SUPPLY CHAIN PLANNING AND PERFORMANCE OF WATER BOTTLING COMPANIES IN NAIROBI CITY COUNTY, KENYA

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DECLARATION

This research proposal is my original work and has not been presented to any other institution. No section of this project may be reproduced or transmitted in any form or by any means, without permission from the author or that of the University of Nairobi.

Signature…… **Date……..**

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D61/64698/2013

This research proposal has been submitted for examination with my approval as the university supervisor.

Signature…… **Date……**

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DEDICATION

I dedicate this project to my dear husband Baraka and loving parents Mr. & Mrs. Kamau for their prayers, love and support during my studies. Words alone cannot express my appreciation; I will forever be indebted to you. God bless you! To my daughter Adia Krista I thank the Almighty for the joy you have brought to my life. You have made me focus

A special dedication also goes to my supervisor Mr. Tom Kongere for his guidance and positive criticism, for his corrections and much needed guidance that was much needed in the undertaking of this project. Thank you very much, God bless you!

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As I undertake this research paper, I deeply acknowledge the immense support and guidance I received from my supervisors, Tom Kongere and Michael Chirchir. Your efforts were worthy the task and I have no better words to express my appreciation. I also wish to acknowledge all my lecturers for their support, encouragement and guidance during my studies at the University of Nairobi.

I would also want to thank my respondents in various water bottling firms in Nairobi, Kenya for taking their time to fill in the questionnaires. Your support was greatly appreciated. May God bless you!

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ABBREVIATIONS AND ACRONYMS

ANADs- Adult non-Alcoholic Drinks

KARI- Kenya Agricultural Research Institute

KPI- Key Performance Indicators

SCE- Supply Chain Execution

SCOR- Supply Chain Operations Reference

WIP- Work in Progress

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Globalization of business and the increasingly competitive pressures have driven many organizations to adopt supply chain planning to minimize the supply chain costs. Lee and Kim (2002) contend that supply chain planning is considered an important element in countering complexities of supply chain management in meeting customer needs. This is because, according to Robert (2004) a well-established supply chain framework acts a guide in overall supply chain strategic planning process for its individual supply chain functions such as transportation, inventory and logistics.

Kerbachea and MacGregor (2004) note that supply chain plans should be monitored regularly to help organizational supply chain planners make changes when the need arises in a cost-effective manner. This is because the needs of customers keep on changing and the organization should ensure that there is a proper match between the demand and supply of goods and services in a cost effective manner. Hokey and Zhou (2002) explain that supply chain planning can often be extremely difficult to manage across enterprise and functional areas within an organization. Functional area expectations, priorities, and preferences can often differ when looking at supply chain planning activities; however, cost effectiveness, process efficiency, and cycle time are common considerations.

Hokey and Zhou (2002) highlighted that in order to deal with global market complexities, most organizations are shifting from a “push” to a “pull” business model. Push business models are premised upon planning, developing and marketing products pushed into the market place. Pull business models relies upon forecasted and actual signals to generate production plans, material plans and supply requirements. Beamon (1998) contends that the desire to become demand-driven is expanding the market for sophisticated and agile solutions in the supply chain.

1.1.1 Supply Chain Planning

According to Lockamy and McCormack (2004) supply chain planning is the component of supply chain management (SCM) involved with predicting future requirements to balance supply and demand. Supply chain planning provides visibility to the demand and allows organizations to determine the optimal way to fulfill that demand based on available enterprise-wide supply and production resources.

Hokey and Zhou (2002) explained that supply chain planning allows the users to drill into demand details to see how supporting production and supply plans were created as well as to make any changes necessary to meet the demand or achieve business objectives more effectively. Supply chain planning ensures that organizations optimize their production and procurement activities on an enterprise-wide basis.

Perona (2001) indicated that SCM is sometimes broken down into the stages of planning, execution and shipping. Supply chain planning and supply chain execution (SCE) are the two main categories of SCM software. Hokey and Zhou (2002) averred that supply chain planning products may include supply chain modeling, and design, distribution and supply network planning. SCE software applications track the physical status of goods, the management of materials, and financial information involving all supply chain partners.

1.1.2 Supply Chain Performance

Stewart (2005) defines supply chain performance as the ability of the supply chain to meet customer needs through product accessibility and responsiveness to ensure on time delivery. It involves a continuous process that requires both an analytical performance measurement system, and a mechanism to initiate steps for realizing key performance indicators. Gunasekaran and McGaughey (2004) argue that the process of achieving key performance indicators are referred to as "KPI accomplishment" for example carrying cost inventory, inventory turnover, order tracking and back order rate. It connects planning, and execution, and builds steps for realization of performance goals.

Supply chain performance can be measured in the context of the following supply chain activities and processes: plan, source, make and deliver. These activities are considered at various levels of management that are strategic, tactical, and operational levels (Gunasekaran et al., 2004). Supply Chain Operations Reference (SCOR) model has been developed to facilitate construction of a systematic supply chain performance measurement and improvement tool. It is often recognized as a systematic approach for identifying, evaluating and monitoring supply chain performance.

1.1.3 Supply Chain Planning and Supply Chain Performance

Andrew and Robert (2004) explored on the importance of integration on supply chain planning. It was found that integration enhanced sharing of information between the suppliers and the organization and thus boosts supply chain planning. With integration, the organization can easily involve its suppliers in decision making processes. This helps in improving the speed of decision making and thus leading to improved supply chain performance. Lee and Kim (2002, p170) stated that "A well planned and designed supply chain system is able to balance constraints and measure tradeoffs between cost, service, quality and time. Top management should understand how planning tools and applications should be deployed in total context of the business process".

Lockamy and McCormack (2004) indicated that a well-managed supply chain system should accommodate changes in the external environment in order to work towards the goals of the organization. The management of the organization should align the functions and the activities of the supply chain in a manner that suits customer needs and expectations. In their study on the link between supply chain planning and performance, Scott, Mason, Ribera and Afarris (2003) concluded that successful operation of supply chain system depends on its ability to plan and re-plan as well as ability to understand when plan need not be changed. Planning has to be comprehensive and timely, based on accurate and up-to-date information and data. Proper planning helps to save both transport and warehousing costs since there is a prior arrangement between the supplier and the firm this leads to supply chain performance.

1.1.4 Water Bottling Companies in Kenya

Bottling water began in the United Kingdom with the first water bottling at the Holly Well in 1622. The first commercially distributed water in America was bottled and sold by Jackson's Spa in Boston in 1767. Today, bottled water is a part of everyday life for millions of people living in the world. Per capita consumption in the United States now tops fifteen gallons per year with sales over $5 billion in 2002 (Chapelle, 2005).

Chapelle further points out that the historical popularity of bottled water is attributed to an associated image and status. It is further associated to a healthy lifestyle, convenience and more consistent taste. Some people are simply content to follow the trend. The popularity of bottled mineral waters has quickly led to a market for bottled water. It is the third most popular commercial beverage in the world after alcoholic and soft drinks. Most bottled water containers are made from recyclable plastic (Mackey et al., 2005).

In Kenya, water bottling companies gained popularity in the late 90's (Members Directory, 2008). These companies were established to serve the changing customer demands on service delivery, distribution as well as globalization (Kilasi, 2013). The functions of these bottling companies include mixing drinking ingredients and filling up cans and bottles with water (Juma and Mathooko, 2013). The bottler then distributes the final product to wholesale sellers in a geographic area. Large companies like the Coca-Cola Company sell their product to bottlers such as the Coca-Cola Bottling Co., who then bottles and distributes it (Bett, 1995).

There are 186 water bottling companies that are licensed to work and operate in Nairobi, Kenya (See Appendix II). The water bottling companies play a key role in the Kenyan economy. They generate revenue to the government through taxes; create employment to the local people in the product manufacturing, packaging and distribution to the retail outlets (Obaga, Omido and Ogutu, 2013).

However, according to MEMBERS' DIRECTORY (2008) these bottling companies are faced with numerous challenges including on-time delivery of goods and services, lack of modern technology, stiff competition and lack of a well-coordinated supply chain system. This might negatively impact on supply chain performance. Consumers expect that retailers will provide the right match in terms of the right product offering, quantities, place, time and price (Oliver, 1993). Water bottling companies should therefore consider implementing supply chain planning for improved supply chain performance.

1.2 Statement of the Problem

Andrew and Robert (2004) contend that supply chain planning capabilities enable firms to allocate demand intelligently to the most appropriate production facility based on lowest manufacturing cost or available resources including capacities and inventories, transport costs, and lead time from facility to customer. This assists in saving time and costs leading to improved supply chain performance. Kerbachea (2004) explained that firms that embrace supply chain methodologies and discipline fostered by a framework-based approach make themselves agile, and so are capable of effectively and rapidly responding to ever-changing business conditions.

Bottling companies will be the focus of this study; this is because of the nature of their supply chain functions especially mixing drinking ingredients and distribution of products to the final consumer (Ijomba, 2010). This is a complex process that requires supply chain planning to successfully deliberate on their functions.

Lockamy and McCormack (2004) carried out a study on supply chain planning and performance of manufacturing firms. It was found that supply chain planning contributed to efficiency in the supply chain. Lee and Kim (2002) carried out a study on the effectiveness of supply chain planning of manufacturing firms in United Kingdom. The study concluded that supply chain planning improved collaboration between supply chain partners. This enhanced supply chain performance. Perona (2001) concluded that banks used supply chain planning to integrate with their supply chain partners in Italy. Ijomba

(2010) conducted a study on the effects of integrated supply chain on the performance of Nairobi Bottlers. The study found that integrated supply chain led to improved supply chain performance.

Lisanza (2013) and Njoroge (2007) did studies on supply chain integration and performance in Humanitarian organizations and EABL. It was concluded that there was a significant positive relationship between SCM integration and performance in humanitarian organizations and East African Breweries Limited. These studies focused on supply chain integration and performance. The studies did not address the relationship between supply chain planning and performance.

The study therefore seeks to bridge the gap in research by finding answers to the following research questions: what are the supply chain planning practices used by water bottling companies in Nairobi Kenya? And what is the relationship between supply chain planning and supply chain performance of water bottling companies in Kenya?

1.3 Objectives of the Study

The general objective of this study was to determine the impact of supply chain planning on supply chain performance of water bottling companies in Kenya. Therefore, specific objectives were:

1. To determine supply chain planning practices used by water bottling companies in Nairobi, Kenya
2. To determine the challenges facing implementation of supply chain planning practices by bottling companies in Nairobi, Kenya
3. To establish the relationship between supply chain planning practices and supply chain performance of bottling companies in Nairobi, Kenya

1.4 Value of the Study

This study will be instrumental to the government and other policy makers. They may use the findings of this study to set policies that create an enabling environment for firms to practice and implement supply chain planning with the aim of optimizing their production and procurement activities to boost performance through increased sales and market share.

The study will serve as a point of reference to researchers and academicians interested in this area of study and related disciplines. It will contribute to the existing body of knowledge in terms of empirical and theoretical framework. The study findings and conclusions could be useful for making inferences for further study.

The study will be useful to the beverage industries. They will learn the benefits of supply chain planning in their supply chains, how to predict the future requirement of a firm by matching their future requirements with supply and demand. This will provide visibility into demand by allowing the firms to determine an optimal way to fulfill their customer demands.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This part consisted of the supply chain planning practices, the challenges of supply chain planning, the empirical review and the summary of the literature review and the knowledge gap.

2.2 Theoretical Perspectives

This part discussed theories that were relevant to supply chain planning and performance. The theories discussed in this study included: theory of constraints and knowledge based –view theory.

2.2.1 Theory of Constraints

According to Boyd and Gupta (2004) this theory is a management paradigm that views any manageable system as being limited in achieving more of its goals by a very small number of constraints. Davies, Mabin and Balderstone (2005) argue that there is always one of the constraints; this theory uses forecasting process to identify the constraint and restructure the rest of the organization around it.

The underlying assumption about this theory is that organizations can be measured and controlled by variations on three measures namely: throughput, operational expense and inventory. Ehie and Sheu (2005) explain that inventory is all the money that the system has invested in purchasing things which it intends to sell. Operational expense is all the money the system spends in order to turn inventory into throughput. Throughput is the rate at which the system generates money through sales. Before the goal itself can be reached, necessary conditions must first be met.

Gupta (2004) argue that failure to forecast into the future may negatively impact on organizational goals as a result of unidentified constraints. This theory is relevant to this study since it enlightens the management of an organization on the need to prepare for the future through supply chain planning (Davies, 2003). This is important because an

organization can be able to plan for its future demand. This will help to meet the growing needs of customers and thus overcome stock out costs; prolonged lead time, reduced holding costs leading to supply chain performance (Benton, 2007).

2.2.1 Knowledge-Based View

Knowledge-based view considers intangible resources of organizations as well. This theory looks at various dimensions to the development of this view namely: organizational learning, organizational capabilities and competencies. This theory promotes sharing of knowledge for purposes of improving efficiency and value creation. Ketchen and Hult (2007) emphasize that creation of value can only be achieved through internal and external organizational supply chain collaboration.

Hult, Ketche and Slater (2004) applied the knowledge-based view to the information process and knowledge development in organizational supply chain performance. They could describe the substantial variance in cycle time of organizational supply chain performance using knowledge-based view. This shows the relevance of sharing of knowledge in achieving supply chain performance in an organization. This theory demonstrates the importance of sharing knowledge during supply chain planning in an organization. The organization should practice sharing of knowledge with its supply chain partners. This enhances the speed of decision making and lowers communication costs leading to improved supply chain performance.

2.3 Supply Chain Planning Practices

Chopra and Meindl (2007) defines supply chain planning as a process of gathering information from buyers and suppliers to assist the organization to plan for its future actions and satisfy the demand at a reduced cost. However, the length of the planning horizon determines the degree of flexibility and the methods used to manage the plant. The supply chain planning practices discussed in this study include: integration with suppliers, control of supply chain planning, demand management process, collaborative

supply chain planning, supply chain decisions, strategic distribution planning and strategic warehouse planning and design.

2.3.1 Integration with Suppliers

Ehie and Sheu (2005) posit that integration enables enhanced sharing of information from buyers and suppliers. This helps the organization to plan its future actions and satisfy the demand at a minimum cost. Integration with suppliers is part of the supply chain planning whereby companies work with suppliers seeking mutual objectives, sharing ideas, information, knowledge, risks, rewards and solutions to common problems. For Lambert (2006), the term partnership is still the most descriptive term for closely integrated and mutually beneficial relationships that enhances supply chain performance (Benton, 2007). According to Baiman and Rajan (2002) what characterizes advanced integration between buyers and suppliers is the presence of a collaborative relationship and respect for other companies' cultural and organizational differences. By gaining indirect benefits, buyer and supplier may feel encouraged to interact which, in turn, enhances the planning process and reinforces the benefits, creating a cycle of positive interaction in the chain. This enables sharing of ideas thus improving supply chain performance (Bellmunt and Torres, 2013).

2.3.2 Control of the Supply Chain planning

In order to make sound tactical and strategic decisions that impact profitability, decision makers must have better control over the planning function. It's precisely in the area of forward decision making where companies can have the most impact on improving business results. To achieve these benefits, however, firms must first invest in supply chain planning education, systems and practices that deliver visibility into the future and therefore empower decision makers (Benton, 2007).

According to Akkermans, Bogerd and Van Doremalen (2004) the planning activities and decisions that management must make for supply chain function ranges from the extremely long-run to the short run and then day to day activities. Further, the

characteristics of these activities and decisions range from those that require vast resources and managerial time as measured by cost, required planning inputs, level of risk and other attributes as well as those requiring relatively minimal time and resources.

2.3.3 Demand Management Process

Soldhi (2003) indicates that demand management process is a documented forecasting process that uses history data to estimate the demand in future in order to plan for the future using mathematical methods. It is concerned with balancing the customers' requirements with the capabilities of the supply chain. This includes forecasting demand and synchronizing it with production, procurement, and distribution capabilities. A good demand management process can enable a company to be more proactive to anticipated demand, and more reactive to unanticipated demand.

An important component of demand management is finding ways to reduce demand variability and improve operational flexibility. Reducing demand variability aids in consistent planning and reducing costs. Kaipia (2008) explains that increasing flexibility helps the firm respond quickly to internal and external events. Most customer-driven variability is unavoidable, but one of the goals of demand management is to eliminate management practices that increase variability, and to introduce policies that foster smooth demand patterns (Soldhi, 2003).

2.3.4 Collaborative Supply Chain Planning

According to Lee and Kim (2002) supply chain collaborative planning seeks to improve supply chain planning process. Having the right product on the shelves will increase sales and customer loyalty. Improved forecasting can reduce raw materials and finished goods inventories leading to a smoother operational execution which reduces logistics costs and improves asset utilization. This is realized not only within the organization but also to other members of the supply chain.

With reference to Benton (2007) the conception and development of partnerships is achieved through improved communication between potential supply chain partners. A study by Baiman and Rajan (2002) on collaborative supply chain has identified critical steps to achieve collaboration. This provides a roadmap that raises key issues about planning collaboration in any supply chain. The first stage is planning. It entails two critical steps: frond-end agreement and joint business plan. The next stage involves two forecast-oriented steps: sales forecast collaboration and older forecast collaboration. Baiman and Rajan (2002) indicate that the final stage involves replenishment. It comprises one major step: order generation. In the collaborative planning, forecasting and replenishment process, the planning phase is critical as partners develop collaboration initiatives and terms (Oliva and Watson, 2011).

2.3.5 Supply Chain Decisions

This is a supply chain planning practice used by the top management of organizations in order to effectively plan for their supply chains. Lockamy and McCormack (2004) put forth that supply chain decisions are categorized in three broad categories: long-term, medium-term and short-term. This depends on the objective that the organization seeks to achieve while executing its supply chain functions and activities (Scott et al., 2003).

Oliva and Watson (2011) argue that the middle level managers maintain proper coordination of activities between the organization and the warehouse. This helps in reducing communication costs, inventory and transport costs leading to supply chain performance. The departmental heads of supply chain makes day-to-day decisions involving the operations of the organization. This kind of decisions focus on scheduling workloads, maintenance of equipment and meeting immediate market demands.

2.3.6 Strategic Distribution Planning

Sodhi (2003) posit that strategic distribution planning includes the determination and redesigning of the physical distribution structures between warehouses and outlets, the flexibility and degree of a supplier's own outbound supply chain activities. Strategic

distribution planning creates structures for the transportation modes for direct links to stores, warehouse-to-store deliveries and cross-docking operations.

Often, retailers use a distribution mix depending on supplier location and product characteristics. They use their warehouses for storage and picking, but sometimes they additionally serve for cross-docking (Lambert, 2006). Another important function of strategic distribution planning is to regulate to what extent the retailer should handle the outbound logistics, and how strategic partnerships with service providers are arranged. This enables the firm to effectively integrate its functions and activities with its supply chain providers and thus improve supply chain performance (Kaipia, 2008).

2.3.7 Strategic Warehouse Planning and Design

Lee and Kim (2002) indicated that warehousing includes all activities between inbound logistics from suppliers and outbound logistics to outlets, especially picking outlet-specific orders. Strategic warehouse design governs the number, location, function and types of warehouses. Determining the number of warehouses and location planning requires a trade-off decision between inbound transportation costs, fixed site costs, inventory costs and outbound transportation costs leading to supply chain performance. It establishes the total number and size of warehouses and selects the site (Oliva and Watson, 2011).

Perona (2001) argues that increasing the number of warehouses reduces the outbound transportation costs but increases the inbound transportation and inventory costs. The function within the network is deciding whether to use central or regional warehouses. The type determination means selecting technologies for serving the warehouses and running picking processes for example technologies for frozen, chilled and ambient products or materials handling technologies for order picking systems.

2.4 Challenges of Supply Chain Planning

Baiman and Rajan (2002) put forth that the planning horizon for a typical business is a rolling twelve month period. This time horizon is often considered a demand forecasting problem. Since the forecast is used to drive the budget, distribution and production planning processes. Benton (2007) argues that increasing the accuracy of the forecast is fundamental to improving the stability of these plans that is distribution, inventory, production and the overall return on investment from corporate resources.

With reference to Bellmunt and Torres (2013) lack of proper coordination of sales and marketing functions with the supply chain initiatives of the organization on what should be produced, and where it is needed is a challenge to most organizations. Lack of good supply chain coordination can lead to frequent changes in production schedules, expedited transfers and shipments in distribution, excessive stock outs, and erratic levels of customer service and lack of visibility into the future demand.

Bellmunt and Torres (2013) further maintain that the other challenge is lack of a shared knowledge about the supply chain planning function. This leads to inadequate decision support systems and unavailable or inconsistent data due to lack of integration to the core business systems. According to Kaipia (2008) most organizations lack adequate knowledge regarding forecasting and planning techniques often, key decision makers have little formal training in the areas of forecasting, inventory planning, production planning, distribution planning or scheduling theory and processes. Many are simply following past practices, which may be outdated and yield undesirable outcomes. Sodhi (2003) argue that planners are often frustrated at the quality of the forecasts they receive from their sales and marketing organizations. In most cases, they will override the forecast and use their own judgment. While this can work better in individual circumstances, it also means that marketing and planning are not working to a coordinated plan. Forecasts at the item or location levels are often least reliable.

2.5 Empirical Review

Kaipia (2008) examined the effects of delivery speed on supply chain planning; a descriptive survey was conducted in a sample of 45 commercial banks in Europe. Primary data was collected using a semi structured questionnaire. A regression model was adopted for data analysis to establish the relationship between the effects of delivery speed on supply chain planning. It was concluded that supply chain planning was a key component in achieving improved delivery speed.

Lee and Kim (2002) investigated on the influence of production distribution planning on performance of manufacturing firms in UK. A causal study was conducted in a sample of 55 manufacturing firms. Both primary and secondary data was used; primary data was collected using a semi-structured questionnaire while secondary data was gathered from financial statements. A correlation analysis was done and the findings concluded that there existed a positive correlation between production distributions planning on performance of manufacturing firms.

Lockamy and McCormack (2004) carried out a study on supply chain planning and performance of manufacturing firms. A cross sectional survey was carried out; primary data was collected using a structured questionnaire. A regression model was used to show whether there was any relationship between supply chain planning and performance of manufacturing firms. The results of the analysis concluded that supply chain planning contributed to efficiency in the supply chain.

2.6 Summary of the Literature Review and Knowledge Gaps

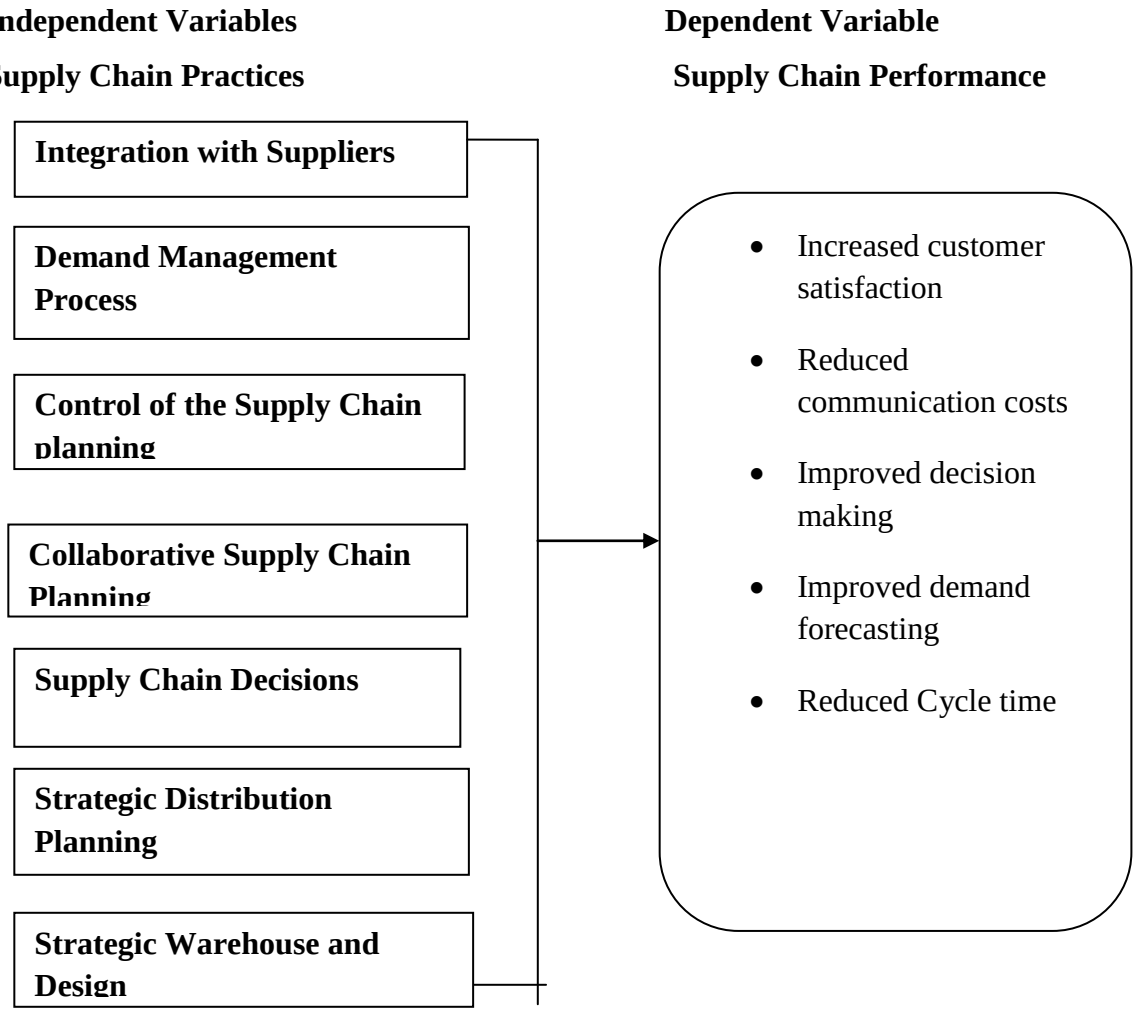
The empirical review shows that supply chain planning practices are an essential component in making supply chain decision in an organization. Supply chain planning enables an organization to match its demand and supply of goods and services to customers. This enables an organization to achieve on time delivery of goods and services, coordination of activities, improved decision making process and reduced communication costs. Studies by Lockamy and McCormack (2004), Lee and Kim (2002)

and Lee and Kim (2002) have concluded that supply chain planning contributes to supply chain performance of the firm in finance and manufacturing sectors. This study seeks to address the question: what is the relationship between supply chain planning practices and supply chain performance of bottling companies in Kenya?

2.7 Conceptual Framework

The study used a conceptual model below to explain the relationship between supply chain planning practices and supply chain performance of bottling companies in Kenya.

Figure 2.1 Conceptual framework



Source: (Author, 2015)

The figure 2.1 above depicted the conceptual argument for this study which showed the relationship between supply chain planning and supply chain performance. Effective implementation of supply chain planning practices (integration with suppliers, control of supply chain planning, demand management process, collaborative supply chain planning, supply chain decisions, strategic distribution planning and strategic warehouse planning and design) is attributable to reduced communication costs, improved demand forecasting, reduced cycle time and improved decision making. This leads to improved supply chain performance.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter described the steps, procedures and approaches used in executing this study. It covered the research design, the study population, sampling, respondent selection, data collection and analysis procedures.

3.2 Research Design

This study used a cross sectional survey and descriptive design. This design was appropriate because it was helpful in establishing the nature of the current situation and analyzing such situation and conditions. According to Kothari (2003) cross-sectional studies are essential where the overall objective is to find out whether there is any association between variables.

3.3 Study Population

The target population of this study consisted of all the 186 water bottling companies in Nairobi, Kenya (See Appendix II). This is because it is where supply chain planning practices were mostly applied due to the manner of consumption of drinking water.

3.4 Sampling

The sample size for this study included 19 respondents. This was arrived at through a formula developed by Kelley and Maxwell (2003) as shown below: 0.101=Sample Size/Total population (0.101*186) =19. This formula was derived from a series of samples assuming non-zero probability. This method is considered appropriate when using a descriptive survey research design and a correlation and regression model as recommended by (Kelley and Maxwell, 2003). The 19 heads of supply chain or their equivalents were selected for data collection. Simple random sampling was employed to select the respondents.

3.5 Data Collection

The study used qualitative form of data collection techniques. Primary data was collected by use of a semi structured questionnaire. According to cooper and Schindler (2003) a questionnaire is useful when collecting large amounts of data from a large number of people in a short period of time and in a relatively cost effective way. The data can easily be quantified. It can be used to compare and contrast other research and may be used to measure change.

The questionnaire was divided into four sections: part A contained questions on the general profile of the respondents and the organization; section B contained questions on the supply chain management practices used by water bottling companies in Kenya Section C contained questions on the challenges facing bottling companies in Kenya on the implementation of supply chain management practices. Section D contained questions on the relationship between supply chain planning practices and supply chain performance of water bottling companies in Kenya. Primary data was collected from the heads of supply chain in the water bottling companies in Kenya, or their equivalents. These respondents were deemed as key informants of the study because they were highly involved in supply chain planning and therefore understand the challenges faced when implementing these practices. The questionnaires was administered by a "drop and pick later" method after five days at an agreed hour with the researcher.

3.6 Data Analysis

The data collected was analyzed using descriptive statistics to achieve the first and the second objectives of the study. This involved measures of central tendency and dispersion, mean and standard deviation. To achieve the third objective of this study, a correlation and regression model was employed. The model consisted of seven independent variables and a dependent variable: The independent variables were supply chain planning practices while the dependent variable was supply chain performance.

$Y = \beta_0 + \beta_1 x_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + e$

Y= Supply chain performance

X_1= Integration with supplier

X_2=Demand management process

X_3= Control of the supply chain planning

X_4= Collaborative Supply Chain Planning

X_5= Supply Chain Decisions

X_6= Strategic distribution planning

X_7= Strategic Warehosue and Design

β_0 and X =Regression Constants

€= Error term.

The study used a linear regression model to show the relationship between supply chain planning practices and supply chain performance of the organization.

Below is a summary of how data collected was analyzed in the table below:

Objectives	**Questionnaire**	**Data Analysis**
General Profile	Section A	Descriptive
Objective 1	Section B	Descriptive
Objective 2	Section C	Descriptive
Objective 3	Section D	Regression

Source: (Author, 2015)

CHAPTER FOUR
DATA ANAYSIS, RESULTS AND DISCUSSION

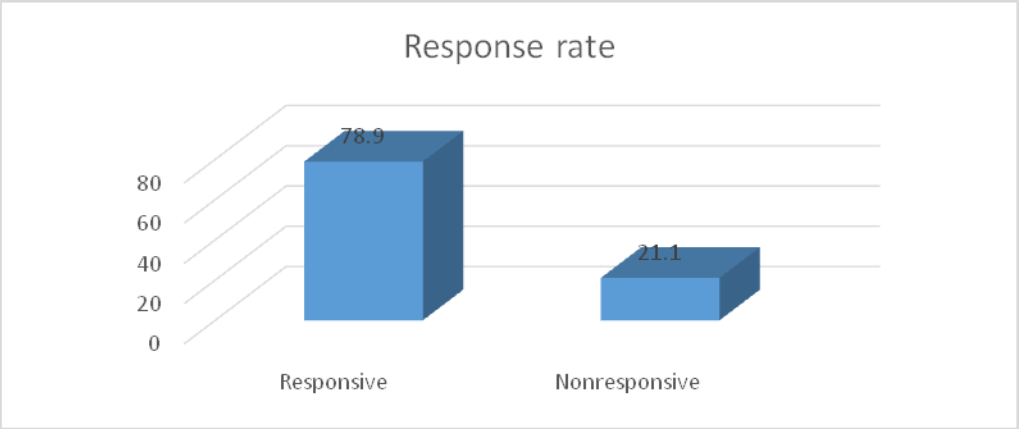
4.1 Introduction

This chapter provides a summary of the data analysis, results of the study and the discussion of the results of the study. The results were presented on the Supply Chain Planning and Performance of Water Bottling Companies in Nairobi, Kenya. The study was based on the following specific objectives: To determine supply chain planning practices used by water bottling companies in Nairobi, Kenya; to determine the challenges facing implementation of supply chain planning practices and to establish the relationship between supply chain planning practices and supply chain performance of bottling companies in Nairobi, Kenya.

4.2 Response Rate

The study targeted a sample size of 19 respondents from which 15 filled in and returned the questionnaires making a response rate of 78.9%. This response rate was satisfactory and representative to make conclusions for the study. According to Mugenda and Mugenda (1999), a response rate of 50% is adequate for analysis and reporting; a rate of 60% is good and a response rate of 70% and over is excellent. Based on the assertion, the response rate was considered to be excellent. 21.1% of the respondents did not return the questionnaires. The figure 4.1 below shows the results

Figure 4.1: Response Rate



Source: Research data, (2015)

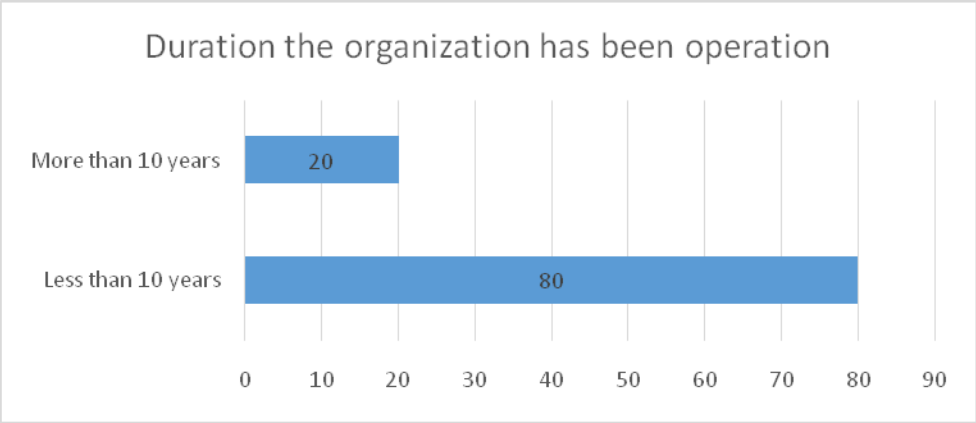
4.3 General information

The study sought to establish the information on the respondents employed in the study with length of period of work at Water Bottling Companies, duration the organization has been in operation and the position of the respondents. These bio data point at the respondents' appropriateness in answering the questions.

4.3.1 Duration the organization has been operation

As pertaining to the duration the organization has been in operation, 80% of respondents indicated their organization has been in operation for less than 10 years, while 20% indicated more than 20 years. This shows the age of the organization. This also shows whether the organization has adopted the supply chain planning practices. The figure 4.2 below shows the results after analysis

Figure 4.2: Duration the organization has been operation

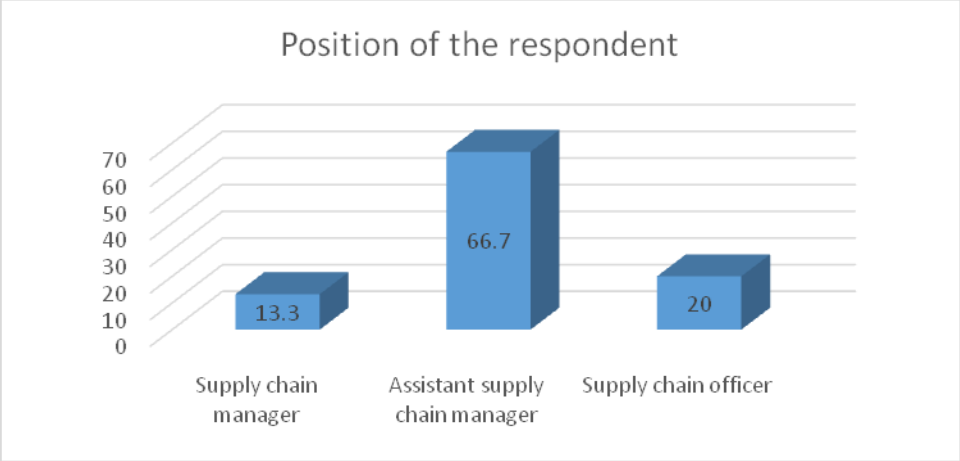


Source: Research data, (2015)

4.3.2 Position of the respondent

The study requested the respondent to indicate their positions, from the findings it was established that, 66.7% of the respondents were assistant supply chain manager, 20% of the respondent indicated their position was supply officer, 13.3% of the respondents indicated they were supply chain manager. This indicates that the respondents were well conversant with supply chain planning practices. The figure 4.3 below presents the results

Figure 4.3: Position of the respondent

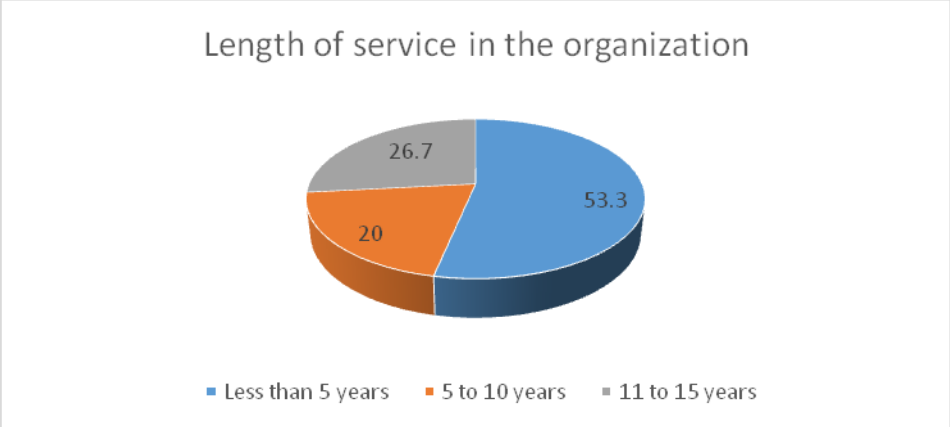


Source: Research data, (2015)

4.3.3 Length of service in the organization

When asked the duration of time they had worked at Water Bottling Companies in Nairobi, 53.3% of all respondents reported to have worked for less than 5 years, 20% of the respondents had worked for 5 to 10 years, while the remaining 26.7% had worked for a period of 11 to 15 years. This is the product of the Water Bottling Companies culture of attracting and retaining the best and hence the extensive experience resource, internal capabilities, the Water Bottling Companies enjoy in building its competitiveness hence improved performance. The figure 4.4 below presents the results

Figure 4.4 Length of Service in the Organization



Source: Research data, (2015)

4.4 Reliability analysis

4.4.1 Cronbach's Coefficient Alpha

The reliability of the measurements was evaluated by Cronbach alpha coefficient (Sekaran, 2005). The results are presented in the table 4.1 below. Different scholars have used different Cronbach Alpha coefficients cut-off points (Nunnally 1978; Hair et al., 1998). The reliability results exceeded the 0.7 level of acceptability and were therefore considered reliable for further analysis (Hair et al., 1998). Hair, Money, Samouel and Page (2007) postulate that alpha coefficient below 0.6 represent poor strength of association among data instrument. The Cronbach's Alpha coefficient was 0.884. George

and Mallery (2003), states that at least a value of 0.7 is recommendable and therefore the instrument was accepted as highly reliable.

Table 4.1: Reliability Statistics

Cronbach's Alpha	N of Items
.884	50

Source: Research data, (2015)

4.5 Supply chain planning practices

On a scale of 1 to 5, where (1) very small extent (2) small extent (3) moderate extent (4) large extent (5) very large extent, the respondents were asked to indicate the extent they agree with the statements on the supply chain planning practices. The scores of very small extentand small extent have been taken to represent a variable which had a mean score of 0 to 2.5 on the continuous Likert scale; ($0 \leq S.E < 2.4$). The scores of moderate extent have been taken to represent a variable with a mean score of 2.5 to 3.4 on the continuous Likert scale ($2.5 \leq M.E < 3.4$) and the score of both large extent and very large extent have been taken to represent a variable with a mean score of 3.5 to 5.0 on the continuous Likert scale; ($3.5 \leq L.E < 5.0$).

A standard deviation of >0.9 implies a significant difference on the supply chain planning practices of the variable among the respondents. The table 4.4 below summarizes the mean scores of the variables of supply chain planning practices.

The findings shows that the integration with suppliers is adopted to a moderate extent as indicated by the composite (m=3.45, std dev=0.908). This shows that the company integrates with suppliers so that the sharing of information is enhanced. The finding concurs with the literature review in that according to Ehie and Sheu (2005) posit that integration enables enhanced sharing of information from buyers and suppliers. This helps the organization to plan its future actions and satisfy the demand at a minimum

cost. Integration with suppliers is part of the supply chain planning whereby companies work with suppliers seeking mutual objectives, sharing ideas, information, knowledge, risks, rewards and solutions to common problems.

The study findings after analysis shows that the practices under integration with suppliers to a large extent includes the firm has improved efficiency in supply chain management with (m= 3.5263, std dev=.90483) and he firms has formally enhanced its communication processes with (m=3.63, std dev=0.895). This shows that this practices adopted have improved the performance of the organization. The other practices adopted to moderate extent includes the firm uses integration to improve logistical efficiency with (m=3.32, std dev=0.95), the organization has significantly reduced its communications costs with (m=3.42, std dev=0.902) and the firm has a shared system with its suppliers with (m=3.37, std dev=0.895).

The results after analysis shows that the demand management process is adopted to a large extent as shown by the composite (m=3.62, std dev=0.94). This shows that the organization has adopted these practices to foster smooth demand patterns. The finding agrees with the literature review in that according to Soldhi (2003) indicates that demand management process is a documented forecasting process that uses history data to estimate the demand in future in order to plan for the future using mathematical methods. It is concerned with balancing the customers' requirements with the capabilities of the supply chain. This includes forecasting demand and synchronizing it with production, procurement, and distribution capabilities. A good demand management process can enable a company to be more proactive to anticipated demand, and more reactive to unanticipated demand.

The other practices adopted to a large extent includes control of the supply chain planning with composite (m=3.56, std dev=0.945), supply chain decisions with composite (m=3.66, std dev=0.901), strategic distribution planning with composite (m=3.69, std dev=0.930) and strategic warehousing design with composite (m=3.76, std

dev=0.93). This shows that the water bottling company has adopted the control of the supply chain planning for decision making hence improved performance. The finding agrees with the literature review in that according to Benton, (2007), control of the supply chain planning is precisely in the area of forward decision making where companies can have the most impact on improving business results.

The supply chain decisions is adopted by the water bottling company to effectively plans for the organizations hence this helps in reducing the communications costs affecting the performance positively. The finding agrees with the literature review in that according to Oliva and Watson (2011) the departmental heads of supply chain makes day-to-day decisions involving the operations of the organization. This kind of decisions focus on scheduling workloads, maintenance of equipment and meeting immediate market demands. The strategic distribution planning is adopted by the water bottling company to create the relationship between the supplier and customers by meeting the demand on time this is because goods are available any time. The finding concurs with the literature review in that according to Sodhi (2003) strategic distribution planning creates structures for the transportation modes for direct links to stores, warehouse- to- store deliveries and cross- docking operations.

The strategic warehousing is also adopted by the water bottling companies because the objective of a logistics system is to reduce cycle times and overall inventories, lower costs and most importantly, improve customer service. Warehousing increases the utility value of goods by providing a means to have the right products available at the right place in the right time. The findings concurs with the literature review in that operations such as order consolidation, order assembly, product mixing and cross-docking that take place within the warehouse structure also add value to the overall logistics system.

Table 4.2: Supply chain planning practices

	Mean	**Std dev**
Integration With Suppliers		
The firm uses integration to improve logistical efficiency	3.3158	.94591
The firm has a shared system with its suppliers	3.3684	.89508
The organization has significantly reduced its communications costs	3.4211	.90159
The firm has improved efficiency in supply chain management	3.5263	.90483
The firms has formally enhanced its communication processes	3.6316	.89508
Composite mean and std deviation	**3.4526**	**.908498**
Demand Management Process		
The organization is able to manage its inventory and to provide uninterrupted production, sales and customer-service levels at minimum cost.	3.2632	.80568
The firm determines the parameter for safety inventory to prevent stock outs	3.6842	1.00292
The firm is able to maintain the optimal level of demand to achieve the desired customer levels.	3.5263	.90483
The firm is able to forecast and sense demand accurately	3.7895	1.03166
The firm maintains a proper balance between supply and demand	3.8421	.95819
Composite mean and std deviation	**3.6211**	**.940656**
Control of the Supply Chain planning		
The firm adapts a better control over the planning function	3.7895	.97633
The firm applies supply chain planning education, systems and practices that deliver visibility into the future	3.3684	.95513
The firm engages its suppliers in short term and long-term decisions	3.5263	.90483

Composite mean and std deviation	**3.5614**	**.94543**
Collaborative Supply Chain Planning		
The firm collaborates with its suppliers in decision making process	3.4211	.83771
The firm formally involves its suppliers in planning decisions	3.6842	.88523
The firm collaborates with its suppliers in forecasting of demand and supply	3.3684	.89508
The firm maintain a supplier relationship for improved trust	3.4737	.77233
Composite mean and std deviation	**3.4868**	**.847588**
Supply Chain Decisions		
The firms practices joint planning and decision making	3.6316	.89508
The firm involves all its supply chain providers in all its decisions	3.6842	.8823
The firm involves its suppliers in long term decisions	3.6842	.94591
The firm ensures coordination of planning and supply chain functions	3.6842	.88523
The firm's top management makes appropriate decisions when selecting suppliers and other key supply chain members	3.6316	.89508
Composite mean and std deviation	**3.6632**	**.90072**
Strategic Distribution Planning		
The firm implements strategies that optimize distribution of goods through collaborative relationships with carriers, suppliers and customers.	3.6316	.95513
The firm outsources transportation to third and fourth party logistics providers to minimize transportation costs.	3.6842	.88523

The firm maintains proper structures for direct links to stores, warehouse to store deliveries and cross docking operations	3.6842	.94591
The firm's uses its warehouses for storing, picking and sometimes cross-docking for improved supply chain planning	3.6842	. 94591
The firms maintains a proper balance of inbound and outbound logistics	3.7895	.91766
Composite mean and std deviation	**3.6947**	**.929968**
Strategic Warehousing Design		
The firm's warehouse is located close to the distributors	3.6842	.88523
The firm outsources the warehousing function for reduced costs.	3.6316	.95513
The firm has a strong distribution and warehousing strategy that is critical for effective logistics management.	3.7895	.91766
The firm's warehouse is strategically located to reduce transportation costs.	3.9474	.97032
The firm uses automated picking systems for increased efficiency	3.7368	.93346
Composite mean and std deviation	**3.7579**	**.93236**

4.6 Challenges of implementing supply chain planning practices

On a scale of 1 to 5, where (1) strongly disagree (2) disagree (3) neither agree nor disagree (4) agree (5) strongly agree, the respondents were asked to indicate the challenges faced when implementing the supply chain planning practices. The scores of strongly disagree and disagree have been taken to represent a variable which had a mean score of 0 to 2.5 on the continuous Likert scale; ($0 \leq S.E < 2.4$). The scores of neither agree nor disagree have been taken to represent a variable with a mean score of 2.5 to 3.4 on the continuous Likert scale ($2.5 \leq M.E < 3.4$) and the score of both agree and strongly agree have been taken to represent a variable with a mean score of 3.5 to 5.0 on the continuous Likert scale; ($3.5 \leq L.E < 5.0$). A standard deviation of >1.0 implies a significant difference on the challenges of the variable among the respondents.

The table 4.1 below summarizes the mean scores of the variables of challenges. The challenges pointed out by the respondents who agreed includes numerous layers in the management levels of our organization leads to duplication of duties, this negatively affects supply planning practices with (m=3.58, std dev=0.90), failure by our top management to commit itself towards implementation of supply practices (m=3.68, std dev=1.00), the top management focus more on competition at the expense of implementation of supply planning (m=3.79, std dev=0.92), inadequate resources for implementing supply planning practices is a problem to our firm (m= 3.58, std dev=0.84) and the organization lack effective training and proper structures for supply chain planning (m=3.74, std dev=0.87). This indicates that numerous layers in the management level leads to poor decisions which negatively affect the implementation of supply chain planning practices.

Lack of top management commitment and focus on competition hinders the management in participating and sharing the necessary information to implement supply chain planning practices. It also shows that lack of top management support will lead to unnecessary frustrations in work place and also, it will cause delay in operations and ineffective decisions in water bottling companies. Inadequate resources hinder the organization from the necessary equipment which are used in the implementation process and lack of effective training hinders the implementation as the employees not have the necessary resources.

The findings concurs with the literature review in that in the absence of skills, appropriate ethics are not applied and hence become a challenge in applying the supply chain planning techniques (Farrington *et al*., 2012). According to Bellmunt and Torres (2013) lack of a shared knowledge about the supply chain planning function leads to inadequate decision support systems and unavailable or inconsistent data due to lack of integration to the core business systems. According to Kaipia (2008) most organizations lack adequate knowledge regarding forecasting and planning techniques often, key decision makers have little formal training in the areas of forecasting, inventory planning, production

planning, distribution planning or scheduling theory and processes. Many are simply following past practices, which may be outdated and yield undesirable outcomes.

Table 4.3: Challenges of implementing supply chain planning practices

	Mean	Std dev
Poor leadership by our top management hinder effective implementation of supply planning practices	3.4737	.96427
Numerous layers in the management levels of our organization leads to duplication of duties, this negatively affects supply planning practices	3.5789	.90159
Failure by our top management to commit itself towards implementation of supply practices	3.6842	1.00292
Cultural dynamism makes supply chain planning difficult in our firm because the management is rigid in their ways of doing things	3.4737	.90483
The top management focus more on competition at the expense of implementation of supply planning	3.7895	.91766
Inadequate resources for implementing supply planning practices is a problem to our firm	3.5789	.83771
Our organization lack effective training and proper structures for supply chain planning	3.7368	.87191

Source: Research data, (2015)

4.7 Supply chain planning practices and supply chain performance

On a scale of 1 to 5, where (1) very small extent (2) small extent (3) moderate extent (4) large extent (5) very large extent, the respondents were asked to indicate the extent they agree with the statements on the supply chain planning practices. The scores of very small extent and small extent have been taken to represent a variable which had a mean score of 0 to 2.5 on the continuous Likert scale; ($0 \leq$ S.E<2.4). The scores of moderate extent have been taken to represent a variable with a mean score of 2.5 to 3.4 on the

continuous Likert scale (2.5≤M.E<3.4) and the score of both large extent and very large extent have been taken to represent a variable with a mean score of 3.5 to 5.0 on the continuous Likert scale; (3.5≤L.E<5.0). A standard deviation of >0.9 implies a significant difference on the variables among the respondents. The table 4.4 below summarizes the mean scores of the variables of supply chain performance. The improved performance is reflected through demand management process ensures optimal stock with (m=3.60, std dev=0.51). This shows that the firm ensures the optimal stock to meet the needs of customers and avoids unnecessary stock.

The finding concurs with the literature review in that reducing demand variability aids in consistent planning and reducing costs. Kaipia (2008) explains that increasing flexibility helps the firm respond quickly to internal and external events. Most customer-driven variability is unavoidable, but one of the goals of demand management is to eliminate management practices that increase variability, and to introduce policies that foster smooth demand patterns (Soldhi, 2003).

The performance is also reflected through strategic warehousing planning minimizes transport costs with (m=3.67, std dev=0.98). This show the warehousing reduces the transportation costs as the goods are only distributed when the order is made. The finding concurs with the literature review in that determining the number of warehouses and location planning requires a trade- off decision between inbound transportation costs, fixed site costs, inventory costs and outbound transportation costs leading to supply chain performance. It establishes the total number and size of warehouses and selects the site (Oliva and Watson, 2011).

The finding after analysis also shows that strategic distribution planning reduces lead time with (m=3.80, std dev=0.68) and strategic distribution planning has led to well defined distribution channels with (m=3.80, std dev=.86). This shows that the firm stores optimal stock and distributes in time when the need arises to avoid competition from other competitors. It also indicates that suppliers supplies goods on time as they are

informed and there are many channels to distribute this goods and services to avoid delays hence customer satisfaction.

The finding concurs with the literature review in that according to Kaipia, (2008) regulating to what extent the retailer should handle the outbound logistics, and how strategic partnerships with service providers are arranged. This enables the firm to effectively integrate its functions and activities with its supply chain providers and thus improve supply chain performance. Retailers use a distribution mix depending on supplier location and product characteristics. They use their warehouses for storage and picking, but sometimes they additionally serve for cross- docking (Lambert, 2006).

The findings after the analysis shows that the respondents indicated to a large extent that supply chain decisions helps in firm delivering goods and services on time with (m=3.73, std dev=0.96) and supply chain decisions help the firm to effectively manage its transport system with (m=3.80, std dev=0.86). This indicates that supply chain is linked with major customers hence the firm delivers goods on time to avoid unhealthy competition. This also strengthens the supplier customer relationship. The finding concurs with the literature review in that according to Oliva and Watson (2011) argues that the middle level managers maintain proper coordination of activities between the organization and the warehouse. This helps in reducing communication costs, inventory and transport costs leading to supply chain performance. The departmental heads of supply chain makes day-to-day decisions involving the operations of the organization. This kind of decisions focus on scheduling workloads, maintenance of equipment and meeting immediate market demands.

The results after analysis shows that collaboration in supply chain leads to on time delivery of goods with (m=3.40, std dev=0.83) and integration with suppliers minimizes communication costs with (m=3.80, std dev=0.77). This shows well coordination of supply chain services improves the delivery of goods and services and communication costs. This also shows that the information sharing between the suppliers and buyers

improves. The findings agrees with the literature review in that according to Baiman and Rajan (2002) what characterizes advanced integration between buyers and suppliers is the presence of a collaborative relationship and respect for other companies' cultural and organizational differences. By gaining indirect benefits, buyer and supplier may feel encouraged to interact which, in turn, enhances the planning process and reinforces the benefits, creating a cycle of positive interaction in the chain. This enables sharing of ideas thus improving supply chain performance (Bellmunt and Torres, 2013).

The findings after analysis shows that the respondents agreed to moderate extent that control of the supply chain planning helps the firm to achieve a competitive advantage against its competitors with (m=3.33, std dev=0.72) and due to collaborations with suppliers, the firm has no manual delivery of information with (m=3.33, std dev=0.82). This implies that the management controls the supply chain planning to so that there is well coordination hence better dissemination of information that leads to improved performance.

Table 4.4: Supply chain planning practices and supply chain performance

	Mean		Std. Deviation
	Statistic	Std. Error	Statistic
Demand management process ensures optimal stock	3.6000	.13093	.50709
Strategic warehousing planning minimizes transport costs	3.6667	.25198	.97590
Strategic distribution planning reduces lead time	3.8000	.17457	.67612
Collaboration in supply chain leads to on time delivery of goods	3.4000	.21381	.82808
Integration with suppliers minimizes communication costs	3.8000	.20000	.77460
Supply chain decisions helps in firm delivering goods and services on time	3.7333	.24817	.96115
Supply chain decisions help the firm to effectively manage its transport system	3.8000	.22254	.86189
Control of the supply chain planning helps the firm to achieve a competitive advantage against its competitors	3.3333	.18687	.72375
Strategic warehouse planning has led to increased delivery frequencies	3.6667	.21082	.81650
Due to collaborations with suppliers, the firm has no manual delivery of information	3.3333	.21082	.81650
Strategic distribution planning has led to well defined distribution channels	3.8000	.22254	.86189

Source: Research data, (2015)

4.8 Pearson Correlation Analysis

The Karl Pearson's coefficient of correlation (simple correlation) is a measure of the degree of relationship between two variables and is denoted by r. Basically, a Pearson product-moment correlation attempts to draw a line of best fit through the data of two variables, and the Pearson correlation coefficient was conducted to examine the relationship between variables, r, indicates how far away all these data points are to this line of best fit (how well the data points fit this new model/line of best fit). The Pearson correlation coefficient, r, can take a range of values from +1 to -1. A value of 0 indicates that there is no association between the two variables.

As cited in Wong and Hiew (2005), the correlation coefficient value (r) range from 0.10 to 0.29 is considered weak, from 0.30 to 0.49 is considered medium and from 0.50 to 1.0 is considered strong. However, according to Field (2005), correlation coefficient should not go beyond 0.8 to avoid multi co-linearity. The results show that there is high correlation between, control of the supply chain planning and supply chain performance with a value of 0.702, strategic warehouse and designand supply performance with a value of 0.663 and demand management process and supply chain performance with a value of 0.653. The correlation coefficients on the main diagonal are always 1.0, because each variable has a perfect positive linear relationship with itself.

Table 4.5: Pearson Correlation Coefficients Matrix

Pearson Correlation	Supply chain Performance	IS	DMP	CSCP	CSCP	SCD	SDP	SWD
Supply chain Performance	1.000	.611						
IS	.611	1.000						
DMP	.653	.700	1.000					
CSCP	.702	.551	.632	1.000				
CSCP	.609	.633	.578	.584	1.000			
SCD	.526	.561	.700	.618	.514	1.000		
SDP	.501	.611	.534	.662	.557	.576	1.000	
SWD	.663	.699	.723	.678	.589	.608	.703	1.000

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

Source: Research data, (2015)

4.9 Regression Analysis

The regression analysis is concerned with the distribution of the average value of one random variable as the other variables which need not be random are allowed to take different values. A multivariate regression model was applied. The regression model specifically connects the average values of y for various values of the x-variables. A regression equation is in no way a mathematical linking two variables but serves as a pointer to questions to be answered. Basically, the regression analysis is used in two distinct ways; (1) as a means of considering data taking into account any other relevant variables by adjustment of the random variable; and (2) to generate mathematical forms to be used to predict the random variable from the other (independent) variables. The regression model was as follows:

$y = \beta 0 + \beta 1X1 + \beta 2X2 + \beta 3X3 + \beta 4X4 + ę$

Where:

Y= Supply chain performance

β_0 = Constant Term

β_1= Beta coefficients

X_1= Integration with supplier

X_2=Demand management process

X_3= Control of the supply chain planning

X_4= Collaborative Supply Chain Planning

X_5= Supply Chain Decisions

X_6=Strategic distribution planning

X_7= Strategic Warehouse and Design

ε= error term

Table 4.6: Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.876[a]	.768	.536	.713

a. Predictors: (Constant), Integration with supplier, demand management process, control of the supply chain planning, collaborative supply chain planning, supply chain Decisions, strategic distribution planning, strategic warehouse and design

b. Dependent Variable: supply chain Performance

Source: Research data, (2015

The model summary is presented in Table 4.4. The model summary was highly significant (p=0.000) showing that the model was functional. The model had an R square value of 0.768 indicating that the percentage of the dependent variable variance that was explained by the independent variables was 76.8%. The P- value of 0.025 (Less than 0.05) implies that the model of supply chain performance is significant at the 5 per cent significance. R is the correlation coefficient which shows the relationship between the study variables, from the findings shown in the table above there was a strong positive relationship between the study variables as shown by 0.876. The Standard Error of the

Estimate is the standard deviation of the data about the regression line, rather than about the sample mean. This statistic is used with the correlation measure, the Pearson *R*. It is used to construct a confidence interval within which the true population correlation will fall. The computations derived from the r and the standard error of the estimate can be used to determine how precise an estimate of the population correlation is the sample correlation statistic.

ANOVA findings (P- value of 0.025) in Table 4.5 show that there is correlation between the predictor's variables and response variable. An F ratio is calculated to represent the variance between the groups, divided by the variance within the groups. A large F ratio indicates that there is more variability between the groups (caused by the independent variable) than there is within each group, referred to as the error term (Pallant, 2005). Therefore, this is an indication of a better the predictor model. A significant F test indicates that we can reject the null hypothesis which states that the population means are equal. The F value of 3.308 indicates that the overall regression model is significant hence it has some explanatory value.

This indicates that there is a significant relationship between the predictor variables integration with supplier, demand management process, control of the supply chain planning, collaborative supply chain planning, supply chain decisions, strategic distribution planning, strategic warehouse and designand supply chain performance. At 95 percent confidence interval i.e. P–value ($p=0.00<0.05$) it implies that all the independent variables combined do influence the decisions to impact supply chain performance.

Table 4.7: Analysis of variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11.789	7	1.684	3.308	.025[a]
	Residual	3.564	7	.509		
	Total	15.353	14			

a. Predictors: (Constant), Integration with supplier, demand management process, control of the supply chain planning, collaborative supply chain planning, supply chain Decisions, strategic distribution planning, strategic warehouse and design

b. Dependent Variable: supply chain Performance

Source: Research data, (2015)

Table 4.8: Coefficients

	Un-standardized Coefficients		Standardized Coefficients		
Model	B	Std. Error	Beta	t	Sig.
1(Constant)	.187	.319		.112	.447
	.329	.100	.183	4.29	.023
Integration with supplier	.340	.014	.257	2.857	.025
Demand management process	.230	.086	.217	2.379	.037
Control of the supply chain	.325	.060	.119	2.123	.049
planning	.345	.123	.303	2.835	.023
Collaborative supply chain	.279	.234	.263	1.318	.032
planning	.303	.235	.323	2.051	.043
Supply chain decisions					
Strategic distribution planning					
Strategic warehouse and design					

a. Dependent Variable: Supply chain performance Performance

Source: Research data, (2015)

From the table 4.6, the established multiple linear regression equation becomes:

$Y = .187 + .329\ X_1 + .340\ X_2 + .230\ X_3 + .325\ X_4 + .345\ X_5 + .279\ X_6 + .303\ X_7$, Where:

β_0 = 0.187, shows that if the level of independent variables are held at constant zero, supply chain performance would be 0.187.

β_1= 0.329, shows that one unit change in Integration with supplier would results in 0.329units increase in supply chain performance

β_2= 0.340, shows that one unit change in demand management process would results in 0.340units increase in supply chain performance

β_3= 0.230, shows that one unit change in control of the supply chain planning would results in 0.230units increase in supply chain performance

β_4= 0.325, shows that one unit change in collaborative supply chain planning would results in 0.325 units increase in supply chain performance

β_5= 0.345, shows that one unit change in supply chain decisions would results in 0.345 units increase in supply chain performance

β_6= 0.279, shows that one unit change in strategic distribution planning would results in 0.079 units increase in supply chain performance

β_7= 0.303, shows that one unit change in strategic warehouse and design would results in 0.079 units increase in supply chain performance

CHAPTER FIVE
SUMMARY OF THE STUDY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter finalizes the study on the relationship between supply chain planning practices and performance of water bottling companies in Nairobi, Kenya. It presents the summary of the findings, conclusions and recommendations of the study.

5.2 Summary of Findings and Recommendations

In the first step, supply chain planning practices most practiced by water bottling firms in Nairobi, Kenya were identified, amongst these strategic warehousing design, strategic distribution planning, control of the supply chain planning and collaborative supply chain planning were highly ranked. In the second step the researcher assessed the relationship between supply chain planning and supply chain performance. The results of the regression analysis indicate that there is a significant relationship between supply chain planning practices on supply chain performance.

When asked whether supply chain planning practices such as integration with suppliers has led to reduced communication costs, most of the respondents strongly agreed at a mean score of 3.5. At the same time enhancing the firms' delivery performance through supply chain planning practices such as strategic warehousing design were rated at means score of 3.76. Further the concept of demand management process has also ensured that the firms have optimal stock. Strategic distribution planning has also reduced lead time at a mean score of 3.8. The firm's delivery frequencies have increased at 3.67 while on time delivery of goods has increased at a mean score of 3.4.

When compared to previous research on supply chain planning practices, the findings that supply chain planning practices was significantly related to supply chain performance is consistent with studies by (Stank et al., 2004, and Zailani and Rajagopali,

2005). Thus, this research reinforces the importance of supply chain planning practices in improving supply chain performance.

5.3 Conclusion

The study concludes that supply chain performance of the water bottling firms has improved because of supplier integration. Suppliers have the free hand to make inventory replenishment decisions and have linked their customers with distributors to enhance delivery and location flexibility. The respondents were affirmative that supply chain practices had a big impact in supply chain performance. Respondents also confirmed that challenges such as numerous layers in the management level and focus on competition had negative impact on supply chain performance. Lack of effective training was pointed out as the major challenge in implementation of supply chain planning practices while focus on competition at the expense of the implementation of supply chain practices ranked second. The study also concluded that use of demand management process ensures optimal stock while having a strategic warehouse plan minimizes transport cost. In addition collaboration with suppliers leads to zero manual delivery of information.

5.4 Recommendations

The study recommends that the various water bottling firms in Nairobi, Kenya adopts the supply chain planning practices extensively as it has established the positive effect it has on supply chain performance of an organization. This study extends the existing research on supply chain planning practices in several ways.

First, it identifies the specific supply chain planning practices commonly adopted by water bottling firms in Nairobi, Kenya. It further empirically tests the relationship between the supply chain planning practices and supply chain performance. Therefore, this study adds greater comprehensiveness of the supply chain planning practices and enhances our understanding of the supply chain planning practices and their impact on supply chain performance.

From the findings, good relationships with supply chain members including suppliers are needed for enhanced supply chain performance just as (Moberg, Gross and Speh, 2002) discovered on their study. Therefore organizations should strive to embrace supplier chain planning practices as it has been shown committed relationships are the most suitable advantages because of their inherent barriers to competition.

5.5 Limitations of the Study

The study used a sample size of 19 water bottling Nairobi, Kenya out of which 15 responded, due to the limitations of time and finances, organizational protocols and time frame for appointments and to this end, the study recommends that future studies use a higher sample size in order to increase the reliability of the data obtained. Secondly, the study only focused on seven supply chain practices used by bottling companies in Nairobi, Kenya. It recommends further studies to be carried out on other supply chain planning practices that that may be affecting performance in the water bottling firms.

5.6 Suggestions for Further Study

The study recommends that a similar study be done on other bottling companies for comparison on whether they have adopted the supply chain planning practices as well as on the organizational performance as influenced by the practices.

While this study makes significant contribution to supply chain planning practices literature, it calls for more research that is not just confined to the supply chain planning practices of water bottling firms in Kenya but also on the factors affecting supply chain planning practices such as organizational culture, environmental factors and other social economic factors as this greatly affects the supply chain planning practices and operations of an organization.

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APPENDICES

APPENDIX I: RESEARCH QUESTIONNAIRE

Section A: General Information

1. Duration that the organization has been in operation

(i). Less than 10 years [ ]

(ii) More than 10 years [ ]

2. What is your position in this organization?

a) Supply chain manager [ ]

b) Assistant supply chain manager [ ]

c) Supply chain officer [ ]

d) Other (specify)…….

3. How long have you been in this position?

a) Less than 5 years [ ]

b) 5 to 10 years [ ]

c) 10 to 15 years [ ]

d) Above 15 years [ ]

SECTION B: SUPPLY CHAIN PLANNING PRACTICES USED BY WATER BOTTLING COMPANIES IN KENYA.

Please indicate the extent to which you agree with the following statements on the supply chain planning practices used by East African Breweries Limited. The scale below will be applicable: 1=very small extent, 2= small extent, 3= moderate extent, 4= Large extent, 5= to a very large extent.

No	Statement	1	2	3	4	5
1	**Integration With Suppliers**					
1	The firm uses integration to improve logistical efficiency					
3	The firm has a shared system with its suppliers					
3	The organization has significantly reduced its communications costs.					
4	The firm has improved efficiency in supply chain management					
5	The firms has formally enhanced its communication processes					

2	**Demand Management Process**					
1	The organization is able to manage its inventory and to provide uninterrupted production, sales and customer-service levels at minimum cost.					
3	The firm determines the parameter for safety inventory to prevent stock outs					
4	The firm is able to maintain the optimal level of demand to achieve the desired customer levels.					
5	The firm is able to forecast and sense demand accurately					
6	The firm maintains a proper balance between supply and demand					
3.	**Control of the Supply Chain planning**					
1.	The firm adapts a better control over the planning function.					
2.	The firm applies supply chain planning education, systems and practices that deliver visibility into the future					
3.	The firm engages its suppliers in short term and long-term decisions					
4.	**Collaborative Supply Chain Planning**					
1.	The firm collaborates with its suppliers in decision making process.					
2.	The firm formally involves its suppliers in planning decisions					
3.	The firm collaborates with its suppliers in forecasting of demand and supply					
4.	The firm maintain a supplier relationship for improved trust					
5	**Supply Chain Decisions**					
1	The firms practices joint planning and decision making					
2.	The firm involves all its supply chain providers in all its decisions					
3.	The firm involves its suppliers in long term decisions					
4.	The firm ensures coordination of planning and supply chain functions					
5.	The firm's top management makes appropriate decisions when selecting suppliers and other key supply chain members					
6.	**Strategic Distribution Planning**					

1	The firm implements strategies that optimize distribution of goods through collaborative relationships with carriers, suppliers and customers.					
2	The firm outsources transportation to third and fourth party logistics providers to minimize transportation costs.					
3	The firm maintains proper structures for direct links to stores, warehouse-to-store deliveries and cross-docking operations					
4	The firm's uses its warehouses for storing, picking and sometimes cross-docking for improved supply chain planning					
5	The firms maintains a proper balance of inbound and outbound logistics					
7.	**Strategic Warehousing Design**					
1	The firm's warehouse is located close to the distributors					
2	The firm outsources the warehousing function for reduced costs.					
4	The firm has a strong distribution and warehousing strategy that is critical for effective logistics management.					
5	The firm's warehouse is strategically located to reduce transportation costs.					
6	The firm uses automated picking systems for increased efficiency.					

SECTION C: CHALLENGES OF IMPLEMENTING SUPPLY CHAIN PLANNING PRACTICES

Please indicate the challenges faced by your organization in implementation of supply chain planning practices. Please tick in the appropriate box using the following rating; 5 =Strongly agree, 4 = Agree, 3 = Neither agree not disagree, 2 = Disagree, 1 = Strongly disagree

		5	**4**	**3**	**2**	**1**
1.	Poor leadership by our top management hinder effective implementation of supply planning practices					
2.	Numerous layers in the management levels of our organization leads to duplication of duties, this negatively affects supply planning practices					
3.	Failure by our top management to commit itself towards implementation of supply planning practices					
4.	Cultural dynamism makes supply chain planning difficult in our firm because the management is rigid in their ways of doing things.					
5.	The top management focus more on competition at the expense of implementation of supply planning					
6.	Inadequate resources for implementing supply planning practices is a problem to our firm					
7.	Our organization lack effective training and proper structures for supply chain planning					

Any other; (please indicate)

_____

SECTION D: SUPPLY CHAIN PLANNING PRACTICES AND SUPPLY CHAIN PERFORMANCE

Please indicate the extent to which you agree with the following statements in regard to the relationship that exists between supply chain planning practices and supply chain performance of water bottling companies. Use the following rating; 5 = to a very large extent, 4 = Large extent, 3 = Moderate extent, 2 = Small extent, 1 = Very small extent

No	Statement	1	2	3	4	5
1	Demand management process ensures optimal stock					
2.	Strategic warehousing planning minimizes transport costs					
3	Strategic distribution planning reduces lead time					
4.	Collaboration in supply chain leads to on-time delivery of goods					
5.	Integration with suppliers minimizes communication costs					
6.	Supply chain decisions helps in firm delivering goods and services on time					
7.	Supply chain decisions help the firm to effectively manage its transport system					
8.	Control of the supply chain planning helps the firm to achieve a competitive advantage against its competitors.					
9.	Strategic warehouse planning has led to increased delivery frequencies.					
10.	Due to collaboration with suppliers, the firm has no manual delivery of information.					
11.	Strategic distribution planning has led to well defined distribution channels					

Any other; (please specify)

APPENDIX II: LIST OF BOTTLING COMPANIES IN KENYA

S/No	**FIRM**	**PRODUCT**	**REGION**
1	KEVIAN (K) LTD.	CONTAINERIZED DRINKING WATER/JUICES	NAIROBI
2	WORLD TRADE LTD	CONTAINERIZED DRINKING WATER	NAIROBI
3	MILIMANI SUBTERRANEAN SPRINGS LTD.	CONTAINERIZED DRINKING WATER	NAIROBI
4	BOUNTY LTD	CONTAINERIZED DRINKING WATER	NAIROBI
5	BLUE PLASTICS AND WATER CO.LTD	CONTAINERIZED DRINKING WATER	NAIROBI
6	MACNJERUS ENTERPRISES	CONTAINERIZED MINERAL WATER	NAIROBI
7	GITILIGINI LTD	CONTAINERIZED SPRING DRINKING WATER	NAIROBI
8	TWIN OAKS LIMITED	DRINKING WATER/JUICES	NAIROBI
9	AQUALEX ENTERPRISES	DRINKING WATER	NAIROBI
10	NAMUSYA AGENCY	DRINKING WATER	NAIROBI
11	EXCEL CHEMICALS LTD	DRINKING WATER/JUICES	NAIROBI
12	ALPINE COOLERS LIMITED	DRINKING WATER	NAIROBI
13	NAIROBI BOTTLERS LTD	DRINKING WATER/SOFT DRINKS	NAIROBI
14	SARK KENYA	DRINKING WATER	NAIROBI
15	PREMIER WATER SOLUTIONS LTD - ONGATA RONGAI	DRINKING WATER	NAIROBI
16	STENRAC ENTERPRISES LTD	DRINKING WATER	NAIROBI
17	ENERGY FOODS LTD	DRINKING WATER	NAIROBI
18	WANDOMIST SUPPLIES	DRINKING WATER	NAIROBI
19	DIARIM ENTERPRISES LTD	DRINKING WATER	NAIROBI
20	DUTCH WATER LIMITED	DRINKING WATER	NAIROBI

21	AQUAMIST LTD [MSA]	DRINKING WATER	NAIROBI
22	NATURES KENYA LTD	DRINKING WATER	NAIROBI
23	ALL SEASONS SERVICES CO.	DRINKING WATER	NAIROBI
24	PENROSE ENTERPRISES	DRINKING WATER	NAIROBI
25	GRACIOUS PURE WATER	DRINKING WATER	NAIROBI
26	TOTAL QUALITY COMPANY LTD.	DRINKING WATER	NAIROBI
27	AGRI PRO-PAK LTD	DRINKING WATER	NAIROBI
28	MARA PURE DRINKING WATER	DRINKING WATER	NAIROBI
29	WATER INTERNATIONAL (K) LTD	DRINKING WATER	NAIROBI
30	EARNEST ENTERPRISES	DRINKING WATER	NAIROBI
31	BLUE WAVE COMPANY LTD	DRINKING WATER	NAIROBI
32	PRISTINE INTERNATIONAL LTD	DRINKING WATER	NAIROBI
33	WAHELAY LIMITED	DRINKING WATER	NAIROBI
34	RAYAN PURE WATER	DRINKING WATER	NAIROBI
35	MILELE SPRINGS	DRINKING WATER	NAIROBI
36	CREST FOODS LIMITED	DRINKING WATER	NAIROBI
37	JOHARI FARM LTD	DRINKING WATER	NAIROBI
38	TOSHEKA GENERAL STORES	DRINKING WATER	NAIROBI
39	FAHARI GARDENS COMPANY LIMITED	DRINKING WATER	NAIROBI
40	CWAY KENYA FOODS AND BEVERAGES CO. LTD	DRINKING WATER	NAIROBI
41	SHACHAH LIMITED	DRINKING WATER	NAIROBI
42	LIFE LINE CO. LTD	DRINKING WATER	NAIROBI
43	CRYSTAL ROCK LIMITED	DRINKING WATER	NAIROBI
44	CRYSTAL COOL PURE SPRINGS WATER	DRINKING WATER	NAIROBI
45	ANCHOR FLOUR MILLERS CO LTD	DRINKING WATER	NAIROBI
46	SIMPLE LIFE TRADING CO. LTD	DRINKING WATER	NAIROBI

47	KENZE ENTERPRISES LIMITED	DRINKING WATER	NAIROBI
48	LOKICHOGIO SPRINGS	DRINKING WATER	NAIROBI
49	MANANE FOODS ENTERPRISES	DRINKING WATER	NAIROBI
50	KAY SEVEN GROUP	DRINKING WATER	NAIROBI
51	SPARKLETTS FRESH	DRINKING WATER	NAIROBI
52	SLOANSQUARE LTD	DRINKING WATER	NAIROBI
53	STENLOIW ENTERPRISES	DRINKING WATER	NAIROBI
54	KALIMONI GREENS	DRINKING WATER	NAIROBI
55	GARAI TRADERS COMPANY	DRINKING WATER	NAIROBI
56	EASYMART SUPERMARKET LTD - ENTERPRISE RD	DRINKING WATER	NAIROBI
57	FULL WAYS COMPANY LTD	DRINKING WATER	NAIROBI
58	ABSOPURE WATER COMPANY	DRINKING WATER	NAIROBI
59	SIMBA SPRINGS ENTERPRISES LTD	DRINKING WATER	NAIROBI
60	GICHOYA DEVELOPMENT CO. LTD	DRINKING WATER	NAIROBI
61	ROLINKEMS MERCHANTS E.A LIMITED	DRINKING WATER	NAIROBI
62	ROOF ARTS LTD	DRINKING WATER	NAIROBI
63	LIMURU COOL INVESTMENT	DRINKING WATER	NAIROBI
64	JOINDA ENTERPRISES	DRINKING WATER	NAIROBI
65	FAMILY HOPE SERVICES LTD	DRINKING WATER	NAIROBI
66	THARA ORCHARDS	DRINKING WATER	NAIROBI
67	FRENCY GENERAL SUPPLIES LTD	DRINKING WATER	NAIROBI
68	RUNDA WATER LTD	DRINKING WATER	NAIROBI
69	FLOMA GENERAL SUPPLIERS	DRINKING WATER	NAIROBI
70	GOLDEN FLAMES LIMITED	DRINKING WATER	NAIROBI
71	SPECIAL GATEWAY	DRINKING WATER	NAIROBI
72	BARIHA ENTERPRISE	DRINKING WATER	NAIROBI
73	YATTA FOODS COMPANY	DRINKING WATER	NAIROBI

	LIMITED		
74	FRESH AQUA ENTERPRISES	DRINKING WATER	NAIROBI
75	TSUBIS GLOBAL INVESTMENTS	DRINKING WATER	NAIROBI
76	DOUBLE LUCK VENTURES	DRINKING WATER	NAIROBI
77	BRIMA PURE DRINKING WATER	DRINKING WATER	NAIROBI
78	NICE SPRING WATER	DRINKING WATER	NAIROBI
79	ELITE COMMERCIAL INSTITUTE	DRINKING WATER	NAIROBI
80	RUSAM LIMITED	DRINKING WATER	NAIROBI
81	LAWNY SPRING ENTERPRISES	DRINKING WATER	NAIROBI
82	AFROGREAT ENTERPRISES LTD	DRINKING WATER	NAIROBI
83	HAKI ENGINEERING CONSULTANTS	DRINKING WATER	NAIROBI
84	PREMIER WATER SOLUTIONS (T-MALL)	DRINKING WATER	NAIROBI
85	AQUA DUE SPRINGS ENTERPRISES	DRINKING WATER	NAIROBI
86	FOUNTAIN SPRINGS ENTERPRISES	DRINKING WATER	NAIROBI
87	BAALLESONS E.A. CO. LTD	DRINKING WATER	NAIROBI
88	ADONEZA GENERAL SUPPLIES	DRINKING WATER	NAIROBI
89	DENCO SERVICES LTD	DRINKING WATER	NAIROBI
90	EMAHO ENTERPRISES	DRINKING WATER	NAIROBI
91	AQUA CHILL COMPANY LTD	DRINKING WATER	NAIROBI
92	HARSHIN DRILLING AND SPARES ENTERPRISE	DRINKING WATER	NAIROBI
93	KIJABE SPRINGS	DRINKING WATER	NAIROBI
94	MWAFAKA FOODS INDUSTRIES	DRINKING WATER	NAIROBI
95	WATAHAUZ ENTERPRISES LTD	DRINKING WATER	NAIROBI
96	KENIQ LIMITED	DRINKING WATER	NAIROBI
97	TRU-FIELD VENTURES	DRINKING WATER	NAIROBI
98	WELLS VALLEY INVESTMENTS LTD	DRINKING WATER	NAIROBI

99	DASANIA GENERAL SUPPLIES	DRINKING WATER	NAIROBI
100	SOUTH SEAS FOOD LIMITED	DRINKING WATER	NAIROBI
101	KILIMANARO MIST BEVERAGES	DRINKING WATER	NAIROBI
102	ICONIC DELIGHTS LTD	DRINKING WATER	NAIROBI
103	AQUA NICE ENTERPRISES	DRINKING WATER	NAIROBI
104	NOOSUYIAN WATER COMPANY	DRINKING WATER	NAIROBI
105	ADVENT CONTRACTORS LTD	DRINKING WATER	NAIROBI
106	KEEN METAL FABRICATORS LTD	DRINKING WATER	NAIROBI
107	ELITE LODGIT LIMITED	DRINKING WATER	NAIROBI
108	NATURE INSPIRE	DRINKING WATER	NAIROBI
109	COMLINES DISTRIBUTORS LIMITED	DRINKING WATER	NAIROBI
110	BRIDGEMEAD LIMITED	DRINKING WATER	NAIROBI
111	THREE SPRINGS PREMIUM WATER	DRINKING WATER	NAIROBI
112	QUALITY MARKETERS	DRINKING WATER	NAIROBI
113	ASILI PLASTICS LIMITED	DRINKING WATER	NAIROBI
114	SILVER ICE PURE WATER	DRINKING WATER	NAIROBI
115	EUBRINE INVESTMENT	DRINKING WATER	NAIROBI
116	SKY DROP COMPANY LIMITED	DRINKING WATER	NAIROBI
117	TROPICA GENERAL MERCHANTS	DRINKING WATER	NAIROBI
118	EBONY FOODS LTD	DRINKING WATER	NAIROBI
119	SUNNY RIVER LTD	DRINKING WATER	NAIROBI
120	FESTIG LTD	DRINKING WATER	NAIROBI
121	INTERIOR BEVERAGES LTD	DRINKING WATER	NAIROBI
122	MODEST ENTERPRISES	DRINKING WATER	NAIROBI
122	CLEAR QUEST SPRINGS	DRINKING WATER	NAIROBI
123	KLAN EAST AFRICA COMPANY LTD	DRINKING WATER	NAIROBI
124	JEDEN COMPANY LTD	DRINKING WATER	NAIROBI

125	OLBOLSATT COMPANY LTD	DRINKING WATER	NAIROBI
126	DESIRE KRYSTAL WATER	DRINKING WATER	NAIROBI
127	SHIVA MOMBASA LIMITED	DRINKING WATER	NAIROBI
128	BETHEL WATER SERVICES	DRINKING WATER	NAIROBI
129	RIVER OAKS ENTERPRISES	DRINKING WATER	NAIROBI
130	AMMOR EA ENTERPRISES	DRINKING WATER	NAIROBI
131	CROMBIC TOURS	DRINKING WATER	NAIROBI
132	THE ZOROS COMPANY LTD	DRINKING WATER	NAIROBI
133	MAJI STORE	DRINKING WATER	NAIROBI
134	KITHOMES LTD	DRINKING WATER	NAIROBI
135	AQUAFIN	DRINKING WATER	NAIROBI
136	RAINBOW SPRINGS	DRINKING WATER	NAIROBI
137	ASTRIDE ENTERPRISES LTD	DRINKING WATER	NAIROBI
138	SHELTER LINE PROPERTIES	DRINKING WATER	NAIROBI
139	TELLYNE ENTERPRISES LIMITED	DRINKING WATER	NAIROBI
140	PREMIER WATER SOLUTIONS (EMBAKASI)	DRINKING WATER (EMBAKASI)	NAIROBI
141	ELDOVILLE FARM LTD	DRINKING YOGHURT	NAIROBI
142	GRANGE PARK/USAFI SERVICES LTD	FLAVOURED MINERAL WATER	NAIROBI
143	WAFO FOODS	FLAVOURED WATER	NAIROBI
144	JOSMIS SUPPLIERS	MINERAL WATER	NAIROBI
145	KRYSTALINE MINERAL WATER COMPANY	MINERAL WATER	NAIROBI
146	BETTER CHOICE LTD	MINERAL WATER	NAIROBI
147	BINGWA MILLERS AND FOOD PROCESSORS	MINERAL WATER	NAIROBI
148	SUNSHINE MINERAL WATER ENTERPRISES	MINERAL WATER	NAIROBI
149	DANMAR ENTERPRISES	MINERAL WATER	NAIROBI
150	MARGEO ENTERPRISES	MINERAL WATER	NAIROBI

151	ADRIAN WATER SYSTEMS LTD	MINERAL WATER	NAIROBI
152	SAFARIMATE MINERAL WATER	MINERAL WATER	NAIROBI
153	KILIMANJARO BOTTLED WATER LTD	MINERAL WATER	NAIROBI
154	MADA HOLDINGS LTD	MINERAL WATER	NAIROBI
155	ULIVETO SPRINGS	MINERAL WATER	NAIROBI
156	FRESAM AGENCIES LTD	MINERAL WATER	NAIROBI
157	CLEBE ENTERPRISES	MINERAL WATER	NAIROBI
158	JENTAR INVESTMENTS LTD	MINERAL WATER	NAIROBI
159	LIMU BLOMEN ENTERPRISES	MINERAL WATER	NAIROBI
160	MLIMANI SPRINGS	MINERAL WATER	NAIROBI
161	DAINLE GENERAL AGENCIES	MINERAL WATER	NAIROBI
162	MAKIS SPRINGS	MINERAL WATER	NAIROBI
163	NATURES HARVEST WATER	MINERAL WATER	NAIROBI
164	SPRINGS OF MBOONI HILLS	MINERAL WATER	NAIROBI
165	MORNING DEW TRAVEL LTD	MINERAL WATER	NAIROBI
166	PALAMAT CHEMICALS	MINERAL WATER	NAIROBI
167	WATERMAX FARM CO. LTD	MINERAL WATER	NAIROBI
169	AQUAMAX TRADERS	MINERAL WATER	NAIROBI
169	UNIVERSAL AQUA LTD	MINERAL WATER	NAIROBI
170	GUAMA MILLERS AND MANUFACTURERS LTD	MINERAL WATER	NAIROBI
171	NATURE ONE ENTERPRISES LTD	MINERAL WATER	NAIROBI
172	KIJABE SUPER SPRINGS	MINERAL WATER	NAIROBI
173	CLASSIC SPRING MINERAL WATER CO.LTD	MINERAL WATER	NAIROBI
174	NYERI WATER AND SEWERAGE CO. LTD	MUNICIPAL DRINKING WATER	NAIROBI
175	AQUAMIST LIMITED	SPARKLING MINERAL WATER	NAIROBI
176	CIANDA SPRINGS	SPRING MINERAL	NAIROBI

		WATER	
177	KENMAL ENTERPRISES	SPRING MINERAL WATER	NAIROBI
178	KOBA WATERS LTD.	SPRING MINERAL WATER	NAIROBI
179	BARANIKI INVESTMENTS (K) LTD	SPRING MINERAL WATER	NAIROBI
180	TULASHA ENTERPRISES	SPRING MINERAL WATER	NAIROBI
181	SANGRASS AGENCIES	SPRING MINERAL WATER	NAIROBI
182	ENJABE ENTERPRISES	SPRING MINERAL WATER	NAIROBI
183	MOUNTAIN ROCK PURE DRINKING WATER LTD	SPRING MINERAL WATER	NAIROBI
184	MONTANA LIMITED	SPRING MINERAL WATER	NAIROBI
185	ICON FOUNTAIN SPRINGS	SPRING MINERAL WATER	NAIROBI
186	FARRIS ENTERPRISES	SPRING WATER	NAIROBI

Source: **(**Kenya Bureau of Standards; March**,** 2015)