

**THE EFFECTS OF INTEGRATED SUPPLY CHAIN ON THE PERFORMANCE OF
NAIROBI BOTTLERS**

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DECLARATION

This management project is my original work and has not been submitted for a degree in any other university.

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Signed.

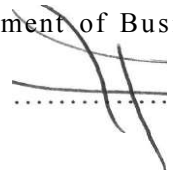
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This management project report has been submitted for examination with my approval as the university supervisor.

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LIST OF ABBREVIATIONS

NIBT	Net interest Before Tax
NBL	Nairobi Bottlers Limited
KPI	Key Performance Indicators
EC	Electronic commerce
EVA	Economic Value added
ERP	Enterprise Resource planning systems
MRP	Materials Requirements planning systems
DRP	Distribution Resource Planning
SCM	Supply Chain Management
S&OP	Sales and Operations Planning.
USA	United States of America
WWW	World Wide Web
sc	Supply Chain
SCOR	Supply Chain Operations model
ISCM	Integrated Supply Chain Management
EDI	Electronic Data Interchange
HR	Human Resources
ICDCI	Industrial
SABCO	South African Bottlers Company
UON	University Of Nairobi

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ABSTRACT

Integrated supply chain management is the integrating of key business processes from end user through original suppliers that provides products, services and information that add value for customers and stakeholders. Companies manage their supply chains by connecting the functions in the supply chain and these are procurement, manufacturing and fulfillment via supply chain planning processes. Integrated supply chain has the most pervasive impact on financial results and therefore part of the documentation process needs to measure how the elements in the supply chain are performing to produce those results. The research adopted case study research design where the unit of study was Nairobi Bottlers limited and the research project sought to determine the effects of integrated supply chain on the performance of Nairobi Bottlers Limited. Content analysis and statistical analysis were used to analyze the data. In-depth questionnaires were used to get information from respondents who in this case were top management, middle management and lower management of Nairobi Bottlers. The main objective investigated during the study is to determine the effects of integrated supply chain on the performance of Nairobi Bottlers Limited. A sample of 20 respondents was used in the study. The data was collected and analyzed using content analysis and statistical analysis. The major finding was that the organization really benefited from integrated supply chain on its operations which was evident on increased profitability and increased customer satisfaction since its adoption. General conclusions drawn are that Nairobi Bottlers Limited are tremendously benefited since the adoption of supply chain which is integrated and this has increased its Net Income Before Tax, increased customer satisfaction. The supply chain structure adopted with central planning function which drives integration really impacted on enhancing the performance of Nairobi Bottlers. Major recommendations including enhancing e-learning of supply chain courses offered by supply chain academy to continue improving supply chain performance as well as entrenchment of S&OP planning processes at NBL will greatly improve integration of supply chain which directly affects business performance.

Key words: Supply Chain, Integration, Performance, Nairobi Bottlers.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

In today's world, the need for integrated, global supply chain management is largely unquestioned. It is accepted, for example, that supply chain leaders usually work more effectively with external business partners. They also tend to design, build, move, store, sell and service their products with greater speed and economy. However, even though the importance of supply chain management is broadly acknowledged, few senior executives are sure about how and where to direct their supply chain investments to maximize business results. This is a critical disconnect. Opportunities for supply chain enhancement are everywhere, but specific information about strategic value is often absent. Executives need more and better information about what it means to be a supply chain leader, what advantages are associated with supply chain leadership, and what supply chain leaders actually do to ensure or extend their competitive advantage, INSEAD, Stanford University and Accenture (2001)

1.1.1 Integrated Supply Chain

Integrated supply chain management can be defined as the integration of key business processes from end user through original suppliers that provide products, services and information that add value for customers and other stakeholders (International Centre for competitive Excellence, 1994). Companies manage their supply chains by connecting the functions in the supply chain and these are procurement, manufacturing and fulfillment via supply chain planning processes. Supply chain planning processes coordinate and share information among the other supply chain functions at all entities both execution and strategic levels to create an integrated supply chain.

A supply chain is a network of autonomous or semi-autonomous business entities that encompass all the facilities, functions and processes involved in producing and delivering products or services from a group of suppliers to their customers (Lee and Belington, 1993, Swaminathan et al., 1994). The supply chain not only includes manufacturers and suppliers,

but also transporters, warehouses, retailers and customers. Within each organization, such as a manufacturer, the supply chain includes all processes involved in filling a customer request. These processes include, procurement, manufacturing, warehouse, distribute, marketing and Research and Development, reverse logistics transportation, inventory control and customer service.

A supply chain is dynamic and involves the constant flow of information, products and funds between different stages. Each stage of the supply chain performs a large group of processes and interacts with other stages of the supply chain to produce and deliver the products and services to the customers. All flows of information, products and funds generate costs within the supply chain. These costs may include production cost, transportation cost, inventory carrying cost, internal material handling cost and information sharing cost. The magnitude of these costs varies widely by industry. Chen (1997) observes that production cost is the largest of all in most of the industries, followed by transportation and inventory costs. However, these varies from industry to industry and region to region. Supply chain management is a set of approaches utilized to efficiently integrate suppliers, manufacturers, warehouses, and stores, so that each merchandise is produced and distributed in the right quantities, to the right locations, and at the right time, in order to minimize system-wide cost while satisfying service level requirements, (Simchi-Levi 2000). It transforms a group of *ad hoc* and fragmented processes into a cohesive system capable of delivering value to customers. To reduce the overall cost, effective supply chain strategies must take into account the interactions of different processes in the supply chain.

The global nature of markets and competition has forced many companies to revisit their operations strategy. Companies have moved from centralized operations to decentralized operations in order to take advantage of available resources and to be closer to their markets. Consistent with this, firms have undergone numerous changes in terms of strategies, tactics, and operations with the aim of meeting the changing requirements of the market. Currently, companies have to compete based on multiple competitive performance objectives such as quality, price, responsiveness, flexibility, and dependability.

Internet technologies have changed the dimension of enterprise operations and management, forcing companies to rely on various strategies based on core competencies and information technologies to achieve flexibility, competitiveness and responsiveness in their supply chain. Today's market environment is characterized by diverse customer tastes and preferences, rapid developments in technology, and the globalization of management (Hsu and Wang, 2004). These factors have led to the need to offer a variety of products, which presents major challenges to manufacturing units. In order to overcome the difficulties posed by a proliferation of products, there has been an increasing emphasis on redesigning products and processes to forestall the possible negative impact of offering a large variety of products. Designing to final configuration of a product is postponed as much as possible, usually until a customer's order is received (Lee and Tang, 1997)

Fierce competition in today's global markets, the introduction of products with short life cycle, and the heightened expectations of customers have forced business enterprises to focus their attention on supply chains. These, together with continuing advances in information technology, have motivated the continuous enhancement of the Supply Chain Management technologies. An effective integrated supply chain will give a competitive advantage to organizations that practice it.

According to international Centre for competitive excellence (1994), integrated supply chain management can be defined as "the integration of key business processes from end user through original suppliers that provides products, services, and information that add value for customers and stakeholders." Adds value for customers and other stakeholders? What does this mean? Defining what value and competitive advantage means for supply chain will be among the primary focal points. Additionally, how companies are using information technology and other means to achieve these ends will be explored

Integrated supply chain has the most pervasive impact on financial results and therefore part of the documentation process needs to measure how the elements in the supply chain are performing to produce those results. The link between corporate performance and supply chain performance begin with strategy and to this respect overall business strategy and supply chain strategy must be aligned.

As companies start embracing and using the concept of integrated supply chain management in their organizations, there are quite a number of pitfalls along the way. These range from lack of proper supply chain skills, lack of top management understanding of integrated supply chain and alignment to overall strategy, lack of supply chain experts, inability of top leaders to today develop an understanding of how the day-to-day activities of managing the supply chain relate to corporate financial success. In many instances that fundamental understanding is lacking.

Traditionally, logistics/procurement, production, research and development, warehousing and customer service organizations along the supply chain operated independently. These organizations had their own objectives and these were often conflicting. For instance, many manufacturing processes are designed to lower production cost with little consideration for the impact on inventory levels and transportation capabilities. Also, a "zero-inventory" policy (Hall, 1983) can significantly increase the transportation cost. Thus, an effective supply chain requires minimizing the overall cost by trading off the costs of production, transportation and inventory. The central role of integrated supply chain management is to have the right products in the right quantities at the right moment at minimal cost which is translated to satisfying two most important stakeholders- its customers and shareholders.

1.1.2 Firm Performance

In today's world, the need for integrated supply chain management is largely unquestioned. Its acceptance, the supply chain leaders usually work more effectively with external business partners while internally optimizing the smooth integration of business processes. Opportunities for supply chain enhancement are everywhere, but specific information about strategic value is often absent. Executives need more and better information about what it means to be a supply chain leader, what advantages are associated with supply chain integration and what supply chain integration does to extend their competitive advantage.

With integration of supply chain processes, firms gain more of customer service focus. They also reduce waste and become faster and more flexible, while maintaining the highest of quality standards. In general, they are better than the competition, and keep implementing continuous improvements to stay in the competition, and keep implementing continuous improvements to stay in that position. Most companies and their managers would vehemently agree, although the vast majority is far from achieving this state.

Companies that have not integrated their own logistics systems are still focused on functional goals, which are departmentally-driven rather than customer-driven. Functional goals refer to objectives that are developed by and for one department, such as marketing or purchasing; versus more process-oriented type goals such as improved order cycle time. These non-progressive companies have characteristics ranging from, Disconnected product and information flows, Limited ability to respond to customer requests, Unpredictable product delivery/fill rate, Limited visibility on shipment information and Performance based on functional activities.

Supply chain that is integrated thus provides a framework for optimizing value creation of the different supply chain processes via linkages and heavily supported by supply chain planning functions. An integrated supply chain in an organization strategically gives a firm competitive edge by reducing costs, faster and satisfactory customer service and direct impact on a firm's profitability. Thus integration if viewed and supported as a strategic view by a firm's to management delivers these benefits to the organization.

1.1.3 Nairobi Bottlers Ltd

Nairobi Bottlers Ltd is a beverage manufacturing company licensed to bottle Coca-Cola beverages by the Coca-Cola Company and is part of the Coca-Cola South African Bottling Company (SABCO) which is a Coca-Cola anchor Bottler. Coca-Cola Sabco has 72.38% shareholding while ICDCI has 27.62% of the shareholding.

The origin of NBL traces back to 1948 when Coca-Cola bottling Company of Nairobi was founded by the Coca-Cola Company. It operated under that ownership establishment until 1978 when NBL was incorporated and then under the Coca-Cola Company and ICDCI (now centum). Coca-Cola Sabco together with ICDCI acquired NBL from the Coca-Cola Company in 1995.

NBL produces 49% of the Coca-Cola beverage products in Kenya from its facility located at Embakasi in Nairobi and is the biggest Coca-Cola bottler in East and Central Africa. It cherishes as the biggest by volume produced from seven production lines, a workforce in excess of 900 employees, a turnover in excess of ksh 6Billion a year. NBL has scooped several awards from the Coca-Cola Company, Bronze award in Quality in 2004, 2005, 2008 and 2009, Silver award in 2006. NBL has also scooped ISO 22000 certification by Kenya Bureau of standards in Feb 2009, ISO 9001 in 2009 , COYA Awards on environment in 2005, Information Management (SAP and Business Warehouse) in 2007 and supply chain manager of the year in 2007.

The Company is headed by the Managing director who is appointed from Sabco group office based in South Africa. He runs the company with five functional Country Managers report directly to him and these Country managers are; Country Finance Manager, Country Supply chain Manager, Country HR Manager, Country Sales Manager and Country Marketing Manager. Notable is that 70% of the employees work in supply chain and 60% of Cash operating expenses are incurred in supply chain. Indeed Supply chain form a bulk of the operations at NBL.

Nairobi bottlers has embraced supply chain for the last three years, this started from the restructuring of roles and appointment of Country supply chain manager. Supply chain comprises of the following departments reporting to Supply Chain manager; Production, Engineering, Quality Assurance, operations (warehousing and Distribution), Central planning, Fleet and continuous Improvement. These departments in one way or another deal with the following main activities that cut across the components of supply chain as well as

link them together. They are; purchasing, order processing, demand planning, manufacturing, inventory management, warehousing, transportation and customer service.

Critical to integration at NBL is the role of Central Planning manager who drives Sales and Operations process, production (supply Planning), materials planning, Distribution planning and dotted coordination with demand planning. However demand planning reports directly to Marketing and procurement reports to finance function.

Central planning because of the perceived criticality to supply chain holds sales and Operations meeting weekly comprising of persons from Marketing, sales, engineering, distribution, warehousing, procurement, finance, quality Assurance and Production. In this weekly meeting sales performance and targets are shared, constraints to supply of materials and constraints or opportunities in regard to capacities in production, warehouse and distribution are also shared out. This coordinated planning also highlights risks to monthly profit targets. The supply chain managers meet weekly independently to review performance in supply chain but due to demand planning and procurement being in marketing and finance respectively; it may serve as opportunity to integration.

Nairobi bottlers uses a financial system referred to as SAP across the company which tracks finances, inventory, production line efficiencies, orders, among others. This system is yet to incorporate stocks at distributor level but stocks at warehouse only. In addition looking at the whole supply chain system and its integration, efforts have been put to optimize its purpose and benefits and the business has gone a step further to get learning rights in supply chain Accensure which is a global on line learning centre to boost skills for the system personnel. Disconnects exists between orders generated, not delivered which becomes a carry over to the following days which indeed should cease as a backlog as days advance. The nature of the business is fast moving and missed orders like in short expiry products become a missed sale rather than aback log.

The structure at Nairobi bottlers also is not well aligned to optimize and realize real advantages of integration, and as mentioned earlier departments such as demand planning and procurement do not fall in supply chain and thus information flow will not be optimized at all levels of supply chain and overall performance. The business incurs losses due to false orders in transport capacity, inventory holding costs, wages and among others and therefore critical and clear understanding and execution of real integration will yield more profits and more customer satisfaction.

As evidenced from the researchers, there is still plenty to do to improve supply chain performance. The problem, however is that it is extremely difficult to define and measure performance. Adequate statistics information technology provides the greatest opportunity, although the limitation and potential are not fully understood. Ayers (2000) indicated that evidence shows that no ideal supply chain strategy exists and that each organization has to define its own strategy. Nairobi Bottlers Ltd will have to accept the new paradigms in integrated supply chain management if they are to grow into key performance that impact on their corporate results. Acting first in embracing the integrated concept will have competitive advantage over rivals as well as huge impact on corporate performance.

1.2 Statement of the Problem

The central aim of integrated supply chain management, is to have the right products in the right quantities (at the right place) at the right moment at minimal cost, is translated into the interrelated issues of customer satisfaction, inventory management, flexibility and overall corporate performance. Customer satisfaction is to a high degree dependent on the flexibility of the supply chain in its ability to respond to changes in demand. Flexibility is often imperfect because of long lead times, uncertainties, and unforeseen event. To counterbalance this lack of flexibility companies will keep inventories at various levels of the supply chain. Balancing the costs of imperfect customer satisfaction and holding inventory is a classic issue of logistics and supply chain management. Corporate performance brings about improved financials and shareholder value.

From studies done on supply chain by past researchers, we have identified gaps for further research. Awino, 1997 on performance Measurement of supply chain linkages of competencies, strategy and capabilities within organizations as abundant clearly show

opportunity for further research, it focused mostly on how attributes affect performance in large Manufacturing firms in Kenya and supply chain best practices as well do not talk of integration. Malik M A Khattan, 2006 on innovating for supply chain integration with construction. It focused mainly on innovative thinking, in procurement processes for supply chain integration offers all involved parties some key benefits in terms of flexibility and adaptability, commercial growth and improved delivered service. Henk Folkerts, 1998 on challenges in International food supply chains; Vertical coordination in European Agribusinesses and food industries. Stresses that more attention should be paid to international food supply chains and that chain reversal asks for new methods, tools and expertise on chain analysis and chain management.

No attempt has been made on how integration of supply chain functions, activities and processes affect overall business performance. In this study therefore the effect of integration of supply chain functions and processes constitutes a gap in knowledge that the study seeks to fill. As Nairobi Bottlers implements and embraces supply chain, to what extent has it implemented integrated supply chain management in its strategy and what are the effects of this integration on its business performance?

1.3 Objective of the Study

To determine the effects of integrated supply chain on the performance of Nairobi Bottlers Limited. Below are the specific objectives for the study:-

- (i) To determine the effects of integrated supply chain on the business performance of Nairobi Bottlers
- (ii) To determine how the integration of supply chain processes with other processes outside supply chain in Nairobi Bottlers affects overall business performance.

1.4 Significance of the Study

Nairobi bottlers can implement supply chain by integrating corporate functions using business processes with its processes, functions, suppliers and customers. Electronic data interchange (EDI) is key. This is important as it will aid management reap the benefits of integration and thus improve its productivity. Nairobi Bottlers can implement the "integrated

supply chain" by composing inbound materials, raw material inventories, manufacturing, finished goods inventories and distribution and view these activities within the set of a single firm. Nairobi Bottlers can optimize its central planning function to aid integration by fully optimizing Sales and operation planning process which brings alignment to corporate goals and strategy

The study will also give an insight to researchers and scholars in general by giving an axis and avenue for further research. Other than research alone, this study will give knowledge of study to scholars and thus adds to a pool of knowledge. The study is also very important to the manufacturing industry in general and it opens doors to improve productivity and performance via aid of supply chain integration and can be used anywhere to align supply chain and overall business strategies companies develop.

1.5 Scope of the Study

The study will cover Nairobi bottlers limited and in particular emphasis will be place on supply chain function covering procurement, manufacturing, planning, engineering , Quality Assurance, warehousing and distribution. The study will also focus on supply chain support functions of marketing, sales and finance. Managers and key supervisory staff were sampled from the areas of study and questionnaires sent to them.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

Companies in the 1970s operated largely based on the theories developed at the beginning of the century by Taylor (Christofides and Beasley 1982), which suggest performance improvement initiatives concentrated on the optimization of individual tasks. This resulted in separate and primarily operating procurement, warehousing, manufacturing, sales and inbound/outbound transportation functions. Coordination with suppliers and customers was left to market forces.

In the late 1980s and 1990s, large industrial manufacturers started to integrate isolated functional silos within their companies by implementing material requirements planning systems (MRP), manufacturing resource planning (MRP), Distribution resource planning (DRP) and consequently enterprise resource planning (ERP) systems throughout 1990s. Many companies had difficulties identifying measurable benefits from the wave of ERP implementations. Research by James and Wolf, 2000 suggests that most benefits could not have been achieved without information technology (IT) investment concurrent to the implementation phase of these supply chain software tools, large industrial companies started to actively explore the potential benefits from efficient coordination with adjacent trading partners.

Interest in supply chain management with focus on external trading partners has increased steadily since 1990s when companies began to see the benefits of collaborative relationships (Ballon, 1992). Increased focus on highly integrated supply chains and wide ranging - collaboration initiatives has been driven in part by the following trends ^observed most explicitly in the high technology and apparel industries; *increased globalization of demand and supply (Beasley, 1993)*, *ever more demanding customers (Fontanella, 200)*, *shortening product cycles (Bitran and Yanasse, 1982)*, *proliferation of product variety, (Bramel and Simchi-Levi, 1997)*, *Time based competition (Chandra and Fisher, 1994)*, *Demand Driven Business Models (Collins et al ., 2£)02)*. Driven by these trends, companies with internal fragmented functional areas have responded by integrating their supply chain operations from the inside out as illustrated by Christ iannse and Kumar, 200)

Ganeshan and Harrison, (2001), define a supply chain as a network of facilities and distribution options that performs the functions of procurement of materials, transformation of these materials into finished products. They also state that a very simple supply chain for a single product, where raw material is procured from vendors, transformed into finished goods in a single step, and then transported to distribution centres, and ultimately, customers. Realistic supply chains have multiple end products with shared components, facilities and capacities. The flow of materials is not always a long clear network, various modes of transportation may be considered, and the bill of materials for the end items may be both deep and large.

Supply chain management is a set of beliefs that each firm in the supply chain directly or indirectly affects the performance of the other supply chain members, as well as ultimately overall corporate performance (Cooper et al, 1999). First the supply chain management as a philosophy of management seeks synchronization and convergence of interaction and inter-firm operational and strategic capabilities into unified, competing market place (Rose, 1998) Bowers ox and Closs (1999) define supply chain as a network of organizations that are involved, through upstream and downstream linkages, in the processes and activities that produce value in the form of products and services in the hands of ultimate consumer. Cooper *et al* (1997) distinguish between supply chain management and logistics and states that while logistics is concerned with the movement of materials, information flows and inventories, SCM is the integrating of all business processes across the supply chain.

Lamming (1993) states that a lean supply chain is the business that is in dynamic competition and collaboration of equals in supply chain , aimed at adding value at minimum total cost, while maximizing end customer service and product quality. According to International Centre for Competitive excellence (1994), integrated supply chain can be defined as "the integration of key business processes from end user through original suppliers that provides products, services, and information that add value for customers and other stakeholders.

Supply chains are linked to value chains. Porter (1985) developed the concept of value chains analysis which gave core and supporting activities that contribute to the competitive advantage of a business by adding, value. A value chain is a strategic collaboration of organizations for the purpose of meeting specific market objectives over the long term and for the mutual benefit of all links of the chain. Supply chain metrics can be coordinated and

linked to financial metrics. The supply chain performance metrics used are based on the Supply Chain Operations Model (SCOR), developed by supply chain council. Integrated supply chain management (ISCM) is an approach for the reduction of environmental impact of a product chains. Such a product chain exists out of an extraction phase, production phase, a use phase and waste phase. (Wikipedia, the free encyclopaedia)

A wino (2007), the various ways of implementing inter-functional coordination include corporative arrangements through which personnel from different functional areas perform linkages and collaboration, managerial control, especially integrating managers who are essentially liaison personnel with formal authority over something important across functions; standardization to guide the process of coordination, organizational structure that integrate the How of products, services, finance and information.

Traditionally, marketing, distribution, planning, manufacturing and the purchasing organizations operated independently. These organizations have their own objectives and these are often conflicting. Marketing's objective of high customer service and maximum sales dollars conflict with manufacturing and distribution goals. Many manufacturing operations are designed to maximize throughput and lower costs with little consideration for the impact on inventory levels and distribution capabilities. Purchasing contracts are often negotiated with very little information beyond historical buying patterns. The result of these factors is that there s not a single integrated plan for the organization. Supply chain management is a strategy through which such integration can be achieved. Supply chain management is typically viewed to lie between fully integrated firms. Cooper and Ellram (1993) compare supply chain management to a well balanced and well-practiced relay team. Such a team is more competitive when each player knows how to be positioned for the hand-off.

Research by Accenture (2004) suggests that in a competitive market, customers have many options to satisfy their demand for the product and therefore companies must anticipate that demand. They do this by developing plans to coordinate (strategy) and execute (operations) the supply chain function activities. Plans must be integrated and coordinated to ensure execution throughout the supply chain while providing information for strategic purposes. Supply chain planning activities include buying materials, making the product, moving the

product, storing the product and delivering the product. Supply chain planning encompasses demand, supply, production and fulfilment planning.

Electronic commerce (EC) has developed very rapidly > Companies conducting EC can perform some or all of the following supply chain transactions over the internet (Chopra and Maindl, 2001), these include, providing information across the supply chain, negotiating prices and contracts with customers and suppliers, allowing customers to place orders, allowing customers to track orders, filling and delivering orders to customers and receiving payments from customers. Typically the internet currently plays a major role in an integrated supply chain. Dell (www.dell.com) displays all its product information over the internet. Dell also shares demand and inventory information online with its suppliers.

Currently supply chain management is usually done using three hierarchical levels (Hax and Candes, 1984). Strategic level which deals with decisions that have long lasting effect on the firm such as decisions regarding number, location and capacity of warehouse and manufacturing plants.. Tactical level which typically includes decisions that are updated everywhere between once every month and once every year such as purchasing and production decisions, inventory policies. Operational level which largely involve production scheduling, rescheduling and execution.

2.2 SC and organizational competitiveness

While developing SC, it is very important to consider the factors that force companies to develop supply chain. For example, Dell Computers has developed a supply chain that uses the Internet as a medium for placing orders to meet the requirements of individual customers. Factors external to an organization such as general economic conditions, inflation, political stability, industrial policies, wage rates, and so forth influence the strategies of a business organization. These factors should be taken into account while developing strategies for SC.

2.3 Implementation of supply chain.

Power and Sohal (2002) discussed issues of implementation from the perspectives of the complexity of the supplier network, the effective life cycle of products, the nature of the components used, cultural issues* and the support of top management. A seven-step implementation framework can be employed for electronic trading in a supply chain: (a) develop a strategy, (b) make an assessment, (c) create the culture, (d) make improvements in

priorities, (e) plan the changes, (f) implement the improved situation, and (g) support the implementation (Pawar and Driven, 2000). This framework could also be utilized for SC, as these steps are generic for any process of change.

Partanen and Haapasalo (2004) reviewed the elements of mass customization for rapid production systems. They discussed theoretical models for the implementation of systems of mass production. These models could be modified to suit the perspectives of SC. Various project-oriented frameworks can also be utilized to effectively implement SC. Erhun and Tayur (2003) described an enterprise wide tool for tactical planning at a grocery retailer. They claimed to observe a reduction in on-hand inventories, an increase in service levels, and substantial improvements in logistics decisions. The total landed cost was substantially lower - with an improvement of 20.85 in operating costs, or 11.6% of net profits - while superior fulfilment was provided to the stores. The tool optimizes across logistics, purchasing, and warehouse management, while considering the necessary economics of joint replenishment and accounting for a wide variety of complexities, such as discounts on total order quantity, intermittent demand, multiple distribution centres, vendor deals and forward buys, and promotions. This enterprise-wide tool can be used for managing SC.

Significant relationships have been recorded among company size, industry sector, and the extent of implementation (Power and Simon, 2004). This should be recognized when companies attempt to implement SC. Brunn and Mefford (2004) discussed the implications of the World Wide Web (WWW) on the implementation of lean production by facilitating communication among partners in a supply chain with shared and transparent information. However, the WWW has its own limitations such as in security and flexibility. Nevertheless, it has become an essential technology for developing interfaces between customers and suppliers along SC.

2.4 Importance of integration

Companies manage their supply chains by connecting the various functions of supply chain-procurement, manufacturing and fulfillment via supply chain planning processes. Supply chain planning processes coordinate and share information among other supply chain functions to create an integrated supply chain. Supply chain functions must be integrated for

companies to ensure that material is available for manufacturing, manufacturing resources are available when required and customer orders are fulfilled in time.(Accenture. 2004)

Companies must integrate different supply chain processes -demand planning and production planning to ensure that demand does not exceed supply or vice versa and that customer orders are fulfilled. Companies must coordinate the different supply chain planning processes so that all the plans are synchronized. The S&OP planning process is normally responsible for coordinating this integration.

2.5 Achieving Competitive Advantage in Supply Chain

Accenture (2004), companies achieve this lofty goal by creating a unique strategic position in the market place and executing the stellar strategy well. But to say something is easy, but to achieve it on the other hand, is slightly tougher. Well, actually a lot tougher. The two components of competitive advantage are unique strategic positioning and excellent execution. To achieve both of these items take a lot. First and above all, companies need to be flexible in their planning and quick in their reactions to change. Second, they need to take advantage of all the information available about their performance. Third, firms need to position themselves and then execute using the sum total of their organization-people, technology, processes and culture.

2.6 Integrated supply chain leadership on business.

Research conducted on excellence in supply chain by INSEAD, Stanford university and Accenture, (1999) concludes that linking supply chains to business strategies, and collaborating with supply chain partners to design products and operate fulfilment networks, were key to superior , sustainable financial performance. This same study explores direct sourcing and long term contracts as key procurement strategies for reducing product costs. The study also highlights best practices key to supply chain performance: collaborative shelf-level management with suppliers and retailers, sharing supply chain assets which involves mutually held inventories, facilities , tracks and so forth. A typical example is Coca-Cola now markets and Distributes Groupe Danone Bottled water in the U.S.A. Other best practices include vertical integration, technology enabled, global procurement management, outsourcing key supply chain activities.

A study by Delloite consulting of 600 companies in 22 counties, supply chain management review (September, 2007), concluded that the most effective firms have adopted a process view of their supply chains rather than functional view. This end- to -end approach enables them to optimize the supply chain process across the organization and generate significant profit and returns. There is also an important driver for aligning the supply chain and business strategy, the Sarbanes-Oxley Act (2003). The acts provisions mandate that for all public companies, the aggregate financial numbers are clearly supported by the data coming from the operations.

Rob D 'Avanzo' (2000), integrating operating models are the key to supply chain theory. Supply chain companies take innovative approaches to designing and managing overall operations. Internal operating model must cover internal functions and functioned executed with external partners. The model has three concepts and their associated best practices. Balancing supply and demand in the supply chain via effective forecasting and inventory management procedures collaborative forecasting and inventory management involving customers, suppliers and other channel partners. Dynamic pricing coupled with customers' assembly which matches product prices to available suppliers in the channel to ensure the product moves with the right velocity.

Accenture, (2000), making customers an integral part of the supply chain change process is a technique often used by leaders. Such technique helps establish better relationships and often lead to collaborative supply chain analysis and management. DuPont whose retail customers take responsibility for mixing final colours and ensuring product quality. This reduces DuPont's manufacturing and inventory costs and reduces planning and forecasting complexity.

2.7 Supply chain characteristics

The characteristics of SC can be defined by product portfolio, the number of suppliers or partnering firms, knowledge management skills, information technology and automation, and so forth. These factors should be aligned with various current market forces. The generic marketing strategy options of low* cost, differentiation, and focus remain the dominant strategy decision models (Porter, 1985). Technical advances, global competition, the realignment of organizational processes with the markets that they serve, new rules of

corporate strategy, and outsourcing to access or to extend organizational capabilities are influencing the nature of the client/organizational interface and changing the nature of competition in today's market place. This is true in the case of SC, which needs to be integrated with the dominant characteristics of present-day markets (knowledge-driven and centred on customer services). Accordingly, partnership/supplier selection in SC needs to be decided. In effect, the markets and production systems have to co-evolve. The main challenge for the partnering firms is how each should support the other's objectives over both the short and long-term with appropriate decisions. Take, for example, the issue of striking a balance between product variety and production costs.

Supply chain is the outcome of an effort to develop well integrated marketing and production systems to meet the requirements of individual customers. The ways in which the current generation of production technologies structures the formation and growth of product markets should be examined. Also worth examining is why firms, driven to stay competitive, are adopting manufacturing strategies that focus on reducing the time it takes to develop and manufacture new products (Sonntag, 2000). SC is an appropriate strategy for striking a balance between delivery time and product customization. It also performs well in many objectives of competitive performance, including cost and quality. This indicates that suitable models to optimize the level of customization and the lead time for the delivery of products need to be developed to facilitate the development of SC.

2.8 characterises of supply chain strategies

There are four types of supply chain characteristics Lee (1996), these characteristics define the type of strategy a firm can employ and get value to the business. These strategies range from cost efficiency, pooling and resource sharing, to being responsive and flexible.

2.8.1 Efficient supply chains

These are supply chains that utilize strategies aimed at creating the highest cost efficiency. For such efficiencies to be achieved, non value added activities should be eliminated, scale economies should be pursued, optimization techniques should be deployed to get the best capacity utilization in production and distribution and information linkages should be established to ensure the most efficient, accurate and cost effective transmission of information across supply chain.

2.8.2 Risk hedging supply chain

These are supply chains that utilize strategies aimed at pooling and sharing resources in a supply chain so that the risks in supply disruption can be shared. A single resource in supply chain can be vulnerable for supply disruptions, but if there is more than one supply source or if alternative supply resources are available, and then the risk of disruption is reduced. Examples include safety stock of engineering items and in this case share with other sister plants and sites.

2.8.3 Responsive supply chain

Supply chain that utilizes strategies aimed at being responsive and flexible to changing and diverse needs of customers. To be responsive companies use build-to-order and mass customization processes as means to meet the specific requirements of customer.

2.8.4 Agile supply chain

These are supply chains that utilize strategies aimed at being responsive and flexible to customer needs, while the risks of supply shortages or disruptions are hedged by pooling inventory and other capacity resources. These supply chains essentially have strategies in place that combine the strength of hedged and responsive supply chains. They are agile because they have the ability to be responsive to the changing diverse and unpredictable demands of customers on the front end, while minimizing the back-end risks of supply chain disruptions.

2.9 Supply Chain performance drivers and outcomes

To determine the real effects of integration of supply chain processes within Nairobi Bottlers, a keen look at the key performance indicators was essential. These indicators will illustrate how real integration is entrenched and getting value to business performance. In this study, several performance indicators were identified and later used to check for performance.

2.9.1 Inventories centred in the system.

Lee (1996), the efficiency of the supply chain can be measured based on the size of the inventory investment in the supply chain. The inventory investment is measured relative to the total cost of goods that are provided through the supply chain.

$$\text{Inventory Turnover} = \frac{\text{Cost of goods sold}}{\text{Average aggregate inventory value}}$$

Cost of goods sold = cost of revenue

Average aggregate inventory value = total value of items held in inventory for the firm valued at cost.

It includes raw materials, work-in-progress, finished goods and distribution inventory considered owned by the company.

$$\text{Weeks of supply} = \frac{(\text{Average aggregate inventory value}) \times 52 \text{ weeks}}{\text{Cost of goods sold}}$$

This is a measure of how many weeks worth of inventory is in the system at a particular point in time.

A firm considers inventory as an investment because the intent is for it to be used in future. Inventory ties up funds that could be used for other purposes and a firm may have to borrow money or finance the investment. The objective is to have the proper amount of inventory and to have it in the right locations in the supply chain.

2.9.2 Economic value added

EVA (Economic Value Added) developed by Stern Steward is recognised as a comprehensive measure of value creation. By understanding EVA drivers' managers become more aware of the impact of innovation, cost reduction, technology, improvements, and capital base reductions on value creation. The linkage approach incorporating EVA and SCOR model is another way of adopting the balanced score card, Monczka, Robert I S M conference on E-procurement, Scottsdale, AZ (June 2000). The supply chains council model SCOR (www.supply-chain.org) can bring a measure of organization to the supply chain measurement process and provide the link to overall corporate performance.

2.9.3 The SCOR Model

The supply chain council's SCOR model can bring a measure of organization to the supply chain measurement process and provide the link to overall corporate performance. The model identifies the need for corporate objectives, strategies, and business plans as the starting point for identifying best practice processes, concepts, and tools and as well as selecting appropriate metrics. As such, it helps to overcome the disconnect between the supply chain metrics and overall corporate performance (www.supply-chain.org). While the SCOR model

is a useful tool through which to demonstrate the direct connection between supply chain management and overall corporate performance, the model itself does not make the connection. Instead it focuses on the hierarchy of planning and business goals, with requirements for objectives, strategies, and metrics at multiple levels in the business structure. The table below is an important element of SCOR model-the level 1 SCORcard Performance Metrics, which are the strategic supply chain metrics. These metrics are performance attributes that have a direct impact on the customer (Customer Facing) and firm (Firm Facing).

Table 2.9.3 SCORcard Performance metrics

SCORcard Performance Metrics.						
SCOR level 1-Strategic Supply Chain Metrics	Performance Attributes Customer-Facing			Internal-Facing		
	Reliability	Responsiveness	Flexibility	Cost	Assets	
Perfect Order Fulfilment						Revenue
Order Fulfilment Cycle time		PWB ^ WWBMMHI				Revenue
Upside supply-chain flexibility						Cost
Upside supply-chain adaptability						Cost
Downside supply-chain adaptability			••••••••<I			Cost
Supply Chain management cost						Cost
Cost of goods sold				ipliliiip		Cost
Cash-to-cash cycle Time						Assets
Return to Supply Chain Fixed Assets						Assets
Return to Working Capital						Assets

(Supply Chain Council, www.supply-chain.org)

Other measures of performance in supply chain include variances (Cost of goods sold), out of stock, stock cover days, lost sales, bounced orders, missed orders, manufacturing efficiencies, net income before tax(NIBT), Cash operating expenses, demand forecast, customer satisfaction among others.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter sets out the research methodology that was adopted so as to meet the objective stated in chapter one of the study in determining the effects of integrated supply chain management on the performance of Nairobi Bottlers Limited. The research design and justification, data collection method and data analysis techniques are discussed.

3.2 Research Design

This study adopted a case study research design where the unit of study was the Nairobi Bottlers Ltd. The design is most appropriate when detailed, in-depth analysis for a single unit of study is desired. Case study research design provides very focused and valuable insights to phenomena that may otherwise be vaguely known or understood. This approach has been used previously in similar research papers like the one by Thuo (2002)

3.3 Data Collection Method

The study involved the collection of both primary and secondary data. The focus of the study was on carrying out a study of the effects of integrated supply chain and how it impacts on the performance of Nairobi bottlers. To achieve this, a questionnaire will be used to collect the data. Secondary data was obtained from Nairobi Bottlers Human Resources, marketing, finance and supply chain documentation. Electronic journals and other internet sources will also be used as sources of secondary data. This will provide information on integrated supply chain, how it should be practiced and the effects on a business performance. Secondary data will also be critical in the formation of the study's literature review

The study targeted a total of fourteen managers and six supervisory management staff drawn from both supply chain at country level, other functions of Nairobi bottler's ltd and some supervisory staff. From country level is Country supply chain Manager, Country sales Manager. Other managers comprise of production, engineering, central planning, operations, distribution, warehouse, coolers, quality, procurement, finance, sales and marketing. The supervisory management staff is also drawn from within the functions mentioned.

3.4 Data Analysis

Given the fact that both the primary and secondary data were qualitative in nature, content analysis and statistical analysis was best suited method of analysis. Content analysis is a technique for making inferences by systematically and objectively identifying specified characteristics of messages and using the same to relate trends, while statistical analysis is a technique used when you have diagrams, trends. Content analysis is further argued that the method is scientific as the data collected can be developed and be verified through systematic analysis (Nachmias and Nachmias, 1996; Strauss and Corbin, 1990) and this approach has been used previously in similar research papers like the one by Thuo (2002). Statistical instruments is where data is measured and in this case a five scale instrument applied to the statistical package for social sciences (SPSS) with analysis done parameter designed in the part of the questionnaire.

CHAPTER FOUR
DATA ANALYSIS AND INTERPRETATION OF RESULTS

4.1 Introduction

This chapter details the findings and discussions of the research study. It provides an in-depth description of the data, analysis and results. This chapter also documents and discusses the performance of the organization in the case study and is Nairobi Bottlers in this particular case via checking out on how set KPIs are performing. This performance of indicators gives the indication of business performance and because supply chain is aligned to overall business strategy

4.2 Profile of respondents

The twenty respondents that formed part of the study are part of management, middle management and lower management at Nairobi Bottlers limited. A total of twenty questionnaires to match the number of each respondent were distributed. All the respondents are either fully involved in supply chain execution or partially involved in supply chain integration by linkages or action that monitor business performance indicators as identified to measure supply chain performance.

4.2.1 Table 4.2.1: Distribution of respondents by function in the company

Position	Function	frequency	%
Country Sales	Sales	1	5
Operations Manager	Supply Chain	1	5
Distribution Manager	Supply Chain	1	5
Warehouse Manager	Supply Chain	1	5
Production Manager	Supply Chain	1	5
Production Unit Managers	Supply Chain	2	10
Quality	Supply Chain	2	10

Assurance Team Leaders			
Engineering Manager	Supply Chain	1	5
Finance Managers	Finance	2	10
Procurement Manager	Finance	1	5
Planning Manager	Supply Chain	1	5
Trade Marketing Manager	Marketing	1	5
Customer marketing Manager	Marketing	1	5
Demand Planning Manger	Marketing	1	5
Regional Sales manager	Sales	1	5
Key Accounts Manager	sales	1	5

The table captures respondents and function that they do work with more respondents coming from supply chain function.

4.3 Nairobi Bottlers

Nairobi Bottlers Ltd is a beverage manufacturing company licensed to bottle Coca-Cola beverages by the Coca-Cola Company and is part of the Coca-Cola South African Bottling Company (SABCO) which is a Coca-Cola anchor Bottler. Coca-Cola Sabco has 72.38% shareholding while ICDCI has 27.62% of the shareholding. The origin of NBL traces back to 1948 when Coca-Cola bottling Company of Nairobi was founded by the Coca-Cola Company. It operated under that ownership establishment until 1978 when NBL was

incorporated and then under the Coca-Cola Company and ICDCI (now centum). Coca-Cola Sabco together with ICDCI acquired NBL from the Coca-Cola Company in 1995.

Supply chain as a function in the business came into being in 2006 which saw the appointment of Country supply chain manager who reports to the managing Director. Subsequent appointment of Central planning manager to coordinate planning processes followed one year later. These changes also saw warehousing and distribution processes (departments) move from sales to supply chain. Currently several processes and departments fall under supply chain , starting with central planning, production, quality assurance, engineering, warehousing, distribution, fleet, cold drinks and continuous improvement. This structure has been embraced and drive supply chain strategies, goals and metrics which are all aligned to overall business goals. The metrics and performance indicators are monitored and reported periodically within the organization.

Integration of supply chain has been improving every year which is evident from the metrics and performance indicators set. NBL has invested in development of capability to drive supply chain processes and these have been made to happen via adoption of e-learning on supply chain courses. The company has incurred learning costs by paying Accenture which is supply chain e-learning organization and managers are getting equipped and do examinations. Internet has also facilitated the integration of key supply chain processes and the company has this facility.

4.4 Integrated supply chain management at Nairobi Bottlers

Nairobi bottlers has embraced supply chain for the last three years, this started from the restructuring of roles and appointment of Country supply chain manager. Supply chain comprises of the following departments reporting to Supply Chain manager; Production, Engineering, Quality Assurance, operations (warehousing and Distribution), Central planning, Fleet and continuous Improvement. These departments in one way or another deal with the following main activities that cut across the components of supply chain as well as link them together. They are; purchasing, order processing, demand planning, manufacturing, inventory management, warehousing, transportation and customer service.

Critical to integration at NBL is the role of Central Planning manager who drives Sales and Operations process, production (supply Planning), materials planning, Distribution planning and dotted coordination with demand planning. However demand planning reports directly to Marketing and procurement reports to finance function

The adoption of supply chain function and creation of planning department supported by top management drives supply chain agenda at NBL. S&OP process is conducted at the end of every week and attracts all supply chain departmental managers, and representatives from finance, marketing, sales, procurement and top management. This process coordinates the supply chain processes and linkages of planning processes. In S&OP meetings sales numbers are shared out, future sales forecast, supply capability and constraints, warehousing capability and constraints, distribution capacity and financial support which is provided in the budget. The constraints to the achievements of supply chain objectives and performance indicators are spelt out and action plans are put in place to address them. Major challenges and outcomes from this process are shared out with the Managing Director who discusses with his top management team. The country supply chain manager drives supply chain goals and agenda and has overall responsibility for the realization of supply chain goals.

This goals are normally set prior to the beginning of a new year which forms part of top business goals and also supports top business agenda. In recent years and currently top goals have been to increase Net Sales Revenue, increase customer service, improve quality to world class; improve employee engagement and satisfaction among others. Looking at this top goals integration of supply chain by adoption of key performance indicators helps to monitor performance. The top NBL business goals which also comprise of supply chain goals and metrics are cascaded down to departments and further to the shop floor that also play a major role in their realization. The objectives and tactics are communicated on mail and posted on shop floor team charts.

4.5 Performance indicators adopted to drive supply chain and its integration

From the information gathered from respondents to drive integration and overall performance of supply chain NBL through supply chain function has embraced and adopted key performance indicators which are monitored daily, weekly or monthly. The country supply chain manager has overall responsibility on the performance of these indicators. At top level

are measures on increasing supply to match increasing demand and this has been supported by increase of manufacturing capacity through investment in production lines, equipment upgrade. The supply chain departments each have performance indicators. Central planning drives sales forecast and accuracy, inventory management which is shared with warehouse, driving S&OP process and the manager of this department monitors and reports on performance.

Production drives produce to plan, manages variances via optimization of manufacturing routines and practices. The manager monitors, communicates and reports all managers on monthly basis or weekly on performance. Operations drives warehousing and distribution which encompasses product stock levels, product shortages, order fulfillment, distribution spend and optimization and overall product delivery to customers, Quality drives quality index(quality measure for product and package) which increase customer satisfaction. Procurement drives material sourcing, reliability and ensuring the material availability for manufacturing execution at NBL. Optimization of supply chain processes and improvement opportunities are also driven by continuous improvement manager and most address working capital reduction, manufacturing optimization, distribution optimization, and other supply chain costs that ought to be reduced. We have seen shipments migrate from sea to airfreight like concentrates and this has tremendously reduced working capital costs. All supply chain KPI's are reported by every departmental manager to all managers on a monthly basis to a business management meeting which has top management in attendance. Any sluggishness and underperformance is discussed and action plans are also derived.

4.6 Effects of integrated supply chain at NBL business performance

NBL has witnessed increase in profits which is partly contributed by the adoption of supply chain that is integrated. Net Income before Tax has been increasing from ksh 400 million in 2005 to 875 million in 2009. Sales have been increasing too since then and supply chain by adoption of a clear strategy and metrics has heavily impacted on this growth. NBL has realized optimization of manufacturing processes which has increased supply to meet market demand and from the top investment in capacity via putting lines has been put in place too. This investment had been driven by accurate sales forecast and top management support to drive supply chain agenda. There has been an increased return on working capital and witnessed by the respondents, reduced inventory turnover, reduced supply chain costs per unit case as well.

From most respondents customer service had tremendously increased at NBL to a point that even at night deliveries are made to customers especially within Nairobi Market. NBL is now more responsive to its customers, reliability to customers has increased and consumers are happier and satisfied which increase sales. This satisfaction is evident by the improved quality numbers of NBL as analysed and posted from Coca-Cola Atlanta. NBL have been trending at 99% on product quality whole year until Nov 2009. The overall supply chain costs as mentioned have reduced and from the income statement it has directly impacted on profitability. Currently a lot of improvement initiatives are in place to address supply chain costs. Process optimization, water use reduction, variance reduction among others. Because of the effects on integration SABCO group office is using Nairobi Central Planning function as most working in the East African bottling plants and the structure has been revised to enhance execution of supply chain.

The study clearly illustrates how NBL uses and evaluates its supply chain performance using the performance metrics they have adopted which affect reliability towards the customer, responsiveness, flexibility, costs and assets. NBL has exercised responsive supply chain strategy, efficient supply chain strategy and agile supply chain strategy in its application of supply chain integration as most respondents allude. This integration is quite evident in the way organizational competitiveness has directly affected the performance of NBL. From the respondents , there is great balance between demand and supply of products due to good forecasts and this balance has made NBL to be able to optimize inventory costs, as well as optimizing supply chain areas of manufacturing, logistics and procurement and in totality contributing to greater overall business performance.

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of the findings of the study as well as the conclusion gathered from the analysis of the data. Findings have been summarized alongside the objective of the study, conclusions have been drawn and recommendations given. The study was a case study of the effects of integrated supply chain on the performance of Nairobi Bottlers limited.

5.2 Discussion

From this study it has been revealed that it was and is quite evident that the introduction of supply chain which is integrated has heavily impacted on the performance of NBL. There is great evidence of top management commitment that created supply chain function with human resources to drive it. The structure, strategy and goals and KPI's are clearly spelt out and executed across the organization as established from more than 80% of the respondents and this is evident from periodic reporting of outcomes across the business.

The study also found out that NBL has grown tremendously on its profitability and the drive to reduce costs especially across supply chain is key. This was made very clear from the respondents from finance who compute income statements taking into account all cost variables. All respondents from other functions too view as evident, clearly evident or outstanding the effect of supply chain on profits, costs, working capital and inventory turnover. NBL spends about 60% of its cash operating expenses in supply chain through materials buying, costs on assets invested, conversion of materials to finished goods and demand fulfillment.

The study further revealed that integrated supply chain has enhanced the provision of linkages on processes with flow of goods, information and financial resources, its quite evident that integrated supply chain has played a huge role in optimizing this. The KPI's ranging from NIBT, stock levels, customer satisfaction, balance of demand with supply, materials variances, material costs, warehousing and distribution costs have all improved positively. This improvement is also illustrated by better employee engagement which asks some questions on supply chain understanding and participation across the organization. The

study established that the company has continued to support supply chain by the adoption of e-learning on supply chain courses because this field is pretty new. Supply chain managers can access supply chain courses as offered by Accenture (supply chain academy). The company pays for this cost and is well aligned with SABCO group who owns majority of NBL.

5.3 Conclusion

Integrated supply chain has clearly impacted on the performance of NBL since its adoption in 2006 as evident from increase in profits, increase in manufacturing capacity to match increasing market demand. The linkages of all supply chain functions and other support functions of sales, marketing and finance as provided with S&OP has eliminated huge supply chain losses that existed when departments were operating as individual processes.

We have seen activities such as new product developments such as Novida Launches and other go through S&OP process and have been quite effective. NBL in liaison with Coca-Cola who is its partner facilitated the introduction of these new products and supply chain was able to deliver the right quality product at the right time, in 2009 COYA awards this won in the market category, fastest launches in the market. NBL has seen huge drop in product stock outs especially in peak seasons and this has been brought about by manufacturing flexibility, stock build up, effective and well aligned equipment maintenance routines, accurate demand forecasts, very high support of S&OP process to the execution of all supply chain functions together with other support functions. The execution of all supply chain processes and other supply chain function fully support the execution of Central planning process which houses S&OP process.

All processes clearly indicate support towards S&OP execution as evidenced from majority of the respondents and S&OP execution directly impacts the execution of other functions and processes. From the study, it was quite clear from most of the respondents how integrated supply chain management has impacted on flexibility towards the customers as well as better responsiveness towards their customers and this is also clear in regard to reliability in customer orders.

5.4 Recommendations

With evidence of integration of supply chain working at NBL, it is critical that top management continue to support the structure and strategy for supply chain. E-learning of supply chain courses as offered by supply chain academy should be enhanced to cultivate supply chain skills as should be practiced. S&OP process should be entrenched further as it drives the integration of planning processes and optimizing process linkages.

The ownership of the planning processes can also be enhanced to deliver greater benefits of integration and to this regard demand planning could also be moved to supply chain central planning as opposed to marketing, some procurement activities can also move to supply chain to fasten decisions and alignment as opposed to being in finance. Supply chain should keep on communicating its strategy, goals, objectives across the organization so that it gets entrenched and understood by all. Both efficient supply chain and agile supply chain strategies can also be used in the integrated supply chain framework to optimize supply chain performance

5.5 Limitations of the study

The study was carried out within limited timeframe and resources which constrained the scope and depth of the research. This necessitated a adoption of case study design hence the findings cannot be used to make generalizations regarding the effects on integrated supply chain of the performance of other manufacturing organizations like this in Kenya.

It was also appreciated that respondents bias may have been an evitable part of the study as managers were required to make judgment on the institution they work for. One may perceive penalties or benefits resulting from a particular position on an issue. This was however minimized by encouraging anonymous responses from the respondents sampled from the organization.

5.6 Suggestions for Further research

Further research on the impact and extent of integrated supply chain can be carried out on other manufacturing firms and services sector in Kenya and across sectional survey design used to compare and make generalizations. It will also be interesting to carry out the extent and benefits of supply chain integration in the year 2011 and beyond which can capture any significant changes in the businesses operating environment in the country.

5.7 Implications to Policy and Practice

This study has wide implications to policy starting with business priorities at top management which are deployed to tactical level. This study clearly indicates that a well executed integrated supply chain extracts a lot of financial benefits across supply chain for an organization and thus heavily impacts on company's profitability. Top management needs to entrench an integrated supply chain and support with the relevant recourses to optimize the benefits.

The study also illustrates the need for an organization to know that integrated supply chain processes create a competitive advantage. This competitive advantage gives Nairobi Bottlers the lead in the marketplace as well as in cost optimization as compared to new entrants or any other competing firms. Going into the future the benefits realized by integration will enhance business support and understanding of supply chain.

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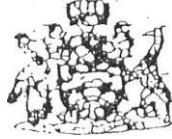
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APPENDIX 1: LETTER FROM THE UNIVERSITY OF NAIROBI, SCHOOL OF BUSINESS



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DATE.

TO WHOM IT MAY CONCERN

The bearer of this letter is a student of the University of Nairobi.

Registration No: **12345678901234567890**

is a Master of Business Administration (MBA) student of the University of Nairobi.

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

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

Thank you.

DR. W.N. IRAKI
CO-ORDINATOR, MBA PROGRAM

UNIVERSITY OF NAIROBI
SCHOOL OF BUSINESS
MBA OFFICE
P O BOX 3019/
NAIROBI

[Handwritten signature]
9/10/09

Appendix 2: Letter of Introduction

Bernard Wasike Ijomba
School of Business
Department of Business Administration
University of Nairobi
P.O.Box 30197 Nairobi

Dear Respondent

RE: Collection of Research Data

I am a postgraduate student at the University of Nairobi, School of Business. In order to fulfil the degree requirement I am undertaking management research on the effects of integrated supply chain. The study is entitled "The effects of integrated supply chain on the performance of Nairobi Bottlers"

You have been selected to form part of this study, this therefore is to kindly request you to assist me collect data by filling out the accompanying questionnaire, which I will collect from you.

The information and data provided will be exclusively for academic purposes. My supervisor and I assure you that the information you give will be treated with strict confidence. At no time will you appear on the report. Your cooperation will highly be appreciated.

Yours faithfully

Bernard Wasike Ijomba
Student

Zackary Awino
Lecturer/Supervisor

Appendix 3: Questionnaire

1. Indicate your functional role in the organization (Nairobi Bottlers Ltd)

- Lower Management
- Middle Management
- Senior Management

2. What is your position in the organization

- Country Manager
- Procurement Manager
- Finance manager
- Planning Manager
- Sales Manager
- Distribution Manager
- Others (Specify)

3. What type of planning has NBL implemented (Tick all that apply)

- Materials planning
- Demand planning
- Supply planning
- S&OP planning
- Demand planning
- Others (Specify)

4. Is the supply chain structure well defined to deliver supply chain strategy?

If yes explain

5. Is supply chain strategy clear and well understood across the organization?

If yes, explain

6. What role does your function perform to support S&OP planning execution

7.How does S&OP execution support the execution of other functions?

Indicate function and explain

8.1s supply chain strategically aligned to corporate performance?

If yes, explain.

9.Could you kindly rate how integrated supply chain management has impacted on NBL business performance? Please Tick as appropriate 1 to 5 (1-No Evident, 2-fairly Evident, 3-Evident, 4- Clearly Evident, 5- Outstanding). If mode of valuation does not apply to your function , indicate N/A(Not applicable)

Mode of valuation	Not Evident	Fairly Evident	Evident	Clearly evident	Outstanding
Increase in NIBT					
Increased return on working capital					
Inventory turnover reducing					
Reduced supply chain costs (fixed costs, variable)					
Increased customer service levels					

Increased flexibility towards the customer					
More responsiveness to customer					
Demand balanced with supply					
Increased reliability to customer orders.					

End of questionnaire.

Thank you very much for your corporation