

**SUPPLY CHAIN MANAGEMENT PRACTICES AND  
PERFORMANCE OF KENYA TEA DEVELOPMENT  
AGENCY MANAGED FACTORIES**

**BY**

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## DECLARATION

I declare that this research project is my original work and has not been submitted to any other university for examination or award of a degree.

Signed..... Date.....

Caroline Ngatia

This project has been submitted for Examination with my authority as the University supervisor

Signed..... Date.....

Michael K. Chirchir

University of Nairobi, School of Business

## **DEDICATION**

This project is dedicated to my family and friends for their support, encouragement, and for their belief in the power of education. I also dedicate this project to my husband for his support and encouragement.

## **ACKNOWLEDGEMENT**

I would like to sincerely express my appreciation to the lecturer, Michael K. Chirchir for his tireless effort, time and guidance to make this project a success. I also wish to acknowledge the Department of Management Science, University of Nairobi for giving me a chance to school under the scholarship programme which has enabled me to complete my masters.

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## **ABSTRACT**

A study was carried out to establish the relationship between supply chain management practices and performance of KTDA managed tea factories. The study sought to achieve two specific objectives: to determine the supply chain management practices of KTDA managed factories in Kenya and to establish the relationship between supply chain management practices and performance of KTDA managed factories in Kenya. The study took the form of a survey of the tea factories. Primary data was successfully collected from 40 tea factories out of the 63 targeted factories. The data was analyzed using frequencies, percentages, mean, descriptive statistics and regression analysis. The findings reveal that good customer relationship management, outsourcing of noncore products and activities, reduction of cycle times across the supply chain and supplier development are the most common and popular among the tea factories followed by other supply chain management practices such as sharing information across the supply chain, purchasing quality products, reduction of lead time and process integration that are adopted to a very great extent. The ten supply chain management practices that formed the independent variables of this study explain 45.7% of the variance in the performance of KTDA managed factories in Kenya. The study recommends that the factories should enhance adoption of the supply chain management practices in order to improve their performance.

# **CHAPTER ONE**

## **INTRODUCTION**

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

Tea is globally among the most popular and lowest cost beverages, next only to water. It is consumed by a wide range of age groups in all levels of society. More than three billion cups of tea are consumed daily worldwide. Tea is considered to be a part of the huge beverage market, not to be seen in isolation just as a commodity. Africa, South America, the Near East and especially the Asian region produces a variety of teas with a reputation in the international markets for high quality (Hicks, 2009). Asia specifically enjoys a share of every importing market in the world because of its high quality of tea produced. In Africa the main producers of tea are Kenya, Burundi, Malawi, Rwanda, Tanzania, Uganda and Zimbabwe among others. In South America countries such as Argentina and Brazil are the main producers of tea. Tea is considered as having a share of the global beverage market, a highly competitive field. A wide range of tea products continue to be developed, through product and process development for added-value, as market shares become more sophisticated and competitive thus requiring good supply chain management practices among organizations that can make the product available to the market in a convenient manner (Hicks, 2009).

Mentzer et al (2001) observes that modern organizational competition does not only lie within the organization but it stems from the external activities taking place outside the walls of an organization. For an organization to survive this competition there is need to effectively link various operations with suppliers such as wholesalers, retailers and end

customers. They further argue that the most important function of supply chain management is to provide organizations with ways of integrating functions at both the upstream and downstream levels. Hence the objective of supply chain management is to enhance the performance of the entire supply chain and not an individual organization.

Studies have indicated that effective implementation of SCM practices has the potential of contributing to enhanced organizational performance. For instance Frohlich and Westbrook (2001) identified five integration strategies: inward facing; periphery facing; supplier facing; customer facing and outward facing. Their study revealed that companies that had a higher degree of integration with suppliers and customers showed very high performance.

### **1.1.1 The Supply Chain Management Practices**

Sonja and Amrik (2007) define supply chain management practices as those activities that are performed by an organization with the aim of ensuring that there is efficiency and effectiveness in the management of supply chain activities. Mentzer et al (2001) assert that it is important to first understand what a supply chain is before attempting to define supply chain management (SCM). They therefore define a supply chain as set of three or more organizations or individuals directly involved in the upstream and downstream flows of products, services, finances, and/or information from a source to a customer. Coordination of these flows requires some level of management. Mentzer et al (2001) indicate that the management of all the above mentioned activities is what is referred to as supply chain management. According Tyndall et al. (1998) SCM as a management philosophy seeks synchronization and convergence of intra-firm and inter-firm

operational and strategic capabilities into a unified, compelling marketplace force. Thus, SCM philosophy suggests the boundaries of SCM include not only logistics but also all other functions within a firm and within a supply chain to create customer value and satisfaction.

Supply chain management also requires sharing information among supply chain members if the supply chain management philosophy has to be implemented especially for planning and monitoring processes. There is need to have frequent information updating among the chain members for effective supply chain management. Information sharing refers to the willingness to make strategic and tactical data available to other members of the supply chain. Open sharing of information such as inventory levels, forecasts, sales promotion strategies, and marketing strategies reduces the uncertainty between supply partners and results in enhanced performance (Salcedo and Grackin 2000). Effective SCM also requires mutually sharing risks and rewards that yield a competitive advantage. Risk and reward sharing should happen over the long term since it is important for long-term focus and cooperation among the supply chain members.

There are a number of Supply chain management practices that organizations may adopt according to the need the organizations has. Tan et al. (2002) argue that there are six main supply chain management practices that are common in most organizations. The first practice involves the need to integrate the supply chain of an organization so that real-time processing and information sharing is made possible. Some organizations also take keen interest on the characteristics of their supply chains to ensure they meet company objectives. The other practices include customer service management and Just In Time practice in production and delivery of products.

### **1.1.2 Organizational Performance**

According to Henri (n.d), performance measurement entails the focus on the internal process of quantifying the effectiveness and the efficiency of action with a set of metrics. The measures and indicators act as surrogates or proxies for organizational phenomena. Performance measurement represents management and control systems that produce information to be shared with internal and external users. It also encompasses all aspects of the business management cycle which constitutes a process for developing and deploying performance direction.

Kirkendall (2010) indicates that a well defined system of organizational performance measures can be a powerful means for prioritizing organizational goals and achieving them. Performance measures are intended to be used in the strategic planning process. Therefore measures should inform planners as to problems that require attention, and should allow planners to monitor progress toward goals. Poister (2003) also indicates that performance measurement is intended to produce objective, relevant information on program or organizational performance that can be used to strengthen management and inform decision making. He further notes that organizational performance can be measured using profitability measures such as return on assets (ROA) and return on Equity (ROE).

Abdifatah (2012) argues that the performance of some organizations such as humanitarian organizations is affected by a number of factors such as good supplier relationship management, the existence of effective and efficient internal operations, ensuring that there is continuous improvement in the supply chain, having in place

flexible production processes, use of technology to speed up humanitarian work, inter-organization integrations and simplicity in internal operations are among the practices prevalent among humanitarian organizations in Kenya.

### **1.1.3 Kenya Tea Development Agency Managed Factories**

Before Kenya attained independence, indigenous Kenyans were barred by law from growing tea. When it approached independence, the legislation was repealed to allow the indigenous people to commence tea growing. Following this development in 1960, the colonial government created the Special Crops Development Authority (SCDA) to promote growing of tea by Africans under the auspices of the ministry of Agriculture. After independence, Kenya Tea Development Authority was formed through legal notice No.42 of 1964 and took over the liabilities and functions of the SCDA to promote and foster the growing of tea in small farms, which were previously said to be unviable in view of the expertise and costs required, as witnessed in the plantation sector. Due to privatization, Kenya Tea Development Authority was converted to Kenya Tea Development Agency Limited and was incorporated on 15th June 2000 as a private company under (CAP 486) of the laws of Kenya, becoming one of the largest private tea management agencies (KTDA, 2013).

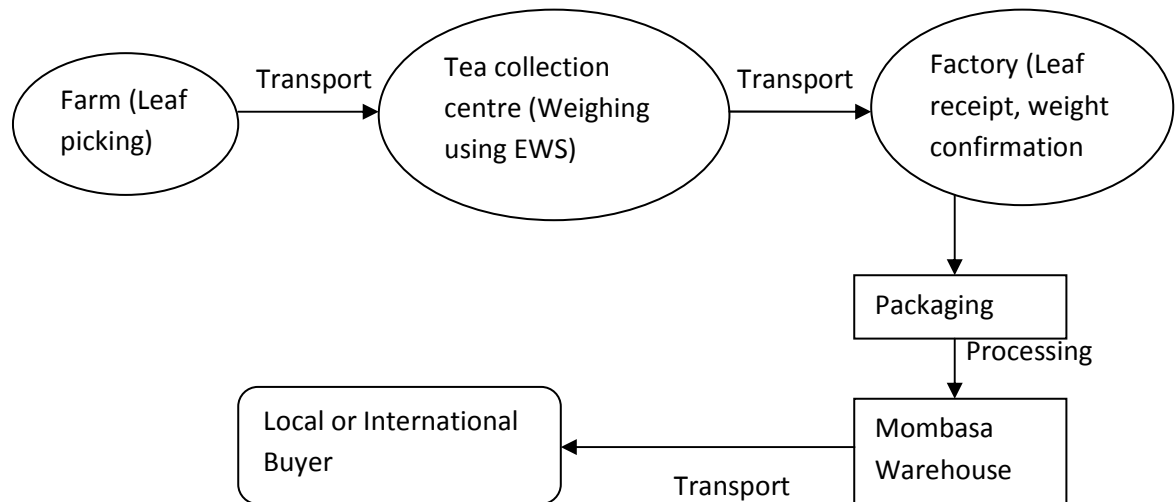
KTDA is offers management services to the small scale tea Subsector in Kenya. The company is managed by a board of directors from the twelve zones that represent the tea growing regions of Kenya. Each zone has a collection of Factories. A factory has six directors that are elected by farmers. The elected directors meet at the zonal level to elect a board member to KTDA. There are sixty five factories under the management of

KTDA. All factories are managed in a similar business model. The company has a responsibility of buying tea leaves from small scale farmers, processing of the tea and ensuring the same is market appropriately. All these activities involve value addition and complex supply chains that need good supply chain management practices at both the upstream and downstream levels. Without proper supply chain management practices, KTDA factories may not be able to operate profitably since their supply chain activities may be derailed thus leading to losses (KTDA, 2013).

#### **1.1.3.1 Kenya Tea Development Agency Factory Supply Chain**

The actual supply chain of a KTDA factory begins with the farmer who is the supplier of green leaves. The green leaf leaves the farm and it is transported by the farmer to a tea collection centre where weighing is done using an Electronic Weighing Solution (EWS). The green leaf is then transported to the factory using tea collection trucks. At the factory the green leaf is received and the weight is confirmed before processing begins. Once the processing is completed, the processed tea is packaged and transported to a Mombasa warehouse where auction is done and the tea ends up either with a local or international buyer. The KTDA factories obtain inputs such as fertilizers from India; machinery from India; spares are obtained from both international and local manufacturers and energy is mainly from KPLC.

**Figure 1.1: KTDA Factory Supply Chain**



Source: Author(2013)

## 1.2 Research Problem

The main objective of supply chain management is to provide products to end customers. Leading organizations understand the importance of the customer in the supply chain since the customer has a significant role to play on the performance of the organization. For an organization to ensure efficiency and effectiveness there is need to adopt good supply chain management practices in order to stay ahead of competitors. Handfield and Nichols (1999) assert that upstream and downstream integration of supply chain activities is essential in enhancing the performance of an organization.

KTDA managed factories have the responsibility of buying raw tea leaves from farmers who are in tea growing zones in Kenya. Tea is highly perishable and they face a number of challenges in ensuring that they adopt appropriate supply chain management practices that can integrate the upstream and downstream supply chain activities.



There are a number of studies that have been carried out on supply chain management practices as well as on organizational performance. For instance Li et al, (2006) carried out a study on the effect of SCM practices on organizational performance and competitive advantage. The study revealed that SCM practices are multidimensional in nature and they cover both upstream and downstream activities of the supply chain. The findings also revealed that there is a significant relationship between supply chain management practices and organizational performance. However the study failed to come out clear on the effect of the practices on financial performance of an organization.

Sonja and Amrik (2007) also carried out a study on supply chain management practices and supply chain performance in Australia. The study focused on manufacturing firms in the Australian industry. It was established that supply chain practices have a significant role to play in the performance of organizations. This also extends to KTDA managed factories as organizations that can enhance performance through their supply chains. Kazi (2012) in his study revealed that the major supply chain management challenges at KEMSA include poor infrastructure, bulky materials to be transported, uncertainty in terms of demand, lack of cold chain maintenance and lack of qualified personnel. The most outstanding shortcoming of these studies is that they only focused on non profit making organizations hence their findings are limited to those organizations only. This study also focused on the medical sector supply chain management in the public sector where profitability is not a priority.

Despite the availability of studies on supply chain management practices and performance, there are no studies that have focused on the tea sector in Kenya. The tea

sector plays a very significant role in the economy and is one of the areas where efficient and effective supply chain management is highly required. This inadequacy left a research gap this study sought to fill. The study therefore sought answers to the following two questions: What supply chain management practices are adopted by KTDA managed factories? And what is the effect of the supply chain management practices on the performance of the KTDA managed factories?

## **1.2 Research Objectives**

The two key objectives of this study were:

- i. To determine the supply chain management practices of KTDA managed factories in Kenya.
- ii. To establish the relationship between supply chain management practices and performance of KTDA managed factories in Kenya.

## **1.4 Significance of the Study**

The findings of this study will be a significant contribution to the body of knowledge on supply chain management practices and performance more especially in the private sector companies. Since this is an area with little observed research activity, the study will be a major contribution to this area in the academic realm.

The study will also assist the KTDA factories to benchmark with other organizations on supply chain management best practices. This will assist the policy makers in the KTDA managed factories to adopt best practices in supply chain management that will improve the performance of their supply chains. The study will also assist the policy makers to

determine the practices that have more weight than others thus giving them more emphasis.

The findings will also represent a bigger picture of the supply chain management practices adopted by private sector companies in Kenya. It will reflect the situation in other companies. The study will therefore assist other companies in the private sector to understand the concept of supply chain management practices.

The government of Kenya will also benefit from the findings of this study since tea is a major foreign exchange earning commodity in the country. It will enable the government to come up with appropriate policies and infrastructure that can assist the factories to adopt best SCM practices.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter discusses the relevant literature that has been reviewed in the area of supply chain management practices by other researchers. The literature that has been reviewed consist the general overview of supply chain management practices, organizational performance; the relationship between supply chain management practices and organizational performance as well as a conceptual framework.

#### **2.2 Supply chain Management Practices**

Effective and efficient supply chain management has now become a very valuable and important way to remain competitive in the market and to improve organizational performance. According to (Childhouse & Towill, 2003) supply chain management plays a very important role in enabling an organization to stay ahead of other competitors. Globalization has largely transformed the supply chain management practices among organizations due to its ability to deliver a product or service at a right place and at the right time. Organizations are realizing that to be competitive in global and local markets they need to develop efficient and effective supply chain management systems. The organizations have to understand the concepts and the practices of SC management for the intention of achieving competitiveness and increasing organizational profitability.

Supply chain management practices (SCM) are referred as the complete set of actions which are done in organizations towards improving the effectiveness of their supply

chain. The modern evaluation of the SCM practices comprises of partnership with the supplier, process of outsourcing, compression of cycle time, continuousness of process flow and sharing of technology and information (Tan, Kannan, & Handfield, 1998). Purchasing of quality products and relations with the customer for the purpose of representing SCM practices is very significant in modern organizations (Alvarado & Kotzab, 2001). In supply chain management it is important to networking systems such as Electronic Data Interchange (EDI) and also ensures elimination of excessive inventory along the supply chain (Tan, Lyman, & Wisner, 2002).

Tan et al. (2002) identify six aspects of SCM practice through factor analysis: supply chain integration, information sharing, supply chain characteristics, customer service management, geographical proximity and JIT capability. Chen and Paulraj (2004) use supplier base reduction, long-term relationship, communication, cross-functional teams and supplier involvement to measure both customer and supplier relationship management. Min and Mentzer (2004) identify the concept SCM as including agreed vision and goals, information sharing, risk and award sharing, cooperation, process integration, long-term relationship and agreed supply chain leadership. Thus the literature portrays SCM practices from a variety of different perspectives with a common goal of ultimately improving organizational performance.

According to an argument perpetuated by Tan et al. (2002) supply chain management practices can be divided into five different categories. The first and most important among these categories involves relationship management at both suppliers and customer levels. The level of information sharing along the supply chain is also very critical for any organization; quality of information sharing and postponement. These five

dimensions are very essential in measuring SCM practice. The five constructs cover upstream (strategic supplier partnership) and downstream (customer relationship) sides of a supply chain, information flow across a supply chain (level of information sharing and quality of information sharing), and internal supply chain process (postponement). It should be pointed out that even though the above dimensions capture the major aspects of SCM practice, they cannot be considered complete. Other factors, such as geographical proximity, JIT/lean capability Tan et al. (2002), cross-functional teams, logistics integration, agreed vision and goals, and agreed supply chain leadership are also identified.

Supplier relation management may take a strategic perspective if it takes the form of the long-term relationship between the organization and its suppliers. It is designed to leverage the strategic and operational capabilities of individual participating organizations to help them achieve significant ongoing benefits. A strategic partnership emphasizes direct, long-term association and encourages mutual planning and problem solving efforts Balsemier and Voicin (1996). The reason why organizations enter into strategic partnerships with suppliers is to promote shared benefits among the parties and ongoing participation in one or more key strategic areas such as technology, products, and markets. Strategic partnerships with suppliers enable organizations to work more effectively with a few important suppliers who are willing to share responsibility for the success of the products. If suppliers are involved in the early stages of product design and development, they have the potential of offering more cost-effective design choices, help select the best components and technologies, and help in design assessment. When strategically aligned organizations can work closely together and eliminate wasteful time

and effort. An effective supplier partnership can be a critical component of a leading edge supply chain (Noble, 1997).

Mentzer et al (2000) assert that when an organization puts in place measures to manage customer complaints, build long-term relationships with customers, and improve the satisfaction customers get from using the products of the organization, it is practicing customer relationship management. They further consider customer relationship management as an important component among the various SCM practices. Organizations need to have committed relationships with their customers because of their inherent barriers to competition. The growth of mass customization and personalized service is leading to an era in which relationship management with customers is becoming crucial for corporate survival. Good relationships with supply chain members, including customers, are needed for successful implementation of SCM programs. The major gains that an organization can gain from good customer relationship management are the differentiation of its product from competitors, sustained loyalty of the customers to its products, and dramatic extension of the value it provides to its customers. Level of information sharing: Information sharing has two aspects: quantity and quality (Tan et al., 2002).

The level of information sharing in a supply chain basically shows that the extent to which critical information is communicated to one's supply chain partner. Shared information can vary from strategic to tactical in nature and from information about logistics activities to general market and customer information. By taking the data available and sharing it with other parties within the supply chain, information can be

used as a source of competitive advantage. Sharing of information is one of five building blocks that characterize a solid supply chain relationship. Supply chain partners who exchange information regularly are able to work as a single entity. An organization and its suppliers when they have strategic partnership can easily understand the needs of the end customer better and hence can respond to market change quicker (Mentzer et al, 2000). Effective use of relevant and timely information by all functional elements within the supply chain is a key competitive and distinguishing factor. The empirical findings of Childhouse and Towill (2003) reveal that simplified material flow, including streamlining and making highly visible all information flow throughout the chain, is the key to an integrated and effective supply chain

Quality of information sharing includes such aspects as the accuracy, timeliness, adequacy, and credibility of information exchanged. While information sharing is important, the significance of its impact on SCM depends on what information is shared, when and how it is shared, and with whom. Literature is replete with example of the dysfunctional effects of inaccurate/delayed information, as information moves along the supply chain (McAdam and McCormack (2003). Divergent interests and opportunistic behavior of supply chain partners, and informational asymmetries across supply chain affect the quality of information. It has been suggested that organizations will deliberately distort information that can potentially reach not only their competitors, but also their own suppliers and customers. It appears that there is a built in reluctance within organizations to give away more than minimal information since information disclosure is perceived as a loss of power. Given these predispositions, ensuring the quality of the



shared information becomes a critical aspect of effective SCM. Organizations need to view their information as a strategic asset and ensure that it flows with minimum delay and distortion.

Postponement is also among the supply chain management practices. It is the practice of moving forward one or more operations or activities such as making, sourcing and delivering to a much later point in the supply chain. Two primary considerations in developing a postponement strategy are: determining how many steps to postpone, and determining which steps to postpone. Postponement allows an organization to be flexible in developing different versions of the product in order to meet changing customer needs, and to differentiate a product or to modify a demand function (Waller and Dabholkar, 2000). Keeping materials undifferentiated for as long as possible will increase an organization's flexibility in responding to changes in customer demand. In addition, an organization can reduce supply chain cost by keeping undifferentiated inventories. Postponement needs to match the type of products, market demands of a company, and structure or constraints within the manufacturing and logistics system. Postponement can only be done under specific conditions such as when dealing with innovative products; when dealing with products that have high monetary density; if the organization has high specialization and wide range of products; markets characterized by long delivery time; low delivery frequency and high demand uncertainty; and manufacturing or logistics systems with small economies of scales and no need for special knowledge (Waller and Dabholkar, 2000).

### **2.3 Organizational Performance**

Organizational performance comprises the actual output or results of an organization as measured against its intended outputs or goals and objectives. According to Richard et al. (2009) organizational performance encompasses three specific areas of firm outcomes: Financial performance (profits, return on assets, return on investment.); Product market performance (sales, market share.); and Shareholder return (total shareholder return, economic value added.). Organizational performance is probably the most widely used dependent variable in organizational research today yet at the same time it remains one of the most vague and loosely defined constructs.

The concept of organizational performance can be applied to either individual performance or organizational performance. In performance improvement organizational performance, is the concept of organizational change in which the managers and governing body of an organization put into place and manage a programme which measures the current level of performance of the organization and then generates ideas for modifying organizational behavior and infrastructure which are put into place to achieve higher output. The primary goals of organizational performance are to increase organizational effectiveness and efficiency to improve the ability of the organization to deliver goods and /or services. Another area in organizational performance that sometimes targets continuous improvement is organizational efficacy, which involves the process of setting organizational goals and objectives in a continuous cycle. Organizational performance at the operational or individual employee level usually involves processes such as statistical quality control. At the organizational level,

performance usually involves softer forms of measurement such as customer satisfaction surveys which are used to obtain qualitative information about performance from the viewpoint of customers (Kaplan & Norton, 2001).

Sababu (2001) conducted a study on the effect of business policy on organizational performance among consumer cooperatives in Kenya. The study established that formal strategic management systems in Kenya influence organizational performance. It was also established demographic and socioeconomic factors appear to have no direct effects on organizational performance. Ongore & K' Obonyo (2011) did an empirical review on the effects of selected corporate governance characteristics on firm performance in Kenya. The findings showed a significant positive relationship between managerial discretion and organizational performance.

Researchers have argued that internal integration of various activities in an organization will be able to enhance economic performance. Flynn et al., (2010) define internal integration as the degree to which two departments collaborate in the management of both inter and intra departmental processes to provide maximum value for the firm. Supply chain management best practices such as e-procurement have the capacity of acting as an integrative technology that enables integration and improvement of processes between departments (Vickery et al., 2003). Flynn et al., (2010) further assert that internal integration of organizational processes is a recipe for moderated corporate performance though there is no clear elaboration on how this happens. Narasimhan et al.,

(2006) concur that there exists a positive effect of e-procurement on firm performance even though no empirical evidence has confirmed this position.

## **2.4 Supply Chain Management Practices and Organizational Performance**

Supply chain performance directly affects quality, customer lead times, inventory levels, and delivery time; supply chain management has a direct impact on company bottom line. Understanding the very latest systems, practices and world-class performance in supply chain management is a key component in evaluating one's own organization (Best Practices Benchmarking, 2010).

SCM practice is expected to increase an organization's market share, return on investment, and improve overall competitive position. For example, strategic supplier partnership has been reported to yield organization-specific benefits in terms of financial performance. Advanced design and logistic links with suppliers are related to better-performing plants. Customer relation practices have also been shown to lead to significant improvement in organizational performance. The higher level of information sharing is associated with the lower total cost, the higher-order fulfillment rate and the shorter-order cycle time. The bottom-line impacts of SCM practices have been confirmed by real-world examples (Lin, Huang and Lin, 2002).

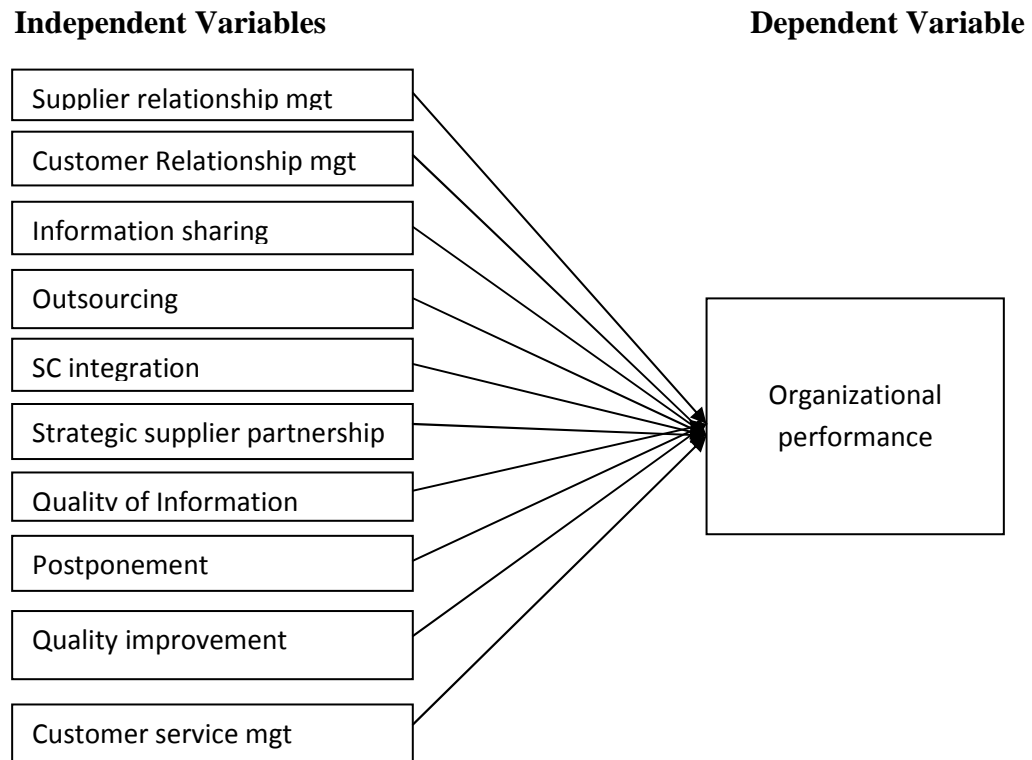
SCM practices impact not only overall organizational performance, but also competitive advantage of an organization. They are expected to improve an organization's competitive advantage through price/cost, quality, delivery dependability, time to market,

and product innovation. Prior studies have indicated that the various components of SCM practices (such as strategic supplier partnership) have an impact on various aspects of competitive advantage (such as price/cost). For example, strategic supplier partnership can improve supplier performance, reduce time to market (Jarell, 1998), and increase the level of customer responsiveness and satisfaction. Information sharing leads to high levels of supply chain integration by enabling organizations to make dependable delivery and introduce products to the market quickly. Information sharing and information quality contribute positively to customer satisfaction and partnership quality. Postponement strategy not only increases the flexibility in the supply chain, but also balances global efficiency and customer responsiveness.

An organization can have one or more of the following capabilities when compared to its competitors: lower prices, higher quality, higher dependability, and shorter delivery time. These capabilities will, in turn, enhance the organization's overall performance. Competitive advantage can lead to high levels of economic performance, customer satisfaction and loyalty, and relationship effectiveness. Brands with higher consumer loyalty face less competitive switching in their target segments thereby increasing sales and profitability. An organization offering high quality products can charge premium prices and thus increase its profit margin on sales and return on investment. An organization having a short time-to-market and rapid product innovation can be the first in the market thus enjoying a higher market share and sales volume (Mentzer et al, 2000).

## 2.5 Conceptual Model

Figure 2.1 Conceptual framework



Source: Author(2013)

When an organization implements good supply chain management practices, it is likely to have an effect on the overall performance. The most common supply chain management practices include partnering with suppliers even in product development and design; ensuring that the relationship with customers is well managed since they are the source of revenue; sharing of information along the supply chain for faster decision making and processing of transactions; outsourcing where necessary and cost effective; reducing cycle times within the supply chain; purchasing quality products as well as integrating the supply chain both within and outside the organization. These practices if well performed will lead to improved organizational performance.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter discusses the methodology the researcher used in studying the effect of supply chain management practices on the performance of KTDA managed factories. The researcher discusses the target population, the sample size and the sampling technique that were used, the data collection techniques and tools as well as the techniques that were used to analyze the data that was collected.

#### **3.2 Research Design**

This study adopted a descriptive survey research design in examining the effect of supply chain management practices on performance of KTDA managed factories. As indicated by Rajendra (2008), descriptive design involves fact finding enquiries of different kinds, where the researcher has no control of the variables and can only report what has happened or what is happening. Descriptive research design was therefore be appropriate for this study since it enabled the study to describe the situation and also establish the relationship between the variables.

#### **3.3 Population**

The target population for the study involved all the KTDA managed factories in Kenya. According to Kenya Tea Development Agency, there were a total of 63 factories under its management. These formed the target population for this study. The study involved a census of all the 63 factories in the country hence there was no sampling. The supply

chain managers or their equivalent from the factories were selected to participate in the study. One respondent from each factory was selected and this gave a total of 63 respondents.

### **3.4 Data Collection Tools**

The researcher collected primary and secondary data from the respondents. The data was collected by use of a questionnaire. The questionnaire contained 3 sections. The first part contained questions on bio data of the respondents; section two sought data on the supply chain management practices adopted by KTDA managed factories while section three sought data on the effect of supply chain management practices on the performance of KTDA managed factories in Kenya.

### **3.5 Data Analysis**

The data collected was sorted and organized before capturing the same in SPSS (for data from questionnaires). The researcher used percentages and frequencies to analyze general information, descriptive statistics for objective one while objective two was analyzed using regression analysis. The following regression model was used to depict the relationship between supply chain management practices and factory performance:  $Y = a + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + b_6x_6 + b_7x_7 + b_8x_8 + b_9x_9 + b_{10}x_{10}$

Where Y was the performance of the KTDA managed factories which was measured using the profitability of the factories;  $x_1$  was the supplier relationship management which was measured using the number of complaints received from suppliers;  $x_2$  was customer relationship management which was measured using frequency of customer



complaints; x3 was information sharing that was measured through the number of stakeholders who were linked with the organization; x4 was outsourcing which was measured using the cost savings from outsourcing; x5 was the supply chain integration which was measured using the number of firms that were linked to the organization; x6 was strategic supplier partnership and was measured using the number of strategic suppliers the organization had partnered with; X7 was quality of information and was measured using the recorded errors originating from faulty information; x8 was postponement and was measured using the average level of activities that the company defers for later dates; x9 was quality improvement and was measured using the improved sales of new products and x10 was customer service management and this was measured using the average customer retention in the organization.

## **CHAPTER FOUR**

### **DATA ANALYSIS AND INTERPRETATION**

#### **4.1 Introduction**

A study was carried out to establish the relationship between supply chain management practices and performance of KTDA managed tea factories. The study sought to achieve two specific objectives: to determine the supply chain management practices of KTDA managed factories in Kenya and to establish the relationship between supply chain management practices and performance of KTDA managed factories in Kenya. Primary data was successfully collected from 40 tea factories out of the 63 targeted factories. This confirms that the study achieved a response rate of 63%. Cooper and Schindler (2003) indicated that a response rate of between 30 to 80% of the total sample size is sufficient to represent the opinion of the entire population. This chapter presents the findings from the study as per the objectives.

#### **4.2 General Information**

The study sought some general information regarding to the profile of the respondents and the background of the tea factories. This information was meant to assist the researcher to ascertain whether the information obtained from the organizations was relevant in solving the problem under investigation.

**Table 4.1: Years of Operation**

Years of operation				
	Frequency	Percent	Valid Percent	Cumulative Percent
Less than 5 years	8	20.0	20.0	20.0
Less than 10 years	12	30.0	30.0	50.0
More than 10 years	20	50.0	50.0	100.0
Total	40	100.0	100.0	

Source: Research Data(2013)

The findings tabulated in table 4.1 above reveal that 50% of the tea factories in Kenya have been operating for more than ten years; 30% for less than 10 years but more than 5 years and 20% for less than 5 years. The results confirm that most of the tea factories have been in operation for more than 5 years and have enough knowledge and understanding of supply chain management practices that are applicable in the industry.

**Table 4.2: Designation**

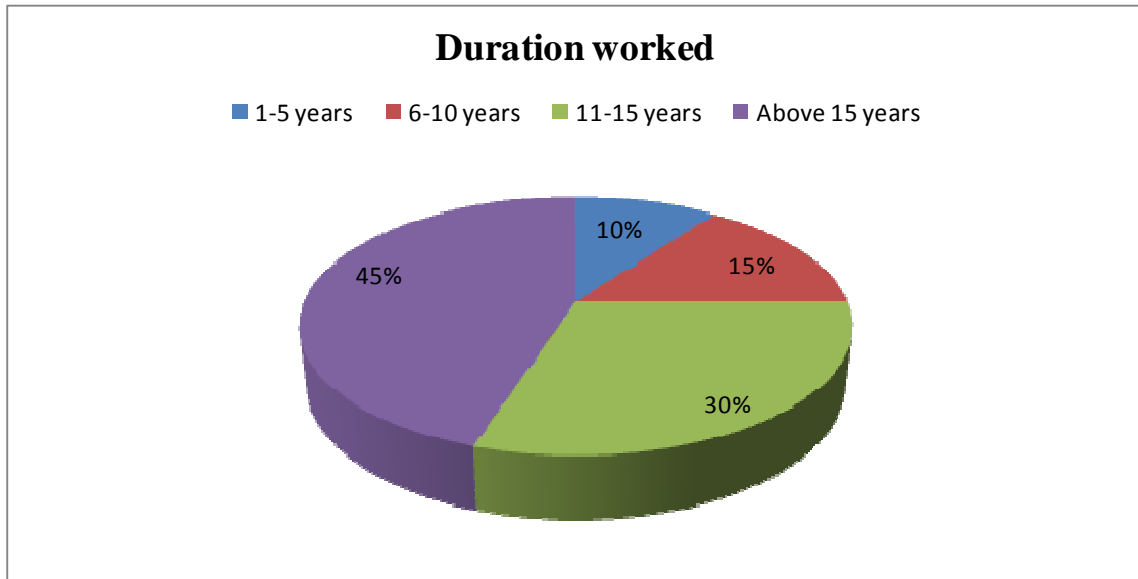
Designation				
	Frequency	Percent	Valid Percent	Cumulative Percent
Supply chain Officer	8	20.0	20.0	20.0
Supply chain manager	32	80.0	80.0	100.0
Total	40	100.0	100.0	

Source: Research Data(2013)

The study sought to establish the designation of the respondents who participated in the survey. The study targeted supply chain managers or their equivalents in the tea factories managed by KTDA. The findings as illustrated in table 4.2 above confirm that 80% of the respondents were supply chain managers whereas 20% of them were supply chain officers. This confirms that the researcher was able to access a large number of supply

chain managers who are considered more knowledgeable on matters related to supply chain management practices in their organizations.

**Figure 4.1: Duration Worked in Factory**



Source: Research Data(2013)

The findings from the pie chart above confirm that 45% of the respondents had worked for the KTDA tea managed factories for more than 15 years; 30% had worked for between 11-15 years; 15% for between 6-10 years and 10% for less than five years. The results confirm that the respondents have worked for a long time that has enabled them gain experience in supply chain management practices and were able to provide reliable information to inform the study.

**Table 4.3: Integration of Factory Operations**

**Integration of operations**

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	26	65.0	65.0	65.0
No	14	35.0	35.0	100.0
Total	40	100.0	100.0	

Source: Research Data(2013)

The respondents were requested to indicate whether the operations in their factories are integrated or not. The findings in table 4.3 above reveal that 65% of the respondents indicated that the operations in their organizations are integrated while 35% of the respondents confirmed that the operations are not integrated. This is an indication most of the factories have embraced information technology in their operations whereas others are yet to.

### **4.3 Supply Chain Management Practices**

The study sought to establish the supply chain management practices that are prevalent among the KTDA managed tea factories in Kenya. They were provided with a total of 14 possible supply chain management practices and they were required to indicate the extent to which each one of them is adopted in the organization. Their responses were subjected to descriptive analysis and the means generated are discussed next.

**Table 4.4: Supply Chain Practices**

	<b>N</b>	<b>minimum</b>	<b>maximum</b>	<b>mean</b>
Risk and award sharing	40	1	5	4.816
Postponement of non urgent activities	40	1	5	4.412
Just in Time delivery	40	1	5	4.237
Building long lasting relationships with stakeholders	40	1	5	3.663
Partnering with suppliers	40	1	5	3.254
Integration of the supply chain internally and externally	40	1	5	3.226
Process integration	40	1	5	2.618
Reduction of lead time	40	1	5	2.432
Purchasing quality products	40	1	5	2.232
Sharing information across the supply chain	40	1	5	2.148
Outsourcing of noncore products and activities	40	1	5	1.874
Reduction of cycle times across the supply chain	40	1	5	1.684
Supplier development	40	1	5	1.421
Good customer relationship management	40	1	5	1.369

Source: Research Data(2013)

The findings tabulated above confirm that there are a number of supply chain management practices that have been adopted by KTDA managed tea factories in Kenya. The supply chain management practices with a mean of 1 indicate that they have been adopted to a very great extent among the tea factories. They include: good customer relationship management with a mean of 1.369; outsourcing of noncore products and activities with a mean of 1.874; reduction of cycle times across the supply chain with a mean of 1.684 and supplier development with a mean of 1.421. The study also established that there are some supply chain management practices that have been adopted to a great extent among the KTDA managed tea factories. They include sharing information across the supply chain with a mean of 2.148; purchasing quality products with a mean of 2.232; reduction of lead time with a mean of 2.432 and process integration with a mean of 2.618. The study further reveal that the supply chain management practices that have been adopted to a moderate extent by the tea factories include: Partnering with suppliers with a mean of 3.254; integration of the supply chain internally and externally with a mean of 3.226 and building long lasting relationships

with stakeholders with a mean of 3.663. It was also evident from the findings of the study as illustrated above that three supply chain management practices have been adopted by the tea factories to a small extent. They include: postponement of non urgent activities; risk and award sharing as well as just in time delivery.

#### 4.4 Relationship Between Supply Chain Management Practices and Performance

The study sought to investigate the relationship between the supply chain management practices adopted by the KTDA managed factories and their performance. The profitability of the tea factories was used to measure the performance and Return on Assets was used as the measure of profitability. The following are the results from the regression analysis.

**Table 4.5: Model coefficients**

	Unstandardized		Standardized	t	Sig.
	Coefficients		Coefficients		
	B	Std. Error	Beta		
(Constant)	12.632	2.409		3.056	.004
Supplier relationship mgt	.836	.326	.621	3.382	.002
customer relationship mgt	.964	.412	.725	1.499	.001
Information sharing	.863	.342	.634	3.509	.002
Outsourcing	.459	.196	.362	.148	.074
Supply chain integration	.356	.132	.186	.098	.114
Supplier partnership	.548	.258	.269	.164	.005
Quality information	.674	.362	.457	.222	.002
Postponement	.324	.146	.168	.084	.118
Quality improvement	.231	.096	.094	.073	.135
Customer service mgt	1.124	.423	1.107	2.152	.000

Source: Research Data(2013)

Table 4.5 of model coefficients indicates that all the ten independent variables which include supplier relationship management; information sharing; customer relationship management; outsourcing; supply chain integration; supplier partnership; quality information; postponement; quality improvement and customer service management have positive coefficients. Using a significance level of 5%, co-efficients having a p-value less than 5% are considered significant. These are x1(0.2%), x2(0.1%), x3(0.2%), x6(0.5%), x7(0.2%) and x10(0%). The rest are not statistically significant. Based on the model given in chapter three of this document and by replacing the values of b with the coefficients above, the following model was obtained:  $Y = 12.632 + .836x_1 + .863x_2 + .964x_3 + .459x_4 + .356x_5 + .548x_6 + .674x_7 + .324x_8 + .231x_9 + 1.124x_{10}$ .

**Table 4.6: Full model**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.676 <sup>a</sup>	.457	.423	.184

Source: Research Data(2013)

The findings as indicated in table 4.6 above reveal that the ten supply chain management practices account for 45.7% of the profitability of the KTDA managed factories in Kenya. This implies that collectively, supplier relationship management; information sharing; customer relationship management; outsourcing; supply chain integration; supplier partnership; quality information; postponement; quality improvement and customer service management explain 45.7% of the variance in the performance of the tea factories. The unexplained variance is 54.3% which implies that there are some



factors not covered by this study that are responsible for explaining this remaining variance.

**Table 4.7: Anova**

	Sum of Squares	df	Mean Square	F	Sig.
Regression	2.782	4	.551	2.128	.012
Residual	4.636	8	.224		
Total	7.418	11			

Source: Research Data(2013)

Table 4.7 indicates the significance of the full model that has been discussed in table 4.6. The significance value is 1.2% which is less than 5%. Hence, the full model is overall statistically significant thus a suitable model for explaining the supply chain management practices and performance.

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

#### **5.1 Introduction**

This chapter presents the summary of findings on the relationship between supply chain management practices and performance of KTDA managed tea factories. The chapter also provides conclusions, recommendations and suggestions for further research.

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

The purpose of this study was to establish the relationship between supply chain management practices and performance of KTDA managed tea factories. The study established that the factories adopt several supply chain management practices to varying degrees. For instance the findings from the study confirmed that the supply chain management practices that are adopted to a very great extent by the factories include good customer relationship management, outsourcing of noncore products and activities, reduction of cycle times across the supply chain and supplier development. These are the supply chain management practices that found to be more common and widely applicable among the factories that participated in the study. The findings are similar to Tan, Kannan, & Handfield (1998) who observed that the modern evaluation of the SCM practices comprises of partnership with the supplier, process of outsourcing, compression of cycle time, continuousness of process flow and sharing of technology and information. However, this differs from Abdifatah (2012) who found out that maintaining good supplier relation, effective and efficient internal operations, continuous improvement, flexible production processes, use of technology to speed up humanitarian work, inter-organization integrations and simplicity in internal operations are among the practices

prevalent among humanitarian organizations in Kenya. It was also clear that some other supply chain management practices are applicable among the tea factories to a great extent. They include sharing information across the supply chain, purchasing quality products, reduction of lead time and process integration. However, there are some supply chain management practices that are applicable to a moderate and small extent such as partnering with suppliers, integration of the supply chain internally and externally, building long lasting relationships with stakeholders, postponement of non urgent activities, risk and award sharing as well as just in time delivery. This however differs from Soo Wook Kim (2006) who found out that supply chain integration has statistically significant influence on both SCM practice and competition capability. This means that, in large firms, SC integration may play an infrastructural role for direct effects of SCM practice and competition capability on firm performance. This points out that it is important for firms to embrace supply chain integration as well to improve performance.

The findings of the study reveal that the ten independent variables of the study which constituted ten supply chain management practices that is, supplier relationship management; information sharing; customer relationship management; outsourcing; supply chain integration; supplier partnership; quality information; postponement; quality improvement and customer service management had positive coefficients and explain 45.7% of the variance on the performance of the tea factories. This was a confirmation that they explain a significant portion of the performance of the KTDA managed tea factories in Kenya.

### **5.3 Conclusions**

KTDA managed tea factories adopt a number of supply chain management practices to varying degrees. Good customer relationship management, outsourcing of noncore products and activities, reduction of cycle times across the supply chain and supplier development are the most common and popular among the tea factories followed by other supply chain management practices such as sharing information across the supply chain, purchasing quality products, reduction of lead time and process integration that are adopted to a very great extent. The ten supply chain management practices that formed the independent variables of this study explain 45.7% of the variance in the performance of KTDA managed factories in the country.

The existing literature suggests that implementation of SCM can considerably improve the performance of an organization such as increased customer service level, inventory turnover and reduced cost (Kopczak & Johnson, 2003; Lee, 2000; Mentzer, 2004). Critical analyses from this study confirm the theory that SCM practices considerably improve the performance of KTDA managed factories. Moreover, earlier case studies have shown that IT and information sharing significantly contribute to most performance measures. The internal operations practice contributes to more performance measures than supplier and customer relationship practice. This indicates that relationship of suppliers and customers practices is mediated by internal operations practice. Firms need to achieve internal integration before embarking to synchronizing their suppliers and customers (Cachon & Fisher, 2000).

#### **5.4 Recommendations**

The study has revealed that the supply chain management practices are applied to varying degrees by the KTDA managed factories all of them are important in the organization. It will be important for the tea factories to be urged to adopt equally these practices in order to enhance performance.

The study has revealed that the supply chain management practices explain 45.7% of the variance on performance of KTDA managed factories in Kenya. The companies should be encouraged to enhance adoption of these practices since they have the potential of improving their performance.

#### **5.5 Limitations of the Study**

Time was not enough to conduct a survey of all the tea factories in Kenya. This is the reason why the researcher chooses to conduct a survey of the KTDA managed factories alone thus leaving out the others.

These findings are more relevant to KTDA managed factories only and not other factories that are privately owned or not under the management of KTDA.

#### **5.6 Suggestions for Further Research**

It is clear from the study that supply chain integration is low among the KTDA managed factories. It will be important to conduct a study to establish the challenges of supply chain integration among the factories.

Enhancement of adoption of supply chain management practices may require benchmarking for best practices. It will be important for the tea factories to carry out a

comparative study with industry leaders in order to benchmark for best practices in supply chain management.

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## APPENDICES

### Appendix I: Research Questionnaire

The purpose of this questionnaire is to collect data on the effect of supply chain management practices on the performance of KTDA managed factories. Kindly provide the appropriate responses for each of the questions. The information provided will be held confidential since it is meant for academic purposes only.

#### PART I: General information

Kindly provide the appropriate responses to the following questions.

1. For how long has this factory operated?  
 Less than 5 years     Less than 10 years     More than 10 years
2. What is your designation?
  - a) Procurement/Purchasing/stores clerk
  - b) Procurement /supply chain officer
  - c) Procurement/supply chain manager
  - d) Other (Specify)
3. For how long have you worked with this factory
  - a) 1-5 years
  - b) 6-10 years
  - c) 11-15 years
  - d) Above 15 years
4. Are the operations in the factory integrated?
  - i) Yes
  - ii) No

#### PART II: Supply chain management practices

This following is a list of supply chain management practices, please indicate the extent to which each one of them has been adopted in your organization.

Use the following Key: VGE= Very great extent, GE= great extent, ME=Moderate extent  
 SE= Small extent and NE= No extent

NO.	SCM Practice	VGE	GE	ME	SE	NE
1.	Partnering with suppliers					
2.	Sharing information across the supply chain					
3.	Good customer relationship management					
4.	Outsourcing of noncore products and activities					
5.	Reduction of cycle times across the supply chain					
6.	Purchasing quality products					
7.	Integration of the supply chain internally and externally					
8.	Building long lasting relationships with stakeholders					
9.	Postponement of non urgent activities					
10.	Reduction of lead time					
11.	Supplier development					
12.	Risk and award sharing					
13.	Process integration					
14.	Just in Time delivery					

11. Please indicate any other supply chain management practices that are common in your organization

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**PART III: Effect of Supply Chain Management Practices on Supply Chain Performance**

Kindly provide approximate figures on the variables that are listed in the table below for the period between 2003-2012.

NO.	Variable	03	04	05	06	07	08	09	10	11	12
1.	Number of suppliers factory partnered with										
2.	Number of stakeholders linked to factory										
3.	Number of customer complaints										
4.	Cost savings from outsourcing of noncore products										
5.	Average cycle time to complete a transaction										
6.	Cost savings from quality purchases										
7.	Number of firms linked to factory										
8.	Average lead time										
9.	Number of suppliers developed										
10.	Factory profit										