

**FACTORS AFFECTING SUPPLY CHAIN INTEGRATION IN  
LARGE MANUFACTURING FIRMS IN KENYA**

**BY**

**AMBEHI BEATRICE MBAISI**

**RESEARCH PROJECT SUBMITTED IN PARTIAL  
FULFILMENT OF THE REQUIREMENTS OF THE MASTER OF  
BUSINESS ADMINISTRATION, THE UNIVERSITY OF NAIROBI**

**NOVEMBER, 2016**

## **DECLARATION**

I declare that this research project is my original work and has not been submitted for a degree in any other university.

Signature \_\_\_\_\_

Date \_\_\_\_\_

**AMBEHI BEATRICE MBAISI**

**D61/72509/2014**

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

Signature \_\_\_\_\_

Date \_\_\_\_\_

**Michael Chirchir**

**Lecturer,**

**Department of Management Science, University of Nairobi**

## **DEDICATION**

This project paper is dedicated to my family Mum and Dad I will forever be indebted to you for the support I got from you pushed me to greater heights. Thank you Almighty God for seeing me through this long journey.

## **ACKNOWLEDGEMENT**

I thank the Lord Almighty for blessing me; I would not have completed my studies were it not for His favor.

Most important, I sincerely wish to acknowledge the support from my supervisor without whom I could not have gone this far with my project work.

To all my lecturers who contributed in one way or another in quenching my thirst for knowledge I owe you my gratitude.

I owe a great deal of gratitude to my family and friends for their unfailing moral and financial support throughout my period of study and for understanding and appreciating the demand of the course in terms of time and resources.

I cannot forget my classmates who influenced positively in my life and were a source of inspiration throughout my study. To you all, God bless.

## TABLE OF CONTENTS

DECLARATION .....	II
DEDICATION .....	III
ACKNOWLEDGEMENT .....	IV
LIST OF TABLES .....	VIII
ABBREVIATIONS AND ACRONYMS .....	IX
ABSTRACT.....	X
CHAPTER ONE.....	1
INTRODUCTION .....	1
1.1 Background of the Study .....	1
1.1.1 Supply Chain Integration .....	1
1.1.2 Large Manufacturing Firms in Kenya.....	2
1.2 Research Problem .....	2
1.3 Research Objectives.....	3
1.4 Value of the Study .....	4
CHAPTER TWO .....	5
LITERATURE REVIEW .....	5
2.1 Introduction.....	5
2.2 Theoretical framework of Supply Chain Integration.....	5
2.2.1 Cooperative Game Theory .....	5
2.2.2 Systems Theory .....	5
2.3 Factors Affecting Supply Chain Integration.....	6
2.4 Empirical Literature Review.....	6
2.5 Summary Literature Review and Research Gap(s).....	8
CHAPTER THREE .....	9
RESEARCH METHODOLOGY.....	9
3.1 Introduction.....	9
3.2 Research Design.....	9
3.3 Target Population.....	9
3.4 Data Collection .....	9
3.5 Data Analysis .....	10
Table 3.1: Summary of how data was collected and analyzed.....	10
CHAPTER FOUR.....	11
DATA ANALYSIS AND PRESENTATION .....	11

4.1	Introduction.....	11
4.2	General Information on respondents.....	11
4.2.1	Position in the Firm.....	11
Table 4.1:	Position in the Firm.....	11
4.2.2	Respondent’s gender.....	12
Table 4.2:	Respondent’s gender.....	12
4.2.3	Respondent’s age bracket.....	12
Table 4.3:	Respondent’s age bracket.....	12
4.2.4	Working duration in the Firm.....	13
Table 4.4:	Working duration in the Firm.....	13
4.3	Extent of SCI.....	13
4.3.1	Supplier Integration.....	14
Table 4.5:	Supplier Integration.....	14
4.3.2	Internal Integration.....	15
Table 4.6:	Internal Integration.....	15
4.3.3	Customer Integration.....	16
Table 4.7:	Customer Integration.....	17
4.4	Factors Affecting Supply Chain Integration.....	18
Table 4.8:	Factor loadings and univariate descriptive of identified factors.....	18
4.5	Other effects of supply chain integration.....	22
4.6	Identified factors and supply chain integration relationship.....	23
4.6.1	Correlation Coefficient.....	23
Table 4.9:	Correlation Coefficient.....	23
<b>4.6.2 Model Summary</b>	.....	24
Table 4.10:	Model summary.....	24
<b>4.6.3 ANOVA (Analysis of Variance)</b>	.....	24
Table 4.11:	ANOVA (Analysis of Variance).....	24
4.7	Findings.....	25
CHAPTER FIVE.....		27
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS.....		27
5.1	Introduction.....	27
5.2	Summary of Findings.....	27
5.3	Conclusions.....	28
5.4	Recommendations.....	28

5.5 Limitations .....	28
5.6 Suggestions for future Research .....	29
REFERENCES .....	30
APPENDICES .....	33
APPENDIX I: QUESTIONNAIRE .....	33
APPENDIX II: LARGE MANUFACTURING FIRMS IN NAIROBI, KENYA.....	41

## LIST OF TABLES

Table 3.1: Summary of how data was collected and analyzed .....	10
Table 4.1: Position in the Firm .....	11
Table 4.2: Respondent's gender .....	12
Table 4.3: Respondent's age bracket .....	12
Table 4.4: Working duration in the Firm .....	13
Table 4.5: Supplier Integration .....	14
Table 4.6: Internal Integration .....	15
Table 4.7: Customer Integration .....	17
Table 4.8: Factor loadings and univariate descriptive of identified factors.....	18
Table 4.9: Correlation Coefficient .....	23
Table 4.10: Model summary .....	24
Table 4.11: ANOVA (Analysis of Variance) .....	24



## **ABBREVIATIONS AND ACRONYMS**

APICS	American Production and Inventory Control Society
CGT	Cooperative Game Theory
EDI	Electronic Data Interchange
ERP	Enterprise Resource Planning
GOK	Government of Kenya
KAM	Kenya Association of Manufacturers
SC	Supply Chain
SCM	Supply Chain Management
SRM	Supplier Relationship Management
ST	Systems Theory
UNIDO	United Nations Industrial Development Organizations

## ABSTRACT

Business integration entails linking the various functions of a business or organization. This integration is made possible through technologies such as the Enterprise Resource Planning (ERP) systems that enable various departments in an organization to link and share information. Contemporary business organizations are finding it essential to integrate their functions if they need to reduce costs and remain competitive. One of the most important achievements of business integration is the reduction of supply chain costs and real time transaction processing that has largely enhanced the performance of supply chains. The objectives of this study was to determine the extent of supply chain integration in large manufacturing firms in Kenya, to establish the factors affecting supply chain integration on large manufacturing firms in Kenya, and to determine the effect of the identified factors on the implementation of SCI on large manufacturing firms in Kenya. The study was based on cooperative game theory and systems theory. The study adopted a descriptive research design. A survey method was used to collect primary data. The survey approach was proposed because it provides a quick, inexpensive, efficient and accurate means of assigning information about the population. This study targeted all large manufacturing firms in Kenya that were members of KAM. The main reason for this choice was that these firms are likely to exhibit an elaborate SCM philosophy and make use of supply chain integration. Primary data was used in this study. Data collection was done through the use of closed-ended questionnaires. Closed-ended questions were conclusive in nature as they were designed to create data that was easily quantifiable. The data were summarized and tabulated using descriptive measures. Factor analysis was used to identify the underlying factors. Descriptive statistics were used to summarize the results for each of the main variables. The study concludes that there exists strategic partnerships between large manufacturing firms and their suppliers and that they consult their suppliers when values of their firm are being developed. In addition, the study concludes that manufacturing firms provide their suppliers with information so that they can improve their quality and responsiveness, they maintain long term relationships between their firm and their suppliers, and that their firm seeks assurance of quality from suppliers. In addition, the study concludes that cross-functional integration is very significant for all supply chain initiatives. The study also concludes that supplier integration reduces the materials total costs, SCM integration has provided the organization ability to quickly and easily relate with suppliers. Further, SCM integration has assisted in improving the quality of goods, works and services offered to the beneficiary. , the study recommends that there is need to establish independent compliant units within the firms to ensure that rules and regulations are adhered to in order to curb malpractices that reduce effectiveness of supply chain performance. The study also recommends there is need for establishment of stronger networking and collaboration platform that facilitates sharing of real-time information between supply chain partners.

# **CHAPTER ONE**

## **INTRODUCTION**

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

SCM Coordinates activities both downstream and upstream to align supply and demand require a collective performance of stakeholders to support the customer's needs. For effective coordination of operational activities along supply chain, firms require relationships that are cross-functional and cross-firm in nature to maximize achievement of information sharing, close partnering and coordination (Leuschner, Rodgers & Charvet, 2013). Emphasis is made on ensuring supply chain members are well updated overall to enable achieve diversified relationship (Fawcett et al. 2007).

As a long-time leading competitive edge in businesses, manufacturing firms have had to review their perspectives and actions to source components and materials from “lower –cost countries” Brazil, Russia and India are identified as emerging markets. Prices have been driven down by emergence of local markets which previously were popularly dominated. Companies have had to realize the importance of influencers such as outsourcing that to enable achieve value from reduced costs and maximization of profits. The benefits however lie wide integration circles that can allow expertise in SCM of large companies to interlink supply chain functions and processes. Christopher and Towill (2000) opined, competition plays a role in firms which forms a basis to determine margins of operations of such a firm in the long-term, it predicts the ability of the firm to compete Globally consequently, firms need to look for success alignment of business processes probably through business process re-engineering (Resse, 2005).

#### **1.1.1 Supply Chain Integration**

Supply chain links finished products with raw materials, parts and components to achieve a common whole. American Production and Inventory Control Society (APICS, 1990) Both products and services are able to be achieved outside and internally in the value chain (Inman, 1992).

Manufacturing is interlinked as an end user face value where firms are able to utilize resources in the best minimal process Scott and Westbrook (1991) Wang and Miller (2005) define supply chain integration original process as one that can be used

interchangeably for the achievement of whole units. Also, according to Fabbe-Costes and Jahre (2008) the overall goal of SC is anticipation of a demand in the future since it provides the ability to forecast. Whether suppliers or customers. Or expresses as integration from “suppliers’ supplier to the customers’ customer”. This definition enables elaborate procedures form mutual relationships. It implies the need for mutual trust, increased contract duration, sharing of information, risks and rewards. Sanders (2008) aver that SCI is integrated in a multitude of interlinked operations including management of materials, transportation and administrative tasks.

### **1.1.2 Large Manufacturing Firms in Kenya**

The manufacturing sector is a significant contributor to Kenya’s economy resulting in a 10% Gross Domestic Product, 12.5% exports and a 13% formal employment. The growth of the manufacturing industry has for years faced such challenges as growth due to challenges in the industry. The rise in increased output in the agro-processing industries has also facilitated growth in the manufacturing industry. Subsectors play a role in its growth as it distributes the raw materials along the various sectors of economy that are viable for growth. (Awino, 2002). Manufacturing sectors has influenced the country’s growth in various sectors of its economy hence improving its competitiveness globally. Manufacturing firms fall under the umbrella of Kenya Association of Manufacturers (KAM) (2002).

### **1.2 Research Problem**

Business integration entails linking the various functions of a business or organization. This integration is made possible through technologies such as the Enterprise Resource Planning (ERP) systems that enable various departments in an organization to link and share information. Contemporary business organizations are finding it essential to integrate their functions if they need to reduce costs and remain competitive. Achievements of SC include reduced costs.

Lancioni, Smith and Schan (2003) note that it is clear market place success is determined by a network of supply chain interlinked. Thus, supply chain integration practices are value adding in a competitive way (Lambert, Cooper & Pagh; 1998). Research enables reduce barriers that affect (SMEs) by increasing GDP to a greater extent in the previous years as compared to forecasts made. (Sherry, 2004) opines

that High performance increases supplier challenges as there are benchmarks set against rules and regulations. Integration entails linking the various functions of a business or organization.

Various researchers have engaged on different levels for integration For instance, Awasthi and Grzybowska (2014) examined the Polands influencing factors on integration and found that resource sharing; organizational compatibility, information sharing, and SCI are hindered and influenced by various interlinked activities. Hudnurkar, Jakhar and Rathod (2014) on the review of various researched literatures through collaborated SC relationships found that supply chain information sharing was important for effective supply chain collaboration.

Locally, Kanda and Iravo (2015) researched on Health facilities in counties focusing on manufacturing pharmaceuticals and established channels of distribution and medical staff capabilities on knowledge and skill gap affects efficiency. Nzuve (2013) examined the implementation of e-procurement practices among private hospitals in Nairobi and found that supply chain integration was influential in the implementation of e-procurement.

There is, therefore, a gap as far as studies on the factors affecting supply chain integration in Kenya are concerned. Given the importance of supply chain integration especially for large manufacturers sought gaps on three research questions: extent of integration on manufacturing firms that are large? What factors affect supply chain integration in large firms? Effect of implemented factors on SCI?

### **1.3 Research Objectives**

The objectives of this study were:

- i) To find out the extent of integration in large manufacturing firms in Kenya is influenced
- ii) To determine factors that affect integration of supply chain at Kenyan Large manufacturing firms
- iii) To establish effect of factors identified SCI implementation on manufacturing firms in Kenya

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

Research was forecasted as of benefit to stakeholders with information playing a key role in firm's performance. Policy makers may enhance performance through guided and well researched policies to regulate the firm. SCI vs performance will enhance academicians to widen their scope for research areas as they aim to reduce gaps identified along the way.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

Focus was on the review of various literatures by researcher. It includes a review of supply chain integration. Among the areas reviewed include: The benefits, performance and drivers of supply chain are able to be well integrated. Research gaps identified and a theoretical framework are interlinked.

#### **2.2 Theoretical framework of Supply Chain Integration**

The theories in Supply Chain Integration were for management best practices. These theories provide strategic benefits that bring ties alongside emerging perspective (Barringer & Harrison, 2000). Gaps identified address theory of; Systems Theory and Cooperative Game Theory.

##### **2.2.1 Cooperative Game Theory**

Non cooperative and cooperative theories form Game theory (Brandenburger, 2007). Formal interdependence between the two contrasts the various underlying findings of the model. Cooperation among the players influences competition. Dobos and Pinter (2010) firms assumed minimization of total costs in a cooperative way as investigated by bullwhip effect in supplier- manufacturer relationship aimed at decreasing utilities. Cooperative provides options and strategic opportunities in a chain. Hence better decision making to enable achieved overall goals desired.

##### **2.2.2 Systems Theory**

The systems development for efficiency as developed by Yourdon (1989), Weinberg (1975), Miller (1978) and von Bertalanffy (1969). Components interact differently in a global setup with influencing open various systems are distinguished from the environment through inputs and outputs of the system. Supply chain performance brings components of a complex system together to form large systems of supply chain. Holistic perspectives are looked into to shaping the performance of the supply chain.

### **2.3 Factors Affecting Supply Chain Integration**

Decisions are determined by inventory, transportation, facilities and information influencing the supply chain. Supply chain performance is influenced by factors affecting the supply chain- Environmental uncertainty, Technology, Supply Chain Relationships, Flexibility and Quality. Competition as well as customers and environmental issues affect the process (Dwivedi & Butcher, 2009) Data interchange facilitates information flow in suppliers, manufacturers and distributors enabling telecommunication to be effective (Handfield & Nichols, 2013).

Firms benefit from relationships that are able to achieve a coordinated, integrated approach of its activities between suppliers and customers (Fraza 2012) Decrease and increase in requirements or expectations of suppliers allows customers flexibility which prompt service providers to work interchangeably around businesses (Bowersox & Cooper 2007) Efficiency is considered and regarded highly as it allows lowering total costs in performance improvement of the business allowing efficiency in quality and operations (Bishop, 2009) Differences exist between highly dependent and outside worlds that influence markets on highly dynamic environments that facilitate managerial perspectives of the Business (Omollo, 2004)

### **2.4 Empirical Literature Review**

Stank and Keller (2001) studied the 306 firms have been integrated in North America for logistical and performance benchmarking. The study identified and used six aspects of integration and six different measures of performance. Relationships influence internal, operational and customer; technology & planning integration vs information systems support and advanced shipment notification support; measurement integration with customer satisfaction; finally relationship integration vs financial performance, specifically return on assets.

The researcher noted there was no significant relationship. A limitation of this study is that it used regression analysis on ordinal (Likert) scale measures. Also other factors that could influence the relationship such as firm size and age were not considered. Awino (2009) conducted a study on supply chain best practices in private manufacturing firms formed an empirical investigation. He noted that critical factors form linkages that enable benchmark performance, strategic alliances and supplier



evaluation hence the cost of production to consumers with strategic emphasis made on the fitness of the manufacturing methods. Large firms focus on efficiency and core competencies that enable the local firms benchmark with global best practices.

Awasthi and Grzybowska (2014) researched on challenges of supply chain integration process using barriers affecting entities in businesses among 17 were identified with methodological tests such as DEcision MAKing Trial and Evaluation Laboratory (DEMATEL). Further research is recommended to allow planning and information sharing. Hudnurkar, Jakhar and Rathod (2014) sought to determine the research papers published and journalized on specific countries based on reviewed papers on collaboration of supply chain in affected supply chain collaborations.

Research as conducted by Owino (2015) on commercial banks and their influence on performance identify technology as a key component in achievement of processes and procedures.. Hence Integration is a major role for service delivery. Results were determined as more strongly related in terms of performance as linked with supplier integration. The study did not consider firm characteristics and only looked at SCI on banks. Kanda and Iravo (2015) on the Public Health facilities in 47 Counties of Kenya. The researcher sought to establish influence of: procurement processes, competency of medical staff in supply chain, ICT infrastructure, distribution channels and, as factors affecting efficiency in Health Centers in Kenya.. The results showed that indeed these factors influenced supply chain efficiency.

Ralston et al. (2015) studied the firm's performance, a firm's strategy, its supply chain integration efforts using a sample size of 220 of USA firms. Structural equation modeling approach was used. Corporate strategy was hypothesized to influence both customer and supplier integration and these two variables in turn affect demand. Demand on the other hand will influence performance as well as operations. Hypothesis showed that operational performance will influence financial performance. It was found that corporate integration had both customers and suppliers having positive relationship which were also found to influence demand as predicted.. This study utilized firm characteristics such variables as market share and control industry size.

## **2.5 Summary Literature Review and Research Gap(s)**

The empirical and theoretical literature demonstrate that, existing literature on factors affecting supply chain integration is not extensively researched in Africa and in Kenya in particular. Previous studies on factors affecting supply chain integration are common in Europe, America and Canada. Failing to explain how each of the sourcing strategies can affect supply chain integration in large manufacturing firms. Indicating there lacks a specific study that clearly identifies the factors affecting procurement and integration of supply chains in large manufacturing firms in Kenya.

Implementation of integrated supply chains covers firms with a role of interlinking information technology as an integrated approach as researched previously in the past. Intercompany alignment allows firms to ensure new skills or professional development along integrated opportunities of the firm. Limitations in form of empirical evidences were encountered with private information sharing alongside performance. The researcher identifies overall that Kenyan manufacturing industries require further research on the topic of study which will enable identify factors affecting supply chain integration in large manufacturing firms. The research sought to bridge this gap.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

The study employed research methodology which adopted to look at research design, target population, analysis and data collection.

#### **3.2 Research Design**

Descriptive research design was used. Survey method was recommended for primary data collection. The survey approach was proposed as it provides an in-depth contextual analysis about the population. In addition it was considered authoritative by people in general and since its used as a research tool by many firms. According to Mugenda and Mugenda (2003) a survey occurs when data is collected from many or several study units.

#### **3.3 Target Population**

The study comprised all large manufacturing firms in Kenya; members of KAM. The firms were identified as likely to exhibit an elaborate SCM philosophy hence enable use of supply chain integration. As per 2015 KAM business directory, there were 55 Large Manufacturing Firms in Kenya who were its members (Appendix II). This study therefore sought to concentrate in Nairobi. Given the relatively small population, a census was proposed as it fulfilled the requirements of effectiveness, total representativeness, reliability and accuracy (Kothari, 2004).

#### **3.4 Data Collection**

Primary data present accurate information hence, the use of closed-ended questionnaires. Statistical significance was able to be achieved through coding which the instrument favored its accuracy (Penwarden, 2013). The respondents were those involved in integration within and out of the organization in the aim of enhancing the firm's performance, specifically managers in SCM or their equivalent. Scales of 1 to 5 of the likert scales were used. The questionnaire contained relatively structured questions in three sections: Section A covered general information, Section B covered the extent of supply chain integration, and Section C covered the factors affecting supply chain integration on large manufacturing firms. This was an efficient data collection technique since the right questions that assisted in the study was asked and

efficiency was able to be achieved with each respondent responding on same questions. The hand delivered to enable completeness and also through e-mail. Follow up and reminders were done through telephone calls and e-mails.

### 3.5 Data Analysis

The data were summarized and tabulated using descriptive measures. Factor analysis was used to identify the underlying factors. Summary of the variables was by descriptive statistics. SPSS computer aided software was used to accomplish efficiency.

**Table 3.1: Summary of how data was collected and analyzed**

<b>Objective</b>	<b>Data Collection</b>	<b>Data analysis</b>
General Information	Section A	Descriptive Statistics
Supply chain integration extent		Descriptive Statistics
Factors affecting supply chain integration on large manufacturing firms in Nairobi	Section B	Factor Analysis
effect of the identified factors on the implementation of SCI on large manufacturing firms in Kenya	Section C	Regression Analysis

**Source: Author (2016)**

## CHAPTER FOUR

### DATA ANALYSIS AND PRESENTATION

#### 4.1 Introduction

The general objective of the research is to determine the factors affecting supply chain integration in large manufacturing firms in Nairobi. Specific objectives were: To find out the extent integration in large manufacturing firms in Kenya is influenced, To determine factors that affect integration of supply chain at Kenyan Large manufacturing firms , To establish effect of factors identified SCI implementation on manufacturing firms in kenya. The sample targeted of 55, 44 employees (80%) responded to the questionnaire. This was considered adequate for the objectives of this study. In the chapter, data analyzed was presented with relevant interpretations. Findings were presented in three sections: General information on respondents, assessment of the extent of supply chain integration and factor analysis

#### 4.2 General Information on respondents

The research sought to authenticate the information on the respondents involved in the research with regards to the level of education, gender, age, Professional training, experience, total number of employees in the firm, branches the firm have and the operational years of the firm. Respondents suitability were inform of questions and looks at the employment demographics.

##### 4.2.1 Position in the Firm

The researcher sought to establish the respondents position in their respective firms and the responses are as shown in Figure 4.1

**Table 4.1: Position in the Firm**

	<b>Frequency</b>	<b>Percent</b>
Information Technology manager	7	16%
Research and development manager	9	21%
Marketing manager	11	26%
supply chain officer	16	37%
<b>Total</b>	<b>44</b>	<b>100%</b>

**Source: Author (2016)**

The findings reveals that majority of the respondents (37%) were supply chain officer, 26% were marketing manager, 21% were research and development manager, while 16% indicated that they were information technology manager. This implies that majority of the respodents were supply chain officers and thus higher changes of understanding clearly about the extent of supply chain integration in their respective organizations, therefore increasing the reliability of the information they gave.

#### 4.2.2 Respondent’s gender

Repondents were required to indicate their gender to undertake the anlysis. Table 4.2 indicates an analysis of gender.

**Table 4.2: Respondent’s gender**

	<b>Frequency</b>	<b>Percent</b>
Male	26	60%
Female	18	40%
<b>Total</b>	<b>44</b>	<b>100%</b>

**Source: Author (2016)**

From the table it is evident that 26 out of 44 (60%) respondents were male while as represented by (40%) of 18 female. This indicated the research as a representative was balanced on gender. This implies that majority of the respondents were male.

#### 4.2.3 Respondent’s age bracket

This sought to find out the respondent’s age distribution and the questionnaire requirements were the respondents to fill in their age category. Figure 4.2 indicates the distribution of the respondents by age

**Table 4.3: Respondent’s age bracket**

	<b>Frequency</b>	<b>Percent</b>
Age of respondents less than 30 years	6	14%
Age of respondents 31-40 years	20	46%
Age of respondents 41-50 years	8	19%
Age of respondents 51-60 years	6	14%
Age of respondents over 60 years	3	7%
	<b>44</b>	<b>100%</b>

**Source: Author (2016)**

From the figure above, the majority of the respondents 46% between the age categories of 31-40. 19% respondents are aged between 41 and 50 while 14% were aged less than 30 years and between 51-60 years respectively. 7% of the respondents were aged over 60 years. The above findings indicate that of 31-40 years were majority of the respondents.

#### 4.2.4 Working duration in the Firm

The study sought to establish from the respondents, the duration they have served in their respective firm. Research observations were as shown in Table 4.4

**Table 4.4: Working duration in the Firm**

<b>Characteristic</b>	<b>Frequency</b>	<b>Percent</b>
Less than 5 years	9	21%
6-10 years	18	41%
11-15 years	10	23%
16-20 years	4	9%
Over 20 years	3	6%
<b>Total</b>	<b>44</b>	<b>100%</b>

**Source: Author (2016)**

According to the study, majority of the respondents (41%) had worked for a duration between 6-10 years, 21% have worked for a duration of less than 5 years, 23% between 11-15 years, 9% between 16-20 years, while 6% indicated that they have worked in their firms for over 20 years. This indicates that majority of the respondents had worked for a duration of 6-10 years and thus an extensive working experience.

#### 4.3 Extent of SCI

The first objective of the research sought to determine the extent of supply chain integration on large manufacturing firms in Kenya. The study findings were as presented in the subsequent subheadings

### 4.3.1 Supplier Integration

The respondents were required to indicate their level of agreement with the statements related to the extent to which their firm has embraced supply chain integration by filling a 5-Likert scale where; 1= to very large extent 2= large extent 3= a moderate extent 4= small extent 5= very small extent. The variable used Mean and standard deviation to compute.

**Table 4.5: Supplier Integration**

<b>Statement</b>	<b>Mean</b>	<b>Standard deviaton</b>
We maintain long term relationships between our firm and our suppliers	2.264	0.0754
There exists strategic partnerships between our firm and our suppliers	1.123	0.2451
Consultation of suppliers when values of the firm were being developed	1.321	0.1245
The firm seeks assuarance of quality from suppliers	2.361	0.0412
Information provision to improve their quality and responsiveness	1.412	0.2341
IT allowing information exchange	3.124	0.4562
Participation of suppliers in the design stage and development of new products	2.364	0.2341
Establishment of Quick ordering systems with main suppliers	2.369	0.4451
Stable procurement through supplier networks has been achieved	2.372	0.2511
There is participation of our suppliers in the processes of procurement and production	2.369	0.0542
Production plans with our main suppliers were shwered	2.484	0.5412
Packaging customization with main suppliers has been achieved	2.371	0.3244
Cooperation between suppliers	2.891	0.7541

**Source: Author (2016)**

The findings above indicated to a very great extent that; there exists strategic partnerships between their firm and their suppliers (mean= 1.123), and that they consult their suppliers when values of their firm were being developed (mean= 1.321). In addition, respondents indicated to a great extent that; they provide their suppliers information to improve their responsiveness and quality (mean= 1.412), they maintain long term relationships between their firm and their suppliers (mean= 2.264), and that



their firm seeks assurance of quality from suppliers (mean= 2.361). Further, respondents agreed to a great extent that their participation in the design stage and development of new products (mean=2.364), establishment of quick ordering systems with main suppliers, there is participation of our suppliers in the processes of procurement and production (mean=2.369), packaging customization with main suppliers has been achieved (mean=2.371), stable procurement through supplier networks has been achieved (mean=2.372), and that production plans with their main suppliers were shwered (2.484). The respondents to a moderate extent agreed that the cooperation shared among suppliers (2.891) and Information Technology that facilitates information exchange in our fim (3.124). This depicts that there exist strategic partnerships between their firm and their suppliers and that they consult their suppliers when values of their firm were being developed

#### **4.3.2 Internal Integration**

Level of agreement was a requirement to determine the respondents response related to the extent to which their firm has embraced internal integration by filling a 5-Likert scale where; 1= very large extent 2= large extent 3= moderate extent 4= small extent 5= very small extent. Variability was computed through Mean and standard deviation.

**Table 4.6: Internal Integration**

	<b>Mean</b>	<b>Standard deviation</b>
Cross-functional management is extensively used in our firm	1.472	0.2451
Supply chain initiatives are cross functionally integrative	1.012	0.7402
Marketing department is cooperative and successful	1.345	0.1421
Strategic plans are communicated to production department	1.542	0.3241
Internal functions were periodic	2.014	0.4133
Information is shared inside the organisation	2.214	0.9655
Internal functions achieved through data integration through the use of Information Technology systems	2.019	0.3452
Integrative inventory management has been implemented	2.111	0.3304
Inventory serach on real time	2.017	0.2451
There is data integration in production process	2.104	0.2341

**Source: Author (2016)**

The results in Table 4.6 indicate respondents agreement to a very great extent that; significant cross-functional integration for all supply chain initiatives (mean= 1.012), the constant and successful cooperation on marketing department (mean= 1.345), and that cross-functional management is extensively used in their firms (mean= 1.472). In addition, respondents agreed to a great extent that strategic plans are communicated to production department (mean= 1.542) and that internal functions are utilized in interdepartmental meetings (mean= 2.014). The research findings agreed to a great extent implementation of real-time searching is at a convenient level (mean=2.017), data IT helps in integration among internal functions (mean=2.019), production process helps in integration process (mean=2.104), integrative inventory management has been implemented (mean=2.111) and that information is shwered inside the organisation (mean=2.214). This implies that the relationship is is very significant for Cross-functional integration in all supply chain initiatives; marketing department is cooperated with the marketing department is constant and successful.

### **4.3.3 Customer Integration**

The findings required the respondents to indicate level of agreement with the various variables related to the extent to which their firm has embraced customer integration by filling a 5-Likert scale where; 1= very large extent 2= large extent 3= moderate extent 4= small extent 5= very small extent. Mean and standard deviation were then computed for the variable.

**Table 4.7: Customer Integration**

<b>Statement</b>	<b>Mean</b>	<b>Standard deviation</b>
There is computerization for customer ordering	2.2866	0.0762
Market information is shwered with customers	1.1342	0.2476
use of Information Technology systems in sharing information	1.3342	0.1257
Utilization of Periodic customer meetings	2.3846	0.0416
Customer requirements are known by the firm	1.4261	0.2364
Customer satisfaction is measured by the firm	3.1552	0.4608
Customer satisfaction processes and activities of the firm aim at the design	2.3876	0.2364
Feedback is a requirement	2.3927	0.4496
Customers are required to give feedback	2.3957	0.2536
Improvement of customer relations, processes, products and services is through feedback received	2.3927	0.0547
Systematic complaints handling is used by suppliers	2.5088	0.5466
Challenges in misunderstanding may arise from customer orders	2.3947	0.3276
Firm values are developed by the firm	2.9199	0.7616

**Source: Author (2016)**

The study findings found that respondents was to a very great extent agreed that; market information is shared with customers (mean=1.1342), IT helps market information in customers (mean=1.3342), and that customer requirements are known by the firm (mean=1.4261). In addition respondents agreed to a great extent that there is computerization for customer ordering (mean=2.2866), Periodic customer meetings are commonly utilised (mean=2.3846), and Customer satisfaction processes and activities of the firm aim at the design (mean=2.3876). Further, respondents agreed to a great extent that customers are encouraged by customers to improve customer relations, processes, products and services (mean=2.3927) respectively. Respondents agreed to a great extent that there exists misunderstandings in orders by the firm (mean=2.3947), and that the company is actively seeking feedback from customers

(mean=2.3957). On the other hand, respondents agreed to a moderate extent that the firm uses systematic processes for handling complaints (mean=2.5088), values of the firm are developed (mean=2.9199) and that the firm measures customer satisfaction (mean=3.1552). This implies that IT helps aiding customers with shared information hence that the firm is aware of the customer requirements.

#### 4.4 Factors Affecting Supply Chain Integration

The study findings were aimed at the factors that affect supply chain integration. Respondents were to rate their levels of agreement with 50 items which were indicators of the factors affecting supply chain integration t, on a scale of 1 – 5 where 1 strongly disagree and 5 strongly agree. The 50 items in subjection to factor analysis with varimax rotation and the results obtained were representative as reflected in the table below.

**Table 4.8: Factor loadings and univariate descriptive of identified factors**

		Factor loadings	Mean	Std. Deviation
Supplier Integration reduces the materials total costs	0.772	Service Delivery		
Supplier Integration improves the procurement process	0.74		3.043	1.335
Supplier Integration reduces the	0.739		3.830	0.666
Supplier Integration leads to improved materials quality and variety	0.644		3.894	0.595
Sourcing and tendering decisions are easily made due to SCM integration and information sharing.	0.541		3.076	1.277
SCM integration has provided the organization ability to quickly and easily relate with suppliers.	0.772		3.979	0.733
Orders are easily processed as a result of SCM integration, thus avoiding	0.61		4.032	0.613

delays.				
With an integrated SCM function, information moves faster and this reduces lead time in the organization	0.687		4.096	0.465
Distribution and delivery is made at the right time and place due to SCM integration, information sharing and coordination	0.662		3.936	0.700
Improvement of quality of goods and services is offered to beneficiaries in SCM integration	0.742		4.011	0.374
Quality of goods and services in SCM integration are offered to beneficiaries	0.712		4.064	0.504
Performance is enhanced in SCM	0.641		4.021	0.672
SCI implementation	0.76		4.106	0.310
Demands in the market are ligned in markets and customers	0.739		4.064	0.564
Financial performance is positive to Total supply Chain	0.674		4.117	0.701
There is an interlink between supply chain responsiveness that consists operation system responsiveness, logistic process responsiveness, and supplier network responsiveness,	0.68		4.266	0.444
Financial and strategic benefits are achieved in manufacturing firms	0.378		4.192	0.396
continual investment to improve the firm advantage is important in SCI	0.346		4.287	0.478
Supplier Integration reduces the supplier's delivery lead time	0.642		4.298	0.460
Supplier Integration leads to improved materials quality and variety	0.533		4.298	0.460

Internal Integration reduces the average unit manufacturing cost	0.634	Operational efficiency		
Internal Integration reduces manufacturing lead time	0.524		4.298	0.460
Internal Integration reduces equipment changeover time	0.612		4.149	0.358
Internal Integration increases direct	0.264		4.128	0.553
Monitoring stock movement has been made easier as a result of the collaboration between procurement, logistics and warehouse/ inventory management.	0.688		4.245	0.522
Increasing competition improves the internal performance of an organisations SC	0.364	Competition	4.266	0.512
Different but related production sections of a firm's information allow monitor performance	0.325		2.463	0.915
Products are differentiated from their competitors because of quality	0.804		3.265	0.959
Continous improvement is highly recommended for product quality and improvements	0.738		3.562	1.302
The firm employs product differentiation from competitors to ensure competition	0.223		3.782	1.037
The firm employs product innovation from competitors to ensure competition	0.311		3.642	1.588
The firm introduces new products from competitors to ensure competition	0.2		3.463	0.932
Companywide consensus is	0.741		3.761	0.909

developed on strategy				
Joint accountability allows personnel involvement in Production	0.323		3.126	1.302
Personnel involved in production, sales, and distribution work in an integrated way	0.276		3.784	1.588
Close proximity between production, sales and distribution brings about joint activity	0.356		3.625	0.462
competitive advantage dimension cost and quality is a part	0.245		3.754	0.264
critical competitive priorities for manufacturing Cost, quality, dependability and speed of delivery.	0.368		3.265	0.165
Customer Integration improves customer service	0.712	Customer satisfaction		
Customer Integration leads to customer satisfaction	0.653		3.565	0.461
Customer Integration leads to improved product quality and variety	0.241		3.786	0.264
Customer Integration increases the speed and numbers of product development	0.703		4.123	0.235
Customer Relationship Management plays an important role in SCM	0.366		3.265	0.491
intensity of firm-supplier integration long-term perspective between the buyer and supplier increase the	0.689		4.324	0.076
Sustainability of customer satisfaction and loyalty Close customer relationship allow product differentiation from competitors,	0.706		3.785	0.893
Quality plays an important role in SCI	0.351		4.022	0.124

of manufacturing firms				
effective decision making process data improves the supply chain visibility thus enabling	0.642		3.742	0.653
Planning is a key component in SCI	0.564		3.422	0.643
Customer Integration leads to improved product quality and variety	0.342		3.786	0.563
Customer Integration leads to on-time delivery of products to customers	0.264		3.971	0.596

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

**Source: Author (2016)**

From the table above, factor analysis identified 4 (four) variables. First variable identified was service delivery measured by 20 items means lying between 3.0 and 4.3. Indicating that service delivery influences supply chain integration to a very great extent. Second factor identified as operational efficiency which had 5 items with a mean ranging between 4.1 and 4.2. Indicating that operational efficiency influences supply chain integration to a very great extent. Other variable identified was competition with a representative of 13 items means ranging between 3.2 and 4.2. Indicating that competition has great influence integration in large manufacturing firms in Kenya. Finally, customer satisfaction was identified as one of the variables represented by 12 items mean ratings between 3.4 and 4.3 hence that customer satisfaction influences supply chain integration to a very great extent

#### **4.5 Other effects of supply chain integration**

Respondents were further asked to indicate other effects of supply chain integration in their organization. Respondents indicated that supply chain integration as an enabler for external integration suggests companies need internally good practices for effective management of external processes. Respondents position integration benefits as accruing from learning and financial performance being correlated to information flows. It is further suggested that integration, information transmitted and



subsequently synthesized. Contextualization and organization afforded through internal integration facilitates determining what information brought outside the organization should affect once received internally.

#### 4.6 Identified factors and supply chain integration relationship

In determining the relationship between the study variables, regression analysis was undertaken to determine the relationship.

##### 4.6.1 Correlation Coefficient

**Table 4.9: Correlation Coefficient**

	Unstandardized		Beta	Standardized	
	B	Std. Error		t	Sig.
(Constant)	6.182	.826		0.635	.0000
Service delivery ( X1)	0.810	1.25	0.61	0.648	.0014
Operational efficiency (X2)	0.764	.938	0.86	0.613	.0068
Competition (X3)	0.661	1.56	0.42	0.615	.0261
Customer satisfaction (X4)	0.463	1.31	0.46	0.353	0.0314

$$Y = 6.182 + 0.810X_1 + 0.764X_2 + 0.661X_3 + 0.463X_4 + \epsilon$$

The researcher findings showed significant positive relationship between implementation of SCI and service delivery ( $\beta=0.810$  and P value  $< 0.05$ ). Therefore, unit increase in service delivery leads to increase of SCI implementation by 0.810. Results of the study showed significant positive relationship between operational efficiency and implementation of SCI ( $\beta=0.764$  and P value  $< 0.05$ ). Therefore, increase in operational efficiency leads to an increase in implementation of SCI by 0.764. Results of the study show a significant positive relationship between use of competition and implementation of SCI ( $\beta=0.661$  and P value  $< 0.05$ ). Therefore, a unit increase in use of competition would lead to an increase in implementation of SCI by 0.661. Results of the study showed that there is a significant positive relationship between use of customer satisfaction and implementation of SCI

( $\beta=0.661$  and P value < 0.05). Hence, a unit increase in use of customer satisfaction would lead to an increase in implementation of SCI by 0.661.

Hence based on the above regression results, the study's regression model became;

#### 4.6.2 Model Summary

**Table 4.10: Model summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.882 <sup>a</sup>	.7779	.756	0.0221

a. Predictors: (Constant), service delivery, operational efficiency, competition and customer satisfaction

b. Dependent Variable: implementation of SCI

Coefficient of determination (R square) is explained as the extent to which change in the dependent variable is affected by change in independent variables or the percentage of variation dependent variable explained by independent variables. From the study findings, the four independent variables in the model were studied (that is, supplier service delivery, operational efficiency, competition and customer satisfaction), explain 77.79% of variation in implementation of SCI in the large manufacturing firms in Kenya as represented by the  $R^2$ . This means that other factors not in the model explain 22.21% of variation in the dependent variable.

#### 4.6.3 ANOVA (Analysis of Variance)

**Table 4.11: ANOVA (Analysis of Variance)**

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	12.768	4	3.192	7.32	.012 <sup>a</sup>
	Residual	4.796	11	.436		
	Total	17.564	15			

a. Predictors: (Constant), service delivery, operational efficiency, competition and customer satisfaction

b. Dependent Variable: implementation of SCI

Table 4.8, value signified is 0.012 which less than that 0.05, hence the model is predictable statistically significant on how operational efficiency, service delivery, competition and customer satisfaction influence the implementation of SCI process in the large manufacturing firms in Kenya. The F statistic was significant (as was =7.32) signifying the model had a good fit.

#### **4.7 Findings**

The researcher identified that there large manufacturing firms exists strategic partnerships and that they consult their suppliers when values of their firm are being developed. In addition, the study established that manufacturing firms are able to be provided with information so that on improving quality and responsiveness, they maintain long term relationships between their firm and their suppliers, and that their firm quality assurance is sought on quality from suppliers. In addition, the study established that supply chain initiatives are cross-functionally integrated for supply chain initiatives. In addition, the study established the production department of their organizations is always aware of the strategic plans of the firm and that utility is made on periodic interdepartmental meetings internal functions. Information Technology helps informationon is sharing and that the firm customer requirements are made aware. In addition it was established that that there is computerization for customer ordering, periodic customer meetings are commonly utilised, and that customer satisfaction levels are designed to increase customer satisfaction levels. In line with the findings, Fraza (2012) opined that firm's goals play important role in achievement of goals in coordinated activities.

It was established supplier integration reduces the materials total costs, SCM integration providing the organization ability to quickly and easily relate with suppliers. SCM integration assists in quality improvement of goods, works and services offered to the beneficiary. In addition, user feedback is considered important in SCI implementation and that top management develops a company-wide consensus on strategy. Products are differentiated from their competitors. Similarly, Stank and Keller (2001) studied the logistical integration and performance using 306 firms in North America. Positive relationship between customer & internal integration and operational performance is positive; technology & planning integration vs information systems support and advanced shipment notification support; measurement integration

with customer satisfaction; finally relationship integration vs financial performance, specifically return on assets. Owino (2015) also investigated the impact commercial banks in Kenya have on supply chain integration and organizational performance. The research found technology plays an important role on the competitive edge for improving performance through service delivery. Hence Integration is a major role for service delivery. Indication on improving performance strongly relate to supplier integration. The limitations of the study were considering firm characteristics looking at SCI on banks.

## CHAPTER FIVE

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

#### 5.1 Introduction

Chapter presents summary of key data findings on the factors affecting large manufacturing firms supply chain integration in Kenya. It gives conclusive findings and recommendations. The chapter is therefore structured into summary of findings, conclusions, recommendations and area for further research.

#### 5.2 Summary of Findings

The study established that there exists strategic partnerships between large manufacturing firms and their suppliers and that consultations are made with suppliers values of their firm are being developed. In addition, the study established that manufacturing firms seek information from suppliers so that they can improve their quality and responsiveness, they maintain long term relationships between their firm and their suppliers, and that their suppliers.

In addition, the study established that production departments are interlinked with cross functions of the department aware of strategic plans of the firm and that periodic utilization of internal functions are utilized. The further explained that market information is shared with customers, market information shared through the use of information technology the requirements of its customers. In addition it was established that that there is computerization for customer ordering, periodic customer meetings are commonly utilised, and customer satisfaction levels are increased through customers.

The study also established that supplier integration reduces the materials total costs, SCM integration has provided the organization ability to quickly and easily relate with suppliers. Further, SCM integration has assisted in benefiting others through quality of goods, works and services offered to the beneficiary. In addition, user feedback is considered important in SCI implementation and that strategies are developed on a wider scale from top management. Furthermore, the study established that products are differentiated from their competitors.

### **5.3 Conclusions**

The study concludes that there exists strategic partnerships between large manufacturing firms and their suppliers and that they consult on a constant basis when undertaking improvements. In addition, the study concludes that manufacturing firms work to constantly avail information, they maintain long term relationships between their firm and their suppliers, and that their firm seeks assurance of quality from suppliers.

The researcher concludes that supply chain initiatives require cross-functional integration. The study also concludes that supplier integration reduces the materials total costs, SCM integration has provided the organization ability to quickly and easily relate with suppliers. Further, SCM integration has assisted improved quality, goods and services to the industry at large. In addition, user feedback is considered important in SCI implementation and that strategy is developed company-wide. Furthermore, the study concludes that products are differentiated from their competitors.

### **5.4 Recommendations**

Based on the study findings, compliant units form need for establishment of stable systems for ensuring rules and regulations are followed. This curbs malpractices reducing extra costs but increasing efficiency and performance in real time information sharing between partners. The study further recommends Just in time approach system of operation of supply chain activities to reduce storage-related cost.

### **5.5 Limitations**

This research was limited to factors affecting supply chain integration in large manufacturing firms in Kenya. Top management the seniors and middle level managers were not available hence response in junior management levels, operatives and clerical staff. In addition, some of the junior staffs may have challenges in understanding the questionnaires. Delays in submitting field questionnaires by respondents were experienced while others completely failed to return questionnaires. This led to delays in data compilation.

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

### **5.6 Suggestions for future Research**

Further research on the impact and extent of integrated supply chain should be carried out on other manufacturing firms and services sector in Kenya and across sectional survey design used to compare and make generalizations. Benefits of supply chain may also be carried out to determine the extent and benefits of supply chain integration in the can capture any significant changes in the businesses operating environment in the country.

## REFERENCES

- Awad, H. A., & Nassar, M. O. (2010a). *Supply Chain Integration: Definition and Challenges*. Retrieved February 14, 2013 from International Association of Engineers:  
[http://www.iaeng.org/publication/IMECS2010/IMECS2010\\_pp405-409.pdf](http://www.iaeng.org/publication/IMECS2010/IMECS2010_pp405-409.pdf)
- Awino Zachary Bolo and Gituro Wainaina (2009) "An empirical investigation of supply chain management practices in large private manufacturing firms in Kenya" unpublished PHD thesis. University of Nairobi
- Barkhamet, R., G. Gudgin, M. Hart, & Hanvey, E., (2006). The Determinants of Small Firm Growth. *Gateshead, Tyne and Wear, UK: Athenaeum*.
- Barney, J. B. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17, 99-120.
- Blowfield, M. & Dolan, C., (2010). *Outsourcing governance: Fairtrade's message for C21 global governance*. *Corporate Governance*, 10, 4 (2010), 484-499.
- Cai, J., Xiangdong L., & Zihui X. (2008). Improving supply chain performance Management": A systematic approach to analyzing iterative KPI accomplishment. *Journal of Business Venturing*.
- Carter, C. R. & Rogers. D.S., (2008). A framework of sustainable supply chain management: Moving toward new theory. *International Journal of Physical Distribution and Logistics Management*, 38(5), 360-387.
- Chong, A.Y.L. & Ooi, K.B (2008). Adoption of inter organizational system standards in supply chains: an empirical analysis of RosettaNet standards', *Industrial Management and Data Systems*, 108(4), 529-547.
- Christopher, M. (2004). "Creating the Agile Supply Chain," *Ascet1*, 15 April.
- Christopher, M., & Towill, D. (2000). Supply Chain Migration from Lean to Agile and Customized, *Supply Chain Management International Journal* 5(4), 206-213
- Cook, R.L., & Garver, M.S. (2002). Subscription Supply Chain, *Mid American Journal of Business* 17(2), 37-45.
- Crisen, R., (2012). Supply chain governance and multinational corporations' governance: a theoretical comparison. *Journal of business studies*, 12, 10-25.



- Dajjissa., J.Q. (2011). Impact Of Outsourcing Of Training Services On Supply Chain Performance In Government Parastatals: A Case Study Of Kenya Power and Lighting Company (Kplc) Limited, *Unpublished MBA project, University of Nairobi*.
- Defee, C.C., Esper, T., & Mollenkopf, D. (2009). Leveraging closed-loop orientation and leadership for environmental sustainability, *Supply Chain Management: An International Journal*, 14(2), 87-98.
- DeNisi, A., Hitt, M & Jackson, S (2003). The Knowledge Based Approach to Sustainable Competitive Advantage. *Managing Knowledge for Sustained Competitive Advantage*, San Francisco: Jossey-Bass, 3-33.
- Dyckhoff, H.,Lackes, R.,Reese,J. (Eds.): Supply Chain Management and Reverse Logistics, Berlin, New York 2004
- Kaplan, R., & Norton, D.(1992) The balanced score card- measures that drive performance. Harvad Business review Jan Feb 71-79
- Kenya economic survey 2010
- Lambert, D.M., Emmelhainz, M.A., and Gardner, J.T. (1996), .Developing and Implementing Supply Chain Partnerships., *The International Journal of Logistics Management*, Vol. 7, No. 2, pp.1-17.
- Larson, P. D., & Halldorsson, A. (2002). What Is SCM? And, Where Is It?, *The Journal of supply Chain Management* 38(4), 36–44.
- Lee, H.L., So, K.C., and Tang, C. S (2000). “The Value of Information Sharing in a Two Level Supply Chain,” *Management Science* 46(5), pp.626-643.
- Lee, W.B., 2000. On a Responsive Supply Chain Information System, *International Journal of Physical Distribution and Logistics* 30 (7/8), 598–610.
- Leuschner, R., Charvet, F, and Rogers, D.S (2013), “A Meta- Analysis of Logistics Customer Service,”*Journal of Supply Chain Management*, Vol. 49 No.1, pp. 47- 63
- Li, S., Ragu-Nathan, B., Ragu-Nathan, T.S. & Rao, S.S. (2006). The impact of supply chain management practices on competitive advantage and organizational performance, *Journal of Information Management*, 34, 107-24.
- Morgan, R. M., & Hunt, S. D. (2002). The Commitment–Trust Theory of Relationship Marketing, *Journal of Marketing*, 58(3), 20-38.

- Mudambi, R., and C. P. Schründer (2006). "Progress toward Buyer-Supplier Integration," *European Journal of Purchasing and Supply Management* 2(2–3), 119–127.
- Narasimhan, R., Swink, M., and Kim, S.W., (2006). Disentangling leanness and agility: an empirical investigation. *Journal of Operations Management*, 24, 440–457.
- Porter, M. E. (1980). *Competitive Strategy*, New York: Free Press.
- Richard, P. J., & Devinney, T. M. (2005). Modular Strategies: B2B Technology and Architectural Knowledge, *California Management Review*, 47(4), 86-113.
- Trkman, P., & Groznik, A. (2006). Measurement of Supply chain integration benefits. *Interdisciplinary Journal of Information, Knowledge, and Management* , 1, 37-45.
- Tushman, A. H. C., & Anderson, H. (2006). Measuring maintenance performance: a holistic approach, *International Journal of Operations and Production Management*, 19(7), 691-715.
- Wang, G. & Miller, S. (2005). Intelligent aggregation of purchase orders in e-procurement, *Journal of Operations and Production Management*, 27-36.
- Wernerfelt, B. (1984). A Resource-Based View of the Firm, *Strategic Management Journal*, 5(2), 171-181.
- Wood, G., & Brewster, C. (2005). Trust, Intra-firm and Supplier Relations, *Business and Society Review*, 110(4), 459-484.
- Zailani, S., & Rajagopal, P. (2005). Supply chain integration and performance: US versus East Asian companies. *Supply Chain Management: An International Journal*, 10(5),379-393.

## APPENDICES

### Appendix I: Questionnaire

This questionnaire has been designed for intended purpose of collecting data on supply chain integration on factors affecting supply chain integration in large manufacturing firms in Nairobi. The data will be treated with a high degree of confidentiality and it is meant for academic and reserach purpose only.

Your participation on questionnaire by putting an “X” on the applicable provided space of the applicable answer.

#### Section A : General Information

1. Name of the Firm:.....
2. Address/Location of the firm:.....
3. Year of establishment:.....
4. What is your position in this firm?
  - a) Information Technology Manager ( )
  - b) Development and Research Manager ( )
  - c) Marketing Manager ( )
  - d) Supply chain officer ( )
  - e) Other (specify).....
5. Respondent's gender: Male ( ) Female ( )
6. Respondent's age bracket:

Less than 30 years	
31-40 years	
41-50 years	
51-60 years	
Over 60 years	

7. How long have you served in the Firm:

Less than 5 years	
6-10 years	
11-15 years	
16-20 years	
Over 20 years	

## Section B: The Extent Integration of Supply Chain

### Supplier Integration

Please indicate on following statements, the extent to which your firm has embraced Supply Chain Integration.

The scale below will be applicable:

1= to a very large extent 2= to a large extent 3= to a moderate extent 4= to a small extent 5= to a very small extent.

No.	Statement	1	2	3	4	5
1	Firms maintain long term relationship between them and suppliers					
2	Strategic partnerships exist between them and suppliers					
3	We consult our suppliers when values of our firm are being developed					
4	The firm seeks assurance of quality from suppliers					
5	We provide our suppliers with information so that they can improve their quality and responsiveness					
6	Information exchange with suppliers through Information Technology systems is a method commonly used in our firm					
7	Our suppliers participate in the design stage and development of new products					
8	Quick ordering systems with main suppliers have been established					
9	Stable procurement through supplier networks has been achieved					
10	There is participation of our suppliers in the processes of procurement and production					
11	Production plans with our main suppliers are shared					
12	Packaging customization with main suppliers has been achieved					
13	The gains resulting from cooperation with suppliers are equally shared					

### **Internal Integration**

Please indicate on following statements, the extent to which your firm has embraced Supply Chain Integration.

The scale below will be applicable:

1= to a very large extent 2= to a large extent 3= to a moderate extent 4= to a small extent 5= to a very small extent.

<b>No.</b>	<b>Statement</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
1	Cross-functional management is extensively used in our firm					
2	Cross-functional integration is very significant for all supply chain initiatives					
3	The cooperation with the marketing department is constant and successful					
4	The production department is always aware of the strategic plans of the firm					
5	Periodic interdepartmental meetings among internal functions are commonly utilised					
6	Information is shared inside the organisation					
7	Data integration among internal functions is achieved through the use of Information Technology systems					
8	Integrative inventory management has been implemented					
9	Real-time searching of the level of inventory has been implemented					
10	There is data integration in production process					

### **Customer Integration**

Please indicate on following statements, the extent to which your firm has embraced Supply Chain Integration.

The scale below will be applicable:

1= to a very large extent 2= to a large extent 3= to a moderate extent 4= to a small extent 5= to a very small extent.

<b>No.</b>	<b>Statement</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
1	There is computerization for customer ordering					
2	Market information is shared with customers					
3	Market information with customers is shared through the use of Information Technology systems					
4	Periodic customer meetings are commonly utilised					
5	The firm is aware of the requirements of its customers					
6	The firm measures customer satisfaction					
7	Processes and activities of the firm are designed to increase customer satisfaction levels					
8	Customers are encouraged to provide feedback					
9	The company is actively seeking feedback from customers					
10	The feedback provided by customers is used to improve customer relations, processes, products and services					
11	The firm uses systematic processes for handling complaints					
12	There exists misunderstandings between customers and firm about orders					
13	Customers contribute to the development of the firmal values					

**Section C: Factors Affecting Supply Chain Integration on Large Manufacturing Firm's**

**Supplier Integration**

Please indicate on the following statements, the factors affecting supply chain integration on the firm. The scale below will be applicable:

1= to a very large extent 2= to a large extent 3= to a moderate extent 4= to a small extent 5= to a very small extent.

No	Statement	1	2	3	4	5
1	Supplier Integration reduces the materials total costs					
2	Supplier Integration improves the procurement process					
3	Supplier Integration reduces the supplier's delivery lead time					
4	Supplier Integration leads to improved materials quality and variety					
5	Internal Integration reduces the average unit manufacturing cost					
6	Internal Integration reduces manufacturing lead time					
7	Internal Integration reduces equipment changeover time					
8	Internal Integration increases direct labour productivity					
9	Customer Integration improves customer service					
10	Customer Integration leads to customer satisfaction					
11	Customer Integration leads to improved product quality and variety					
12	Customer Integration increases the speed and numbers of product development					
13	Sourcing and tendering decisions are easily made due to SCM integration and information sharing.					
14	SCM integration has provided the organization ability to quickly and easily relate with suppliers.					

15	Orders are easily processed as a result of SCM integration, thus avoiding delays.					
16	Monitoring stock movement has been made easier as a result of the collaboration between procurement, logistics and warehouse/ inventory management.					
17	With an integrated SCM function, information moves faster and this reduces lead time in the organization					
18	Distribution and delivery is made at the right time and place due to SCM integration, information sharing and coordination					
19	SCM integration has assisted in improving the quality of goods, works and services offered to the beneficiary					
20	SCM integration has assisted in improving the quality of goods, works and services offered to the beneficiary					
21	In general SCM integration has enhanced the performance of our organization					
22	User feedback is considered important in SCI implementation					
23	Use of technology in SCI is important in aligning demands of the markets and customers					
24	Total Supply Chain integration (supplier-firm-customer) is positively related to financial performance					
25	Customer Relationship Management plays an important role in SCM					
26	Increasing competition improves the internal performance of an organisations SC					
27	Different but related production sections of a firm's information allow monitor performance					
28	Products are differentiated from their competitors because of quality					
29	Continous improvement is highly recommended for product quality and improvements					



30	The firm employs product differentiation from competitors to ensure competition					
31	The firm employs product innovation from competitors to ensure competition					
32	The firm introduces new products from competitors to ensure competition					
33	supply chain responsiveness that includes operation system responsiveness, logistic process responsiveness, and supplier network responsiveness,					
34	Top management develops a company-wide consensus on strategy.					
35	Personnel involved in production, sales, and distribution have joint accountability for results.					
36	Personnel involved in production, sales, and distribution work in an integrated way					
37	Personnel involved in production, sales, and distribution are located close to each other					
38	Manufacturing firms benefit from supply chain integration both financially and strategically					
39	long-term perspective between the buyer and supplier increase the intensity of firm-supplier integration. Firms					
40	Close customer relationship allow product differentiation from competitors, help sustain customer satisfaction and loyalty					
41	cost and quality is a part of competitive advantage dimension					
42	Cost, quality, dependability and speed of delivery as some of the critical competitive priorities for manufacturing.					
43	continual investment to improve the firm advantage is important in SCI					
44	Quality plays an important role in SCI of manufacturing firms					

45	process data improves the supply chain visibility thus enabling effective decision making						
46	Planning is a key component in SCI						
47	Customer Integration leads to improved product quality and variety						
48	Customer Integration leads to on-time delivery of products to customers						
49	Supplier Integration reduces the supplier's delivery lead time						
50	Supplier Integration leads to improved materials quality and variety						

9. Other effects of the factors identified by your firm (please specify)

.....

.....

.....

.....

## Appendix II: Large Manufacturing Firms in Nairobi, Kenya

<b>LARGE MANUFACTURING FIRMS IN NAIROBI, KENYA</b>	
1.	ACME CONTAINER LTD
2.	AFRICA KALUWORKS (ALUWARE) DIVISION
3.	AFRICA OIL KENYA B.V
4.	ALPHA DAIRY PRODUCTS LTD
5.	ALPHA FINE FOODS LTD
6.	APEX STEEL LTD
7.	AQUASANTEC
8.	AQUVA AGENCIES LTD -NAIROBI
9.	ARROW RUBBER STAMP COMPANY LTD.
10.	ASHUT QUALITY PRODUCTS
11.	ATHI RIVER MINING LTD
12.	ATLAS COPCO EASTERN AFRICA LTD
13.	BIDCO OIL REFINERIES LIMITED
14.	BIODEAL LABORATORIES LTD
15.	BILCO ENGINEERING
16.	BLOWPLAST LIMITED
17.	BLUE TRIANGLE CEMENT
18.	BOBMIL INDUSTRIES LIMITED
19.	BRITISH AMERICAN TOBACCO KENYA LTD
20.	C. DORMANS LTD
21.	CHANDARIA INDUSTRIES LIMITED
22.	CHLORIDE EXIDE KENYA LIMITED
23.	COLGATE-PALMOLIVE(EAST AFRICA) LTD
24.	COSMOS LIMITED
25.	CROWN-BERGER (K) LTD.
26.	EAST AFRICAN BREWERIES LIMITED
27.	EAST AFRICAN CABLES LTD.
28.	EAST AFRICAN PORTLAND CEMENT
29.	ECOLAB EAST AFRICA (K) LTD
30.	ENERGY REGULATORY COMMISSION

31.	EXCEL CHEMICAL LTD.
32.	FARMERS CHOICE LTD
33.	FORBES MEDIA ELECTRONIC ADVERTISING SOLUTIONS
34.	HYDRAULIC HOSE & PIPE MANUFACTURERS LTD
35.	KAPA OIL REFINERIES LIMITED
36.	KENYA ELECTRICITY GENERATING COMPANY LIMITED.
37.	KENYA FLUORSPAR COMPANY LTD (KFC)
38.	KENYA POWER AND LIGHTING COMPANY LTD
39.	MAKIGA ENGINEERING SERVICE LIMITED
40.	MICROSOFT EAST AFRICA
41.	ORBIT CHEMICAL INDUSTRIES LTD
42.	PACKAGING INDUSTRIES LTD
43.	RAMCO PRINTING WORKS LIMITED
44.	ROSEWOOD OFFICE
45.	STEEL STRUCTURES LIMITED
46.	TOP TANK
47.	UNGA FARM CARE (EA) LTD
48.	UNGA GROUP LTD.
49.	UNILEVER KENYA LIMITED
50.	KIM-FAY E.A LIMITED
51.	EAST AFRICA GLASSWARE MART LTD
52.	OCTAGON EXPRESS (KENYA) LIMITED
53.	POLYPIPES LTD
54.	UNGA GROUP LTD
55.	SUDI CHEMICALS (KENYA LTD)

Source: Kenya Association of Manufacturers (2015)