

**A STUDY ON THE EFFECTIVENESS AND EFFICIENCY OF THE
SUPPLY CHAIN MODEL IN THE WRIGLEY COMPANY (EAST
AFRICA) LIMITED - (WCEA) ¹¹**

BY

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**A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT
OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE
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ACKNOWLEDGMENTS

DECLARATIONS

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I declare that this project is my original work and that it has not been submitted to any other University or Institution for academic credit

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Sign.



Date

27/11/2007

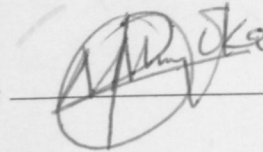
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27/11/2007

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ABSTRACT

A close scrutiny of debates and discourses on the concept of organizational supply chain management readily reveals that a leading concern among most organizations working with known supply chain models give overwhelming attention to cost minimization. It is generally believed that a firm's level of profit maximization will depend in large measure on the type of supply chain process that it depends on. In other terms firms that insist on working with other business partners in their supply chains who have adopted best supply and production practices are better placed to cut on overheads as they maximize profits.

The purpose of the study was to investigate and provide an understanding of the existing Supply Chain Model at WCEA within the context of its main areas of efficiency and effectiveness. Further the study sought to establish what the challenges presently face the supply chain model/structure that WCEA uses. In the study, the descriptive research method was the preference. This granted the researcher the opportunity to acquire complete and accurate information relating to the issues under enquiry.

This study employed the use of two types of study tools namely a structured questionnaire and an interview schedule. Structured survey questionnaire to measure a number of variables related to supply chain processes relevant to the objectives of the study. The interview schedule on the other hand enabled the researcher to carry out in-depth probing of respondents in order to get all possible perspectives of the subject under study.

In the study, several statistical analyses were performed on the study data. First, descriptive statistics was used to analyse the distribution of any categorical and numerical responses to generate frequencies and percentages. Secondly, the data from the interview schedules and open ended items was transcribed, reconstructed and analyzed using narratives.

The study findings revealed that majority of staff, irrespective of hierarchy, believed that the work they did in the company was directly related to the supply chain process. It was also found that the three most common objectives as identified by the respondents were: increased productivity, enhanced customer service, and higher quality standards. Staff expected that, to a great extent, the supply chain activity would increase significantly the organization's performance in the next five years.

It is recommended that the company leadership demystifies the SCM concept to all associates and communicated to them effectively the intended benefits that would accrue when SCM is properly implemented and operationalised. There is also a need for WCEA management to introduce staff capacity development initiatives to improve their understanding of the supply chain process and inform them of their contribution to the process.

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CHAPTER ONE

INTRODUCTION

1.1 Background

Supply chain management (SCM) is a business process that holds a great amount of mystery – and fear. Supply chain management has generated much interest in recent years for a number of reasons (Johnson and Pyke 1999). Many managers now realize that actions taken by one member of the chain can influence the profitability of all others in the chain. Today Firms are increasingly thinking in terms of competing as part of a supply chain against other supply chains, rather than as a single firm against other individual firms. Also, as firms successfully streamline their own operations, the next opportunity for improvement is through better coordination with their suppliers and customers. The costs of poor coordination can be extremely high.

With the emergence of the Internet, customers seek out specific products they want at the prices they're willing to pay. Modern supply chains focus on the customer. Manufacturers need to precisely gauge what a customer might want, how to package it and where to ship it. There is no such thing as "one size fits all". When the customer wants a change, they need to be prepared to shift directions quickly. As a result, business and manufacturing processes need to be just as agile and scalable. Manufacturers who do not adopt proven methods to succeed today may be out of business tomorrow.

Ansoff, (1984) asserts that an organization is an open system that can not exist and sustain itself. No organization can exist without the environment. Each organization must scan the environment in order to spot budding trends and conditions that could affect the industry and adopt them (Thompson and Strickland). A good corporate strategy should integrate an organization's goals, policies, and action sequences (tactics) into a cohesive whole, and must be based on business realities. Business enterprises can fail despite 'excellent' strategy because the world changes in a way they failed to understand. Strategy must connect with vision, purpose and likely future trends.

The success or not of an organization depends on how well it addresses its customers needs and demands for products and services. This requires an organization to re-look at its core activities and ensure value addition at each stage until the customer gets the final product. A good value product could result from how a set of linked activities are performed from design, component manufacture, assembly processes, care, and speed of distribution, the way the product is stored and displayed, right through to support on installation and after-sales service (Johnson & Scholes, 2004). This value chain categorizes the generic value-adding activities of an organization. The "primary activities" include: inbound logistics, operations (production), outbound logistics, marketing and sales, and services (maintenance). The "support activities" include: administrative infrastructure, management, human resource management, R&D, and procurement. The costs and value drivers are identified for each value activity. This network of activities through which the materials flows is also known as supply chain. Firms can no longer effectively compete in isolation of their suppliers and other entities in the supply chain. (Lummus & Vokurka, 1999). Supply chain management is currently perceived as an effective means to achieving successful international competitiveness (Evans et al., 1996)

1.2 The Wrigley Company (East Africa) Limited

The Wrigley Company is one of the many confectionary companies operating in Kenya. The Confectionary Industry will be defined for the purpose of this study as the groupings of organizations that are involved in the manufacture and marketing of chewing gum, bubble gum, candy, chocolate, lollipop, toffee, fudge, sweets, jelly, ice-cream, etc. Some of the players in the confectionary industry in Kenya include: Bingo sweets Ltd; Cadbury (K) Ltd; Candy Kenya Ltd; Carlton Products (EA) Ltd; Firox Sweets Ltd; Hema Confectionary Ltd; Kenafic Industries Ltd; Kenya sweets Ltd; Kwaliti Candies & Sweets Ltd; Patco Industries Ltd; Pearl Industries Ltd; Swan Industries Ltd; Virani industries Ltd, and Wrigley Company (East Africa) Ltd.

The Wrigley Company (East Africa) Ltd is a wholly owned subsidiary of the international company Wm Wrigley Jr Company. Wm Wrigley Jr. Company is a recognized leader in the confectionary field and the largest manufacturer and marketer of chewing gums. The company was founded in 1891 and has been traded publicly since 1917. It is an international company based in Chicago but with associate companies all over the world, including Kenya. The Wrigley Company (E.A.) Ltd produces chewing gum mainly for the East African markets, the West African markets, Ethiopia, Sudan, Rwanda, Congo, South Africa and the Middle East markets. In Kenya it is the market leader in quality chewing gum products.

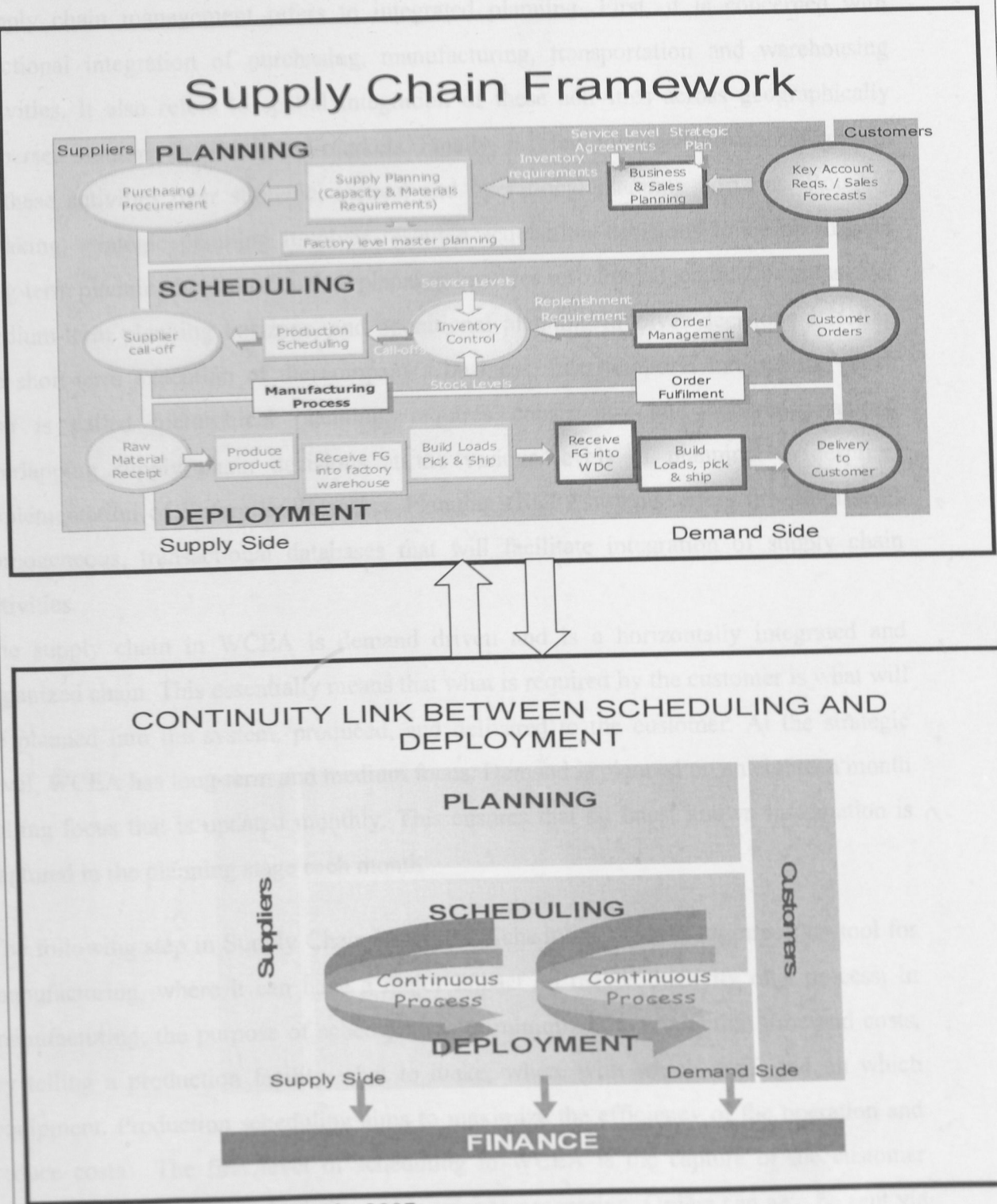
The African market is still largely unexplored in terms of aggressive marketing of Wrigley chewing gum products. It's a huge market that promises great opportunities. Currently all sugar free gum sold in Kenya is imported. The challenge facing the company is to develop sugarfree brands locally mainly for the Kenyan market, but also use the same to enhance the acceptability of chewing gum in rest of East Africa and, indeed, the whole of Africa.

In today's competitive environment, a company more than ever needs a strategy that specifies the kind of competitive advantage that it is seeking in its market place and articulate how that advantage is to be achieved, underlining the technology it is going to use in the process, and functions to be performed.

1.2.1 The Wrigley Company (East Africa) Supply Chain Model

The present SCM framework that WCEA has adopted has three main framework processes namely; planning, scheduling and deployment. The model also entails other forms of integration that include new applications in business information management such as Software Application & Product (SAP), an Enterprise Recourse Planning (ERP) that ensure faster and secure data and information the supply chain management process. Figure 2 below illustrates the model processes.

Figure 1: The WCEA Supply Chain Management Model



Source: WCEA System Records, 2007

1.2.2 WCEA's Supply Chain Processes

Supply chain management refers to integrated planning. First, it is concerned with functional integration of purchasing, manufacturing, transportation and warehousing activities. It also refers to spatial integration of these activities across geographically dispersed vendors, facilities, and markets. Finally, it refers to inter-temporal integration of these activities over strategic, tactical and operational planning horizons. Roughly speaking, strategic planning involves resource acquisition decisions to be taken over long-term planning horizons, tactical planning involves resource allocation decisions over medium-term planning horizons, and operational planning involves decisions affecting the short-term execution of the company's business. Inter-temporal integration, which also is called hierarchical planning, requires consistency and coherence among overlapping supply chain decisions at the various levels of planning. Widespread implementation of Enterprise Resource Planning (ERP) systems offers the promise of homogeneous, transactional databases that will facilitate integration of supply chain activities.

The supply chain in WCEA is demand driven and is a horizontally integrated and organized chain. This essentially means that what is required by the customer is what will be planned into the system, produced, and delivered to the customer. At the strategic level, WCEA has long-term and medium focus. Demand is planned on an eighteen month rolling focus that is updated monthly. This ensures that all latest known information is captured in the planning stage each month.

The following step in Supply Chain Process is Scheduling. This is an important tool for manufacturing, where it can have a major impact on the productivity of a process. In manufacturing, the purpose of scheduling is to minimize the production time and costs, by telling a production facility what to make, when, with which staff, and on which equipment. Production scheduling aims to maximize the efficiency of the operation and reduce costs. The first level of scheduling in WCEA is the capture of the customer orders. WCEA gathers order information prior to processing. Orders can also be sent via post or fax or transmitted through EDI. Under Order management, all orders received are checked to establish if the order is immediately available from inventory, (should be if

demand is 'normal'), or if it must be backordered or manufactured/delivered by a third party. Here, the system will also identify when the product will be available. The order price (using requested, volumes or contract conditions with Call-offs) will also be determined. This process is to establish whether the order can be fulfilled immediately or if replenishment will be necessary. The Inventory Control Process co-ordinates replenishment activity between Wrigley factories and Wrigley & Distribution Centres (DCs) to meet pre- defined Service levels. Note: In cases of normal demand, all orders will be fulfilled from inventory. To ensure demand fulfilment WCEA determines requisite replenishment and monitor adherence to Service Level agreement (SLA.) Call-offs are reviewed and prioritized and then flow through to production scheduling. As part of short range planning, detailed production planning within specific time fence (3 to 4 weeks) is performed. There is plan to coordinate all necessary resources to manufacture the required demand fulfilment. Production plan then authorizes the factory to manufacture a certain quantity of an item for a required date in the time horizon of 1 week. Finally, materials and services are purchased. In supplier call off, gum base or other supplies are ordered and can be verified manually or automatically.

The process that follows Scheduling as shown in the diagram above is Deployment. This entails managing the movement of raw materials into an organization and the movement of finished goods out of the organization toward the end-consumer. As corporations strive to focus on core competencies and become more flexible, they have reduced their ownership of raw materials sources and distribution channels. Deployment categorizes the generic value-adding activities of an organization. The "primary activities" will include inbound logistics, operations (production), and outbound logistics, marketing and sales. At WCEA; this includes managing receiving and storing of materials from suppliers and interplant, within a warehouse. That is delivering materials to an individual, or place goods into storage location, updating inventory and ensuring necessary documentation is completed. Deployment ensures that the production plan is met. This is the conversion of raw materials into final products according to the production schedule. The final step in deployment is the physical shipment of orders to the end customer.

1.3 Statement of the Research Problem

Organizations have come a long way from days when Henry Ford could famously declare 'A customer can have a car of any colour he wants, so long as it is black' (Witzel, 2003a: 113 in Burns 2004). Nowadays, the boot is on the other foot; it is a case of consumers dictating to organizations that they should meet their ever-changing tastes, and woe betide the company that fails to meet them (Burns, 2004 :84). To remain competitive in the business, organizations have been forced to continuously search for new paradigms and strategic choices. Strategic choices are concerned with decisions about an organization's future and the way in which it needs to respond to the many pressures and influences of the environment (Johnson and Scholes, 2004). Business operations nowadays traverse multiple geographies and countries. Organizations are also engaged in multiple and diverse businesses. All these issues have contributed to complexity in the way organizations operate. Competition between organizations has become very stiff, sophisticated and sometimes fierce. These organizations usually strive to achieve and maintain sustainable competitive advantage over their rivals. Customers are also today well informed and increasingly demanding. It is therefore becoming even more difficult to satisfy the customer. That is why, faced with all these gigantic and potentially overwhelming challenges, Wrigley Company (East Africa) Ltd have resorted to strategic planning.

Today, WCEA also faces the real threat of market saturation with low end market confectionary products produced locally and imported from Asia, particularly china. Due to the low buying power of most consumers in Kenya, and confectionary not being seen as absolute necessity, the cheaper the product the more it will appeal to the consumers. Owing to comparatively low production costs in the Chinese market, its confectionery products enjoy consumer preference in the largely quality indiscriminant Kenyan market. WCEA on the hand continues to struggle to survive in a market with high costs of production leading to significantly high end-product mark up. In the face of this combination of these factors, the Nairobi plant has cost reduction through a better managed, time efficient and cost effective Supply chain as one of its immediate options.

Because competition between WCEA and its main rivals has become so stiff, WCEA strives to achieve and maintain sustainable competitive advantage over its rivals in the Kenyan and regional market where it operates. WCEA has had to look at strategic ways to remain relevant in the business by putting effort and resources in the enhancement of its supply chain to enable it overcome most of the logistical and structural challenges that the chain faces. The firm's primary aim is to adopt a most process efficient, cost effective and challenge free supply chain.

1.4 Objectives of the Study

The broad objective of the study was to investigate and provide an understanding of the existing Supply Chain Model at WCEA within the context of its main areas of efficiency, effectiveness. In particular the study focused on the following objective:

- a) To critically review on the existing Supply Chain Model at WCEA, with an aim to establish its effectiveness and efficiency and how it has helped the company optimize on its operations.

1.5 Research Questions

To accomplish the objectives of this study, the following questions will be addressed:

- a. What are the efficiency and effectiveness indicators of the SCM model in operation at WCEA?

1.6 Significance of the Study

The findings of this study will be of critical significance to both WCEA as an organization and its various stakeholder groups in the supply chain in more than one way. The company's Policy makers will find study recommendations constructive in the improvement of the present SCM model through suggestions on least cost alternatives and improved efficiency leading to overall reduced operations costs. Similarly other business partners who are in the supply chain also stand to benefit a great deal from the study recommendations on how to overcome challenges and improve efficiency thus reduced costs in the supply chain. They will also be able to tell whether their supply

chain is working optimally. Those companies that have not yet constituted a supply chain management may want to take examples from the WCEA supply chain model plus the recommendations given in the case study, and implement their own models. Middle level management including supervisors and other staff will equally benefit from the study at the point where it will give recommendations on what structural changes are required within WCEA's supply chain to further enhance work efficiency.

1.7 Study Limitations

The following were some of the limitations to the study:

- i. The research was only focused on employees of WCEA and that of its main business partners found in the supply chain within Kenya but excluded key players in the whole supply chain who were located outside the country.
- ii. The researcher is a member of staff; a position that lead to biases when dealing with some of the study results and findings owing to his personal involvement in and knowledge of the organization.
- iii. Some of the staff tended to feel insecure when discussing what may appear to be sensitive issues touching on the some of the internal challenges to the supply chain efficiency and effectiveness, this could have inhibited free flow of honest and valuable feedback from employees.
- iv. Owing to few cases of comprehensive research in the area of SCM in Kenya, the study was limited in local literature for reviews
- v. Given SCM is a relatively new concept in business operations, most key players in the Wrigley supply chain were lacking data and information relevant to the study.

Taking the above cited study limitations into consideration; the researcher ensured appropriate research instruments were used to enhance data collection and data analysis to mitigate the above limitations. The researcher also engaged research assistants to help with the administration of the questionnaire independently of the researcher to enhance the quality of data collection while eliminating chances of respondent curtesy bias from staff.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The overall objective of this chapter is to review relevant literature on the concept of supply chain management and how it impacts organizational efficiency in terms of costs, real time communication links, timely procurement of raw materials and deliveries of finished products to the distribution and finally to the end consumers. The literature review has been conducted within the framework of systematic identification of what Mugenda and Mugenda (1999) call the location and analysis of documents containing information related to the research problem under investigation. The literature review provides the researcher with a body of knowledge and understanding of the conceptual and analytical framework in the area of study (Chandran 2004). This chapter provides a broad overview of various literatures relevant to the area of study. In addition, the literature review offers important insights into the critical concepts of supply chain, supply chain management, and supply chain models based on authorities and researches that have been conducted in the area of the study.

2.2. Supply Chain

An integrated supply chain or value chain is a connected series of organization resources, and activities involved in the creation and delivery of value, in the form of both finished products and services, to the end customer (Martin & Roth, 2000). A supply chain can also be viewed as a network of facilities and distribution options that performs the functions of procurement of materials into intermediate and finished products, and the distribution of these finished products to customers (Martin & Roth, 2000).

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 & Billington

1993). The supply chain not only includes manufacturers and suppliers, but also as transporters, warehouses, retailers and customers. Within each organization, such as a manufacturer, the supply chain includes all processes involved in filling a customer's request. These processes include, but are not limited to, procurement, manufacturing, marketing, transportation, and inventory control and customer service (Wu Gang 2003).

Gang posits that a supply chain is a dynamic process 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 to 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. However, production cost is the largest of all in most of the industries, followed by transportation and inventory costs (Chen, 1997).

Traditionally, production, transportation and warehousing organization along the supply chain operated independently. These organizations have their own objectives and these are 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 by trading off the costs of production, transportation and inventory. To reduce the overall cost, effective supply chain strategies must take account of the interactions of different processes in the supply chain. Today those strategies are often referred to as supply chain management or SCM.

2.2.1 Evolution of Supply Chain Management

The concept of supply chain management is relatively contemporary one, first appearing in management literature in the mid 1980s (Oliver et al, Houlihhan, 1985; Jones & Riley, 1985). Its popularity however, has evolved from a combination of recent and earlier

developments in management. The SCM concept can be said to have evolved from the improvement of total distribution strategies over the past few years. These strategies, like SCM, combine all the individual elements, materials handling, storage and transportation into a fully integral logistics concept (Mcfadyen, 1987). The evolution of SCM can thus be said to have originated in some of the routine functions such as product distribution, inventory handling, warehousing, transportation, etc. These, over time, have evolved into a more powerful function called logistics which itself has become an integral component of SCM (Battaglia, 1994). In order for the SCM concept to evolve further, there is need, to constantly develop its theoretical framework and the principles guiding management in order to close the gap between the theory and practice of SCM (Hewitt, 1994).

2.2.2 Supply Chain Management

Supply chain management (SCM) is the process of planning, implementing, and controlling the operations of the supply chain with the purpose to satisfy customer requirements as efficiently as possible. Supply chain management spans all movement and storage of raw materials, work-in-process inventory, and finished goods from point-of-origin to point-of-consumption. The term supply chain management was coined by consultant Keith Oliver, of strategy consulting firm Booz Allen Hamilton in 1982.

Around the world, successful companies are dedicating more resources to supply chain management. In some Manufacturing industries, the supply chain represents the single largest opportunity to reduce costs. Deloitte's supply chain management leaders Jim Kilpatrick and Kurt Ritcey have examined the supply chains of over 800 companies. (Deloitte & Touché LLP - Canada (English))

Integrated supply chain management is a proven business strategy that has gained wide acceptance in recent years due to increasing customer demands for quality, delivery, and speed. New and radical ways of communicating, coupled with cost reduction and more interdependent supplier, provider, and customer relationships, have contributed to the emergence of an integrated supply chain approach. Customers are increasingly demanding higher and higher service levels from their suppliers, and suppliers are

increasingly looking to differentiate themselves from competitors through service performance. Thus the Supply Chain Management is the ability to get the Right Product to the Right Place in the Right Quantity at the Right Time for the Right Cost with Error-Free Documentation.

According to the Council of Supply Chain Management Professionals, supply Chain management encompasses the planning and management of all activities involved in sourcing and procurement, conversion and all logistics management activities (CSCMP, 2007). Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third party service providers, and customers. In essence supply chain management integrates supply and demand management within and across companies.

Stevens (1989) on the other hand views the entire construct of SCM from across the different schools of thought on the concept of SCM, and defines the concept as an integrative approach to linking business processes across organizational functions, from suppliers to end-users in such a way that adds value across all members of the supply chain. To this end, the supply chain is defined as a network of firms, which interact to deliver value to the end-consumer and competitive advantage to all its members by “planning co-coordinating and controlling (the flow of) material, parts and finished goods from suppliers to the customer”

According to Simchi-Levi (2000), 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. Levi further observes that SCM transforms a group of *ad hoc* and fragmented processes into a cohesive system capable of delivering value to customers. Successful supply chain management requires several decisions relating to the flow of information, products and funds. Wu Gang (2003) places these SCM decisions into three categories or phases, depending on the frequency of each decision and the time

frame over which a decision phase has an impact namely: supply chain strategy, supply chain planning and supply chain operation

During the supply chain phase, a company decides a supply chain. Decisions made during this phase are also referred to as strategic decisions. Decisions made by companies include the location and capacities of production and warehousing facilities, where products are manufactured or stored, and the type of information system to be utilized.

As a result of the planning phase, companies define a set of operation policies that govern short-term operations. With decisions made during this phase, the supply chain's configuration determined in the strategic phase is fixed. This configuration establishes constraints within which planning must be done. Supply chain planning involves optimizing the flow of products throughout a given supply chain configuration over time horizon.

The time horizon in supply operations is weekly or daily, and during the supply operations phase companies make decisions regarding individual customer orders. At the operational phase supply chain configuration is considered fixed and planning policies are already defined. The goal during this phase is to exploit the reduction of uncertainty and optimize performance within the constraints established by the configuration and planning policies.

Normally, companies first make supply chain decisions by taking into account of uncertainties in demand over the next few years. Once the supply chain configuration has been fixed, it will not change for a long term. The companies start the planning phase with a forecast of demand in the shorter time horizon.

2.3 Supply Chain Characterization

Supply chain characterisation entails the process of differentiation of functions and relationships within organizations in relation to the structures of their supply chains. Yemisi (2000) characterizes the practice of SCM into two broad schools of thought

namely; the integration and the network schools. The overlap of several authors' definitions across these schools however only serve to reinforce attempts by these writers to portray the two-halves as being part of the whole nature of SCM.

The first school, the integration perspective, views SCM as a concept involved in linking organizations and their functions beyond their traditionally defined boundaries for the purpose of delivering increased level of value to the customers (Jones et al, 1987; Ellram & Cooper, 1990; Harland 1996; Cooper et al 1997). This school defines the supply chain in functional terms referring to the blending of diverse activities involved in bringing goods to the final consumer.

The Network Concept in SCM deals with the intangible aspects of SCM. Its focus is on the formation of relationships, organizational structures and alliances which are required to support the integration process required by SCM (Ellram & Cooper, 1990; Christopher, 1992; Ellram, 1995; Ford, 1997). This school defines SCM in structural terms with a view that the performance of organization is no longer wholly dependent on what they do internally, but is largely affected by the collective performance of all the firms within connected supply chains (Christopher, 1992). An implication of this (network formation) requirement for many organizations lies in the fact that different organizations' boundaries might overlap in the process of bringing finished products to the end consumer. These structural and relationship patterns formed across the distribution channel are more complex than previous linear concepts of the supply chain have depicted (Jones & Riley, 1987).

2.4 Objectives of Supply Chain Management

Houliham (1985) and Jones & Riley (1985) summarized what may be termed as the overall goal of SCM. According to the authors, SCM aims at lowering the total amount of resources required to provide the necessary level of customer service to a specific segment. Other objectives found in literature supportive of this include the ability to reduce inventory investment in the supply chain and build competitive advantage for the supply chain (Ellram & Cooper, 1990; Christopher, 1992; Cooper & Ellram, 1993).

Successful SCM brings bottom-line benefits amongst other things. This payoff can come in different forms e.g. through customer service, improved market share and reduction in transaction costs (Quinn, 1997).

Shapiro (2000) points out that the traditional objective of supply chain management is to minimize chain costs to meet fixed and given demand. This total cost may be comprised of a number of items including: Raw material and other acquisition costs; In-bound transportation costs; Facility investment costs; Direct and indirect manufacturing costs; Direct and indirect distribution centre costs; Inventory holding costs and Out-bound transportation cost

In building a model for specific planning problems, it might be useful to examine only a portion of the company's entire supply chain and associated costs. One can argue that total cost minimization is an inappropriate and timid objective for the firm to pursue when it analyzes its strategic and tactical supply chain plans. Instead, the firm should seek to maximize net revenues.

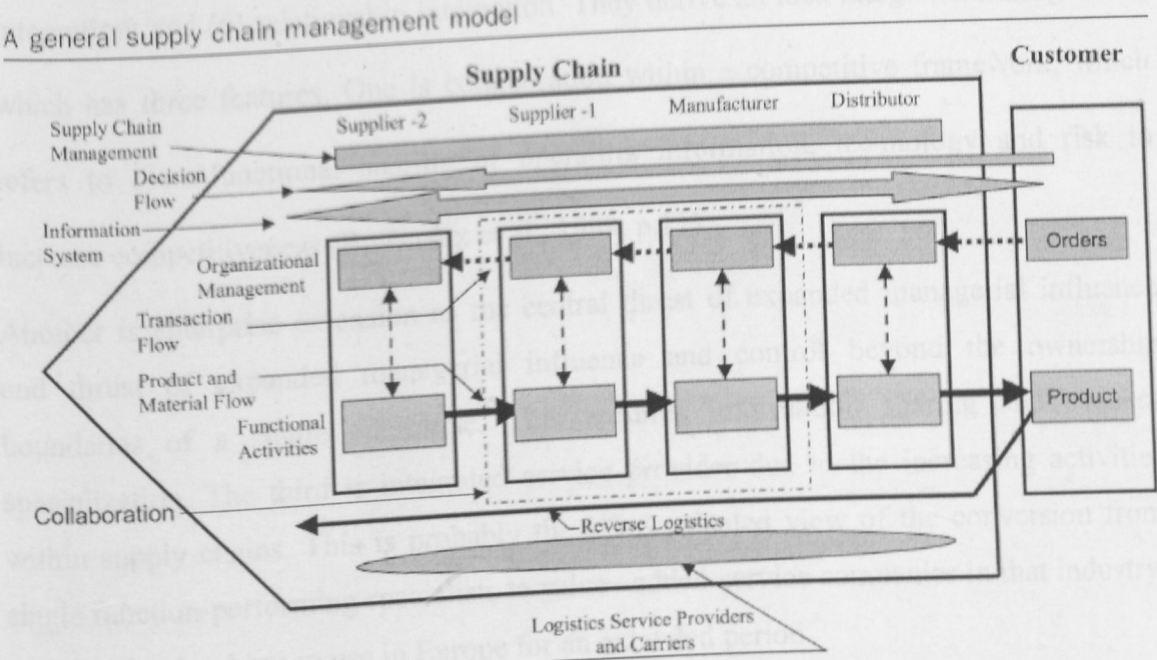
2.5 Supply Chain Management – Model and Process

SCM is typically seen as the entire set of business processes that produces and delivers products/services to the end-customer from suppliers (Cooper et al., 1997). Figure 2 below shows a general SCM model. The supply chain begins with the customer. It moves through successive stages: distribution, final, manufacturing and assembly, first-tier suppliers and, finally, basic materials. Management decisions make this path, determining the choice of structure, structures, partners and processes. Products and materials flow forward, towards the customer. Information flows in both directions. All information is potentially available to all participants in the supply chain.

This model emphasises an inter-organizational, strategic and end-user oriented approach, which differentiates SCM from logistics management (Schary and Skojoett-Larsen, 2001). A similar view is found in Coyle et al. (2000), who characterise SCM as an expanded version of the logistics process. Whereas logistics has traditionally focused its

attention on co-ordinating the flow of activities of an individual firm, SCM is concerned with co-ordinating the product, information, cash movement, and flow activities in a logistics channel environment.

Figure 2: A General Supply Chain Management Model



Source: Schary and Skjoett-Larsen (2001)

2.5.1 Supply Chain Integration

According to Bowersox et al. (1999) the integration objective can be formulated along six different lines: (1) Customer integration; (2) internal integration; (3) material and service supplier integration; (4) technology and planning integration; (5) measurement integration; and (6) relationship integration. They derive an idea integrated management, which has three features. One is collaboration within a competitive framework, which refers to cross-functional sharing of operating information, technology and risk to increase competitiveness (Bowersox et al., 1999, p.11).

Another is enterprise extension as the central thrust of expanded managerial influence and thrust of expanded managerial influence and control beyond the ownership boundaries of a single enterprise. This requires information sharing and process specialization. The third is integrated service provider due to the increasing activities within supply chains. This is probably the US-dominated view of the conversion from single function-performing specialists to value-added-service companies in that industry, practice that has been in use in Europe for an extended period.

Similarly, Lee (2000) outlines three dimensions of supply chain integration: information integration, co-ordination and resource sharing and organizational relationship linkages. Information integration refers to the sharing of information and knowledge among the members in the supply chain, including sales forecasts, production plans, inventory status and promotion plans. Co-ordination and resource sharing refers to the realignment of decisions and responsibility in the supply chain. Organizational relationship linkage include communication channels between the members in the supply chain, performance measurement and sharing of common visions and objectives.

2.6 Supply Chain Management Benefits

According to Martin and Roth (2000), supply chain integration between customers and suppliers can strip away the waste. In an attempt to estimate the extent to which SCM can benefit an enterprise, the authors outline the following cost profiles: (1) Supply chain costs represent more than 60-80 percent of the cost structure in today's business, (2) Purchased materials account for 50-55 percent, (3) Manufacturing another 15-20 percent, (4) Physical distribution 10 percent and (5) and sales 5 percent. Martina and Roth estimate that, with profit margins of only three-four percent, even a five percent reduction in supply waste can double profits.

The authors further note that benefits accruing to companies implementing an integrated supply chain management would vary. Notable improvements as estimated by Martin and Roth (2000) include: Reduction in cycle times ranging between 35-65%; Increased revenues between 5-25%, decreased inventory investment ranging from 25-55%; decreased support inventories in the range of 25-65%; Increased personnel productivity ranging from 25-75%; Decreased depreciation from manufacturing equipment ranging from 15-40%; decreased scrap from production ranging from 25-80%; decreased delivery lead times ranging from 25-60 percent; and decreased time market ranging from 25-75%.

Cokins (2007), on the other hand cites a number of benefits that designing supply chains with an understanding of the specific requirements of a company's unique situation gives. These benefits include: Improved forecast accuracy; Improved planning and scheduling capabilities; Reduced inventory levels; Increased asset utilization; Reduced manufacturing/replenishment lead-times and accelerated supply chain response times; Enhanced customer satisfaction through higher order fill rates; Reduced costs for logistics, warehousing and manufacturing; Dramatically improved customer service

ratings; Reduced volume of errors and exception processing; and Streamlined, more efficient processes

2.7 Supply Chain Challenges

Essential to the organization's business success in the face of stiff competition is the timely and cost effective delivery of materials, supplies and equipment. Unless the production materials arrive when they are required, achieving periodic production targets becomes a difficult task. Within the global economy corporations are competing not only locally but globally to maintain a competitive edge over the market, to achieve this corporations are not only offering products and service nationally and internationally, they are also economically leveraging foreign manufacturing facilities, labour and the application of joint venture agreements to develop natural resources or new products (Teeikanags 2000). According to Henrie Morgan (2006) some supply-chain risks and challenges include lack of supplier attention, late placed orders, internal procurement challenge, and critical raw material damages in shipment and supplier changes.

Lack of supplier attention is common in instances where suppliers view orders placed with them as one-off project sales. Indications of this view can be traced to events such as promised delivery dates missed as higher value competing orders placed with the supplier by other firms are filled first. Other forms of lack of supplier attention include failure to return calls or e-mail inquiries in time, slow response to requested updates, and frequent shifting of procumbent requests between different sales personnel.

Another contrasting side of organizational procurement conflicting objectives and goals is the need to ensure that the material is on hand when required. The main challenge often arises from late placed orders. Potential issues of vendor backorders, late deliveries and wrong deliveries encourage the firm to order sooner than required to allow for these potential risks. Obtaining the materials earlier helps to minimize the risks yet can result in additional storage, breakage, and shrinkage costs as well.

Supply-chain management is also subject to internal procumbent challenges, which in some instances pose certain challenges to the efficiency of the entire SCM process.

Conflicting or restricting company purchasing policies and procedures become constraints when for example various supply-chain management constraints can include appropriate levels of procurement signature authority, mandatory competitive bid requirements, and restriction on the type of vendors' materials that can be used. Other limiting company policies can include stringent insurance and warranty contractual requirements.

Another supply-chain risk involves the receipt of damaged or expired raw materials for processing. Whenever damaged or expired supplies are received the production processes may come to a halt for the time such supplies have got to be sent back to the suppliers for replacement.

When it comes to technology intensive and complex systems, supplier-induced changes are an additional area of supply-chain risk. Supplier induced changes involve the state where the supplier provides the requested part but has introduced a change from the original design. These changes can range from something as simple as substituting metric standard bolts for English standard bolts to supplying a software intensive system that has a newer operating system version. In either case, the supplier-induced change can result in a continuum of issues from a minor irritation to catastrophic system impacts.

2.8 Supply Chain Limitations

Martin and Roth (2000) point out that in addition to dealing with the overall company objectives of minimizing costs while at the same time improving efficiency, those developing or implementing the supply chain strategies will need to overcome or accommodate these limiting factors: Who is responsible and at what authority level; The place of common suppliers; Work with customers; Intellectual property rights; Getting different firms working together; Assuring equity throughout the system; Lack of information flow across organizations; Challenges in relationship development such as "sacred cows", breaking existing relationships; Relationship of customer and supplier; Relationship of competitor as customer and/or supplier

The following section discusses the first four of these limitations as viewed by Martin and Roth (2000).

As a limitation in the supply chain, allocation of Responsibility and Levels of Authority involves who wins organizationally and who gets the higher organizational position and who moves down the ladder. Developing a win-win situation for all players will be challenging and in most cases difficult to achieve. To forestall this, Martin and Roth (2000) suggest that there may need to be an office of supply chain management to resolve disputes between departments or other members.

There is also need for value measures that are driven from the office of supply chain management related to success of the product or service in the market place. The authors contend that integration through measurement will require that right measure be put in into the office and that people in the office have the ability to drive performance in the supply chain. If, for example, marketing owns inventory, the behaviour is going to be different from a situation where it is manufacturing owning inventory. From the supply chain perspective there will be need to for some measures at improving the functional performance.

While placing the dilemma that firms face when they have to do business with suppliers common between them and their competitors, Martin and Roth (2000) ask the question; how is it possible for the same supplier to be part of two competing supply chains? In many supply strategies, provisions will need to be made for such organizations. The two authors further opine that complex business decisions will have to be made concerning such issues as providing a common supplier with resources, improved processes, or with intellectual property or intellectual capital to make needed products.

In many companies a very limiting development of a supply chain strategy is simply the lack of experience between customers and suppliers working together. A customer usually gives a supplier a specification to be used to produce a product or tells the supplier to make a product with a certain kind of material. In a designed part, such requirements tend to be handed down as matter of course. To achieve the best results in supply/value chain, it is very important to determine what the real customer requirement is. Review and define the "second order of consequences" for the customer needs. If any

outsourcing is used by a supply chain member, it is important that all parties understand the role and functions to be done. A clear understanding of the expectations provides a firm foundation for long term success.

The handling of intellectual property and shared rights also can have a major limiting effect on the development of a supply chain strategy. It is a matter dealing with the “crown jewels”, of the organization (Martin and Roth, 2000). What can't be divulged? Companies become more interdependent with certain customers, certain suppliers in the supply chain need to make some conscious reviews of what can't be divulged versus “what is going to be our interest” over time to divulge. Again, the dominant objective is to achieve some synergies between organizations.

In some limited instances, confidentiality agreements are already influencing technologies and the resources that are being put onto technologies in terms of their development. Decisions are being made to put resources into certain technologies by two or three players in the supply chain based on whether it looks like they will contribute to increasing sales in the final customer market place.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The chapter is organized in six sections: research design, study population, sampling method, data collection, data analysis, and operational measures.

3.2. Research Design

According to Cooper and Schindler, (2003), a research design is a structured plan of investigation that a researcher develops to obtain answers to a number of research questions such as: what techniques will be used? What kind of sampling strategies will be used? How will time and resources constraints be dealt with? In terms of the significance of research design, the authors have noted, that it is the blue print for the purposes of data collection, measurements, treatment of data and analysis which aid the researcher in allocating resources when making important choices. Therefore, research design is the 'glue' that holds all of the elements in a research project together. This study used the descriptive design.

Descriptive Research Design, according to Gay (1983) is an important process of collecting useful data required in testing the hypothesis or information that helped the researcher to answer a number of questions concerning the present supply chain structure used in the company of focus in the study. Descriptive research enabled the researcher to describe existing conditions and attitudes through observation and interpretation techniques.

In the context of the study, descriptive research method was preferred as it offered the researcher the methodology to appropriately describe and portray characteristics of events, processes, organizations and the population (Chandran, 2004). This granted the researcher the opportunity to acquire complete and possibly accurate information relating to the issues that were under enquiry. The use of a structured questionnaire did assist the researcher to capture the details of the entire edifice of SCM using various supply chain models that have been reviewed in the context of this study.

3.3. Study Population

The target population for this study were employees from WCEA as represented in the table below:

Senior managers	4
Middle level managers	9
Supervisors	18
All others	31
Total	62

Other respondents targeted included three managers each from four suppliers of Wrigley's wrapping materials i.e. General printers, Prudential Printers, East African Packaging, and Print Pack. Three managers each from the suppliers of ingredients to the WCEA plant that include; Czarnikow Ltd., CPC Kenya Ltd., and other Wrigley Associate Company Companies.

3.4. Sampling Method

The study used a purposive sampling approach which according to (Chandran 2004); and (Cooper and Schindler, 2003), is the selection of respondents based on discretion of the researcher and judgment based on expert knowledge of the respondents in the areas of study. Since it is not usually possible to interview every member of a population to be studied, this study took a small sample frame of the whole population.

3.5. Data Collection

This study employed the use of a structured questionnaire. The structured survey questionnaire was used to measure a number of variables related to supply chain processes relevant to the objectives of the study. To collect data that was be critical in answering the study questions and meeting objectives, the researcher used a standardised questionnaire comprising seven main sections A, B, C, D, E, F and G. Section A of the tool sought respondent bio data. In section B, study information on objective of the existing supply chain was sought including respondent ratings for given benefits accruing to the company. Section C sought information on benefits of the company's supply chain.

Section D of the questionnaire focused on staff expectations on the supply chain. Sections E and F sought data on respondent perception on communication media used at the company and challenges facing the company's supply chain, respectively. The last section, F focused of respondent perceptions on some of the recommendations that would improve the efficiency and effectiveness of the supply chain under study.

The researcher engaged two research assistants to operate in each principal area of the study to conduct the research survey and administer the questionnaires independently of the researcher. The research assistants had direct contacts with all respondents and but the identity of the researcher was not revealed. It was expected that this approach minimized any likely biases when dealing with sensitive issues and staff could be more open to fill the forms and to answer any questions without fear of reprisal. This enhanced credibility of the research and minimized any researcher biases since there was no interface with the respondents. As already highlighted from the preceding sections, data was collected through the use of questionnaires. According to Davies (1997) a questionnaire is preferred as instruments for collecting primary data which provides a high degree of data standardization and adoption for generalization of information from the population.

The method of circulating questionnaires to respondents was through drop in and -pick up by the research assistants and once the questionnaires had been filled by the respondents, the research assistants were responsible for collection

The instruments used to gather data and the methods used for data collection in both quantitative and qualitative research were be tested for validity and reliability to ensure consistency of results and accuracy of information and representation of the population under study. Pre - testing for the data collection instrument was done on a selected sample of 10 respondents drawn from the WCEA supply chain. Pre-testing was important as it enabled the researcher to assess the significance and reliability of the data collection instruments. According to Chandran (2004) the overall objective in a pre-test, is to determine to what extent a questionnaire communicates and therefore, it offers the researcher the opportunity to revise the questions and to make them clearer to the

respondent. Pre –testing the questionnaire assisted the researcher to modify the data collection instrument in accordance with the responses received.

3.6 Data Analysis

In the proposed study, raw data for analysis will be obtained in the form of responses received from interviews and questionnaires. While qualitative data from the questionnaires will be analysed through content analysis, quantifiable data obtained from the questionnaires will be coded and keyed by the researcher to be fed into a Statistical Package of Social Science (SPSS) database to produce descriptive and other relational statistics. Where applicable, study findings will be presented using descriptive statistics namely percentages and proportions (charts and diagrams). Qualitative data will be presented in the form of narration and which according to Mugenda and Mugenda (2003) are the indices that describe a given sample

3.7 Operational Measures

It is intuitive that companies striving for supply chain competitiveness must first organize for efficiency. This means optimizing the whole and not its constituent parts. The ferociously competitive business landscape is impelling firms to generate the highest possible level of customer satisfaction while delivering the highest value to shareholders to survive and prosper. Monitoring supply chain performance of a company means combining insights from across accounts payable, inventory, production, and procurement data to gain a clearer picture of process effectiveness. Supply chain effectiveness, as measured by service level, must be considered along with cost. A thorough understanding of both costs and service level, attained by use of best practices and monitored by appropriate performance measures, will enable the design of material and information flows which fit performance requirements.

The Box below shows some of the operational measures:

Efficiency Measures:

- Service Level (% shelf satisfaction)
- Number of stock-outs (Items causing down time)
- Stock turnover rate (value of issues / stock holding)
- Days of Stock holding
- Average total headcount
- Manufacturing Schedule Adherence (%)
- Manufacturing cost per unit
- Manhours per 100 units
- Materials waste (%)
- Changeover Time (% to Production Schedule)

Effectiveness measures:

- Customer focus – Consumer complaints rate
- Avenues of communication within and between firms
- Technology that enables supply chain management
- Performance measurement and competitive benchmarking
- Level of coordination between forecasting to manufacturing
- Demand forecast accuracy
- Inventory visibility
- Flexibility in demand changes
- Overall Equipment Effectiveness (OEE)

CHAPTER FOUR

DATA ANALYSIS AND FINDINGS

4.0 Introduction

This chapter presents the main findings on the effectiveness and efficiency levels of the WCEA supply chain in relation to staff perceptions and views. Further the chapter discusses some of the challenges to which the WCEA supply chain is exposed. Additionally, focus attempts have been made to answer the study question namely:

a. What are the efficiency and effectiveness indicators of the SCM model in operation at WCEA?

4.1 Demographic Characteristics of Respondents

Irrespective of hierarchy there were considerable differences in respondent distribution by gender Table 1 where up to 82 % of WCEA staff participating in the study were male compared to 18% who were female.

Table 1: Respondent Distribution by Gender

Gender	Frequency	Percent
Male	51	82.3
Female	11	17.7
Total	62	100.0

Staff segregation by gender however indicate that female presence was highest among the section head/supervisor category with one every four respondents being female, among senior/middle level managers, about one in every six respondents was female. The lowest female presence by proportion was within the associates' category where only one in every seven was female.

Table 2: Respondent Distribution by Gender and Position in the Company

Gender	Position in the Company			Total
	Senior /Middle Level Management	Section Heads/Supervisors	Associates	
Male	9 81.8%	15 75.0%	22 88.0%	46 82.1%
Female	2 18.2%	5 25.0%	3 12.0%	10 17.9%
	11 100.0%	20 100.0%	25 100.0%	56 100.0%

a) Staff Distribution by Age

As shown on table 3 below, the largest majority of staff were concentrated within the 26 – 39 years bracket (61.3%), both the 18-25 years and 40-55 years categories shared equal respondent proportions of 19%.

Table 3: Staff Distribution by Age

Age	Frequency	Percent
18 - 25 Years	12	19.4
26 - 39 years	38	61.3
40 - 55 Years	12	19.4
Total	62	100.0

Staff categorization by position and age bracket as shown by Table 4, indicates that while the 18 – 25 year category was dominated by junior cadres (six out of ten), the highest proportions middle and senior age brackets were dominated by staff in supervisory and management positions.

Table 4: Staff Distribution of respondents by age and Position in the Company

Position	Age			Total
	18 - 25 Years	26 - 39 years	40 - 55 Years	
Senior/Middle Level Management	0 .0%	7 20.0%	4 36.4%	11 19.6%
Section Heads/Supervisors	4 40.0%	11 31.4%	5 45.5%	20 35.7%
Associates	6 60.0%	17 48.6%	2 18.2%	25 44.6%
	10 100.0%	35 100.0%	11 100.0%	56 100.0%

b) Marital Status

Up to three in every four (74%) of staff participating in the study were married compared to 24% who reported being single. Only one percent of respondents reported other forms of marital status.

Table 5: Staff Distribution by Marital status

Marital Status	Frequency	Percent
Single	15	24.2
Married	46	74.2
Other	1	1.6
Total	62	100.0

c) Hierarchical Distribution of Respondents

The biggest proportion (45%) of respondents indicating their positions within the company were found within the associates category, second biggest proportion (36%) of respondents were drawn from the Section Head/Supervisors category, staff within the Senior/Middle level management category comprised the lowest proportion (20%) of respondents.

Table 6: Staff Distribution by Position in the Company

Position	Frequency	Percent
Senior/Middle Level Management	11	17.7
Section Head/Supervisors	20	32.3
Associates	25	40.3
Total	56	90.3
Other unspecified	6	9.7
	62	100.0

d). Staff Turnover Indicators

Irrespective of hierarchy, majority of staff participating in the study were concentrated within the less than one and 1-5 year brackets. In other terms, about two in every three members of staff in the study had served at WCEA for five years or less.

Table 7: Duration of service

Duration of service	How many years have you been in this position?	
	Frequency	Percent
Less than one Year	20	32.3
1 - 5 Years	20	32.3
6 - 10 Years	11	17.7
11 - 15 Years	7	11.3
Over 15 Years	4	6.5
Total	62	100.0

Results presented on Table 7 above are indicators to the possibility that WCEA has faced significantly high levels of high staff turnover.

e). Staff Levels of Education

Levels of education of staff are significant to organizational assessment process to the extent that it is a fairly accurate determinant of general staff preparedness to undertake certain technical tasks that could be incidental to the efficiency and effectiveness of the supply chain. Aggregation of staff shows that up to 80% of staff reported holding a diploma or higher qualifications, this indicates that in general, most WCEA staff had the necessary academic capacity to contribute meaningfully to the enhancement of its supply chain operations within their respective departments.

Table 8: Staff Distribution by Academic Qualification

Academic Qualification	Frequency	Percent
Postgraduate	7	11.3
Undergraduate	21	33.9
Diploma	21	33.9
KCSE Level Certificate	10	16.1
KCPE Certificate	2	3.2
Other	1	1.6
Total	62	100.0

4.2 Supply Chain Employment and SCM Objective

As shown on Table 9 below, up to 9 in every ten respondents in the study believed that their job at the company was directly related to the WCEA’s supply chain. This in part demonstrates that a majority of the respondents had a dependable knowledge level about the supply chain concept.

Table 9: Staff Views on Level of relation between their job and WCEA’s supply Chain

View	Is your job directly related to the organization's supply chain?	
	Frequency	Percent
Yes	57	91.9
No	5	8.1
Total	62	100.0

A desegregation of staff by their positions of service at the company (Table 10) indicates that while all senior/middle level managers in the study believed their jobs were related to the organization’s supply chain, one in every four section heads/supervisors did not view their jobs as directly related to the company’s supply chain. On the other hand all associates participating in the study indicated that their jobs were directly related to WCEA supply chain process.

Table 10: Distribution of Staff by Position in the Company and Views on Level of relation between their job and WCEA’s supply Chain

Position in the Company	Is your job directly related to the organization's supply chain		Total
	Yes	No	
Middle Level Management	11 100.0%	0 .0%	11 100.0%
Section Heads/Supervisors	15 75.0%	5 25.0%	20 100.0%
Associates	25 100.0%	0 .0%	25 100.0%
	51 91.1%	5 8.9%	56 100.0%

4.3 Objectives of the WCEA Supply chain Activities

Overall, the three most common supply chain objectives identified by respondents were; increased productivity (34%), enhanced customer service and responsiveness (23%) and higher quality standards (18%). The third, fourth and fifth commonly cited objectives were; inventory cost savings (10%); high return on asset (3%) and new product launches (3%).

Table 11: Staff perception on most important objective supply chain activity

Objective in the supply chain activity	Frequency	Percent
Enhanced Customer service and responsiveness	14	22.6
Inventory cost savings	6	9.7
Increased productivity	21	33.9
Higher return on asset	2	3.2
Higher quality standards	11	17.7
Lowered delivery costs	1	1.6
Safe production environment	1	1.6
New product launches	2	3.2
other Specified	3	4.8
Total	61	98.4
Other unspecified	1	1.6
	62	100.0

While in the view of Senior/Middle Level Management at WCEA participating in the study, the leading objective was enhanced customer service and responsiveness (4 out of 10), among the section heads/supervisors, increased productivity (ten out of twenty) and enhanced customer service and responsiveness (6 out of 20) were the leading supply chain objectives. On the other hand increased productivity (8 out of 25) and higher quality standards (8 out of 25) were the leading perceived objectives of the company's supply chain among associate staff.

Table 12: Staff Perception on Important objective of the organization in its supply chain activity

Objectives in the supply chain activity	Position in the Company			Total
	Middle Level Management	Section Heads/Supervisors	Associates	
Enhanced Customer service and responsiveness	4 40.0%	6 30.0%	2 8.0%	12 21.8%
Inventory cost savings	1 10.0%	1 5.0%	3 12.0%	5 9.1%
Increased productivity	1 10.0%	10 50.0%	8 32.0%	19 34.5%
Higher return on asset	1 10.0%	0 .0%	1 4.0%	2 3.6%
Higher quality standards	1 10.0%	2 10.0%	8 32.0%	11 20.0%
Lowered delivery costs	1 10.0%	0 .0%	0 .0%	1 1.8%
Safe production environment	0 .0%	1 5.0%	0 .0%	1 1.8%
New product launches	0 .0%	0 .0%	2 8.0%	2 3.6%
other Specify	1 10.0%	0 .0%	1 4.0%	2 3.6%
	10 100.0%	20 100.0%	25 100.0%	55 100.0%

Study results on hierarchy based variations in staff perceptions on the objectives of the company's supply chain Table 12 above could be attributed more to the fact that staff would perceive the supply chain process differently depending on their roles in the organization. In essence however, a greater synchrony in the organizational supply chain objectives can be discerned when roles and objectives of different departments are seen to be complementary and part of incremental process in value addition and enhanced service provision. From the findings for example, it can be empirically shown that while the immediate concern among the associates' input within the supply chain could be increased productivity and higher quality standards, the principle of complementation leads a manager to view this increased productivity and quality within the context of enhanced customer service and responsiveness. The staff hierarchy based variations in their perceptions of the roles of the company's supply chain do not necessarily imply tangential inter-hierarchy staff concerns but rather, a pointer to the fact that staff at different levels execute different role functions towards the attainment of a common objective.

4.4 Benefits of the WCEA supply Chain

4.4.1 SCM Benefits in Planning, Inventory Management and Organizational Performance

As shown on Table 13, the mean scores of 1.89 and 2.28 for senior/Middle level managers and Section heads/Supervisors indicates that, staff in these cadres felt that the implementation of a new supply chain had resulted in improved planning information has enabled lower landed cost sourcing to a great extent. On the other hand, associates taking part the study however felt that the company's new supply chain had only improved planning information has enabled lower landed cost sourcing moderately (mean score 2.52). An overall mean score of 2.33 however indicates that all respondents generally felt the implementation of the supply chain concept at WCEA had planning information has enabled lower landed cost sourcing to a great extent.

Mean scores of 1.90, 2.16, and 2.40 for senior/middle level managers, section heads/supervisors and associates, respectively are a pointer to the fact that all staff irrespective of hierarchy felt that inventory visibility had improved to a great owing the implementation of the supply chain concept at WCEA.

Table 13: SCM Benefits in Planning, Inventory Management and Organizational Performance

Benefits	Senior/Middle Level Management	Section Heads /Supervisors	Associates	Total
	Mean	Mean	Mean	Mean
a).Improved planning information has enabled	9 1.8889	18 2.2778	25 2.52	52 2.3269
b). Inventory visibility has improved	10 1.9	19 2.1579	25 2.4	54 2.2222
c) Obsolete inventory has been reduced.	9 2.4444	17 2.7059	25 2.44	51 2.5294
d) Finance staff freed up to higher value activities	8 2.125	15 2.3333	24 2.75	47 2.5106
e) WCEA's supply chain activity has significantly improved the performance of the organisation in the past year	10 2.2	16 1.75	24 2.2083	50 2.06
f) There has been reduced time to consolidate financials	9 2.3333	16 2.125	24 2.9583	49 2.5714
g) The supply chain forecasting we do is reasonably accurate	9 2.2222	16 2.3125	24 2.625	49 2.449
h) WCEA establishes relationships with its suppliers that benefit both the supplier and the company.	10 2.0	16 2.375	24 2.25	50 2.24

Staff were however of the view that was only a moderate reduction in obsolete inventory (mean 2.53). Similarly felt that with the implementation of the supply chain concept finance staff had only been freed moderately to higher value activities. On the other hand, respondents observed that the implementation of the supply chain concept had to a great extent (mean 2.06) resulted in significant improvement in the performance of the organization in the past year. However respondents were of the perception that the company's supply chain concept had only moderately (mean 2.57) resulted in reduced time for consolidation of financials.

4.4.2 SCM Benefits in Stock, Sales, Supplies Management and Customer Service

Staff indicated that the company's supply chain had led to an increased in sales with greater stock visibility to a great extent (Overall mean, 2.28). This is a pointer to the likelihood that compared to the situation before the introduction of the supply chain concept, stock turnover levels had increased significantly since the implementation of the WCEA's supply chain process.

Similarly the overall mean score of 2.22 for all staff taking part in the study indicates that the company's supply chain had resulted in improved planning information has enabled reduction in Purchasing costs through supplier rationalization to a great extent.

Respondents were also of the view that improvements in demand forecast accuracy had significantly increased performance and added value to operation's bottom line (mean score 2.40). This result suggests that on the basis of the organization's supply chain indicators, it was possible to accurately forecast demand for its products in the primary market making it possible to set and meet crucial production volume targets while keeping wastages at optimal lowest. At overall mean score of 2.16, all respondents generally agreed that WCEA's supply concept had resulted in resulted in the avoidance of future storage costs as inventory levels were reduced. This also draws directly from the company's ability to use its supply chain indicators and parameters to accurately forecast demand and thus be able efficiently manage stock levels.

Results on table below further indicate that irrespective of hierarchy, all company staff taking part in the study believed that the implementation of the supply chain concept at the company, had resulted in increase customer service levels to a great extent (mean score 2.22).

However, while senior/middle level managers seemed undecided (score 2.67) on the contribution of the company's supply chain towards their ability to quickly sense changes in demand and respond precisely by adapting production and provide a significant competitive advantage, section heads/supervisors (2.28) and associates (2.48) on the other hand felt the company's supply chain had to a great extent improved the organizations ability to quickly sense changes in demand and respond precisely by adapting production and provide a significant competitive advantage.

Table 14: SCM Benefits in Stock, Sales, Supplies Management and Customer Service

Benefits	Middle Level Management	Section Heads/Supervisors	Associates	Total
a) Increased sales with greater stock visibility	10 2.4	19 2.4737	25 2.08	54 2.2778
b) Improved planning information has enabled reduction in Purchasing costs through supplier rationalization	10 2.2	18 2.2222	25 2.24	53 2.2264
c) Improvements in demand forecast accuracy have significantly increased performance and added value to operation's bottom line.	9 2.4444	16 2.375	23 2.3913	48 2.3958
d) Future storage costs are avoided as inventory levels are reduced.	9 2.4444	17 1.8824	25 2.24	51 2.1569
e). There has been an increased customer service levels	10 2.2	18 2.1667	24 2.2917	52 2.2308
f) We can quickly sense changes in demand and respond precisely by adapting production and provide a significant competitive advantage.	9 2.6667	18 2.2778	23 2.4783	50 2.44

4.5 Expectations on the Contribution of SCM

At mean score of 1.79, all WCEA staff believed that to a great extent, the company's chain activity would contribute significantly more to the performance of my organization in the next five years. Comparatively however associates were less inclined to this

assertion (score 2.1) in relation to Senior/middle level management (1.55) and section heads/supervisors (1.45).

Again whereas the Senior/middle level management (1.55) were more inclined to the assertion that the organization would regularly share more of its operations and planning information with its suppliers within the next five years, section heads/supervisors (1.90), and associates (2.16), although in agreement, were less inclined to this expectation. This finding is in part attributable to the fact lower cadre staff could be less privy to some of the organization's strategic administrative and operational initiatives.

Table 15: Respondent Distribution by Position and Expectations on the Supply Chain

Expectations	Middle Level Management	Section Heads/Supervisors	Associates	Total
	Mean	Mean	Mean	Mean
a) I expect that my organization's supply chain activity will contribute significantly more to the performance of my organization in the next five years	11 1.5455	20 1.45	25 2.16	56 1.7857
b) I think that supply chain management will be a more important element in my organization's strategic plan over the next five years	11 1.5455	20 1.9	25 2.24	56 1.9821
c) I believe that my organization will regularly share more of its operations and planning information with its suppliers within the next five years	10 1.9	20 2.05	25 2.16	55 2.0727
d) Supply chain management is an important element in my organization's current strategic plan	10 1.4	20 1.45	25 1.92	55 1.6545
e). My organization regularly shares its planning and operations information with its suppliers	9 2.7778	20 2.65	24 2.2917	53 2.5094

Findings further indicate that while all staff generally believed that Supply chain management was an important element in the organization's current strategic plan (1.65), the mean score differentials however point to a scenario where the section heads/supervisors (1.45) and senior/middle level management (1.40) were the more categorical on this expectation compared to associates (1.92). In other words, section heads/supervisors and senior/middle level management were the hierarchies that attached greater importance to the role of the supply chain management in WCEA's strategic plan.

This finding is consistent with the expectation that lower cadre staff, compared to senior staff, may not understand an organization’s strategic concerns well.

4.6 Communication within the WCEA Supply Chain

Holding that effective communication, specifically the use of modern ICT applications, would help improve an organizations operational efficiency in great measure, this section present study findings on the reported frequency of staff use of different media in communication. Focus on the use of different communication media used at WCEA is premised on the projection that the application of certain particular modes could be proxy indicators of the level of advancement of the organizations present supply chain Model.

As shown on Table 16 below, the most frequently used medium of communication among senior and middle level management at the company was the phone (1.2). The second and third most frequently used mediums of communication within this hierarchy were e-mail (2.27) and face to face (2.40). The communication modes most rarely used by staff in these cadres were Fax (3.4), Internet/portal (3.8), and Mail (3.9).

Similar to the case of senior/middle level management, the leading most commonly used mode of communication was the phone (1.44) with the second being e-mail (2.06). Communication modes used with a moderate frequency among staff in these cadres included; fax (3.06), face-to-face (3.22) and mail (3.33). The internet/portal was however a rarely used mode.

Table 16: Frequency of use Communication Media by Staff Hierarchy

Position in the Company		Phone	E-mail	Fax	Face-to-face	Internet/P ortal	Mail
Senior/Middle Level Management	Mean	1.2727	2.2727	3.4545	2.4000	3.8000	3.9000
	N	11	11	11	10	10	10
Section Heads/Supervisors	Mean	1.4444	2.0556	3.0556	3.2222	3.5000	3.3333
	N	18	18	18	18	18	18
Associates	Mean	2.0435	2.7826	3.3810	2.2727	3.6667	3.6818
	N	23	23	21	22	21	22
Total	Mean	1.6731	2.4231	3.2800	2.6400	3.6327	3.6000
	N	52	52	50	50	49	50

Key: 0-1.4 Most Frequently, 1.5-2.4 Very Frequently, 2.5-3.4 Moderately, 3.5-4.4 Rarely, 4.5-5.0 Very rarely

Among associates on the other hand the leading commonly used modes of communication were the phone (2.04), and face-to-face (2.27). The e-mail (2.78) and fax (3.38) however were modes used with moderate frequency. Associates rarely used the internet/portal (3.63) and mail (3.68). Overall, the leading medium of communication in terms of frequency of use among staff of all cadres was the phone (1.67), while the second most frequently used communication facility at the company was e-mail (2.4). It can thus be concluded that efforts to enhance overall operational efficiency through communication should ensure the improved staff access to and use of reliable phone and e-mail networks. This approach can be one effective way of improving the WCEA supply chain efficiency through real-time transfer of information and data among employees and between the organization and its customers and suppliers. Applying state-of-the-art communication technologies will be one sure way of elevating efficiency levels in supplies, procurement and product distribution to wholesale and retail outlets in a way that gives WCEA an edge of the competition.

4.7 Main Challenges Facing the WCEA Supply Chain

This section presents study findings on the staff perceptions on some of the challenges to which the WCEA supply chain is exposed. The main challenges identified here include: Demand and Customer Needs Challenges, Quality and Market Competition Challenges, Raw Material and Operation Challenges, and Staff Training and Capacity Challenges.

4.7.1 Demand and Customer Needs Challenges

As shown on Table (17) below, irrespective of hierarchy, staff were undecided (mean 2.5) on whether the company received demand orders on time to enable them deliver to their customers in time. In particular it is the senior/middle level management staffs at WCEA who were most uncertain on the company's ability to receive demand orders in time. This is an indication that timely receipt of demand orders and an equally timely delivery to customers was a challenge to WCEA. On the other hand, all respondents irrespective of hierarchy at the company believed that the company knew what its customers needed (mean 2.24), a result that points to the likelihood that WCEA supply

chain comprehended the exact needs of the clientele. At mean score of 3.00, and 2.80 senior/middle level managers and supervisors, respectively, were uncertain on whether the demand orders were always as per periodic plan. Similarly but to a lower intensity, associates (mean 2.65) were equally uncertain on whether demand orders were always as per periodic plans. This suggests a major challenge in organizational planning where it was likely that in many instances, demand orders were not in phase with the WCEA periodic plans.

Table 17: Demand and Customer Needs Challenges

Demand & Customer Needs Challenges	Middle Level Management	Supervisors	Associates	Total
	Mean	Mean	Mean	Mean
(a). We always receive demand orders in time to enable us deliver to our customers in time.	10 2.7	20 2.45	24 2.5	54 2.5185
(b). We always know what our customers need.	11 2.3636	20 2.3	24 2.125	55 2.2364
(c). The demand orders are always as per periodic plan.	10 3.00	20 2.80	23 2.6522	53 2.7736
(d). We are always able to meet out customer targets - on time delivery and availability	10 3.00	20 2.65	24 2.5	54 2.6481
(e). Our Customers demand increasingly high quality from us - quality and reliability assurance.	10 2.2	20 1.7	22 2.0909	52 1.9615

Key: 0-1.4 to a very great extent, 1.5-2.4 to a great extent, 2.5-3.4 moderately, 3.5-4.4 to a lesser Extent, 4.5-5.0 Never

Overall, respondents were uncertain (mean 2.64) if the company was able to meet out customer targets including on time delivery and availability. Further, Table 17 shows that it is the senior/middle level mangers who were most uncertain about the ability of WCEA (mean 3.00) to meet customer targets. It can thus be deduced that more than any other operational obligation, senior staff felt that WCEA was still faced with the real challenge of ability to meet customer targets. At mean score 1.96, staff suggested that, to a great extent, WCEA Customers demand increasingly high quality from the company implying that customers consistently demanded quality and reliability assurance.

4.7.2 Quality and Market Competition Challenges

WCEA staff observed that Quality complaints from their customers were a concern to the Supply Chain (1.73). On the other hand however, staff believed that cheap imports,

especially from the Far East were a moderate threat to our operation (mean 2.53). There was near uncertainty among all staff (mean 2.45) on how reasonable the company's costs were in line with operations similar to those undertaken by the company. This uncertainty is attributable partly to the fact that it could be difficult to accurately compare WCEA's operations to another company locally. Moreover even if there existed such a parallel coming by such information or data on whose basis it would be possible to objectively compare costs would be a major challenge.

Table 18: Quality and Market Competition Challenges

Quality & Market Challenges	Position in the Company			Total
	Middle Level Management	Supervisors	Associates	
	Mean	Mean	Mean	
a). Quality complaints from our customers are a concern to the Supply Chain.	11 1.7273	20 1.65	24 1.7917	55 1.7273
b). Cheap imports, especially from the Far East are a threat to our operation.	10 2.6	19 2.4737	24 2.5417	53 2.5283
c). Our costs are reasonable and in line with operations similar to ours.	9 2.5556	18 2.3333	24 2.5	51 2.451
d). It is not easy for us to integrate demand planning, production, logistics and distribution into a seamless Supply Chain process	8 3.125	18 3.00	21 3.2381	47 3.1277
e). Please indicate the extent to which your organisation now shares information with its customers and suppliers:	9 2.7778	17 2.4118	24 2.4167	50 2.48

Respondents in all cadres were seemingly uncertain (mean 3.13) on the WCEA's ability to integrate demand planning, production, logistics and distribution into a seamless Supply Chain process. This is an indication that the supply chain management process at WCEA still faced serious logistical challenges. While senior/middle level management were observed that WCEA shared information with customers and suppliers to a moderate extent, sections heads/supervisors (mean 2.41) and associates (2.41) generally suggested that WCEA shared information with its customers and suppliers to a great extent.

4.7.3 Raw Material and Operational Challenges

There was a general staff uncertainty (mean 2.59) on their view of the level of attention they received from suppliers and their ability to deliver WCEA’s orders in time. At mean score of 2.89, senior/middle level management were most uncertain on the level of attention they received from suppliers and their ability to deliver WCEA’s orders in time. Staff were similarly uncertain on whether the company always received our raw materials as planned from its suppliers. There was equally general uncertainty on staff views on the adequacy of raw materials to meet the company’s production requirements.

Table 19: Raw Material and Operation Challenges

Material & Operation Challenges	Middle Level Management	Supervisors	Associates	Total
	Mean	Mean	Mean	Mean
a). Our suppliers always give us good attention and deliver our orders in time.	9 2.8889	18 2.6667	24 2.4167	51 2.5882
b). We always receive our raw materials as planned from our suppliers.	9 2.8889	17 2.8235	24 2.5833	50 2.72
c). There are always enough raw materials to meet our production requirement.	9 2.5556	19 2.8421	24 2.5	52 2.6346
d). The level of coordination between different operations from forecasting to manufacturing to order fulfilment, as well as the effectiveness of the current supply chain planning operations is good enough.	10 2.5	18 2.4444	24 2.5	52 2.4808

On the hand, respondents felt that the level of coordination between different operations from forecasting to manufacturing to order fulfilment, as well as the effectiveness of the current supply chain planning operations is good enough (mean 2.48).

4.7.4 Staff Training and Capacity Challenges

Staff believed that to a great extent (mean 2.20) they know perfectly well what Supply Chain concept was all about, an indication that staff taking part in the study were both competent on SCM issues and capable of improving effectiveness and efficiency of the company’s supply chain. Staff also pointed out that skills required to perform their current jobs have changed in the past five years (mean 1.98) to a great extent, a pointer that there was an urgent need to improve staff capacity to deliver through refresher courses or on the job training.

moderately (mean 3.09). Respondents were however uncertain (mean 2.94) on whether

Study findings further indicate that while senior/middle level management (mean 2.20) and section heads/supervisors (mean 2.21) felt that they had adequate training in Supply Chain management to perform their duties perfectly, associates on the other hand were uncertain (mean 3.24) if the adequate training in Supply Chain management to perform their duties perfectly. All staff irrespective of cadre (mean 1.84) felt they needed more training in Supply Chain management to increase their performance. At score 1.72, associate were the ones in need of more of this kind of training.

4.5 Suggestions on how to improve on the Efficiency and Effectiveness of the Supply Chain

Respondents were in agreement that to a great extent (mean 2.0); WCEA would like to use Internet-related technologies more in its relationships with its customers and suppliers.

Table 20: Staff Training and Capacity Challenges

Capacity Challenges	Middle Level Management	Supervisors	Associates	Total
	Mean	Mean	Mean	Mean
a). I know perfectly well what Supply Chain concept is all about.	2.2	2.0526	2.32	2.2037
b). The skills required to perform my job have changed in the past five years	10 1.9	18 1.9444	25 2.04	53 1.9811
c). I got adequate training in Supply Chain management to perform my duties perfectly	10 2.4	19 2.2105	25 3.24	54 2.7222
d). I need more training in Supply Chain management to increase my performance.	9 2.0	19 1.9474	25 1.72	53 1.8491
e). My organisation would like to use Internet-related technologies more in our relationships with our customers and suppliers	10 2.2	17 2.0588	23 1.8696	50 2.0
f). The application of information technologies to the supply chain has increased the stress involved in my job	11 2.9091	18 3.1111	24 3.1667	53 3.0943
g). I am concerned that the skills that I have now will be insufficient to enable me to do my job in the next five years	10 2.9	17 2.5882	23 3.2174	50 2.94
h). I am concerned that I may lose my job in the next five years because my skills will be insufficient to allow me to do it to the satisfaction of my employer	10 3.8	16 3.5	24 3.75	50 3.68

Respondents were however of the opinion that the application of information technologies to the supply chain had increased the stress involved in their jobs on

moderately (mean 3.09). Respondents were however uncertain (mean 2.94) on whether the skills that have now will be insufficient to enable them to do their job in the next five years. Staff were however categorical that they were not concerned about losing their jobs (mean 3.68) in the next five years because their skills will be insufficient to allow them to do it to the satisfaction of their employer, an indication that there was general feeling of reasonable job security levels among staff. This would be a major morale boost among staff to even perform better.

4.8 Suggestions on how to Improve on the Efficiency and Effectiveness of the Supply Chain

Irrespective of hierarchy, respondents believed that there was need to improve on the company's service level to customers (mean 1.63). Similarly, staff suggested that with customer's delivery target becoming more crucial, there was need to improve on the company's inventory management (mean 1.54). Again, at mean score of 1.54, respondents were categorical that more training to key staff members will greatly improve of the efficiency and effectiveness of the supply chain. At means of 1.50 and 1.64, section heads/supervisors and Senior/middle level management staff, respectively were the more inclined towards the need to increase the level of automation of the company's production processes, compared to associates (mean 2.08). The slightly perceptual differential in staff quest for automation in favour of higher cadres could be attributed to the possibility that most associates took part in manual operations for which there would be no automation alternatives that were known to them. Overall all WCEA staff felt that more awareness on the supply chain concept was required to align all employees towards the common company objectives (mean 1.52). The variation in mean scores of 1.44, 1.55 and 1.83, for Senior/middle level management, section heads/supervisors and associates, respectively, indicates that staff quest for the need for Benchmarking with others companies operating the Supply chain concept increased with hierarchy. To an extent, these observed differentials in mean perceptions could be attributed to the fact that bench marking process is a specialized area that staff in lower cadre could hardly grasp its significance and befits to the company's operations.

Table 21: Aspects of Improving the Efficiency and Effectiveness of the Supply Chain

Aspects of Improving Efficiency & Effectiveness	Middle Level Management	Section Heads /Supervisors	Associates	Total
	Mean	Mean	Mean	Mean
(a). There is need to improve on our service level to our customers.	11 1.7273	17 1.3529	24 1.7917	52 1.6346
(b). With customer's delivery target becoming more crucial, there is need to improve on our inventory management.	11 1.5455	17 1.2353	24 1.75	52 1.5385
(c). More training to key staff members will greatly improve of the efficiency and effectiveness of the supply chain	11 1.5455	17 1.3529	24 1.6667	52 1.5385
(d). There is need to increase the level of automation of our production process	11 1.6364	18 1.5	25 2.08	54 1.7963
(e). More awareness on the supply chain concept is required to align all employees towards the common company objectives.	11 1.5455	18 1.3333	25 1.64	54 1.5185
(f). Benchmarking with others companies operating the Supply chain concept will very beneficial.	9 1.4444	18 1.5556	24 1.8333	51 1.6667
(g). There is need to develop and grow the employees to improve on their competencies and capabilities.	11 1.2727	18 1.3889	25 1.48	54 1.4074
(h). There in need for optimizing the allocation of resources by outsourcing less critical or efficient activities in the Supply Chain process	9 1.6667	18 1.7222	25 2.16	52 1.9231
(i). It is becoming more necessary to structure a flexible Supply Chain For quick response to technical, market, and competitive change	9 1.6667	17 1.7647	25 1.68	51 1.7059
(j). We need continuous product and performance improvement	10 1.5	18 1.3333	25 1.4	53 1.3962

All employees of the firm regardless of cadre agreed that there was need to develop and grow the employees to improve on their competencies and capabilities (mean 1.41). With the lowest mean of 1.27, senior/middle level managers felt the strongest need to get to improve employee competencies and capabilities. This finding is in part attributable to the expectation that managers comprehended the role of improved employee competencies and capabilities in enhancing organizational effectiveness and efficiency. Both managers (mean 1.67) and section heads/supervisors (mean 1.72) strongly felt the in need for optimizing the allocation of resources by outsourcing less critical or efficient activities in the Supply Chain process. Respondents in all cadres also observed that to a great extent (mean 1.71), it was becoming more necessary to structure a flexible Supply

Chain For quick response to technical, market, and competitive change with the aim of making the supply chain more efficient to enable WCEA products remain competitive. There were no significant variations in mean scores among staff in the top (mean 1.50), middle (mean 1.33), and lower (mean 1.40) on their perceptions about the need for continuous product and performance improvement at the company. This indicates that staff recognized the essence of continuous product and performance improvement in efforts to improve general operational efficiency while contracting costs and enhancing price competitiveness of the final products.

Findings and conclusions

5.1 Summary

WCEA's present SCM framework operates on the basis of three logistical processes namely; planning, scheduling and deployment. The model also entails other forms of integration that include new applications in business information management such as Software Application & Product (SAP), an Enterprise Resource Planning (ERP) that ensure order and secure data and information the supply chain management process.

Integrated planning is concerned with functional integration of purchasing, manufacturing, transportation and warehousing activities. It also refers to spatial integration of these activities across geographically dispersed vendors, facilities, and markets. Scheduling the second process in the supply chain framework is an important tool for manufacturing, where it can have a major impact on the productivity of a process. In manufacturing, the purpose of scheduling is to minimize the production time and costs, by telling a production facility what to make, when, with which staff, and on which equipment. Production scheduling aims to maximize the efficiency of the operation and reduce costs. Deployment entails managing the movement of raw materials into an organization and the movement of finished goods out of the organization toward the end-consumer. As Companies strive to focus on core competencies and become more flexible, they have reduced their ownership of raw materials sources and distributed channels. Deployment categorizes the generic value-adding activities of an organization.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENADATIONS

5.0 Introduction

This chapter presents summary and conclusions based on the findings on respondent perceptions on the WCEA supply chain operation processes and their implications for effectiveness and efficiency of the company's supply chain model, as revealed by the study. Further it presents recommendations that the researcher made in view of the study findings and conclusions.

5.1 Summary

WCEA's present SCM framework operates on the basis of three logistical processes namely; planning, scheduling and deployment. The model also entails other forms of integration that include new applications in business information management such as Software Application & Product (SAP), an Enterprise Recourse Planning (ERP) that ensure faster and secure data and information the supply chain management process.

Integrated planning is concerned with functional integration of purchasing, manufacturing, transportation and warehousing activities. It also refers to spatial integration of these activities across geographically dispersed vendors, facilities, and markets. Scheduling the second process in the supply chain framework is an important tool for manufacturing, where it can have a major impact on the productivity of a process. In manufacturing, the purpose of scheduling is to minimize the production time and costs, by telling a production facility what to make, when, with which staff, and on which equipment. Production scheduling aims to maximize the efficiency of the operation and reduce costs. Deployment entails managing the movement of raw materials into an organization and the movement of finished goods out of the organization toward the end-consumer. As corporations strive to focus on core competencies and become more flexible, they have reduced their ownership of raw materials sources and distribution channels. Deployment categorizes the generic value-adding activities of an organization.

The "primary activities" will include inbound logistics, operations (production), and outbound logistics, marketing and sales.

This study attempted to answer a main question namely:

a. What are the efficiency and effectiveness indicators of the SCM model in operation at WCEA?

It also attempted to find out what the challenges facing WCEA's supply chain were.

The study used a descriptive design, as it did offer the researcher the methodology to appropriately describe and portray characteristics of events, processes, and organizations. The use of a structured questionnaire assisted the researcher to capture the staff perceptions and views on different facets of the supply chain concept as implemented at WCEA.

In the context of this study, the descriptive research method was preferred as it offered the researcher the methodology to appropriately describe and portray characteristics of events, processes, organizations and the population (Chandran, 2004). This granted the researcher the opportunity to acquire complete and possibly accurate information relating to the issues under enquiry. The use of a structured questionnaire assisted the researcher to capture the details of the entire edifice of SCM using various supply chain models that was reviewed in the context of this study.

The researcher employed statistical procedures to organize the mass of data that was collected from the field into some sensible and manageable form easy to understand. Several statistical analyses were performed. First descriptive statistics were generated in the form of frequencies and percentage. Mean scores were used to determine staff perceptions different indicators of WCEA's supply chain process efficiency and effectiveness. The SPSS computer statistical package version 11.5 was used to analyse the research data, in relation to the research questions and key areas of focus of the research.

Study findings revealed that majority of staff, irrespective of hierarchy, believed the work they did at the company was directly related to the supply chain process. The leading

three most common supply chain objectives identified by respondents were; increased productivity (34%), enhanced customer service and responsiveness (23%) and higher quality standards (18%).

An overall mean score of 2.33 however indicates that all respondents generally felt the implementation of the supply chain concept at WCEA had planning information has enabled lower landed cost sourcing to a great extent. Staff also felt that inventory visibility had improved to a great extent owing the implementation of the supply chain concept at WCEA. Staff also indicated that the company's supply chain had led to an increase in sales with greater stock visibility to a great extent. This is a pointer to the likelihood that compared to the situation before the introduction of the supply chain concept, stock turnover levels had increased significantly since the implementation of the WCEA's supply chain process.

WCEA staff expected that, to a great extent, the company's chain activity would contribute significantly more to the performance of their organization in the next five years. Comparatively however associates were less inclined to this assertion (score 2.1) in relation to Senior/middle level management (1.55) and section heads/supervisors (1.45).

Again whereas the Senior/middle level management were more inclined to the expectation that the organization would regularly share more of its operations and planning information with its suppliers within the next five years, section heads/supervisors, and associates, although in agreement, were less inclined to this expectation. This finding is in part attributable to the fact lower cadre staff could be less privy to some of the organization's strategic administrative and operational initiatives.

While the leading mode of communication among senior and middle level staff were the phone and e-mail, associates at WCEA predominantly used face-to-face and internal phone as the most common mediums of communication.

Findings indicated that the WCEA supply chain process faced a number of challenges in the areas of; Demand and Customer Needs Challenges, Quality and Market Competition

Challenges, Raw Material and Operational Challenges, and Staff Training and Capacity Challenges.

Staff made a number of suggestions that in their opinion would help enhance efficiency and effectiveness of the company's supply chain including; continuous product and performance improvement at the company, development and growth among the employees to improve on their competencies and capabilities, more awareness on the supply chain concept to align all employees towards the common company objectives are all indications that staff require more capacity development through training to improve their ability to be more effective and enhance the overall efficiency of the supply chain.

5.2 Conclusions

Staff familiarity levels with the supply chain concept, was found to be generally high where a majority indicated that their work was directly related to the company's supply chain. The identification of increased productivity, enhanced customer service and responsiveness and higher quality standards as three leading benefits of the company's supply chain process is an indication that staff believed SCM can actually lead to greater efficiency within its networks spanning; supplies production and sales product and distribution.

The observed differentials in staff perceptions by hierarchy in favour of the senior staff was an indication that information flow at the company was not symmetric, and this had the potential of impeding full involvement of other staff in efforts to attain the higher efficiency and effectiveness goal of the company's supply chain process. Moreover employees will find increasingly difficult to meaningfully contribute to organizational initiatives over which they have little information owing to information asymmetry.

The finding that associates dominated the use of face to face communication indicates inadequate integration of state-of-the-art information technologies within the outside suppliers dealing with WCEA. Efforts to enable the WCEA supply chain benefit from

real time information transfer for greater efficiency would therefore call for implementation a more comprehensive communication network by its outside supply chain partners.

The need for; continuous product and performance improvement at the company, development and growth among the employees to improve on their competencies and capabilities, more awareness on the supply chain concept to align all employees towards the common company objectives are all indications that staff require more capacity development through training to improve their ability to be more effective and enhance the overall efficiency of the supply chain.

5.3 Recommendations

In view of the study findings and conclusions, the researcher made the following recommendations to further enhance effective management of the WCEA's supply chain for greater efficiency with the view of maintaining a competitive hold on its present and anticipated future market niche. The company leadership needs to demystify the SCM concept to all associates and communicate to them effectively the intended benefits that would accrue when SCM is properly implemented and operationalised. The WCEA management should implement structures to ensure greater flow of information to lower levels since the existing information asymmetry impedes full participation of other staff towards attainment of higher efficiency in the company's supply chain

There is an urgent need for WCEA management to introduce staff capacity development initiatives to improve their understanding of the supply chain process and inform them of their contribution to the process. This means the company needs to put in place training plans to all its associates that are directly involved in the process. SAP software training needs to be stepped up since limitations in the use of the software will mean that most of the efficiencies expected from the SCM will not be realized. This will also mean that the company should ensure it engages qualified and competent new staff that can easily be trained each time an opportunity arises.

WCEA Should improve staff terms of service so as to reduce high staff turnover levels suggested from the finding that up 65% (two in every three) of staff had been at the organization for 5 years or less. Staff retention would ensure that even those with best training in SCM would be remaining at the company for long enough to pass those specialized skills to others. It is a very dangerous situation, if, all the staff who are proficient in the SCM operations, especially the use of SAP software, are lured by greener pastures from those other companies in the process of implementing SCM.

The WCEA needs to urgently identify outside suppliers who are willing to, and ready to integrate their operations with the company. This would mean they acquire appropriate software that can be integrated with the SAP software system the company is currently using. This will make it easier for the suppliers to read directly from the WCEA data base, the expected requirements from them, and the dates they will be expected to make the deliveries. This will also help the WCEA to optimally reduce its stock holding of raw materials and thus reduce its stockholding costs such as insurance, storage space, obsolescence, and free up capital for other urgent needs.

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Note: Reference done using APA format.

APPENDIX I: LETTER OF INTRODUCTION

PETER O. AYUGI
FACULTY OF COMMERCE
UNIVERSITY OF NAIROBI
P.O. BOX 30197
NAIROBI

Dear Sir/Madam,

I am a Masters Student at the University of Nairobi's Faculty of Commerce. In partial fulfilment of the requirements for the Master of Business Administration (MBA), I am conducting a study on the Supply Chain Model in The Wrigley Company (East Africa) Limited.

You have been selected to form part of this study. To this end, I kindly request your assistance in compiling the attached questionnaire, which forms the integral part of this research project. The information and data is needed for academic purposes and will be treated in strict confidence.

Your Cooperation in this will go a long way in ensuring success of this project.

Thanking you in advance for your time,

Yours sincerely,

Peter Ayugi.

APPENDIX II: QUSTIONNAIRE

Section A. Bio data

Please answer the following questions as diligently as possible

Put tick where appropriate. Fill the blank spaces.

Information will be treated with confidence

Do not indicate your name

- 1) Gender: Male ☐ Female ☐
- 2) Age: 18-25yrs ☐ 26-39yrs ☐ 40- 55 yrs ☐ 56 yrs and above ☐
- 3) Marital status: Single ☐ Married ☐ Divorced ☐ Widowed ☐

4. Position in the company-----

5. Approximately how many years have you been in this position?

Less than 1 yr

1- 5 yrs

5- 10 yrs

10-15 yrs

Over 15 years

☒☐☐☐

6) Length of service

Less than 1 yr

1- 5 yrs

5- 10 yrs

10-15 yrs

Over 15 years

☐☐☐☐☐

7) Academic Qualification

Post graduate []

Under Graduate []

Diploma []

KCSE level certificate []

KCPE Certificate []

Any other(specify) -----

Supply Chain Employment

Involvement with supply chain activity

Is your job directly involved with your organization's supply chain activity?

Yes

[]

No

[]

Section B. Organisation's most important objective in supply chain activity

8. What do you believe is the single most important objective that your organisation has in its supply chain activity? (Choose only one)

a) Enhanced customer service and responsiveness []

b) Inventory cost savings []

c) Higher shareholder value []

d) Increased productivity []

e) Higher return on assets []

f) Better asset utilization []

g) Reduction in total order fulfilment times []

h) Higher quality standards []

[]

- i) Lowered delivery costs []
- j) Faster time to market []
- k) Improved communications []
- l) Improved inventory accuracy []
- m) Enter new markets []
- n) Safe production environment []
- o) New product launches []
- p) Increased market share []
- q) Enhanced supply chain integration []

Other (please specify) -----

Section C. The benefits realized by the organization on the implementation of the Supply Chain concept.

9. Please indicate the extent to which you agree or disagree with the following statements as a result of the implementation of the Supply chain.

To a very great extent.	To a great Extent.	Moderate.	To a lesser Extent	Never
[]	[]	[]	[]	[]
1	2	3	4	5
a) Improved planning information has enabled Lower Landed Cost Sourcing	[]	[]	[]	[]
b) Inventory visibility has improved	[]	[]	[]	[]
c) Increased sales with greater stock visibility	[]	[]	[]	[]

- | | 1 | 2 | 3 | 4 | 5 |
|---|-----|-----|-----|-----|-----|
| d) There has been an increased customer service levels | [] | [] | [] | [] | [] |
| e) Improved planning information has enabled reduction in Purchasing costs through supplier rationalization | [] | [] | [] | [] | [] |
| f) Obsolete inventory has been reduced. | [] | [] | [] | [] | [] |
| g) Future storage costs are avoided as inventory levels are reduced. | [] | [] | [] | [] | [] |
| h) Finance staff freed up to higher value activities | [] | [] | [] | [] | [] |
| i) There has been reduced time to consolidate financials | [] | [] | [] | [] | [] |
| j) The supply chain forecasting we do is reasonably accurate | [] | [] | [] | [] | [] |
| k) Improvements in demand forecast accuracy has significantly increased performance and added value to operation's bottom line. | [] | [] | [] | [] | [] |
| l) We can quickly sense changes in demand and respond precisely by adapting production and provide a significant competitive advantage. | [] | [] | [] | [] | [] |
| m) WCEA's supply chain activity has significantly improved the performance of the organisation in the past year | [] | [] | [] | [] | [] |
| n) WCEA establishes relationships with its suppliers that benefit both the supplier and the company. | [] | [] | [] | [] | [] |
| o) Any other relevant benefit you would want listed (specify)----- | | | | | |

Section D: Your expectations on the Supply Chain Management

10. Please indicate the degree to which you agree or disagree with the following statements based on your experience in Supply Chain Management. (Please insert 1, 2, 3, 4, or 5 as you feel is right)

To a very great extent.	To a great Extent.	Moderate.	To a lesser Extent	Never
()	()	()	()	()
1	2	3	4	5

a) .I expect that my organisation’s supply chain activity will contribute significantly more to the performance of my organisation in the next five years

1	2	3	4	5
()	()	()	()	()

b) I think that supply chain management will be a more important element in my organisation’s strategic plan over the next five years

()	()	()	()	()
-----	-----	-----	-----	-----

c) I believe that my organisation will regularly share more of its operations and planning information with its suppliers within the next five years

()	()	()	()	()
-----	-----	-----	-----	-----

d) Supply chain management is an important element in my organisation’s current strategic plan

()	()	()	()	()
-----	-----	-----	-----	-----

e) My organisation regularly shares its planning and operations information with its suppliers

()	()	()	()	()
-----	-----	-----	-----	-----

f) Any other expectations (Specify)-----

Section E. Communication

11. How often do you use each of the following methods of communication with your smaller suppliers?

	To a very great extent.	To a great Extent.	Moderate.	To a lesser Extent	Never
	()	()	()	()	()
	1	2	3	4	5
Phone					
E-mail					
Fax					
Face-to-face					
Internet/Portal					
Mail					
Other (Please explain) -----					

Section F. The main challenges that face WCEA supply chain.

12. To what extent do you agree to the statements below?

	To a very great extent.	To a great Extent.	Moderate.	To a lesser Extent	Never
	()	()	()	()	()
	1	2	3	4	5
a). We always receive demand orders in time to enable us deliver to our customers in time.					
b). We always know what our customers need.					
c). The demand orders are always as per periodic plan.					

	1	2	3	4	5
d). We are always able to meet out customer targets - on time delivery and availability	[]	[]	[]	[]	[]
e). Our Customers demand increasingly high quality from us - quality and reliability assurance.	[]	[]	[]	[]	[]
f). Quality complaints from our customers are a concern to the Supply Chain.	[]	[]	[]	[]	[]
g). Cheap imports, especially from the Far East are a threat to our operation.	[]	[]	[]	[]	[]
h). Our costs are reasonable and in line with operations similar to ours.	[]	[]	[]	[]	[]
i). In is not easy for us to integrate demand planning, production, logistics and distribution into a seamless Supply Chain process	[]	[]	[]	[]	[]
j). Please indicate the extent to which your organisation now shares information with its customers and suppliers:	[]	[]	[]	[]	[]
k). Our suppliers always give us good attention and deliver our orders in time.	[]	[]	[]	[]	[]
l). We always receive our raw materials as planned from our suppliers.	[]	[]	[]	[]	[]
m). There are always enough raw materials to meet our production requirement.	[]	[]	[]	[]	[]
n). The level of coordination between different operations from forecasting to manufacturing to order fulfilment, as well as the effectiveness of the current supply chain planning operations is good enough.	[]	[]	[]	[]	[]
o). I know perfectly well what Supply Chain concept is all about.	[]	[]	[]	[]	[]
p). The skills required to perform my job have changed in the past five years	[]	[]	[]	[]	[]
s. I got adequate training in Supply Chain management to perform my duties perfectly	[]	[]	[]	[]	[]

- | | | | | | |
|---|-----|-----|-----|-----|-----|
| | 1 | 2 | 3 | 4 | 5 |
| q). I need more training in Supply Chain management to increase my performance. | [] | [] | [] | [] | [] |
| r). My organisation would like to use Internet-related technologies more in our relationships with our customers and suppliers | [] | [] | [] | [] | [] |
| s). The application of information technologies to the supply chain has increased the stress involved in my job | [] | [] | [] | [] | [] |
| t). I am concerned that the skills that I have now will be insufficient to enable me to do my job in the next five years | [] | [] | [] | [] | [] |
| u). I am concerned that I may lose my job in the next five years because my skills will be insufficient to allow me to do it to the satisfaction of my employer | [] | [] | [] | [] | [] |

v). What other challenges do you feel needs to be noted? (List them)-----

Section G. Respondent's recommendations to improve on the efficiency and effectiveness of the supply chain

13. To what extent do you agree to the statements below?

To a very great extent.	To a great Extent.	Moderate.	To a lesser Extent	Never
[]	[]	[]	[]	[]
1	2	3	4	5

- | | | | | | |
|--|-----|-----|-----|-----|-----|
| | 1 | 2 | 3 | 4 | 5 |
| a). There is need to improve on our service level to our customers. | [] | [] | [] | [] | [] |
| b). With customer's delivery target becoming more crucial, there is need to improve on our inventory management. | [] | [] | [] | [] | [] |

1 2 3 4 5

- c). More training to key staff members will greatly improve of their efficiency and effectiveness of the supply chain [] [] [] [] []
- d). There is need to increase the level of automation of our production process. [] [] [] [] []
- e). More awareness on the supply chain concept is required to align all employees towards the common company objectives. [] [] [] [] []
- f). Benchmarking with others companies operating the supply chain concept will very beneficial. [] [] [] [] []
- g). There is need to develop and grow the employees to improve on their competencies and capabilities. [] [] [] [] []
- h). There in need for optimizing the allocation of resources by outsourcing less critical or efficient activities in the Supply Chain process [] [] [] [] []
- i). It is becoming more necessary to structure a flexible Supply Chain For quick response to technical, market, and competitive change [] [] [] [] []
- j). We need continuous product and performance improvement [] [] [] [] []

k). What other recommendations do you have? (Specify them)-----

Thank you for taking time to complete the questionnaire.

APPENDIX III: AUTHORIZATION LETTER

July 18, 2007

TO: The Managing Director

From: Finance Manager SC

Subject: Permission to use The Wrigley Company (EA) Ltd in a case study

I am pursuing Masters of Business Administration (MBA) program at the University of Nairobi. I am through with part 1 of the program and for part two I am undertaking a study on Supply Chain Management Models, benefits, and challenges in the confectionary industry.

The purpose of this letter is to ask to be granted permission to use the Supply change model in the company as a case study.

I intend to conduct interviews among those who participated in the process and those who were affected by it.

It is my hope that the result of the study will be helpful in providing feed back to the management on the Supply Chain management strategy.

Thanks

Peter Ayugi

Finance Manager SC

cc: PLD Manager