

**DRIVERS OF CHANGE AND SUPPLY CHAIN STRATEGY IN THE  
SUGAR INDUSTRY IN KENYA**

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## **DECLARATION**

I declare that this project is my original work and has not been presented in any other university or institute of higher learning for examination or academic purposes.

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### **Declaration by Supervisor**

This project has been submitted for examination with my approval as the University Supervisor.

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## **DEDICATION**

To my father whose foresight in education and constant encouragement drove me to this level of education.

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## **LIST OF ABBREVIATIONS AND ACRONYMS**

<b>COMESA</b>	- Common Market for Eastern and Southern Africa
<b>CEO</b>	- Chief Executive Officer
<b>EAC</b>	- East African Community
<b>ERP</b>	- Enterprise Resource Planning
<b>IT</b>	- Information Technology
<b>R&amp; D</b>	- Research and Development
<b>SC</b>	- Supply Chain
<b>SCDD</b>	- Supply Chain Design Decomposition
<b>SCM</b>	- Supply Chain Management
<b>WTO</b>	- World Trade organization

## ABSTRACT

Supply chain management has become an important issue in a business organization. Organizations are facing increasing competitive pressure with respect to prices, delivery, quality, variety and innovation of products and services. In order to respond to these challenges in turbulent business environment, organizations require a robust and aligned supply chain strategy. The purpose of this research is to present the drivers of change; the relationship between drivers of change (external uncertainties) and supply chain strategy and finally, the challenges encountered in supply chain strategy formulation and implementation in the sugar industry in Kenya. The data collection instrument used was a questionnaire which was administered to a total sample of 50 senior staff in seven sugar factories in Kenya. Sample selection was based on convenience sampling. The data was analyzed using mean, standard deviation and correlations between independent and dependent variables. The analysis involved statistical methods such as factor analysis and multiple regressions. The study found that new strategic alliances influenced supply chain strategy to a moderate extent. It also found that trading partners shared business knowledge of core business processes with the companies to a great extent. The study concludes that taking all other independent variables at zero, a unit increase in each of the following variables: globalization, IT, organizational consolidation, empowered consumer and government policies and regulations will lead to an increase in the scores of the supply chain strategy in the sugar industry in Kenya. This infers that globalization influences the supply chain strategy in the sugar industry in Kenya most followed by organizational consolidation, information technology and government policies and then empowered consumer. The study recommends that new strategic alliances should be well set as they are the greatest influence on supply chain strategy. The study finally recommends that government policies and regulations should be revised in order to facilitate fair play from all stakeholders.

# **CHAPTER ONE**

## **INTRODUCTION**

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

Over the past decade a combination of socio-economic, political, technology and market forces have forced companies to examine, review and reinvent their supply chain (SC) strategies. Some of these forces include the globalization of businesses, the proliferation of product variety, increasing complexity of supply networks, enlightened customers, company consolidation, changing information technology (IT), the shortening of the product life cycle and government policies and regulations (Carter, Carter, Monczka, Blascovich, Slight & Markham, 2007; Coyle, Bardi & Langley, 2012). To stay competitive, companies are motivated to achieve greater coordination and collaboration in supply chain strategy formulation and implementation.

Firms are increasingly thinking in terms of competing as part of a SC against other SCs, rather than as a single firm against other individual firms (Cetinkaya, 2011). It is believed that this new pattern is built on inter-firm collaboration and cooperative networks, focusing towards optimizing models based on improving SC responsiveness and reliability. This has led many firms to ask their SC professionals to take on a broader, more strategic mission, to embrace a more comprehensive set of goals, and to deliver a higher level of performance (Carter et al, 2007; Melnyk, Burns, Lummus, Vokurka & Santor, 2009). Thus, SC managers are being asked to improve customer service, enhance continuity of SC, reduce the exposure of the firm to unanticipated risks in the SC, improve the new product design process, reduce environmental waste, improve

environmental performance and contribute to enhanced product and service quality (Handfield, Monczka, Gunipero & Patterson, 2009; Carter et al, 2007).

To achieve these objectives in the aforementioned conditions, it becomes imperative for SC managers to assess the impact of these changes both on the firm and on SC strategy to survive. They also need to ensure that the SC strategies adopted are robust and focus on the total alignment of customers, distributors, suppliers and business environment to meet competitive objectives across the end to end SC. Morris and Pinto (2007) concurs when they postulate that significant benefits accrue to companies that effectively and efficiently manage their SCs: lower costs, shorter lead times, increased productivity, greater customer satisfaction and higher profits. Companies like Apple, Dell, Procter and Gamble for example, increasingly outperform others in SC excellence (Cetinkaya, 2011).

### **1.1.1 Drivers of Change**

Drivers of change are adjustments or pressures in a business environment that force a company to search for new ways of running its business in order to maintain its competitive advantage (Ambe, 2010). Broadly speaking, drivers of change can be classified as SC uncertainties including risks that may occur at any point within a global SC network (Simangunsong, Hendry & Stevenson, 2011). Different authors have adopted different phrases to express these factors. Among them St.John, Alan & Richard, (2001) and Ambe, (2010) adopted both phrases as 'change drivers' and 'drivers of change'; Carter et al, (2007) used 'forces of change', Porter (2008) used 'competitive forces'.

However, other scholars Machuki and Aosa, (2011); Simangunsong et al, (2011) used 'external and internal (Macro and Micro) business environment or uncertainties' to explain what drives change in organizations and SCs. It is proposed that 'drivers of change move from what is external and impersonal (environment, market place, organizations) to what is internal and personal (culture and people)' (Anderson & Anderson, 2001). The drivers of change alter both how value is defined and how external resources can help deliver that value and how traditional ways of thinking are refined (Carter et al, 2007).

Additionally, 'organizational change stems from changes in the environment or market place, coupled with the organization's inability to perform adequately using its existing strategy, organizational design, culture, behavior and mindset' (Anderson & Anderson, 2001). The drivers of change may make the future ambiguous; they create a plethora of new business opportunities, as well as challenges to be tapped and mastered, thus being important for SC strategy formulation and implementation (Cetinkaya, 2011).

Building capacity to change has become a strategic prerequisite for most firms in today's economy. Managers are called upon to be accustomed to reading the trends in their changing environment to create SC strategies to respond more appropriately to them. For this to be successful it is critical for managers to understand what drives this change and how this drivers impact decisions relating to SC strategies to be adopted.

### **1.1.2 Supply Chain Strategy**

Supply chain management (SCM) has become today's most important concept for competitive advantage for the reason that it enables companies organized along a SC to exploit the new realities transforming the marketplace (Handfield et al, 2009). A SC consists of all parties involved directly or indirectly in fulfilling a customer request and includes suppliers, manufacturers, warehouses, transporters, retailers and customers (Chopra & Meindl, 2004). Equally, SCM in this study's context is 'the systemic, strategic coordination of the traditional business functions and the tactics across these business functions within a particular company and across businesses within the SC, for the purposes of improving the long term performance of the individual companies and the SC as a whole (Mentzer, Dewitt, Keebler, Soonhoong, Nix, Smith & Zacharia, 2001).

Currently the strategic perspective of SCM is becoming more important as the company's performance is linked to its strategic anchoring (Kohlberger, Engelhardt-Nowitzki & Gershberger, 2012). In a dynamic, networked and changing business environment, SCM has no choice but to be responsive, proactive and innovative in building competitive capabilities (Nollet, Ponce & Campbell, 2005). Since SC strategy formulation is the practical process that is concerned with how to reconcile market requirements with SC resources over the long term (Mentzer et al, 2001). While SC strategy implementation is the process by which objectives and practices (that is, processes, technologies, SC organizational arrangements, managerial systems and approaches) are put into action (Defee & Stank, 2005). SC strategy configuration has been proposed as a competitive capability for most firms (Cetinkaya, 2011).

The definition of SC strategy is heterogeneous as observed in authors defining in relation to SC components, activities, dimensions and elements (Kohlberger et al, 2012). However this study will adopt the definition that, SC strategy includes ‘the decisions that shape the long-term capabilities of the company’s SC functions and their contribution to the overall strategy through the ongoing reconciliation of market requirements and SC resources (Lummus & Demarie, 2006). Hence from a core competence perspective SC strategy defines what operations in the core processes of Plan, Source, Make, Deliver and Return, a firm will try to do better than competition (Kohlberger et al, 2012). Consequently, SC strategy determines the goals and the configuration of the SC with regard to SC partners, structures, processes and systems (Cetinkaya, 2011).

According to Defee and Stank (2005), SC strategy differs from traditionally acceptable company strategies in that it requires the coordination and commitment of multiple firms to implement their strategic objectives. Thus, success in this environment requires an appropriate match between the SC strategy, business strategy, customer needs, power position and the uncertainties (Cohen & Rousell, 2005; Chaharsooghi & Heydari, 2011). By adapting this systems thinking approach means that whenever a SC manager makes a decision, the interaction and reflections of that decision on other parties (for example, actors, processes, functions) has to be considered. This holistic focus leads to complexity in the formulation and implementation of SC strategies. Thus in uncertain business environment, competitive advantage is achieved when you determine the drivers of change, be flexible, adaptive and responsive through agile SC strategy; and align your SC strategy to the overall business strategy (Ambe, 2010). However, the management of SC

and the roles of various partners involved differ from industry to industry and company to company.

### **1.1.3 Drivers of Change and Supply Chain Strategy**

Analyzing and understanding drivers of change enable a firm to implement right SC strategies when dealing with them (Cetinkaya, 2011). A commonly shared view of the external environment and entrepreneurial orientation in all of the SC companies are the prerequisites for the strategic renewal and competitiveness of the entire SC. Due to the volatile and uncertain environment: short product lifecycles, disruptive technologies, impacts of geopolitics, rise of new markets, mergers and acquisitions, fluctuating currency exchange rates; firms and their SCs are putting more pressure on their ability to change or react to environmental uncertainty without affecting their performance. To be successful in increasingly globalized and competitive markets, firms constantly strive to reduce SC costs and improve customer service while planning for the unexpected (Chaharsooghi & Heydari, 2011). Firms have now become aware of the need to be flexible. SC flexibility is the ability of the SC to react to environmental uncertainty with little penalty in time, effort, cost or performance (Swamidass & Newel, 1987). To increase SC flexibility, firms establish long-term relationships (collaborate) with their SC partners and share with them proprietary information (for example, Production, financial, design and risk) (Wang & Wei, 2007).

IT systems such as Enterprise Resource Planning (ERP) systems are now crucial for the management of most companies providing updated information about various parts of the SC and within the company. IT allows firms to coordinate more closely with SC partners; it becomes easier to coordinate with more and different SC partners (Simangunsong et al, 2011). By SC partners viewing that their destinies are interdependent; they engage in long term partnering relationships, build around mutual goals and accompanied by a very rich and deep exchange of information. This culminates into collaboration which is “the means by which firms within the SC work together towards mutual objectives through the sharing of ideas, information, knowledge, risks and rewards” (Cohen & Rousell, 2005). IT is widely seen to be a SC enabler, reducing inventory levels and stocking, shortening lead times, fostering a spirit of collaboration with suppliers and dealers, enhancing visibility leading to better coordination and reducing non-core activities, vendor base rationalization at all echelons of the SC (Aitken, Christopher & Towill, 2002; Fatorachian, 2012).

Agility is a business-wide capability that embraces organizational structures, information systems, logistics processes and in particular mindset (Ambe, 2010). It calls for the ability of the SC as a whole and its members to rapidly align the network, its operations to dynamic and turbulent requirements of the customers and the business environment. The main focus being to run the businesses in network structures with an adequate level of agility to respond to changes as well as proactively anticipate changes and seek new emerging opportunities (Ambe, 2010).

#### **1.1.4 The Sugar Industry in Kenya**

The sugar industry plays a significant role in socio-economic development of the Kenyan economy. The sector directly supports 200,000 small scale farmers who supply over 85% of the cane milled by the sugar companies, an estimated six million Kenyans derive their livelihood directly or indirectly from the sugar industry and the industry is estimated to employ some 12,500 Kenyans in sugar plantations and sugar factories (KSI, 2009). An excess of USD 250 million in foreign exchange is saved for Kenya annually. Social amenities such as schools, roads and bridges, health facilities, sporting facilities especially football clubs and environmental protection through reforestation programs and effluent treatment are provided to the communities by the factories. Besides the socio-economic contributions, the industry also provides raw materials for other industries such as bagasse for power co-generation and molasses for a wide range of industrial products including ethanol (KSI, 2009). Molasses is also a key ingredient in manufacturing of various industrial products such as beverages, confectionery and pharmaceuticals.

The industry is currently facing innumerable problems ranging from globalization due to liberalized markets under the COMESA and WTO protocols, mergers and alliances, high costs of production, poor state of some factories, poor SCM, poor state of infrastructure, inadequate research and development (R&D) and extension services, insufficient funding, un-harmonized industry regulatory framework, cheap imports and punitive tax regime, non-tariff barriers, political and state interference and enlightened customers (KSI, 2009 & IEA, 2005).

There have been persistent complain of cane poaching by rival millers; encroachment of each other's cane growing scheduled zones and waiting to bank on political goodwill to survive competition from cheap COMESA imports (DN, 2014). The situation have been prompted by the fact that the Kenyan Sugar Industry value chain (growing, harvesting, transport, milling, storage and marketing) have a high proportion of out-growers (contract farmers) causing a great risk for millers in terms of ensuring a steady supply of sugarcane, especially since there are many small-scale farmers. These out-growers sometimes get mis-coordinated and make independent decisions about where to deliver their cane, what farming practices to follow, and whether to invest further in their farms (Chisanga, Gathiaka, Nguruse, Onyancha & Vilakazi, 2014).

The inefficiencies experienced at the grower level of the value chain have reduced the supply of cane to local millers. These difficulties have reduced the ability of millers to operate at optimal levels meaning that the Kenyan market is undersupplied by domestic millers. Hence, cane shortages and excess capacity suggest that the real competition between millers in Kenya occurs in terms of attracting cane (supplier relationship through collaboration in SC strategy), prices are high because of underutilized capacity and thus the rising production costs (Chisanga et al, 2014).

In such an environment, the industry is required to enhance its competitiveness along the entire SC to be in line with EAC partner states and COMESA sugar producing countries. Hence, competitive capacity needs to be based on SC coordination and cooperation among sugar factories and their SC partners. Among the eight strategies proposed by the KSI (2010) include SC inefficiency mitigation, diversification, value addition and cost of

production reduction. This may help fulfill Vision 2030 aspiration to achieve self-sufficiency in sugar with a surplus for export in a global competitive market; generation of gainful employment and creation of wealth; supply of raw material for sugar related industries and finally promotion of economic development in rural economy and beyond through activities linked to the sugar industry (KSI,2009).

## **1.2 Statement of the Problem**

Several macro-economic developments, customer satisfaction and marketplace understanding with a commonly shared view in all of the SC firms, are crucial elements for consideration when attempting to establish a new SC strategy (Carter et al, 2007; Chaharsooghi & Heydari, 2011). SCs must be adaptable as they evolve over time with changes in the macro-environment (Lee, 2002). In addition, it is essential to recognize that SC strategy cannot be considered in isolation from other strategies in the company (Kohlberger, et al, 2012). Hence, in the formulation and implementation of a SC strategy; the challenge is to achieve alignment of a cross-company SC strategy with the strategic intent of the businesses and the macro-environment to create value and enable growth over the whole SC (Cohen & Roussel, 2005). However, although most of the firms have an explicitly stated business strategy, they almost never have an explicit SC strategy (Perez-Franco, Singh & Sheffi, 2011; Defee & Stank, 2005).

The causal relationships among environment (drivers of change), strategy and performance have long been advocated and empirically tested as strategic management paradigm (Ho, Chi & Tai, 2005). The paradigm first assumes a link between a firm's strategic profile and its external content; then the strategic choice perspective asserts that

such a link has significant implications for performance. Since the strategic management paradigm has been supported by research, its extension to SCM has not been investigated thoroughly (Ho et al, 2005; Magutu, 2013).

Few concepts and case studies have been presented on how SC strategy is developed and implemented (Seuring & Müller, 2010). Supply chain design decomposition (SCDD) model was developed as a tool for both selection of appropriate best practices, as well as for SC strategy formulation and implementation. Thus, it would provide decision support for improvement of SC performance as observed on Dell case study (Schnetzler, Nobs & Sennheiser, 2004). Equally, Kohlberger et al, (2012) extending the SCDD model found out that formulation and implementation of a SC strategy with respect to current conditions can significantly ease the day to day business. However, it was theoretical and they proposed the need for empirical analysis to validate the practical applicability in different industries. Moreover, the model does not show a direct relationship between drivers of change and SC strategy like the current study, as the SC strategy is decomposed from the corporate strategy, posing a moderating effect of drivers of change.

Qi and Zhao, (2006) results demonstrate that drivers of change are important moderators in the SC strategy formulation and implementation. However, this study proposed that a test of their model using data from different industries and different parts of the world is required. This is because the perception of SC strategy and the impact of environmental uncertainty on formulation and implementation of SC strategy will be different across countries. Ambe, (2010) study shows a contingent relationship between drivers of change

and agile SC. However, the study was on agile SC and competitive advantage; it did not consider the direct relationship of drivers of change and SC strategy.

Locally, the effect of co-alignment on different topics (for example, corporate strategy and external environment (drivers of change), drivers of change and organizational performance, SC strategy and performance) have been empirically investigated and shown an important role in business performance (Mwangi, 2007; Awino, 2011; Machuki & Aosa, 2011; Nyangweso, 2013; Magutu, 2013). However, empirical research on the topic of co-alignment among a manufacturing firm's SC strategy and its environmental uncertainty (drivers of change) is extremely scarce in SCM area.

It is evident from the studies above that a gap exists on drivers of change and SC strategy in the sugar industry in Kenya. Hence the study sought to bridge the gap by answering the following questions: What are the drivers of change in the sugar industry in Kenya? What is the impact of drivers of change on SC strategy in the sugar industry in Kenya? What are the challenges encountered in the process of SC strategy formulation and implementation in the sugar industry in Kenya?

### **1.3 Research Objectives**

- i. To determine the drivers of change in the sugar industry in Kenya.
- ii. To determine the impact of drivers of change on SC strategy in the sugar industry in Kenya.
- iii. To determine the challenges encountered during SC strategy formulation and implementation in the sugar industry in Kenya.

#### **1.4 Value of the Study**

The results of this study are expected to assist managers understand the need to be proactive in reading trends to formulate and implement better SC strategies to harness the opportunities and mitigate the threats inherent. Noting that most firms have no explicit SC strategies, it is a wake-up call for managers to revamp their thinking since competition is among both SC to SC and between firms.

It may also help policy makers develop a better understanding of sources of uncertainty and hence make well-informed decisions on issues relating to liberalization, pricing and sustainability leading to realization of Vision 2030. This is because implementation of better policies may have significant implications for the performance of firms facing a complicated environment influenced by various uncertainties.

The study is also expected to make a theoretical contribution to SCM with a strategic focus. Thus scholars may use the results of this study as a source of reference on how firms respond to drivers of change through better SC strategy formulation and implementation.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter focused on the literature review from various studies that have been conducted by other researchers relating to the need to assess drivers of change, SC strategy and challenges experienced in SC strategy formulation and implementation. The chapter also provides the theories underpinning the study.

#### **2.2 Theoretical Foundation**

This section builds a theoretical model by drawing on manufacturing strategy theory and strategic management theory, that are both based on contingency and alignment theory as explained below.

##### **2.2.1 Manufacturing Strategy Theory**

Different studies have proposed manufacturing strategy theory to be relevant to SCM research (Aitken, Christopher & Towill, 2002; Simangunsong et al, 2011). Manufacturing strategy theory incorporates the contingency theory based model, which conceptualizes the relationship between a changing environment, managerial decision making and performance (Swamidass & Newell, 1987). Similarly, corporate performance is positively related to the role of manufacturing manager in strategic decision making. Alignment between business environment characteristics, competitive priorities and SC structure improve firm performance (Simangunsong et al, 2011). Decision making in manufacturing strategy reflects how a company intends to compete in the market by

making internal choices consistent with their competitive priorities of cost, quality, flexibility, reliability and speed of delivery to achieve global success.

Much of contingency theory postulates that if the environment is dynamic, then it is useful to differentiate the organization and employ more sophisticated integrative devices (Swamidass & Newell, 1987). Surviving in today's highly competitive and rapidly changing environment often requires firms to develop strategies that provide the right kind of flexibility to succeed in their specific environments.

### **2.2.2 Strategic Management Theory**

On the other hand, various scholars advocate for SCM to be performed via a strategic management process (Hwang & Rau, 2006; Defee & Stank, 2005; Ho et al, 2005; Awino, 2011; Cetinkaya, 2011); whereby the strategic management theory predicts that a firm's strategy created in consideration of external environmental factors drives the development of organizational structure and processes (Defee & Stank, 2005). An understanding of environmental change established through a series of activities including environmental scanning, interpretation and learning help managers process and interpret informational stimuli from the environment and lay the foundation for strategic change (Mwangi, 2007; Machuki & Aosa, 2011). In this process, managers identify the major forces driving their SCs and businesses, interpret them as threats or opportunities and develop appropriate SC strategies through a three stage process of planning, execution and control (Hwang & Rau, 2006).

Since strategic choice theory emphasize the role of managerial strategic decision in organizational success or failure (Child, 1972); SCM must become part of all of the firms' strategic planning process, in which objectives and policies are jointly determined based on the final customer's needs and what the SC as a whole does well in the current business environment. A foundational assumption being that SCs can actively shape their environment by making appropriate strategic choices.

### **2.3 Drivers of Change**

The sources or drivers of change affecting a transformation process are important to understand especially when trying to ascertain whether a change initiative is valid or effective. Understanding why a change is taking place is an important beginning part of the change analysis and discussion. The external business environment plays a large role in organizational change (Anderson & Anderson, 2001; Carter et al, 2007).

Even though the success and failure of SCs is ultimately determined in the business environment by the end consumer; getting the right product, at the right price, at the right time to the right consumer is not only the lynch pin to competitive success but also the key to survival (Aitken et al, 2002). Therefore customer satisfaction and business environment understanding are crucial elements for consideration when attempting to establish a new SC strategy. Only when the business environment is understood can a firm attempt to formulate a strategy that will meet the needs of both the SC and the end customer.

Different researchers through Delphi Studies proposed important drivers of change in the 21<sup>st</sup> century as summarized herein: Hughes (1997): in St. John et al, 2001); Carter et al (2007) and Coyle et al (2012) observed, ubiquitous availability and distribution of information; accelerating pace of change in technology access; globalization of markets and business competition; global wave and job skills shifts; environmental responsibility; resource limitations and increasing expectations; demographics; increased government policies and regulations; increased product variety and shorter life-cycles; customer and channel dynamics and mergers, acquisitions and supply market consolidations.

Likewise, Simangunsong et al (2011) undertook a critical review and were able to identify fourteen SC uncertainties and grouped them into three clusters as: internal to the organization, internal to the SC and external uncertainty. The external uncertainties also related to external environment is of significance in the current study. They include ‘environment, (for example, government regulation, competitor behavior, macroeconomic issues) and disasters, (earth quake, hurricane and high sea waves)’ (Simangunsong et al, 2011). They finally developed a contingency theory based model of SC uncertainty and proposed an empirical test of the model on SC strategy formulation and implementation (Simangunsong et al, 2011).

Serdar-Asan and Tanyas (2005) Classification of external environment identifies the market trends (actions of competitors, customer requirements, workforce operations) and geopolitical environment (national-international laws, standards and regulations, language and cultural differences). Consequently, a Delphi study reveals the five major drivers of change that appear to be driving the rate of change and changing the economic

and political landscape: globalization, information technology, organizational consolidation, the empowered consumer and government policies and regulations (Coyle et al, 2012).

## **2.4 Supply Chain Strategy**

Normann and Ramirez (1993) view a SC strategy as an art of positioning a company in the right place on the value chain, the right business, the right products and market segments, and the right value-adding activities. Schnetzler et al (2004) observed that there was a strong need to identify the factors that influence the choice of SC strategies and investigate their impact on adoption of SC strategies and effectiveness of those strategies. Consequently, Ogden, Peterson, Carter and Monczka, (2005) examined 80 predictions and through a three-round Delphi study rated the following as high confidence SC strategies to mitigate the drivers of change in the 21<sup>st</sup> century: increased integration, information sharing, globalization and collaboration.

Other findings reveal that today's SC strategies concentrate more on supply and demand characteristics rather than on SC external conditions such as techno-socio- political and environmental conditions (Cetinkaya, 2011). Simangunsong et al (2011) observed that external uncertainties being factors outside the company (drivers of change in this study) had received less attention in form of empirical evidence in their causal relationship on SC strategy formulation and implementation and firm performance.

The literature on SC strategy focuses on two main themes of agile and lean SC strategies coupled with commitment of the top management to SCM related activities. Agility which builds on lean in a SC is widely accepted as a winning strategy for growth, and as a basis for survival in uncertain business environment due to its distinguishing characteristics that include: market sensitivity, virtuality, process integration and networking (Aitken et al, 2002; Ambe, 2010). Hence firms adopt agile SC strategy to harness its objectives that are favorable for the 21<sup>st</sup> business environment that include: 'strategic response, adaptability, building defenses against competitors, a step towards innovation and a promise of business world based around cooperation' (Ambe, 2012). However, it is increasingly accepted that 'one size does not fit all' when it comes to designing a SC strategy to support a wide range of products with different characteristics, and sold in a diversity of markets (Christopher, Peck & Towill, 2006).

Similarly, there is a need for all SC partners to connect their SC strategies by formulating a set of complementary SC strategies represented by a time-phased series of actions, which will mutually support an overall, shared SC objective in sourcing, manufacturing and distributing of products and services to profitably satisfy customer needs (Sadler & Gough, 2003). Thus planning conducted holistically generates a greater range of alternatives and better overall strategies than separate plans would achieve. In such relationships, shared SC goals across participating SC firms heighten the chances of success (Defee & Stank, 2005).

No matter what strategy the firm has chosen for their SC, the implementation of that strategy should include architecture details in processes, applications and information (Cohen & Rousell, 2005). Thus, it is proposed that SC strategy implementation requires ‘investment in IT that supports coordination and flexibility among SC entities, creation of formal and informal modes of communication to facilitate rapid sharing of information and business plans, standardization of information and processes, centralized planning and decision making supporting decentralized implementation of plans, and integrated individual and organizational reward structures that target overall SC goals’ (Defee & Stank, 2005).

## **2.5 Drivers of Change and Supply Chain Strategy**

Rapidly shifting environments force firms to respond quickly to the changing competitive priorities through SC reconfiguration. ‘SC reconfiguration is potentially a powerful lever for competitive advantage so as to increase SC surplus by reducing costs, increasing sales volume and market share with compact customer satisfaction and relations’ (Magutu, 2013). SC configuration requires the ability ‘to scan the environment, to evaluate markets and competitors, and to quickly accomplish reconfiguration and transformation ahead of competition’ (Machuki & Aosa, 2011; Mwangi, 2007).

Studies of SC dynamics suggest the critical role of SC visibility, flexibility, coordination, agility, integration, and information sharing in dealing with environmental turbulence (Ambe, 2010; Jeeva & Guo, 2010; Swamidass & Newell, 1987; Defee & Stank, 2005). It has been proposed that developing flexibility in adapting to sudden changes in global markets, resource availabilities and outbreaks of financial and political crises becomes an

integral part of effective SC strategy. Integrating flexibility into SCs requires building efficient response mechanisms for adapting to changes in a host of internal and external factors (Swamidass & Newell, 1987). It revolves around improved communication integration, collaboration and closer interaction and partnering with customers, suppliers and a wider range of stakeholders (Defee & Stank, 2005; Jeeva & Guo, 2010).

Agility is widely accepted as a successful exploration of competitive bases (speed, flexibility, innovation, proactivity, quality and profitability) through the integration of reconfigurable resources and best practices in a knowledge -rich environment to provide customer driven products and services in a fast changing market environment (Ambe, 2012). Developing effective SC strategies in turbulent environment involve a complicated mixture of incentive alignment, information sharing, decision synchronization and collaborative planning and forecasting (Defee & Stank, 2005). Consequently, strategic partners throughout a SC, collaborate to identify joint business objectives and action plans, enforce common processes, data sharing, define, monitor and react to performance metrics (Cohen & Roussel, 2005).

## **2.6 Challenges in SC strategy Formulation and Implementation**

The absence of strategies for a SC in actual firms is considered to be partly due to the lack of suitable processes to assist managers to formulate SC strategies (Sadler & Gough, 2003). Nevertheless SCs involve far more than just two companies, which may not have the same interests, understanding of SCM, resource levels, and willingness to invest in necessary IT infrastructure and consequently might also have a different strategic focus, (Jafarnejad & Safari, 2003). Firms lacking good IT integration have difficulty supporting

coordinated activities across the SC, which can lead to inferior decision making. Hence it could be easier to formulate and implement strategies where a focal company has a dominating role as observed in cases like Wal-Mart and Procter and Gamble in that they have integrated IT systems which binds together the focal company and its SC partners (Jafarnejad & Safari, 2003).

The role of managers in SC strategy formulation and implementation is complex as seen in the seminal work of Child (1972), that there is a substantial degree of choice over the response to environmental change in that managers vary in their response according to their perceptions, implicit theories, preferences, values, interests and power (Child,1972). This may lead to lack of supportive corporate structures, processes, budget, knowledge, skills and top management commitment.

Defee & Stank (2005) argue that a lot of companies fail with implementation of a SC strategy, although there are enough resources, reason being inconsistent and incomplete SC strategies. Poor coordination across functional and SC boundaries is another reason. Consequently, Ambe (2012) argue that mismatched strategies are the root cause of the problems that afflict SCs and SC strategies based on a one-size-fits-all strategy often fail. Finally, not all of the previous decisions made by other organizations can be used as a guide for the future decision making. This is because the external environment factors and the SC itself evolve calling for the firm to constantly match the internal and external factors over and over again to derive the best decisions for the firm.

## **2.7 Research Gap**

Analyzing and understanding drivers of change enable firms to implement right SC strategies when dealing with change drivers. Without an idea of the drivers, it becomes difficult to develop a clear SC strategy to deal with those factors. However, from the previous studies a gap exists for empirical evidence on drivers of change and SC strategy formulation and implementation. Hence, further empirical analysis seems necessary to investigate the relationship between environmental uncertainty as a contingency factor in determining SC strategy formulation and implementation and firm performance (Defee & Stank, 2005; Ho et al, 2005; Qi & Zhao, 2006; Simangunsong et al, 2011).

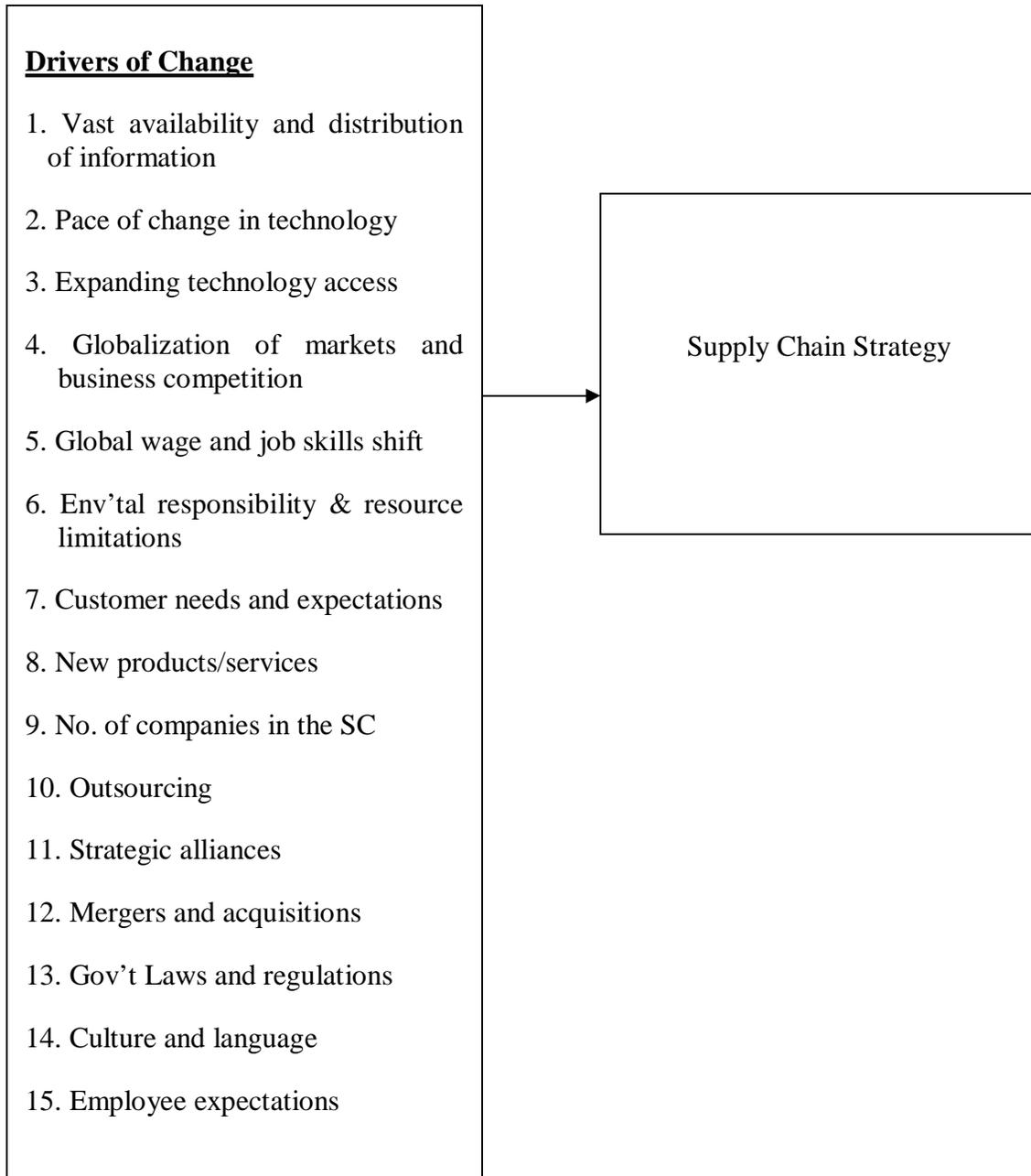
## **2.8 Conceptual Framework**

The conceptual framework in figure 2.1 shows a contingent relationship between drivers of change and SC strategy. The current external business uncertainties push firms to be more competitive leading them to re-evaluate their SC strategies. Flexibility and agility have been promulgated as strategic responses to the turbulent environment. Hence SCM activities need to be flexible and agile to respond to external environmental uncertainties. Managers achieve this by ensuring collaboration, integration, SC visibility, information sharing and flexibility in their SC configuration process.

**Figure 2.1: Conceptual framework**

**Independent Variables**

**Dependent Variable**



**Source (Author, 2014)**

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter contained the research methodology that was used to carry out the survey, the selection of the research design, the target population, sampling method, data collection instrument and how data was analyzed, interpreted and presented.

#### **3.2 Research Design**

A descriptive cross-sectional research design was used to establish the relationship between drivers of change and SC strategy. A similar research design was used by Nyangweso (2013), successfully. A descriptive research design was adopted because the study was concerned about a univariate question in which the respondent was asked about information sharing, firm SC agility, collaboration and SC visibility in SC strategy formulation and implementation. This permitted the researcher to make statistical inference on the broader population and generalize the findings to real life situations and thereby increased the external validity of the study.

#### **3.3 Population**

The target population included all the ten sugar manufacturing firms in Kenya (Appendix II). Given the relatively small number of the population a census survey was conducted. Since the formulation of strategy is seen as the prerogative of top management and more importantly, it is seen as a rational exercise involving the objective analysis of company resources and the external environment in which the firm operates; a convenience sampling method was utilized. The respondents included one member of the top

management consisting of the chief executive officer (CEO) or their equivalent, the heads of departments (Procurement, Production, Agricultural service, Marketing and Finance).

### **3.4 Data Collection**

Primary data was collected by means of a semi- structured questionnaire. The questionnaires were self-administered via the use of email, drop and pick later method to the firms. The questionnaire had four parts; Part A covered the firm's demographic and respondent's profile; Part B examined the drivers of change in the sugar industry in Kenya; Part C examined the impact of drivers of change on SC strategy and Part D examined the challenges encountered.

The questionnaire allowed greater uniformity in the way questions were asked, ensuring greater compatibility in the responses. The use of structured questions on the questionnaire allowed for uniformity of responses to questions; while unstructured questions gave the respondent freedom of response which helped the researcher to gauge the feelings of the respondent, he or she used his or her own words. The structured questions were in form of a five point Likert scale, whereby respondents were required to indicate their views on a scale of 1 to 5.

### **3.5 Data Analysis**

The data collected was analyzed using descriptive statistics (measures of central tendency and measures of variations), factor analysis and regression analysis to achieve the three objectives of the study. The dependent variable in the study was SC strategy. The independent variables for the study included the drivers of change in the sugar industry, among them: globalization, information technology, organizational consolidation,

empowered consumer and government policies and regulations. The regression equation assumed the following form:

**Regression model**

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \dots + \beta_{15} X_{15} + \epsilon$$

Where; Y= Supply Chain Strategy in the Sugar Industry in Kenya,

$\beta_0$ = Constant Term,

$\beta_1 - \beta_{15}$  (Coefficients),

X1 - X15- Drivers of Change

$\epsilon$  error

## **CHAPTER FOUR**

### **DATA ANALYSIS AND PRESENTATION**

#### **4.1 Introduction**

This chapter represents the results of the study to determine the drivers of change affecting SC strategy in the sugar industry in Kenya. The results are presented in both tabular and graphical formats. The study targeted all the ten sugar companies in Kenya. However, data from seven sugar companies was obtained. Of the fifty respondents targeted, forty responded, translating to a response rate of 80% which is above the 70% threshold (Ho et al, 2005).

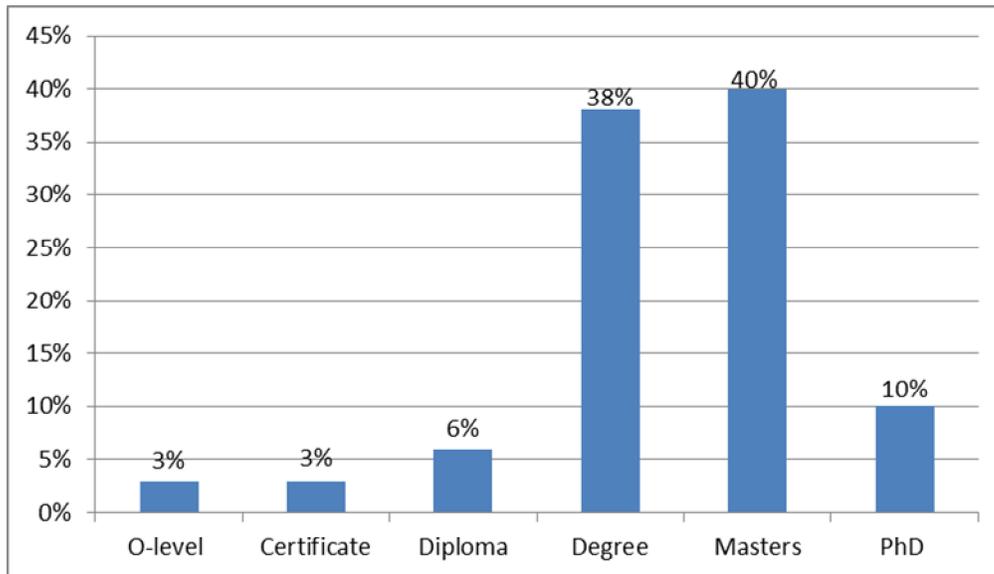
#### **4.2 Bio Data and Company Profile**

The respondents were asked to give information about themselves and their firms. The responses are displayed in the tables and figures below.

##### **4.2.1 Academic Background**

The academic background is of utmost value in the manager's decision making process since they are called upon to be accustomed to reading the trends in their changing environment to create SC strategies to respond more appropriately to the drivers of change (Melnyk et al, 2009).

**Figure 4.1 Academic Background**



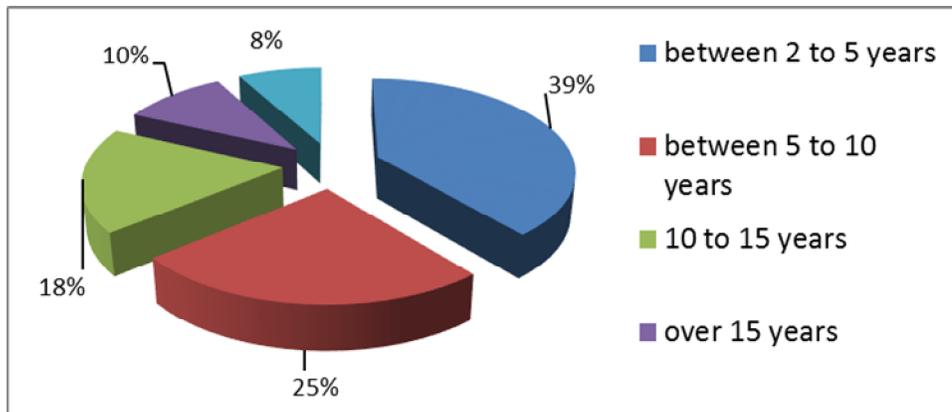
**Source: Research Data (2014)**

The study sought to investigate the academic backgrounds of the respondents as shown in figure 4.1, 40% being the majority were master's degree holders, 38% were degree holders, and 10% were PhD holders whereas 3% were certificate and O- level holders representing each. 88% have the required academic background for strategic decision making, being an indication that there are competent personnel in the sugar industry, who can take on broader, more strategic mission to embrace a more comprehensive set of goals and to deliver a higher level of performance (Carter et al, 2007).

#### 4.2.2 Number of Working Years

Knowledge gain through experience working in the sugar industry would be important in formulating and implementing SC strategy in the sugar industry.

**Figure 4.2 Number of Working Years**



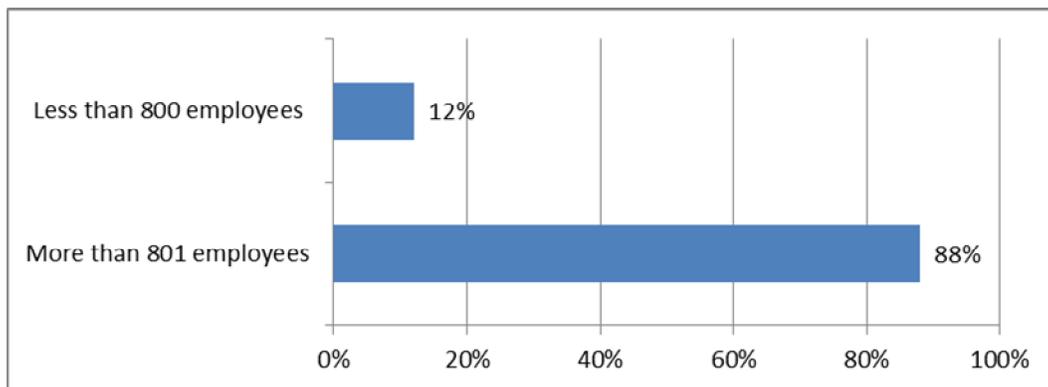
**Source: Research Data (2014)**

The study sought to find out the number of years the respondents had worked in the Sugar Industry as shown in figure 4.2, 39% who were the majority indicated that they had worked for a period between 2 to 5 years, 25% had worked for a period of between 5 to 10 years, 18% had worked for a period between 10 to 15 years, 10% had worked for a period of over 15 years whereas 8% had worked in the Sugar Industry for a period below 2 years. The study gave an indication that the employees had gained the required experience to understand the trends of drivers of change, although the learnt culture may lead to resistance to change. Previous experience of change have a strong impact on the attitude towards the new changes (Ho et al, 2005).

### 4.2.3 Number of Employees

To effectively manage a SC there is need for enough personnel to manage various departments and link the organization with other players in the industry's SC. The study found out that 88% of the respondents who were the majority indicated that their organizations had more than 801 employees whereas 12% indicated that their organizations had less than 800 employees as shown in figure 4.3. This denotes economies of scale and greater knowledge resource an opportunity that can elevate a firm's competitive advantage (Defee & Stank,2005).

**Figure 4.3 Number of Employees**



**Source: Research Data (2014)**

### 4.2.4 Ownership Type

The study also sought to find out the ownership type of the respondents companies, 78% who were the majority indicated that their companies were owned by the government, 18% indicated that their companies were owned by the public whereas 5% indicated that their companies were owned by privately owned as shown in table 4.1. This explains

inefficiencies in capacity utilization of some factories due to political and state interference (IEA, 2005).

**Table 4.1 Ownership Type**

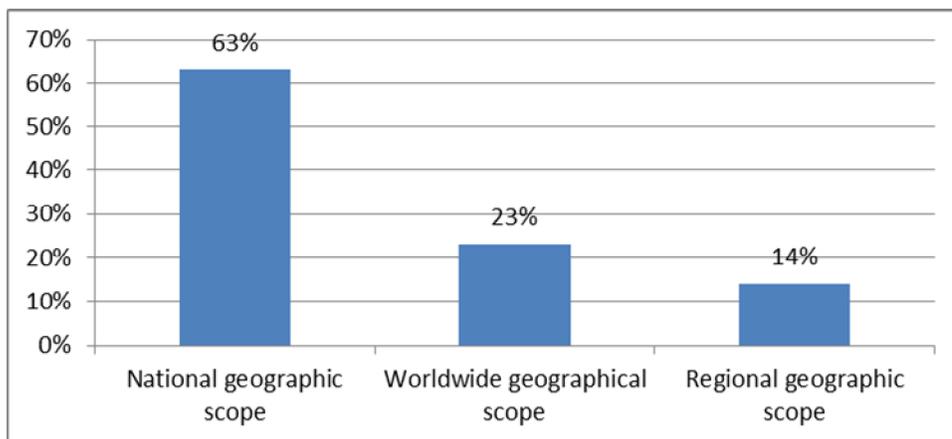
<b>Owner</b>	<b>Frequency</b>	<b>Percentage</b>
Government	31	78
Public	7	18
Private	2	5
<b>Total</b>	40	100

**Source: Research Data (2014)**

#### 4.2.5 Geographic Scope

Globalization of SCs compels companies to look for more effective ways to coordinate the flow of materials into and out of the company and move toward closer relationships with suppliers, distributors, transporters and customers (Mentzer et al, 2001).

**Figure 4.4 Geographic Scope**



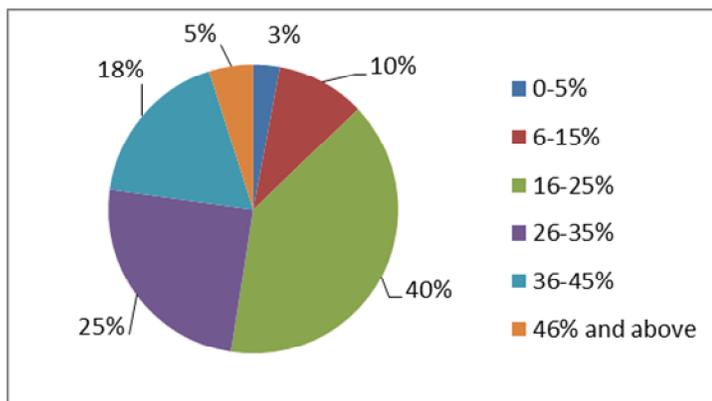
**Source: Research Data (2014)**

The study also sought to investigate the respondents geographic scope of their company's operations as shown in figure 4.4, 63% who were the majority indicated that their companies' operations were done at a national scope, 23% indicated that their companies' operations were done at a worldwide scope whereas 14% indicated that their companies' operations were done at a regional scope. Hence the industry is required to enhance its competitiveness along the entire SC to be in line with EAC partner states and COMESA sugar producing countries (Chisanga et al, 2014).

#### 4.2.6 Market Share

By assessing the impact of drivers of change on SC strategies and aligning the SC strategies to customer needs, distributors, suppliers and business environment across the end to end SC lead to significant benefits to firms. They include low costs, shorter lead times, increased productivity, greater customer satisfaction and higher profits due to increased market share (Morris & Pinto, 2007).

**Figure 4.5 Market Share**



**Source: Research Data (2014)**

The study also sought to find out the percentage of market share the respondents companies contributed as shown in figure 4.5, 40% who were the majority indicated that their market share was between 16 to 25%, 25% indicated that their market share was between 26 to 35%, 18% indicated that their market share was between 36 to 45%, 10% indicated that their market share was between 6 to 15%, 5% indicated that their market share was 46% and above whereas 3% indicated that their market share was 0-5%. Companies that have adopted robust and aligned SC strategies increasingly outperform others in SC excellence (Cetinkaya, 2011).

#### **4.2.7 Certification by ISO Standards**

The study also sought to find out whether the respondents companies had been certified by one or more of the following ISO standards, 58% who were the majority indicated that they had been certified by ISO 22001: 2005 Food Safety Management System, 24% indicated that they had been certified by ISO 14001:2005 Environment Management System whereas 18% indicated that they had been certified by ISO 9001: 2008 Quality Management System ISO standards as shown in table 4.2 below.

**Table 4.2 Certification by ISO Standards**

ISO Standards	Frequency	Percentage
ISO 14001:2005 Environment Management System	10	24
ISO 9001: 2008 Quality Management System	7	18
ISO 22001: 2005 Food Safety Management System	23	58
<b>Total</b>	40	100

**Source: Research Data (2014)**

### **4.3 Drivers of Change**

This section looked at what drives change in the sugar industry in Kenya. The highest ranked in the mean had the greatest impact on SC strategy.

#### **4.3.1 Drivers of change in the Sugar Industry in Kenya**

The study also sought to determine which drivers of change influence SC strategy in the sugar industry in Kenya. The table 4.3 below shows that most of the respondents indicated that, new strategic alliances (3.49); increased number of companies in the SC (3.31); engaging in mergers and acquisitions (3.30); rapidly expanding technology access (3.13) and accelerating pace of change in technology (3.04) influenced SC strategy to a moderate extent as shown by the mean scores.

Industry-specific regulations and standards (2.99); globalization of markets and business competition (2.91); ubiquitous availability and distribution of information (2.86); differences in culture and languages (2.86); outsourcing functions to third parties (2.83); changing customer needs and expectations (2.78); changing employee expectations (2.73); launching new products or services(2.70) and actions of competitors (2.69) influenced SC strategy to a little extent as shown by the mean scores. Environmental responsibility and resource limitations (2.42; national and international laws and regulations (2.35) and global wage and job skills shift (2.24) influenced supply chain strategy to a very little extent as shown by the mean scores. The findings are in line with most Delphi studies carried out (Carter et al, 2007 & Coyle et al, 2012).

**Table 4.3 Drivers of Change in the Sugar Industry in Kenya**

<b>Statement</b>	<b>Mean</b>	<b>Std.dev</b>
New strategic alliances	3.49	.904
Increased number of companies in the supply chain	3.31	.408
Engaging in mergers and acquisitions	3.30	1.217
Rapidly expanding technology access	3.13	.707
Accelerating pace of change in technology	3.04	.144
Industry-specific regulations and standards	2.99	.803
Globalization of markets and business competition	2.91	.405
Ubiquitous availability and distribution of information	2.86	.564
Differences in culture and languages	2.86	.411
Outsourcing functions to third parties	2.83	.664
Changing customer needs and expectations	2.78	1.005
Changing employee expectations	2.73	1.382
Launching new products/ services	2.70	.722
Actions of competitors	2.69	.115
Environmental responsibility and resource limitations	2.42	.189
National and international laws and regulations	2.35	.325
Global wage and job skills shifts	2.24	.353

**Source: Research Data (2014)**

#### **4.4 Drivers of Change and Supply Chain Strategy**

This section sought to ascertain the relationship between drivers of change and SC strategy dimensions of information sharing, firm SC agility, collaboration and SC visibility.

#### **4.4.1 Effects of Drivers of Change on SC Strategy in the Sugar Industry in Kenya**

The study aimed at analysing the effects of drivers of change on SC strategy by evaluating information sharing in the companies. According to the study respondents informed trading partners in advance of changing needs to a moderate extent as shown by a mean score of 3.24, the companies trading partners shared propriety information with them to a moderate extent as shown by a mean score of 3.11, the companies and their trading partners exchanged information that helped in the establishment of business planning to a moderate extent as shown by a mean score of 2.95, the companies and their trading partners kept each other informed about events or changes that could have affected the other partners to a moderate extent as shown by a mean score of 2.85, the companies and their SC partners exchanged information frequently, informally and in a timely manner to a moderate extent as shown by a mean score of 2.79, the companies trading partners shared business knowledge of core business processes with them to a moderate extent as shown by a mean score of 2.69 as well the companies shared their business units' proprietary information (e.g. production, financial, design and risk) with SC partners to a moderate extent as shown by a mean score of 2.67.

On ascertaining the effects of drivers of change on SC strategy by analysing firm SC agility, the study found that trading partners shared business knowledge of core business processes with the companies to a great extent as shown by a mean score of 4.19, the companies and their trading partners exchanged information that helped in the establishment of business planning to a great extent as shown by a mean score of 4.03, the companies and their SC partners exchanged information frequently, informally and in

a timely manner to a great extent as shown by a mean score of 3.79, the companies informed their trading partners in advance of changing needs to a moderate extent as shown by a mean score of 3.24, the companies trading partners shared propriety information with them to a moderate extent as shown by a mean score of 3.11, the companies and their trading partners keep each other informed about events or changes that may affect the other partners to a moderate extent as shown by a mean score of 2.85 while the companies share their business units' proprietary information (e.g. production, financial, design and risk) with SC partners to a moderate extent as shown by a mean score of 2.67.

On establishing the effects of drivers of change on SC strategy by assessing collaboration between the companies and their supply chain, the study found that, the companies regarded the collaboration with SC partners as important in risk management to a great extent as shown by a mean score of 4.31, the companies and SC partners were jointly responsible for making sure that disruptions were properly handled to a great extent as shown by a mean score of 4.27, the companies and SC partners worked jointly to plan and execute SC operations to a great extent as shown by a mean score of 4.12, the companies collaborated with SC partners in managing disruptions to a great extent as shown by a mean score of 3.73, the companies involved suppliers early in the product design effort to a great extent as shown by a mean score of 3.66, the companies regularly solves problems jointly with their SC partners to a moderate extent as shown by a mean score of 3.19, the companies includes SC partners in their goal-setting activities and planning to a moderate extent as shown by a mean score of 2.98, the companies actively

involved SC partners in new product development processes to a moderate extent as shown by a mean score of 2.76.

On establishing the effects of drivers of change on SC strategy by assessing the companies SC visibility, the study found that the companies were ready to share information and cooperate in the scope of SCM to a great extent as shown by a mean score of 4.22 while the companies have mapped their SC to a great extent as shown by a mean score of 4.09.

The findings generally are in line with Qi and Zhao (2006) whose results demonstrated that drivers of change are important moderators in SC strategy formulation and implementation.

**Table 4.4 Effects of drivers of change on supply chain strategy**

<b>Information sharing</b>	<b>Mean</b>	<b>Std.dev</b>
Our trading partners share business knowledge of core business processes with us	4.19	.805
We and our trading partners exchange information that help in the establishment of business planning	4.03	.453
Our company and our supply chain partners exchange information frequently, informally and in a timely manner	3.79	1.305
We inform trading partners in advance of changing needs	3.24	.164
Our trading partners share propriety information with us	3.11	.477
We and our trading partners keep each other informed about events or changes that may affect the other partners	2.85	1.009
We share our business units' proprietary information (e.g. production, financial, design and risk) with supply chain partners	2.67	.227
<b>Firm Supply Chain Agility</b>	<b>Mean</b>	<b>Std.dev</b>
We can adjust the specification of orders as requested by our customers	3.32	.564
We always receive the information we demand from our suppliers	3.31	1.117

Our firm can promptly identify opportunities in its environment	3.15	.408
We can easily detect changes in our environment	3.07	.314
My organization can rapidly sense threats in its environment	2.99	.564
We always obtain the information we request from our customers	2.90	.005
My company can make resolute decisions to deal with changes in its environment	2.89	.395
	2.88	.779
My organization can make firm decisions to respond to threats in its environment		
My firm can increase its short-term capacity as needed	2.77	.164
When needed, we can adjust our supply chain operations to the extent necessary to execute our decisions	2.69	.982
We can make definite decisions to address opportunities in our environment	2.51	1.413
<b>Collaboration</b>		
Our company regards the collaboration with supply chain partners as important in risk management	4.31	.417
Our company and supply chain partners are jointly responsible for making sure that disruptions are properly handled	4.27	.905
Our company and supply chain partners work jointly to plan and execute supply chain operations	4.12	.564
Our company collaborates with supply chain partners in managing disruptions	3.73	.443
Our company involves suppliers early in the product design effort	3.66	1.064
Our company regularly solves problems jointly with our supply chain partners	3.19	1.237
Our company includes supply chain partners in our goal-setting activities and planning	2.98	.405
Our company actively involves supply chain partners in new product development processes	2.76	.753
<b>Supply Chain Visibility</b>		
Our company is ready to share information and cooperate in the scope of supply chain management	4.22	.278
We have mapped our supply chain	4.09	1.112

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**Source: Research Data (2014)**

#### **4.4.2 Factor Analysis**

Factor analysis was used to extract the most important components that measured the study variables. The principal component analysis and varimax rotation methods were

used to extract components with the Eigen values > 1 and items with correlation coefficients greater than or equal to 0.60 as shown in the following rotated matrix tables.

**Table 4.5: Rotated Component Matrix for drivers of change**

Drivers of change	Components				
	Globalization	Information Technology	Organizational consolidation	Empowered consumer	Government Policies and regulations
New strategic alliances			.341		
Increased number of companies in the supply chain			.326		
Engaging in mergers and acquisitions			.323		
Changing employee expectations			.268		
Actions of competitors			.264		
Rapidly expanding technology access		.308			
Accelerating pace of change in technology		.298			
Ubiquitous availability and distribution of information		.281			
Globalization of markets and business competition	.286				
Differences in culture and languages	.281				
Outsourcing functions to third parties	.279				
Changing customer needs and expectations				.275	
Launching new products/ services				.265	
Environmental responsibility and resource limitations					.237
National and international laws and regulations					.231
Global wage and job skills shifts					.220
Industry-specific regulations and standards					.294
<b>Eigen Values</b>	<b>1.635</b>	<b>1.199</b>	<b>.105</b>	<b>1.199</b>	<b>.105</b>
<b>Variance %</b>	<b>7.108</b>	<b>10.902</b>	<b>15.911</b>	<b>12.756</b>	<b>8.714</b>
<b>Cumulative %</b>	<b>72.293</b>	<b>83.195</b>	<b>99.106</b>	<b>83.195</b>	<b>99.106</b>

**Source: Research Data (2014)**

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. A rotation converged in 8 iterations.

Factor analysis results yielded five components. These were interpreted as globalization (7.108), Information Technology (10.902), Organizational consolidation (15.911), Empowered consumer (12.756) and Government Policies and Regulations (8.714) explaining 99.1% of the variance in drivers of change. Eigen values explain the summed contribution of responses to the questionnaire items to each generated component. Since the largest Eigen value of 1.635 corresponds to globalization, this is the component that claims most of the responses.

#### **4.4.3 Regression Analysis of Drivers of Change on SC Strategy**

The researcher conducted a multiple linear regression analysis so as to determine the relationship between the factors affecting SC strategy in the sugar industry in Kenya and the five independent factors namely: globalization, information technology, organizational consolidation, empowered consumer and government policies and regulations were considered.

**Table 4.6 Correlations**

			Globali zation	Inform ation technol ogy	Organizati onal consolidat ion	Empow ered consum er	Governme nt policies and regulation s
Spearman's rho	Globalization	Correlation	1.000	.617	.547	.667	.609
		Coefficient	.	.000	.000	.000	.000
		Sig. (2-tailed)	40	40	40	40	40
			N				
	Information technology	Correlation	.617	1.000	.437	.235	.763
		Coefficient	.000	.	.000	.001	.
		Sig. (2-tailed)	40	40	40	40	40
			N				
	Organizational consolidation	Correlation	.547	.437	1.000	.441	.331
		Coefficient	.000	.000	.	.002	.000
		Sig. (2-tailed)	40	40	40	40	40
			N				
	Empowered consumer	Correlation	.667	.235	.441	1.000	.175
		Coefficient	.000	.000	.000	.	.000
		Sig. (2-tailed)	40	40	40	40	40
			N				
	Government policies and regulations	Correlation	.609	.763	.331	.175	1.000
		Coefficient	.000	.	.000	.000	.
		Sig. (2-tailed)	40	40	40	40	40
			N				

**Source: Research Data (2014)**

The results suggest that the relationship between globalization and information technology ( $\rho = 0.617$ ,  $p = 0.000$ ) is statistically significant. Globalization and organizational consolidation had a rho of 0.547 and a p value of 0.000 therefore denoting

statistical significance. Similarly, the globalization and empowered consumer posted a rho of 0.667 with a p value of 0.000 therefore providing a statistical significance. Information technology and organizational consolidation had a rho of 0.437, p=0.000 further pointing to a statistical significance. On the same note, the information technology and the empowered consumer correlated at rho=0.235 and p=0.001. Government policies and regulations and the globalization correlated at rho=0.609 and p=0.001. Government policies and regulations and information technology correlated at rho=0.763 and p=0.001. Government policies and regulations and organizational consolidation correlated at rho=0.331 and p=0.001. Government policies and regulations and empowered consumer correlated at rho=0.175 and p=0.001. This therefore is statistically significant. Finally, the organizational consolidation and empowered consumer stood at a correlation of rho=0.441 and p= 0.002 revealing statistical significance.

**Table 4.7 Coefficients Results**

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.116	.186		0.623	.535
Globalization	0.577	.068	.559	8.478	.000
Information technology	0.157	.043	.257	3.676	.036
Organizational consolidation	0.082	.042	.301	2.252	.020
Empowered consumer	0.021	.002	.245	6.906	.001
Government policies and regulations	0.134	.031	.347	7.453	.031

**Source: Research Data (2014)**

- a) Predictors: (Constant), Globalization, information technology, organizational consolidation, empowered consumer and government policies and regulations
- b) Dependent Variable: SC Strategy in the sugar industry in Kenya.

The established regression equation was

$$Y = 0.116 + 0.577X_1 + 0.157X_2 + 0.082X_3 + 0.021X_4 + 0.134X_5 \varepsilon$$

The regression equation above has established that holding all factors (globalization, information technology, organizational consolidation and empowered consumer) constant, factors affecting SC strategy in the sugar industry in Kenya will be 0.116.

The findings presented also shows that taking all other independent variables at zero, a unit increase in globalization will lead to a 0.577 increase in the scores of the SC strategy in the sugar industry in Kenya. A unit increase in information technology will lead to a 0.157 increase in SC strategy in the sugar industry in Kenya. On the other hand, a unit increase in organizational consolidation will lead to a 0.082 increase in the scores of the SC strategy in the sugar industry in Kenya; a unit increase in empowered consumer will lead to a 0.021 increase in the scores of the SC strategy in the sugar industry in Kenya and a unit increase in government policies and regulations will lead to a 0.134 increase in SC strategy in the sugar industry in Kenya. This infers that globalization influences the SC strategy in the sugar industry in Kenya most followed by organizational consolidation, information technology, and government policies and then empowered consumer. The study also established a significant relationship between SC strategy in the sugar industry in Kenya and the independent variables; globalization ( $p=0.00<0.05$ ), information technology ( $p=0.036<0.05$ ), organizational consolidation ( $p= 0.020<0.05$ ), government policies and regulations ( $p= 0.031<0.05$ ) and empowered consumer ( $p=0.001<0.05$ ) as shown by the p values.

**Table 4.8 Model Summary**

<b>Model</b>	<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>	<b>Standard Error of the Estimate</b>
1	0.843	0.742	0.724	0.4216

**Source: Research Data (2014)**

- a) Predictors: (Constant), Globalization, information technology, organizational consolidation, empowered consumer and government policies and regulations.
- b) Dependent variable: SC strategy in the sugar industry in Kenya.

The study used the R square. The R Square is called the coefficient of determination and tells us how the SC strategy in the sugar industry in Kenya varied with globalization, information technology, organizational consolidation, empowered consumer and government policies and regulations. The five independent variables that were studied explain 74.2% of the factors affecting SC strategy in the sugar industry in Kenya as represented by R Squared (Coefficient of determinant). This therefore means that other factors not studied in this research contribute 25.8% of the factors affecting SC strategy in the sugar industry in Kenya.

**Table 4.9: ANOVA**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11.72	6	1.302	44.231	.000(a)
	Residual	3.432	34	0.066		
	<b>Total</b>	<b>15.152</b>	<b>40</b>			

**Source: Research Data (2014)**

- a) Predictors: (Constant), Globalization, information technology, organizational consolidation, empowered consumer and government policies and regulations
- b) Dependent Variable: SC strategy in the sugar industry in Kenya

The study used ANOVA to establish the significance of the regression model from which an f-significance value of p less than 0.05 was established. The model is statistically significant in predicting how globalization, information technology, organizational consolidation, empowered consumer and government policies and regulations affect SC strategy in the sugar industry in Kenya. This shows that the regression model has a less than 0.05 likelihood (probability) of giving a wrong prediction. This therefore means that the regression model has a confidence level of above 95% hence high reliability of the results.

## **4.5 Challenges Encountered in Formulation and Implementation of Supply Chain Strategy**

This section sought to analyze the challenges SC managers encounter when formulating and implementing SC strategies in the manufacturing sector especially in the sugar industry in Kenya.

### **4.5.1 Challenges Encountered**

The study also sought to determine the challenges encountered by the respondents companies in the formulation of SC strategy, according to the respondents lack of accurate, thorough, up-to-date, reliable and usable information was a challenge encountered in the formulation and implementation of SC strategy to a great extent as shown by a mean score of 3.76, lack of training and understanding challenged the companies a great extent as shown by a mean score of 3.65, budget constraints challenged the companies to a great extent as shown by a mean score of 3.61, lack of top management commitment challenged the companies to a great extent as shown by a mean score of 3.54, lack of top management commitment challenged the companies to a moderate extent as shown by a mean score of 3.34, lack of supportive corporate structures and processes challenged the companies to a moderate extent as shown by a mean score of 3.15, lack of trust among SC partners challenged the companies to a moderate extent as shown by a mean score of 3.15.

Unclear SC structures challenged the companies to a moderate extent as shown by a mean score of 3.11, lack of performance measurement tools challenged the companies to a moderate extent as shown by a mean score of 3.09, lack of customer focus challenged

the companies to a moderate extent as shown by a mean score of 2.99, lack of alignment of SC strategy to company strategy challenged the companies to a moderate extent as shown by a mean score of 2.89, conflict of interest among SC partners challenged the companies to a moderate extent as shown by a mean score of 2.88, lack of internal and external coordination challenged the companies to a moderate extent as shown by a mean score of 2.80, opportunistic behavior among SC partners challenged the companies to a moderate extent as shown by a mean score of 2.79, poor decision making by management caused by manager's attitudes challenged the companies to a moderate extent as shown by a mean score of 2.79, poor technology challenged the companies to a moderate extent as shown by a mean score of 2.78, not clearly defined authority and responsibility challenged the companies to a moderate extent as shown by a mean score of 2.69, rapidly changing environment challenged the companies to a moderate extent as shown by a mean score of 2.51 however lack of employee support (Resistance to change) challenged the companies to a low extent as shown by a mean score of 2.29.

**Table 4.10 Challenges Encountered**

<b>Statements</b>	<b>Mean</b>	<b>Std.dev</b>
Lack of accurate, thorough, up-to-date, reliable and usable information	3.76	.119
Lack of training and understanding	3.65	.405
Budget constraints	3.61	.118
Lack of top management commitment	3.54	1.077
Lack of supportive corporate structures and processes	3.34	.564
Lack of trust among supply chain partners	3.15	.888
Unclear supply chain structures	3.11	.477
Lack of performance measurement tools	3.09	1.114
Lack of customer focus	2.99	.064
Lack of alignment of supply chain strategy to company strategy	2.89	.434
Conflict of interest among supply chain partners	2.88	.909
Lack of internal and external coordination	2.80	.605
Opportunistic behavior among supply chain partners	2.79	.135
Poor decision making by management caused by manager's attitudes, their information interpretation, heuristics and routines	2.79	.082
Poor technology	2.78	1.105
Not clearly defined authority and responsibility	2.69	.382
Rapidly changing environment	2.51	.953
Lack of employee support (Resistance to change)	2.29	.053

**Source: Research Data (2014)**

#### **4.6 Discussion**

The study found that new strategic alliances influenced SC strategy to a moderate extent. Increased number of companies in the SC influenced SC strategy to a moderate extent. These findings were in line with Swamidass and Newell (1987) as well as Defee and Stank (2005). It has been proposed that developing flexibility in adapting to sudden changes in global markets, resource availabilities and outbreaks of financial and political crises becomes an integral part of effective SC strategy. The flexibility may be achieved in SCs through forming long-term relationships like strategic alliances and mergers and acquisitions.

The study found that trading partners shared business knowledge of core business processes with the companies to a great extent. According to the study findings the companies regarded the collaboration with SC partners as important in risk management to a great extent. These findings correlate with Defee and Stank (2005) and Jeeva and Guo, (2010) who asserts that business knowledge revolves around improved communication integration, collaboration and closer interaction and partnering with customers, suppliers and a wider range of stakeholders.

According to the study findings lack of accurate, thorough, up-to-date, reliable and usable information was a challenge encountered in the formulation and implementation of SC strategy to a great extent, lack of training and understanding challenged the companies to a great extent, budget constraints challenged the companies to a great extent as well as lack of top management commitment challenged the companies to a great extent. This

study was similar to Kohlberger et al (2012) who asserted that a lot of companies fail with implementation of a SC strategy, although there are enough resources, reason being inconsistent and incomplete SC strategies. Poor coordination across functional and SC boundaries is another reason. Consequently, Ambe (2012) argue that mismatched strategies are the root cause of the problems that afflict SCs and SC strategies based on a one-size-fits-all strategy often fail.

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSION AND RECOMMENDATIONS**

#### **5.1 Introduction**

This chapter provides the summary of the findings from chapter four, and also it gives the conclusions and recommendations of the study based on the objectives of the study. The objectives of this study were to determine the drivers of change in the sugar industry in Kenya, to determine the impact of drivers of change on SC strategy in the sugar industry in Kenya and to determine the challenges encountered during SC strategy formulation and implementation in the sugar industry in Kenya.

#### **5.2 Summary of findings**

The study found that new strategic alliances influenced Sc strategy to a moderate extent (Mean score= 3.49). The increased number of companies in the SC influenced SC strategy to a moderate extent (Mean score= 3.31). According to the study respondents informed trading partners in advance of changing needs to a moderate extent (Mean score= 3.24). The companies trading partners shared propriety information with them to a moderate extent (Mean score= 3.11).

The study found that trading partners shared business knowledge of core business processes with the companies to a great extent (Mean score= 4.19). The study found that, the companies regarded the collaboration with SC partners as important in risk management to a great extent (Mean score= 4.31). It was found that the companies were ready to share information and cooperate in the scope of SCM to a great extent (Mean

score= 4.22) while the companies have mapped their SC to a great extent (Mean score= 4.09).

Similarly, the study found that lack of accurate, thorough, up-to-date, reliable and usable information was a challenge encountered in the formulation and implementation of SC strategy to a great extent (Mean score= 3.76), lack of training and understanding challenged the companies a great extent (Mean score= 3.65), budget constraints challenged the companies to a great extent (Mean score= 3.61) as well as lack of top management commitment challenged the companies to a great extent (Mean score= 3.54).

### **5.3 Conclusion**

The study concludes that new strategic alliances influenced SC strategy. This was through SC partners who worked jointly to plan and execute SC operations. Additionally the study concludes that lack of accurate, thorough, up-to-date, reliable and usable information was a challenge encountered in the formulation and implementation of SC strategy.

The study further concludes that taking all other independent variables at zero, a unit increase in globalization will lead to an increase in the scores of SC strategy in the sugar industry in Kenya. A unit increase in information technology will lead to an increase in SC strategy in the sugar industry in Kenya. On the other hand, a unit increase in organizational consolidation will lead to an increase in the scores of the SC strategy in the sugar industry in Kenya; a unit increase in empowered consumer will lead to an

increase in the scores of the SC strategy in the sugar industry in Kenya and a unit increase in government policies and regulations will lead to an increase in SC strategy in the sugar industry in Kenya. This infers that globalization influences the SC strategy in the sugar industry in Kenya to a great extent followed by organizational consolidation, information technology and government policies and regulations and then the empowered consumer.

#### **5.4 Implications and Recommendations**

An alternative framework for SC strategy is presented. The framework parallels that of manufacturing strategy and encourages integrative research using the two strategies. In addition, the framework enable advanced understanding of SC strategy and its priorities. Lastly, the study contributes to SC strategy theory having empirically examined the relationships among drivers of change and SC strategy.

This study imparts several managerial implications as well. The framework provides managers with a concise way to examine and evaluate which priorities are most important to their SC strategy and then choose the subsequent actions to be taken to strengthen those priorities. Since the new SC strategy framework proposed and supported by this study gives SC managers a new way to think about how they manage their activities.

The study recommends that new strategic alliances should be well set as they are the most influencers on SC strategy. The companies under the sugar sector should train their employees on the best practices of SC partnership. The study further recommends that the

company and SC partners should work together to plan and execute SC operations as this will ensure effectiveness and performance. The study finally recommends that government policies and regulations should be revised in order to facilitate fair play from all stakeholders.

### **5.5 Limitations of the Study and Suggestions for Future Research**

There are a number of limitations that influence the generalization of this study. First, the study is limited to a single sector hence conclusions may not be generalized to other sectors. Future studies replicating this research across multiple industries and sectors would increase the understanding of drivers of change and SC strategy. Second, the sample selection based on convenience and self-reported questionnaire may cause respondents to answer questions in a way that is perceived to be more desirable or acceptable than what is actually experienced or believed. Additional research could be conducted using a random probability sample. Finally, the current research only focused on external drivers of change , further research may include both internal and external drivers of change with extended dimensions of SC strategy.

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## APPENDICES

### Appendix I: Questionnaire

This questionnaire is to collect data for purely academic purposes. All information will be treated with strict confidence. Do not put any name or identification on this questionnaire. **Answer all questions as indicated by either filling in the blank or ticking the option that applies.**

#### SECTION A: PERSONAL INFORMATION AND COMPANY PROFILE

- 1) What is your job title.....
- 2) What is your academic background  
O-level [ ] Certificate [ ] Diploma [ ] Degree [ ] Masters [ ] PhD [ ]
- 3) How long have you worked in the sugar industry in Kenya?  
Below 2 years ( )      5 to 10 years ( )      Over15year ( )  
2 to 5 years ( )      10 to 15 years ( )
- 4) Total number of employees in your organization  
Less than 800 employees ( )      More than 801 employees ( )
- 5) Indicate ownership type of your company  
Government owned ( )      Public owned ( )      Private owned ( )  
Other specify \_\_\_\_\_
- 6) Please indicate the geographic scope of your company's operations? (Check one)  
Regional ( )      National ( )      Worldwide ( )

7) Indicate your market share

0-5 % ( )

6-15% ( )

16-25% ( )

26-35% ( )

36-45% ( )

46% & above ( )

8) Has your company been certified by one or more of the following ISO standards?

Please tick more than one box if appropriate

ISO 14001:2005 Environment Management System ( )

ISO 9001: 2008 Quality Management System ( )

ISO 22001: 2005 Food Safety Management System ( )

Others specify \_\_\_\_\_

**PART B: DRIVERS OF CHANGE IN THE SUGAR INDUSTRY IN KENYA**

9) In your opinion, to what extent do you think the following drivers of change influences supply chain strategy in the sugar industry in Kenya? Indicate 1=Not at all, 2= Little extent, 3= Moderate extent, 4= Great extent, 5= To a very great extent

<b>Drivers of change</b>	<b>Not at all</b>	<b>Little extent</b>	<b>Moderate extent</b>	<b>Great extent</b>	<b>To a very great extent</b>
Vast availability and distribution of information					
Accelerating pace of change in technology					
Rapidly expanding technology access					
Globalization of markets and business competition					
Global wage and job skills shifts					

Environmental responsibility and resource limitations					
Changing customer needs and expectations					
Launching new products/ services					
Increased number of companies in the supply chain					
Outsourcing functions to third parties					
New strategic alliances					
Engaging in mergers and acquisitions					
National and international laws and regulations					
Industry-specific regulations and standards					
Differences in culture and languages					
Actions of competitors					
Changing employee expectations					
Others (Please indicate)					

**PART C: DRIVERS OF CHANGE AND SUPPLY CHAIN STRATEGY IN THE SUGAR INDUSTRY IN KENYA.**

10) To what extent do you agree with the following statements on how drivers of change affect supply chain strategy in the sugar industry in Kenya? Indicate 1=Not at all, 2= Little extent, 3= Moderate extent, 4= Great extent, 5= To a very great extent

Statements	Not at all	Little extent	Moderate extent	Great extent	To a very great extent
Information sharing					

We share our business units' proprietary information (e.g. production, financial, design and risk) with supply chain partners					
We inform trading partners in advance of changing needs					
Our trading partners share propriety information with us					
Our trading partners share business knowledge of core business processes with us					
We and our trading partners exchange information that help in the establishment of business planning					
We and our trading partners keep each other informed about events or changes that may affect the other partners					
Our company and our supply chain partners exchange information frequently, informally and in a timely manner					
<b>Firm Supply Chain Agility</b>					
Our firm can promptly identify opportunities in its environment					
My organization can rapidly sense threats in its environment					
We can easily detect changes in our environment					
We always receive the information we demand from our suppliers					
We always obtain the information we request from our customers					
We can make definite decisions to address opportunities in our environment					
My organization can make firm decisions to respond to threats in its environment					
My company can make resolute decisions to deal with changes in its environment					
When needed, we can adjust our supply chain operations to the extent necessary to execute our decisions					
My firm can increase its short-term capacity as needed					
We can adjust the specification of orders as					

requested by our customers					
<b>Collaboration</b>					
Our company includes supply chain partners in our goal-setting activities and planning					
Our company actively involves supply chain partners in new product development processes					
Our company involves suppliers early in the product design effort					
Our company and supply chain partners work jointly to plan and execute supply chain operations					
Our company regularly solves problems jointly with our supply chain partners					
Our company and supply chain partners are jointly responsible for making sure that disruptions are properly handled					
Our company collaborates with supply chain partners in managing disruptions					
Our company regards the collaboration with supply chain partners as important in risk management					
<b>Supply Chain Visibility</b>					
We have mapped our supply chain					
Our company is ready to share information and cooperate in the scope of supply chain management					

**PART D: CHALLENGES ENCOUNTERED IN THE FORMULATION AND IMPLEMENTATION OF SUPPLY CHAIN STRATEGY IN THE SUGAR INDUSTRY IN KENYA.**

11) What are the challenges encountered in the formulation and implementation of Supply Chain Strategies in the sugar industry in Kenya? Indicate 1=strongly disagree, 2= disagree, 3= neutral, 4= agree, 5= strongly agree.

Challenges	Strongly disagree	disagree	neutral	agree	Strongly agree
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Lack of customer focus					
Lack of supportive corporate structures and processes					
Lack of top management commitment					
Lack of training and understanding					
Lack of employee support (Resistance to change)					
Lack of accurate, thorough, up-to-date, reliable and usable information					
Poor technology					
Not clearly defined authority and responsibility					
Budget constraints					
Lack of alignment of supply chain strategy to company strategy					
Lack of performance measurement tools					
Unclear supply chain structures					
Lack of internal and external coordination					
Rapidly changing environment					
Conflict of interest among supply chain partners					
Opportunistic behavior among supply chain partners					
Poor decision making by management caused by manager's attitudes, their information interpretation, heuristics and routines					
Lack of trust among supply chain partners					
Others (Please Specify)					

**Your responses are invaluable in helping shape better supply chain practices.**

**Thank you for filling in this questionnaire!**

## **Appendix II: Sugar Companies**

Butali Sugar Company Ltd

Chemelil Sugar Company Ltd

Kwale International Sugar Company

Kibos & Allied Sugar Company

Muhoroni Sugar Company Ltd.

Mumias Sugar Company Ltd

Nzoia Sugar Company Ltd.

South Nyanza Sugar Company Ltd

Transmara Sugar Company

West Kenya Sugar Company Ltd

Source: [kenyasugar.co.ke](http://kenyasugar.co.ke) (3/03/2014)