. KENYA SUGAR RESEARCH FOUNDATION
21. NEW KCC
22. NYAYO TEA ZONES DEVELOPMENT CORPORATION
23. PYRETHRUM BOARD OF KENYA
24. TEA BOARD OF KENYA
25. TEA RESEARCH FOUNDATION OF KENYA
26. PEST CONTROL BOARD

SOURCES: OFFICE OF PUBLIC COMMUNICATION (OFFICE OF GOVERNMENT SPOKEMAN: ONLINE PORTAL AT http//www.communication.go.ke/parastatal

APPENDIX 4: SUPERVISION ALLOCATION FORM

UNIVERSITY OF NAIROBI
SCHOOL OF BUSINESS

DEPARTMENT OF MANAGEMENT SCIENCE
MBA PROJECT SUPERVISION ALLOCATION FORM

SECTION A: (To be completed by the Student)

Name of Student: ZEDEKIA J. ADHAYA Reg. No: DG1/61183/2011

Proposed Title of the Study: Supply Chain Management practices of Agricultural Sector parastatals in Kenya

Specialization (Tick as appropriate):

Operations Management [✓]

Management Information Systems [ ]

Procurement & Supply Chain Mgt. [ ]

Suggested Supervisors: (1) ——— (2) Nyamwange

Signature of Student: ——— Date: 10/4/2013

SECTION B (To be completed by the Department)

Name of Supervisor Allocated: S. NYAMWANGE

Allocated Moderator: DR. NJIHIA

Total number of students allocated to the supervisor within the year to date.....

Acceptance by Supervisor:

Name:..... Signature:..... Date:.....

Approval by the Thematic Coordinator:

Name:..... Signature:..... Date:.....

Approval by Chairman of Department:

Name: DR J. M. NJIHIA Signature:..... Date: 24/6/13

UNIVERSITY OF NAIROBI
SCHOOL OF BUSINESS
DEPT. OF MANAGEMENT SCIENCE
P.O. Box 30197 00100
NAIROBI

Note:

Original to be filed in the Department
Copy 1 (Photocopy) to be filed by thematic Coordinator
Copy 2 (Photocopy) to be filed by the Supervisor

APPEN DIX: 5 PROPOSAL CORRECTION FORM

UNIVERSITY OF NAIROBI

SCHOOL OF BUSINESS

PROPOSAL CORRECTION FORM

Student Name: ZEDEKIA JUMA ADHAYA

Registration Number: D61/61183/2011

Department: Management Science

Specialization: Operation

Title of Project Proposal: SUPPLY CHAIN MANAGEMENT PRACTICES OF AGRICULTURAL SECTOR PARASTATALS IN KENYA.

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

Name of Supervisor: S N Kamwaro Signature: Date: 27/07/13