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SCHOOL OF MECHANICAL AND INDUSTRIAL ENGINEERING

Improving Supply Chain Integration for Competitiveness in the African Continental Free Trade Area - The case of Ethiopian manufacturing Industries in Addis Ababa

-By-

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A Thesis submitted to the School of Graduate Studies of Addis Ababa University in partial fulfillment of the Degree of Masters of Science in Industrial Engineering

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Improving Supply Chain Integration for Competitiveness in the African Continental Free Trade Area - The case of Ethiopian manufacturing Industries in Addis Ababa

By: Teshome Tessema

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DECLARATION

I hereby declare that the work which is being presented in this thesis entitled "**Improving Supply Chain Integration for Competitiveness in the African Continental Free Trade Area - The case of Ethiopian manufacturing Industries in Addis Ababa"** is original work of my own, has not been presented for a degree in any other university and all the resource of materials used for this thesis have been duly acknowledged.

_____ _____

Teshome Tessema **Date**

This is to certify that the above declaration made by the candidate is correct to the best of my knowledge.

_____ _____

Dr. Gulelat Gatew (Advisor) Date

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Abstract

The manufacturing industries in developing countries have been facing unprecedented competitiveness pressure generated by different new business trends. To cope with these pressures, the manufacturing industries had tried to upgrade their operations by using different manufacturing techniques. Despite these efforts; the manufacturing industries have not yet made their share of markets. Like in any other developing country, manufacturing industries in Ethiopian are facing the same challenge. A number of causes for the low performance of the Ethiopian manufacturing industries had been identified by different researchers. One of the causes identified by these researchers was a weak Supply Chain Integration (SCI).

In the near future, on top of the existing challenges of the Ethiopian manufacturing firms, other challenges from the African Continental Free Trade Area (ACFTA) are going to emerge. One of these challenges could be fierce competition from African products that enter into Ethiopia with very low border tariffs and import duties. Unless the Ethiopian manufacturing firms get prepared in every aspect to compete in the free market, their existence would be in question. With this understanding, this research was conducted with the main objective of identifying the aggregate causes of weak SCI, identifying challenges that could emerge with ACFTA, and finally developing a model that can help to improve the SCI for competitiveness in ACFTA. The main reason for selecting the SCI model as a technique among the different techniques was that effective supply chain management (SCM) and supply chain integration (SCI) are becoming increasingly critical factors for business success. Besides, the issue of competitiveness in ACFTA is the issue of competitiveness in the Supply chain.

The primary data for this research was collected from 27 managers of 14 different manufacturing firms by administering a questionnaire. Secondary data was also collected from different online sources. The data collected were more qualitative which were analyzed with qualitative data analyzing procedure. The quantitative data were also analyzed using Excel tools.

In the end, the research has identified the aggregate causes for the weak SCI of Ethiopian manufacturing industries; have also identified possible Challenges that could emerge with ACFTA. At last but not least, a SCI model had been developed. Finally, the researcher has found out that the benefits of SCI and the benefits of ACFTA to be similar, which led the researcher to conclude that SCI and ACFTA are complementary. In other words, an efficient SCI helps for competitiveness in ACFTA; in reverse the ACFTA also supports the improvement of SCI.

Key words: ***Supply chain, Supply Chain Management, Supply Chain Integration (SCI), African Continental Free Trade Area (ACFTA), Manufacturing industries competitiveness, SCI challenges, SCI model***

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List of Acronyms

AAU	Addis Ababa University
ACFTA	African Continental Free Trade Area
ASEAN	Association of South-east Asian Nations
AU	African Union
CFTA	Continental Free Trade Area
COGS	Cost of Goods Sold
COMESA	Common Market for Eastern and Southern Africa
DC	Distribution center
EI	Economic Integration
ERP	Enterprise resource Planning
FDI	Foreign Direct Investment
FTA	Free Trade Area
FTZ	Free Trade Zone
GDP	Gross Domestic Product
GTP	Growth and Transformation Plan
ICT	Information Communication Technology
NAFTA	North American Free Trade Area
REC	Regional Economic Communities
SADC	South African Development Community
SC	Supply Chain
SCC	Supply Chain Council
SCI	Supply Chain Integration
SCM	Supply Chain Management
SCOR	Supply Chain Operations Reference
TFTA	Tripartite Free Trade Area
UN	United Nation
US	United States
WIP	Work In Process

CHAPTER ONE

INTRODUCTION

1.1. Background and Justification

The manufacturing industries in developing countries have been facing unprecedented competitiveness pressure generated by the new business trends such as globalization, new technological developments and, strategic alliances for business partnership etc. To cope with these pressures, the manufacturing industries have tried to upgrade their operations by using different manufacturing techniques such as Total Quality Management, Business Process Reengineering, Lean Technology, and others. Despite these efforts, the manufacturing industries have not yet made their share of markets. This drives industries to get additional efficiency from their production systems. Effective supply chain management (SCM) and supply chain integration (SCI) are becoming increasingly critical factors for business success. The integration of Supply Chain (SC) members can significantly support the manufacturing industries to face the constantly changing competitiveness scenarios (Betegeorgise, Thobe, & Seifert, 2014).

Different scholars and institutes define competitiveness differently. According to Balkyte and Tvaronaviciene (2010) cited in (Tigabu D. Getahun, 2018) , competitiveness is defined as the ability of firms to produce and sell goods and services of the right quality at the right price and time. According to the world economic forum / WEF report of the year 2016, Ethiopia ranked 109th out of 140 countries in overall manufacturing competitiveness (Tigabu D. Getahun, 2018).

Ethiopia is one of the developing countries whose manufacturing industries registered low performance in the past years. Although Ethiopia has emerged as one of Africa's fastest-growing economies, its manufacturing sector is still far from being an engine of growth and economic transformation (Oqubay, 2018) . The Ethiopian manufacturing industry has been operating at an average of 43% capacity utilization and growing at a rate less than 11% - far lower than the targeted plan of 22% under the GTP-I pe-

riod (Getahun, A.Kebedew, Gaëlle, & Sima, 2018) . A number of reasons for low performance of the Ethiopian manufacturing industries have been identified by different researchers. One of the reasons that this study shall focus on is the weak supply chain integration (Eshetie, 2018). This is because, Supply Chain Integration considers all actors in the upstream and downstream of the supply chain that play a major role in the success or failure of a manufacturing firm and the researcher believes that solving this challenge (weak supply chain integration) would solve most of other challenges of the manufacturing sector.

Supply chain integration (SCI) is one of the fundamental aspects of supply chain management processes in aligning and coordinating the resources, decisions, methods, business processes and employees of the different stakeholders in the supply chain to improve their ability to work together in a continuous improvement process (Palomero & Chalmeta, 2014).

In near future, on top of the existing challenges of the Ethiopian manufacturing firms, other challenges from the African Continental Free Trade Area (ACFTA) are going to emerge. ACFTA is the first agreement of its kind to bring together all 55 African countries under a single Free Trade Area (FTA), with a focus on creating a common market for goods, services and investment and allowing the free movement of persons (Parshotam, 2018) . When the agreement is put in practice, it is a mere fact that the Ethiopian business corridors will be opened for African products with very low border tariffs and import duties.

According to major economic sources, Ethiopia will be Africa’s star performer, with its industry continuing to improve in line with the country’s economic expansion. With a population of over 107 million, it is definitely a market to target. Ethiopia’s economy is projected to grow by at-least 7-9% in 2020. Ethiopia is Africa's oldest independent country and the fastest growing economy today. With a large population and an average annual economic growth rate of 10% over the past 15 years, it presents a unique opportunity. As one of the fastest growing economies in the world, Ethiopia’s economy has achieved robust, broad-based growth averaging 10.3% a year since

2006/07, compared to a regional average of 5.4%. The fast economic growth, a conducive investment climate, large market size and high-level government commitment towards FDI attraction have contributed to the growth of FDI inflow into Ethiopia-making the country the second largest recipient of FDI in Africa. East Africa, the fastest-growing region in Africa, received $7.6 billion in FDI, of which Ethiopia absorbed nearly half and is now the second largest recipient of FDI in Africa after Egypt (IMF, 2018) (World Bank, 2018).

These all facts will make Ethiopia to be a choice of most African countries for exporting their products and this shall definitely result in flooding Ethiopian market with imported products from Africa through the ACFTA. Unless the Ethiopian manufacturing firms get prepared in every aspect to compete in the free market, their existence would be in question. One of the aspects that Ethiopian manufacturing firms need to get prepared to compete in ACFTA is improving their supply chain integration status. That is why this research paper focused on ways of improving SCI in relation to ACFTA.

In the literature reviewed, the researcher noted that the SCI level of Ethiopian Manufacturing firms is weak (Eshetie, 2018). Many researchers did their study on identifying the challenges and the causes of low performing SCI, of individual manufacturing firms, but way of improving the weak SCI has not been discussed (Abate, 2018), (Atnafu, 2018), (Betegeorgise, Thobe, & Seifert, 2014).

On the other hand ACFTA is a new phenomenon for most African countries including Ethiopia though similar low level regional agreements such as Common Market for Eastern and Southern Africa (COMESA) are practiced. ACFTA has not been implemented yet and due to this reason its actual benefits and challenges have not been realized. In addition, as far as knowledge of the researcher is concerned the ACFTA has not been discussed in connection with SCI of Ethiopian manufacturing firms.

Therefore, having these gaps of the literature, this study was conducted in filling the gaps by aggregating the SCI challenges or causes of the weakness of SCI and identifying challenges that will emerge together with ACFTA's implementation. Finally, a

general SCI model that can be used to improve the existing supply chain integration status of the Ethiopian manufacturing firms in ACFTA was developed.

The data for the study was collected from both primary and secondary sources. The primary data was collected by administering a questionnaire to few manufacturing industries through e-mail and telegram. The secondary data was collected from the electronic sources that discuss about SCM, SCI, ACFTA and FTA and other related online sources. The research type was descriptive and the analysis was more of qualitative with elaborative quantitative data. After the analysis, a model that can help to improve the SCI of Ethiopian manufacturing firms in a way of overcoming the challenges of ACFTA is developed.

1.2. Statement of the Research Problem

The Heads of State and Government of the Member States of the African Union signed and sealed an agreement to establish the "African Continental Free Trade Area (ACFTA)" in Kigali, on the 21st day of March in the year 2018 (Ighobor, 2018). The operational phase of this African Continental Free Trade Area, ACFTA had been launched, on 7 July 2019 in Niamey -Niger (ECA, 2019).

The objective of this Free Trade Agreement (FTA) is boosting and integrating intra-Africa Market. Accordingly, the signed member States had agreed to remove 90 percent of their tariffs on goods over a period of between 5 and 15 years, depending on whether a country is classified as developing or least developed (United Nations, 2018). Ethiopia is one of the African countries that signed and ratified the agreement. When this agreement is put in practice, it will bring its own challenges to the Ethiopian market, especially to the manufacturing sector. One of the challenges is that the Ethiopian business corridor will be opened for African products with very low border tariffs and import duties. This will result in flooding Ethiopian market with imported products from Africa.

On the other hand, it was noted that most Ethiopian manufacturing industries are not competitive, productivity is low, quality often does not meet international standards and their supply chain integration is weak (Eshetie, 2018). Unless the Ethiopian man-

ufacturing firms prepare themselves to compete in the free market, their existence would be in question when African products start to enter to Ethiopian border with low tariffs. Therefore, the low capability of Ethiopian Manufacturing firms to compete in ACFTA due to their weak supply chain integration is the main problem that this research tried to address.

1.3. Research Questions

1. What are the main challenges that ACFTA will bring against the Ethiopian manufacturing industries?
2. What are the main causes for the weaknesses of SCI in the Ethiopian manufacturing industries?
3. How the Supply Chain can be integrated to improve the competitiveness of Ethiopian manufacturing firms in the ACFTA?

1.4. Research Objectives

General Objective of the Research

The general objective of this research is to develop a general SCI model that can be used to improve the SCI weaknesses of the manufacturing industries in Ethiopia and thereby enhance the competitiveness in ACFTA.

Specific Objectives

1. To identify the main challenges that can result from ACFTA against the Ethiopian manufacturing industries.
2. To identify the main causes of weaknesses of SCI of the Ethiopian manufacturing industries.
3. To investigate ways of improving the SCI and propose a SCI model that can be used to improve the competitiveness of Ethiopian manufacturing industries in ACFTA.

1.5. Significance of the Study

The audiences of this study are expected to be the manufacturing sector owners and

managers in particular and the business community in general. It helps the business communities to understand the effect of ACFTA on their business supply chain and helps them to improve their SCI and get prepared ahead of the enactment of ACFTA. It also triggers researchers to study more on the impacts of ACFTA in other business areas such as Services sector, Agricultural sector, Construction sector, etc.

1.6. Scope of the Study

The study is delimited in developing a model that can help the Ethiopian manufacturing industries located in Addis Ababa to improve their External supply chain integration in a way of overcoming the challenges from ACFTA and gaining from the opportunities that ACFTA shall bring.

1.7. Limitation of the Study

Data collection of this research was conducted during the season of Corona Virus (COVID-19) spread in Ethiopia, especially in Addis Ababa. Due to the virus, state of emergency was declared and collecting primary data was really a challenge since many manufacturing industries were ceasing their operation. Moreover, physically appearing in manufacturing industries for data collection was a challenge. For this reason, the researcher could not distribute as many questionnaires as required. In fact the researcher was forced to change the plan of physically distributing hard copies of the questionnaire to respondents to sending via e-mail and other Medias such as Telegram.

1.8. Organization of the research paper

The first chapter gives a brief background introduction to the concept of competitiveness, supply chain integration, African Continental Free Trade Area and the reasons for conducting the research based on the gaps identified in the literature. The second chapter contains a literature review of the research work performed in the areas of supply chain and supply chain integration and FTAs. The third chapter deals with the methodology the study followed. The fourth chapter presents summary of data collected, analysis and discussion. The fifth chapter provides the conclusions and recommendation.

CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction

As the topic of the research is about improving the supply chain integration of Ethiopian manufacturing industries for competitiveness in the African Continental Free Trade Area, the literature reviewed has two main parts that cover the two main areas of the topic. The first part is about the Supply Chain Integration and the Second Part is about the African Continental Free Trade Area (ACFTA). The researcher used trustworthy sources of journal articles and other online sources for the literature review.

Both parts of the literature review discussed about the theories and concepts in their respective areas. Moreover, the researches that had been done on the supply chain integration status of manufacturing industries in Ethiopia had been reviewed separately. The SCI of Ethiopian manufacturing firms for success in ACFTA had also been discussed and summarized at the end of the review.

2.2. Ethiopian manufacturing Industries

In ISIC Rev.4, 2008 (as cited in (Endale, 2011)), manufacturing is defined as a physical or chemical transformation of material components into new products. The definition also includes the assembly of component parts of manufactured products as a manufacturing activity whether the production is done at factory or home, sold at retail or wholesale, and whether power driven machine is used or not. Success experiences of developed countries show that manufacturing is the pillar behind a sustained growth (Endale, 2011).

Although Ethiopia has emerged as one of Africa's fastest-growing economies, its

manufacturing sector is still far from being an engine of growth and economic transformation (Oqubay, 2018) . One of the reasons for this can be low capacity utilization of the manufacturing sector. The Ethiopian manufacturing industry has been operating at an average of 43% capacity utilization and growing at a rate less than 11% - far lower than the targeted plan of 22% under the GTP-I period (Getahun, A.Kebedew, Gaëlle, & Sima, 2018) . The growth of the manufacturing sector within industry is essential to build national technological capacity, industrial capability and create broad based job opportunity and improve income. In addition to this, the development of the manufacturing industry helps to improve the total factor productivity and competitiveness of the overall economy and its trickledown effect to up and down the supply chain. Because of existence of a number of comparative advantages in the country and to strengthen its competitiveness, the Government of Ethiopia offered multiple incentives for the growth of the manufacturing sector. Though the manufacturing sector is a way out for sustainable economic development its growth is not without challenges (Eshetie, 2018).

Some of the challenges of the Ethiopian manufacturing sector collected by the researcher of this paper from different research papers are:

- The sector is dominated by small firms and resource-based industries, low-value and low technology products, and weak inter-sectorial and intra-sectorial linkages (Oqubay, 2018)
- The manufacturing sector's export orientation has been low and stagnant (Oqubay, 2018)
- It currently plays a marginal role in employment creation, exports, and output, and falls short on stimulating domestic linkages (Oqubay, 2018)
- Unskilled labor forces with limited experience (Eshetie, 2018)
- Limited infrastructure (Eshetie, 2018)
- External pressure from global market (Eshetie, 2018)
- Shallow industrial research and development activities (Eshetie, 2018)
- Underdeveloped market information system (Eshetie, 2018)
- Problems related to trade logistics and limited promotion made on the resources and other opportunities. (Eshetie, 2018)
- Low productivity (Eshetie, 2018)

- Quality often does not meet international standards (Eshetie, 2018)
- **The supply chain integration is weak** (Eshetie, 2018)
- Institutions in the lines ranging from handling, licensing to providing logistical support of export of manufacturing industries require international standard of efficiency (Wakiaga, Kibret, Onoch, & Bwalya, 2017)
- Misallocation of human capital: Currently, with the booming of the construction sector, daily wage in the sector is by far greater than in the manufacturing as well as the service sector because of this the human labor prefer to work in other sectors than the manufacturing sector (Wakiaga, Kibret, Onoch, & Bwalya, 2017)

Of all these challenges described above, this research focused only on the "**weak supply chain integration**" of Ethiopian manufacturing firms. This is because, Supply Chain Integration considers all actors in the upstream and downstream of the supply chain that play a major role in the success or failure of a manufacturing firm and the researcher believes that most of other challenges of the manufacturing sector described above are interlinked with supply chain and solving this challenge (Weak supply chain integration) would solve most other challenges of the sector. Besides, effective supply chain management (SCM) and supply chain integration (SCI) are becoming increasingly critical factors for business success.

On the other hand, as stated in (Palomero & Chalmeta, 2014), to remain competitive, enterprises have begun to rethink many of the management models that, until now, they have considered valid. This change in outlook can be explained by a number of different factors, the most important of which include: (1) the fact that enterprises are finding themselves almost forced to open up to international markets due to the phenomenon of globalization; (2) the increasing demand from customers for a greater variety of products, with a high level of quality, short delivery times, very competitive prices and high quality aftersales service; (3) the new possibilities in business management afforded by computer support tools and (4) the deep recession suffered by financial markets around the world. Within this framework, one of the areas in which important efforts are being made to cut costs and improve efficiency is in the relations

the firm has with its stakeholders in the supply chain.

2.3. Supply chain

A supply chain is the collection of processes and resources required to make and deliver a product to the final customer (Rajgopal, 2019). When viewed as a process, a supply chain is a sequence of (decision making and execution) processes and (material, information and money) flows that aim to meet final customer requirements and take place within and between different supply chain stages.

The supply chain not only includes the manufacturer and its suppliers, but also (depending on the logistics flows) transporters, warehouses, retailers, and consumers themselves. It includes, but is not limited to, new product development, marketing, operations, distribution, finance, and customer service (Vorst, 2004).

Supply chain can be viewed as having three integrated segments:

- Upstream, where sourcing or procurement from external suppliers occurs
- Midstream (or Internal), where manufacturing or assembly takes place
- Downstream, where distribution (often by external distributors) and sales to the customer take place.

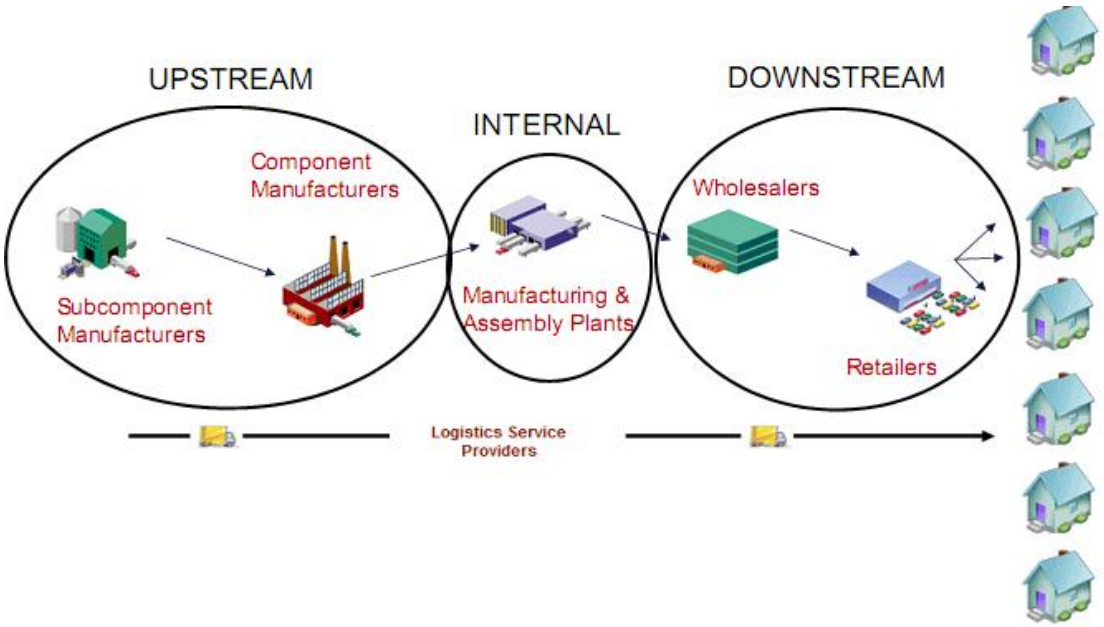


Figure 1 Typical supply chain links and segments *(source:* (Rajgopal, 2019)*)*

2.3.1. Flows in a supply chain

There are three major flows in a supply chain. These are: material flow, information flow and money (cash) flow. The Material flows from upstream to downstream and the money flows in the reverse direction from the downstream to the upstream. Information flows in both directions. Broadly speaking, a supply chain can focus on either responsiveness or efficiency related to these flows (Rajgopal, 2019). Responsiveness has two determinants: 1.The speed with which the supply chain can respond to a customer's requirements and expectations 2.The flexibility with which it can handle changes in these requirements and expectations. Efficiency refers to the cost at which a supply chain can accommodate customer requirements.

2.3.2. Supply chain drivers

SCM consists of five drivers. Each of these drivers can be developed and managed to emphasize responsiveness or efficiency. As one investigates how a supply chain works, he learns about the demands it faces and the capabilities it needs to be successful (Sukrit Pal, 2017). The five drivers are described below:

i. **Production** – This driver can be made very responsive by building factories that have a lot of excess capacity and use flexible manufacturing techniques to produce a wide range of items. To be even more responsive, a company could do its production in many smaller plants that are close to major groups of customers so that delivery times would be shorter. If efficiency is desirable, then a company can build factories with very little excess capacity and have those factories optimized for producing a limited range of items. Further efficiency can also be gained by centralizing production in large central plants.

ii. **Inventory –** Responsiveness can be enhanced by stocking high levels of inventory for a wide range of products. Additional responsiveness can be gained by stocking products at many locations so as to have the inventory close to customers and available to them immediately. Economies of scale and cost savings can be gotten by stocking inventory in only a few central locations such as regional distribution centers (DCs).

iii. **Location/Warehousing** – A location decision that emphasizes responsiveness would be one where a company establishes many locations that are close to its customer base. Efficiency can be achieved by aggregating its inventory to a central location.

iv. **Transportation –** Responsiveness can be achieved by a transportation mode that is fast and flexible such as trucks and airplanes. Efficiency can be emphasized by transporting products in larger batches and doing it less often. The use of transportation modes such as ship, railroad, and pipelines can be very efficient.

v. **Information –** The power of this driver grows stronger each year as the technology for collecting and sharing information becomes more wide spread, easier to use, and less expensive. Information, much like money, is a very useful commodity because it can be applied directly to enhance the performance of the other four supply chain drivers. High levels of responsiveness can be achieved when companies collect and share accurate and timely data generated by the operations of the other four drivers.

2.4. Supply chain management (SCM)

SCM is the integrated planning, co-ordination and control of all business processes and activities in the supply chain to deliver superior consumer value at less cost to the supply chain as a whole whilst satisfying requirements of other stakeholders in the supply chain (Vorst, 2004). Supply chain management (SCM) has become a strategic goal and is now seen as a key competitive factor that is essential to be able to compete in markets that are increasing (Palomero & Chalmeta, 2014). For this reason, Lambert and Cooper (2000) cited in (Vorst, 2004), distinguished three key decisions in SCM, summarized in the conceptual framework below (Figure 2). The framework emphasizes the interrelated nature of SCM and the need to proceed through several steps to design and successfully manage a supply chain. Each step is directly related to the supply chain objectives, i.e. the degree to which a supply chain fulfills end-user requirements concerning the key performance indicators at any point in time, and at what total cost. Key Performance Indicators (KPIs) refer to a relatively small number

of critical dimensions which contribute more than proportionally to the success or failure in the marketplace (Christopher, 1998).

KPIs compare the efficiency and/or effectiveness of a system with a norm or target value. A well-defined set of supply chain performance indicators will help establish benchmarks and assess changes over time. A good example is the Supply Chain Operations Reference-model (SCOR) developed by the Supply-Chain Council (SCC) as the cross-industry standard for SCM. SCOR provides an integrated, heuristic approach for supply chain improvement via (i) the modeling of business processes, (ii) the definition of SCM metrics for evaluating the supply chain and rapidly identifying high value opportunities and (iii) the identification of best practices to provide a candidate list of improvement options (Vorst, 2004).

SCOR is a process reference model that provides a language for communicating among supply-chain partners. As an industry standard, SCOR helps management focus across inter-company supply chains. SCOR is based on five Distinct Management Processes: Plan, Source, Make, Deliver and Return (Supply chain council, 2002)
SCOR spans:

- All customer interactions, from order entry through paid invoice
- All product (physical material and service) transactions, from the supplier's supplier to the Customer's customer, including equipment, supplies, spare parts, bulk product, software, etc.
- All market interactions, from the understanding of aggregate demand to the fulfillment of each order

SCOR does not attempt to describe every business process or activity, including: Sales and marketing (demand generation), Research and technology development, Product development, some elements of post-delivery customer support. Links can be made to processes not included within the model's scope, such as product development, and some are noted in SCOR. SCOR assumes but does not explicitly address: Training, Quality, Information Technology (IT), Administration (non SCM) (Supply chain council, 2002)

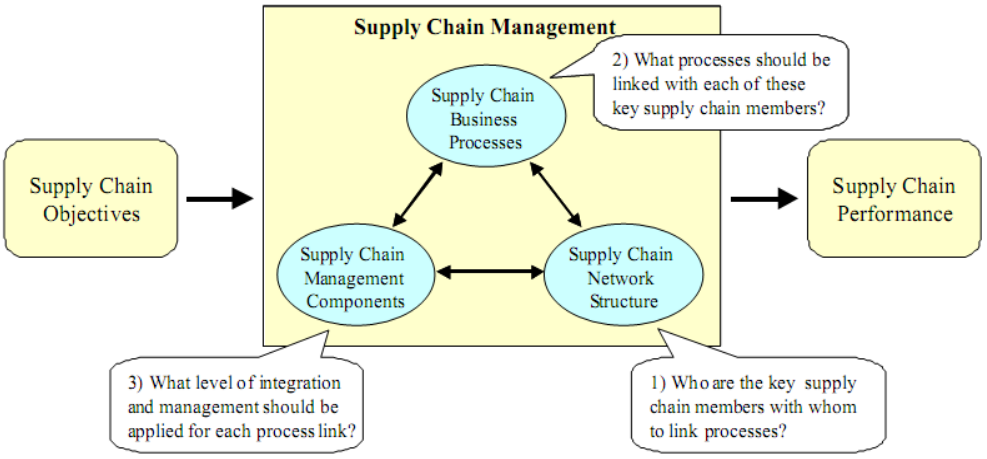


Figure 2 Key decisions in SCM **adapted from Lambert and Cooper 2000.**

By analyzing goals of each individual organization and by identifying market requirements, integrated KPIs can be defined and norms established (Vorst, 2004). The three key decisions are:

1. **Who are the key supply chain members with whom to link processes?**

The first step in analyzing and redesigning a supply chain is to determine the organizations that are part of the supply chain under investigation. The key is to sort out which members are critical to the success of the company and the supply chain – in line with the supply chain objectives - and, thus, should be allocated managerial attention and resources.

2. **What processes should be linked with each key member?**

Successful SCM requires a change from managing individual business processes within one Organization to integrating activities over organizations into key supply chain processes. Lambert and Cooper (2000) have identified eight key business processes that could be integrated with the key members in the supply chain (see Table 1).

S.N.	Business Process	General Description
1	**Customer relationship management**	Specifying service level agreements with key customers

2	**Customer service management**	Providing the customer with real-time information on promised shipping dates and product availability through interfaces with the organizations' production and distribution operations
3	**Demand management**	Balancing the customer 's requirements with the firms supply capability
4	**Order fulfillment**	Delivering products and meeting customer need dates
5	**Manufacturing flow management**	Pulling product through the plant based on customer needs
6	**Procurement**	Developing strategic plans with suppliers to support the manufacturing flow management process and development of new products
7	**Product development and commercialization**	Customers and suppliers must be integrated into the product development process in order to reduce time to market
8	**Return Process**	Aligning process to realize an efficient return of re-usable items

Table 1 Business Processes that could be integrated in supply chain

SCM literature suggests several redesign strategies to improve the effectiveness and efficiency of these business processes in the supply chain. Van der Vorst and Beulens (2002) as cited in (Vorst, 2004) has identified a generic list of SCM redesign strategies to facilitate the redesign process and accomplish joint supply chain objectives. These are the following:

- Redesign the roles and processes performed in the supply chain (e.g. change or reduce the number of parties involved, re-allocate roles and eliminate non-value-adding activities);
- Reduce customer order lead times (e.g. change the position of the decoupling point, implement ICT systems for information exchange and decision support, reduce waiting times, increase manufacturing flexibility);
- Create information transparency (e.g. establish an information exchange infrastructure in the supply chain and exchange demand/supply/inventory or WIP information, standardize product coding);
- Synchronize logistical processes to consumer demand (e.g. increase execution frequencies of production and delivery processes, decrease the lot sizes); and

- Co-ordinate and simplify logistical decisions in the supply chain (e.g. co-ordinate lot sizes, eliminate human interventions, differentiate and simplify products, systems and processes).

Van der Vorst and Beulens (2002) propose that in order to identify the most effective strategies in a specific supply chain one should focus on the identification and management of the sources of uncertainties in the supply chain's decision-making processes.

3. What level of integration and management should be applied to each process linkage?

Lambert and Cooper (2000) distinguish two groups of management components. The first is the physical and technical group, which includes the most visible, tangible, measurable and easy-to-change components. The second group, the managerial and behavioral components, defines the organizational behavior and influences how the physical and technical management components can be implemented. If the managerial and behavioral components are not aligned to drive and reinforce an organizational behavior supportive to the supply chain objectives and operations, then the supply chain will likely be less competitive and profitable.

2.5. Supply chain Integration

One of the fundamental aspects involved in accomplishing SCM is to achieve supply chain integration (SCI) which consists in aligning and coordinating the resources, decisions, methods, business processes and employees of the different stakeholders in the supply chain to improve their ability to work together in a continuous improvement process (Palomero & Chalmeta, 2014). Integration, as pointed out by the Council of Supply Chain Management Professionals (2005), allows the entire supply chain to be managed as a single process. In an integrated supply chain, all the functions that make up the supply chain are viewed as a single entity rather than separately as individual functions (Palomero & Chalmeta, 2014) .

As reported by Chen et al. (2004) cited in (Palomero & Chalmeta, 2014), SCI yields different kinds of benefits that include reduced costs, increased revenue, enhanced (end) customer satisfaction, improved on time delivery, reduced supply chain costs, reduced time in the provisioning and quality control processes, reduced work in process and final products stocking, automated processes, standardized production, improved payment process, improved distribution process and improved global competitiveness, improved services, improved quality, improved pipeline visibility (that is the visibility of each of the activities of the supply chain by each of the partners), and improved demand visibility by each of the partners, and so forth.

In order to fully benefit and implement supply chain management concepts, it is important for the firms to integrate efficiently with their suppliers, customers, warehouses, and other intermediate value-adding partners. Different research results have suggested that the higher level of integration with suppliers and customers in the supply chain benefits at greater extent (Betegeorgise, Thobe, & Seifert, 2014).

As cited by (Betegeorgise, Thobe, & Seifert, 2014), Steven 1989 has identified four stages of supply chain integration.

1. The first stage represents the fragmented operations within the individual company.
2. The second stage is limited to integration between adjacent functions, for example, purchasing and materials control.
3. The third stage is the internal integration of the end to-end planning in the individual company.
4. Finally, the last stage is the true supply chain integration including upstream to suppliers and downstream to customers.

This study focuses on this final stage of integration (External Integration). For the success of the external integration, the other three integrations stages are very important. However, as objective of the research is to improve competitiveness in ACFTA, where competition would be with African manufacturers, focusing on the external integration is preferred.

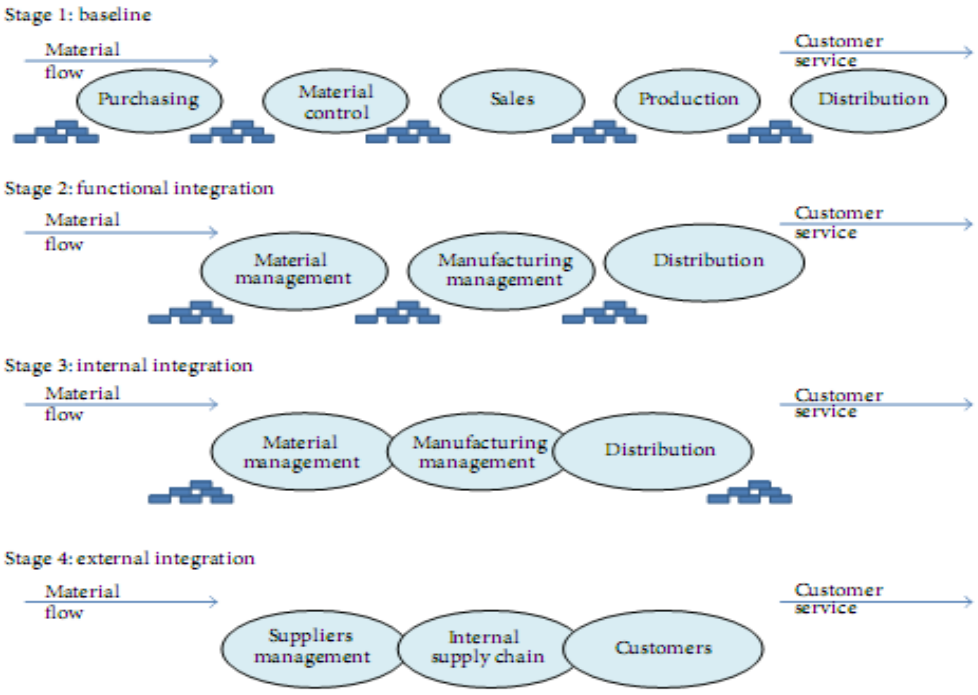


Figure 3 stages of Supply chain integration **Source: (Betegeorgise, Thobe, & Seifert, 2014)- original source Steven-1989**

In the literature surveyed, the potential benefits of integrated supply chain are identified.

These are:

- Lowering the cost of labor
- Cutting costs
- Integrating tasks and sharing information
- Generating and identifying new business opportunities
- Collaborating and coordinating of all the components of the supply chain
- Product innovation lead times reduction
- Improvements in inventory management
- Reducing cost of new product development
- Improved programming and follow-up
- Further performance improvements
- Significant improvements in both customer and supplier services
- Generation of a coordinated work flow
- Sales, purchases, warehousing and production departments can share and process information simultaneously
- Increased access to financial support
- Clear improvements in the productivity of the operational logistics system
- Generation of proactivity with regard to the process of SCI

2.6. SCI status in Ethiopian manufacturing industries

In the following section the researcher summarized the literature written on the SCI of Ethiopian manufacturing industries, especially on the external integration.

(Betegeorgise, Thobe, & Seifert, 2014) Selected seven Ethiopian manufacturing industries engaged in the production of different products and studied the level of SC integration in each of these manufacturing industries. These industries were producers of Alcohol, Textile, Wood, Food, Garment, Leather & Leather garment and Ceramics. The integration level was investigated based on four dimensions: Integration with in a firm, supplier relationship and integration, customer relationship and integration and the existing enablers and challenges.

The level of integration with in the firms was investigated based on the information exchange level and the inventory management policy. Accordingly, the researchers found out that the firms were practicing traditional ways of information exchange methods (letter, telephone and verbal instruction). The inventory management policy was also governed by high stock level for long period of time to control supply and demand uncertainty.

Supplier relationship and integration was found out to be challenged by different factors depending on whether the supplier is local or international. Some of the main challenges in this regard were inconsistency in raw material quality, late delivery, loyalty, and price fluctuation. The means of communication was also limited to the use of telephone, fax and emails.

With regard to customer relationship, the researchers found out that most of the firms relied on walk-in customers who had little interaction to the improvement of the product. The means of communication was limited to the traditional ones, but some were using emails. The relationship with customers has turned to be a strategic issue for today's companies.

With regard to the information exchange as one of the enablers for the SC, the researcher found out that, simple communication system such as telephone, fax, and e-mail was used for communicating with suppliers. State-of-the-art electronic business (e-Business) was not started yet in any place. Most of the companies had no company website even with primary information about their product. Three companies out of seven had a plan to use ERP system to create e-Business via Internet. Furthermore, the information exchange system used paper which was commonly used and larger space was needed for keeping the record because there were many copies of purchasing orders for each order. Most companies were planning to develop the paperless system by working with networked computer and linked the departments' process via local network and Internet. Thus, the use of information technology among the company, customers, and suppliers was the issue that had to be improved.

In general, the study revealed that the degree of integration was low when it comes to Ethiopian firms but there were some promising initiatives undergoing. one of the major obstacles to fully integrate materials and information flows across the supply chain lies in the inadequacy of the Internal management systems of the individual firms—for example, fragmented information flows, lack of integration amongst different company's departments/functions, low level of rationalization, and standardization in operational processes. In addition, the findings had shown that the firms had limited understanding and awareness of the importance about external integration with suppliers and customers.

Daniel Atnafu, in his research paper (Atnafu, 2018) on Ethiopian soap and detergent manufacturing companies with the main objective of investigating the challenges of supply chain integration found out that inflexible organization system, lack of channel trust and commitment, resistance to change and lack of top management commitment were supply chain integration challenges in soap and detergent manufacturing firms.

Alazar Abate, (Abate, 2018) studied the effect of SCI on the operational performance of an Ethiopian food company and found out that all supply chain integration types (internal, supplier and customer integration) had a direct significant effect on the op-

erational performance of the organization. In order to enhance the operational performance, Creation of a platform that drives to frequent interaction with selected supplier collaborates, provision of training on new production process to internal workers and creation of frequent departmental contact within the internal functions were advised. In addition, adopting flexible production techniques based on market demand, sharing adequate information with strategic customers were recommended to the organization.

Mitiku Solomon in his research (Solomon, 2018) with the objective of investigating the supply chain integration of an Ethiopian metals factory through inbound logistic found out that all the dimensions of an inbound logistics (supplier integration, Inventory Management, Visibility, Transportation Management and Information Technology) used were positively and linearly correlated with upstream integration. The findings of the study indicated that the supply chain upstream integration of the metal factory was low. The highest value of poor performance was for the effect of level of low inventory management experience followed by information technology. The level of visibility was low followed by transport management and level of supplier integration was the last one. This showed that the level of supply chain integration was low in the company.

Salem Samuel (Samuel, 2012) in her research with a major objective of investigating the effect of supply chain integration on Ethiopian garment industry's performance and provide recommendations which could help to improve the product quality and competitive position performance of the sector. Data were collected from 29 garment industries using questionnaire and quantitative analysis was conducted .The evidence from this study indicated that Ethiopian garment industry had a problem of quality and competitive advantage. The main reason behind this poor performance was lack of supply integration and customer integration within the garment industry. Since all the independent variables (supply, customer, and internal integration) had positive correlation with the dependent variables (product quality and competitive advantage), they had the potential to affect the quality and competitive advantage of the sector. This means, the higher the garments performance of supply chain integration, the higher they can improve their product quality and competitive advantage.

2.7. Free Trade Areas (FTA)

A Free Trade Zone (FTZ), also called Foreign Trade Zone, Duty Free Zone or Special Economic Zone, is a designated physical site that is considered to be outside formal customs authority and, therefore, allows for free trade with countries across the world. In FTZs, which are generally located at or near water ports or airports, 'nondomestic merchandise may be stored, exhibited, processed, or used in manufacturing operations without being subjected to duties and quotas until the goods or their products enter the customs territory of the zone country'. Free Trade Zones (FTZs) may help supply chains improve their bottom line while generating economic development to their geographical regions (Benton, Napier, & Ülku, 2016)

Decades before, this concept of FTZ expanded into Free Trade Areas (FTA). FTAs today are legally binding agreements between two or more countries to reduce or eliminate barriers to trade and facilitate cross-border movement of goods and services between the territories of the parties. Lowering trade barriers helps businesses access new sources of raw materials reduce cost of goods sold and boost market reach. Trans-oceanic trade and commerce are the primary reasons for the economic and social development of any region. FTAs can deliver such enhanced trading opportunities that can contribute to economic growth because participating countries co-operate to reduce or drop border tariffs and import duties, making it beneficial for the member countries to engage in trade with them. This gradually paves the way for their markets to flourish with the free movement of goods and service (Cheung, 2018)

The Free Trade Area (FTA) is an essential component and stage of economic integration (EI) which the Regional Economic Communities (RECs) and African Union (AU) are working towards achieving. The FTA ensures almost, if not complete, perfect mobility of portable production resources, especially tangible goods and it leads to achievement of custom union. The EI, in ascending order, begins with independent economy, preferential trade area, free trade area, customs union, common market, monetary union, fiscal union and political union (Economic Online, 2017). With the Continental free Trade Area (CFTA), Africa is at the third stage and it is hoped that once it is achieved, it will lead to the realization of customs union in line with its third

objective for the accomplishment of EI and it will make many African countries to develop, as in history, few countries have developed economically without trade (Warford, 2016) cited in (Ogunyemi, 2017).

The sourcing strategy for any company is one of the primary drivers for profitability and product differentiation. In the last two decades, companies across the world have flexed their sourcing muscles to identify and leverage low-cost sourcing hubs across the globe, to drive innovation and remain competitive. It is becoming increasingly clear that to drive the next level of cost optimization, companies will need to make the best use of Free Trade Agreements (FTAs). From exploring FTAs with existing supplier countries, to completely reimagining and restructuring supply chains for maximizing FTA benefits and operational efficiencies, it is time to look at FTAs to save costs and achieve a serious competitive advantage. There is an expanding network of countries and regions that are collaborating and supporting each other for achieving global trade liberalization. They enter into multilateral or bilateral FTAs that help remove barriers to trade, resulting in greater flow of goods and services between parties, higher investments, and enhanced economic integration.

Unfortunately, the popular perception about FTAs is that they are complicated, and implementing them profitably is not practical. However, in a research conducted by the Economist Intelligence Unit, it was found that 86% exporters reported an increase in exports because of FTAs, while 79% agreed that signing more FTAs could increase their exports. Further, 69% agreed that FTAs are the best hope for the future of their overseas business (Cheung, 2018).

FTAs are classified as multilateral free-trade agreements (between multiple countries) or bilateral free-trade agreements (between two countries). Globally, there are hundreds of FTAs between various entities. While each of these has its own objective and significance for the entities involved, here are some of the key FTAs commanding significant global influence/ value (Cheung, 2018)

- **North American Free Trade Agreement (NAFTA**): NAFTA came into place in January 1994 and is a key FTA between Canada, US and Mexico.

This agreement supports over 140,000 small and medium size businesses and contributes to over 3 million jobs in the US.

- **ASEAN-China Free Trade Area**: Based on the sheer size of the population, ASEAN-China is the largest FTA and the third largest in terms of GDP. It includes trade collaboration between the 10 Association of Southeast Asian Nations (ASEAN) and China.
- **Common Market for Eastern and Southern Africa (**COMESA): COMESA is a FTA between 19 states such as Libya, Sudan, and Egypt to overcome trade and tariff barriers across Africa. It has created a vital marketplace for Africa.

2.7.1. Benefits of adopting and optimizing FTA

Free Trade Agreements aim to maximize economic benefits by fostering free trade and developing stronger ties with partner nations. FTAs don't just eliminates tariffs, they also address trade barriers, encourage foreign direct investment (FDI), develop intellectual property (IPs), facilitate collaboration and knowledge transfer .They help improve productivity and contribute to higher GDP growth by allowing domestic business to access cheaper inputs. They also introduce newer technologies, and foster competition and Innovation.

The key benefits derived from optimizing FTAs for business operations and trades are as follows: they also address trade barriers,

- **Reducing Landed Cost**: By adopting FTAs, business can leverage tariff subsidies and lower their Landed Costs. Regular import duties range between 5-20%, under some product categories, there is an immediate elimination of import duties to 0% when FTA is enforced. This helps businesses reduce COGS and multiply supply chain savings.
- **Improving Access to Foreign Markets** FTAs liberalizes trade and improves market access by reducing regulatory bottlenecks across member nations. By leveraging an FTA, a business can gain access to a market which would otherwise be not lucrative due to tariff barriers.
- **Lowering Cost of Raw Materials**: Low cost inputs are integral to maintaining a competitive price advantage. Strategic import of such raw material from low cost countries covered under FTAs helps maintain and enhance competi-

tiveness. FTAs help reduce the complexities and time taken for import and export, thereby driving efficiencies and reducing time to market.

- **Enabling Leaner Manufacturing Options and Lowered Production Costs** : In the age of agile manufacturing, FTAs facilitate leaner processes and help reduce costs by allowing import duty deferrals and elimination of tariffs

2.7.2. Perceived challenges in implementing FTAs

Most businesses believe that FTAs are too complex to benefit their business. The notion is not entirely misplaced. There are more than 100 FTAs across the globe and each one could run into 500+ pages of minute legal drafting. They are undoubtedly complex. They are often overlapping and difficult for businesses to understand. The challenge currently is understanding and implementing them. Hence, it is no surprise that the adoption rates are low.

- **Perception vs. Reality**: Businesses forego FTA benefits because they perceive the trade agreements to be too complex, involving extraordinary amount of documentation, demanding high level of precision, data sharing, and coordination across multiple entities.
- **Lack of Visibility** Currently, some businesses have insufficient automation to maintain visibility through their end-to-end supply chain processes. They fear that FTAs will add to the lack of visibility which can result in demand/ supply mismatch, high inventory carrying costs, higher transportation costs and delayed cycles. A supply chain program with cross-functional capabilities featuring strength in data analytics should be leveraged to increase visibility.
- **Tariff, Classification and Compliance Complexity**
  Although FTA integration in the supply chain is perceived as tricky and complicated, automated solutions can significantly simplify the process. Challenges with respect to determining the eligibility of goods and complexity of tariff classification can be mitigated by implementing reporting and compliance tools. This facilitates leaner cash outflow, enables a business to determine the potential duty saving areas and steer them clear of compliance issues (Cheung, 2018).

2.8. African Continental Free Trade Area (ACFTA)

In Africa, various integration initiatives have been undertaken both, at the continental and regional levels, to bring economic and political integration. The effort to establish the Tripartite Free Trade Area (TFTA) and the Continental Free Trade Area (CFTA) are among the measures to secure economic cooperation between Partner States of COMESA, East African community (EAC) and South African development Community (SADC) and African Member States respectively (Hailu, 2018).

The TFTA, the predominant initiative to economically integrate the Eastern and Southern part of the continent has been entrusted to be the milestone for the CFTA building process that aimed at enhancing the continental integration effort. The idea using the TFTA as launching pad for the establishment of a unified CFTA is a well-founded and convincing approach. Both AU and Tripartite Members intended to build the CFTA on the successes and commitments of the TFTA i.e. the TFTA to form part of the CFTA acquits, with the belief that it will do more than half of the job of creating the CFTA. Regional leaders and policymakers intended to use the Tripartite Free Trade Area (TFTA) as stepping stone for the establishment of the CFTA. The notion of building the CFTA on the success and commitments of the TFTA is a well-founded direction adopted to boost continental integration. Both Tripartite and African Leaders designed their FTAs towards this end (Hailu, 2018).

The ACFTA is the first agreement of its kind to bring together all 55 African countries under a single FTA, with a focus on creating a common market for goods, services and investment and allowing the free movement of persons. African heads of state decided to establish the ACFTA in 2012 at the 18 ordinary session of the AU, and negotiations formally commenced in June 2015. The ACFTA stems from African leaders' realization that intra-African trade is critically low and those regional economic communities (RECs) have not prioritized developing and enhancing regional trade (Parshotam, 2018).

The intra-African trade has averaged only 12%–14% of Africa's total trade basket for the past 20 years, primarily as a result of the continent's continued dependency on raw materials and low levels of industrialization. According to 2014 statistics, up to 86% of Africa's trade occurs with external trade partners outside the continent's borders– yet in the EU, for example, at least 61% of all trade is conducted within the union's borders (Parshotam, 2018). In SADC, intra-regional trade has stagnated at 15–17%. During the early 2000s intra SADC trade declined from 15% to 11%, while the East African Community (EAC), in comparison managed to grow intra-regional trade to 20% in 2008 (but has not surpassed this level in the past decade. Approximately 26% of African countries rely on one or two resource commodities for at least 75% of their exports, while 60% rely on a maximum of five commodities (Parshotam, 2018).

On 21 March 2018 in Kigali, 44 member States of the African Union signed the Agreement Establishing the African Continental Free Trade Area (ACFTA). An additional 6 member States of the African Union signed the Kigali Declaration by which they committed to sign the Agreement of the African Continental Free Trade Area once they had undertaken necessary national consultations (United Nations, 2018). Following the unveiling of the African Continental Free Trade Agreement in Kigali, Rwanda, in March 2018, Africa is about to become the world's largest free trade area: 55 countries merging into a single market of 1.2 billion people with a combined GDP of $2.5 trillion (Ighobor, 2018).

Niamey, Niger 7 July 2019- The operational phase of the African Continental Free Trade Area, ACFTA has been launched, after a day-long summit of Heads of State and Government of the African Union (AU) in the Nigerien capital (ECA, 2019) .

ACFTA is meant to create a tariff-free continent that can grow local businesses, boost intra-African trade, rev up industrialization and create jobs. The agreement creates a single continental market for goods and services as well as a customs union with free movement of capital and business travelers. Countries joining ACFTA must commit to removing tariffs on at least 90% of the goods they produce. Intra-African trade is likely to increase by 52.3% by 2020 under the ACFTA (Ighobor, 2018).

African Union member States have agreed to remove 90 percent of their tariffs on goods over a period of between 5 and 15 years, depending on whether a country is classified as developing or least developed, with special and differentiated treatment for the group of seven countries, which are, as mentioned to be Djibouti, Ethiopia, Madagascar, Malawi, the Sudan, Zambia and Zimbabwe (United Nations, 2018).

The pace of tariff liberalization will vary depending on the level of development of the country or possible inclusion in the group of seven countries. Specifically, non-LDCs will need to fully liberalize non-sensitive products over a period of five years after entry into force of the Agreement, while they will have 10 years from the same date to remove tariffs on sensitive products. LDCs will be given 10 years to liberalize non-sensitive products and 13 years to eliminate tariffs on sensitive goods. The group of seven countries will have 10 years to fully cut 85 per cent from their non-sensitive products, 15 years to cut the other 5 per cent from non-sensitive products, and 13 years to bring their tariffs on sensitive goods to zero (United Nations, 2018).

The AUC (2016) and Region Refocus Third World Network-Africa (2016) indicated the main objectives of the CFTA as:

> I. Creates a single continental market for goods and services, with free movement of business persons and investments, and thus paves the way for accelerating the establishment of the Continental Customs Union and the African customs union.
> II. Expand intra African trade through better harmonization and coordination of trade liberalization and facilitation regimes and instruments across Regional Economic Communities (RECs) and across Africa in general.
> III. Resolve the challenges of multiple and overlapping memberships and expedite the regional and continental integration processes.
> IV. Enhance competitiveness at the industry and enterprise level through exploiting opportunities for scale production, continental market access and better reallocation of resources.''



Figure 4 African countries that signed and ratified ACFTA
Source: https://www.weforum.org/agenda/2018/10/africa-continental-free-trade-afcfta-sme-business/

From the Literature surveyed the researcher generalized the following benefits and challenges of the ACFTA in particular and the FTA in general.

2.8.1. Benefits of ACFTA

i. Leading to increasing trade and consumer choice- Manufacturing firms that have business plans to introduce their products to foreign market can easily do so as goods are freely moved within the continent. Business can develop and implement new business initiatives and products because large market is available that can

easily be penetrated. This will boost the image, profit and shareholders wealth (Ogunyemi, 2017)

ii. The CFTA offers businesses no-barrier market access and single custom union and there is increased market size and share for goods. To take advantage of this, technology innovation of business will be facilitated and boosted among entrepreneurs to offer more goods and services at relatively reduced unit cost and a fixed cost spread over larger market area and customer base.

iii. Manufacturing firms within a REC can partner in forming cross border production chain by leveraging on their respective comparative advantage to produce goods and sell finished product outside their REC within the CFTA (EBRD, 2012)

iv. The Manufacturing firms upon exporting successfully within the CFTA can leverage on the achievement and sell to the market outside Africa. Expansion of exports can be achieved by the Manufacturing firms that would have acquired capacity to do so over time in the continent with competitive advantage to export to any other continents.

v. Manufacturing firms get introduced to strategies of adjusting to different business climates with cultures, customs, social and religion values that are very often different from their base country. Entrepreneurs can adjust to the new environment, cautiously import acceptable foreign environmental values to their country of origin and introduce their country values to the foreign markets within the CFTA that will be acceptable there if such adds to business bottom line.

vi. Though the services market is subjected to regulations and protection than the goods market in many countries, the manufacturing firms in the sector will have the chance of taking their businesses to other countries as the CFTA leads lo liberalization of service markets (Ogunyemi, 2017).

vii. Deeper regional integration brings with it important social welfare benefits by promoting reduced trade barriers, increased competition and larger markets across the continent. This will enable citizens to improve their welfare by obtaining goods and services based on comparative advantage among competing markets. Other potential gains from a successfully implemented ACFTA agreement include simplified rules of trade and customs procedures, improved transportation, better linkages to global value chains, and the opportunity to implement common safety

standards, rules of origin and the removal of non-trade barriers (NTBs). Although tariff elimination is an important end goal for deeper intra-African trade, some of the greatest benefits would lie in significant export growth and welfare gains accruing from enhanced trade facilitation and eliminating NTBs affecting trade in agricultural products, food safety and sanitary and phytosanitary concerns, and preferential rules of origin (Parshotam, 2018).

viii. Economists believe that tariff-free access to a huge and unified market will encourage manufacturers and service providers to leverage economies of scale; an increase in demand will instigate an increase in production, which in turn will lower unit costs. Consumers will pay less for products and services as businesses expand operations and hire additional employees. "We look to gain more industrial and value-added jobs in Africa because of intra-African trade," said Mukhisa Kituyi, secretary-general of the UN Conference on Trade and Development, a body that deals with trade, investment and development, in an interview with *Africa Renewal* (Ighobor, 2018)

ix. African women, who account for 70% of informal cross-border trading, will benefit from simplified trading regimes and reduced import duties, which will provide much-needed help to small-scale traders. If the agreement is successfully implemented, a free trade area could inch Africa toward its age-long economic integration ambition, possibly leading to the establishment of pan-African institutions such as the African Economic Community, African Monetary Union, and African Customs Union and so on (Ighobor, 2018).

2.8.2. Challenges to come from ACFTA

Depending on countries culture, economy, technological development and Regulation different Challenges are expected to emerge together with ACFTA enactment. Some of these challenges collected from literature are described here below.

i. Necessity to adopt flexible and responsive global best practices where and when possible regardless of world standardization and established efficiency. African locally manufactured products are to be sold in the CFTA instead of products imported from other continents.

ii. Sourcing for human resources with the qualities required for cross border trade which include talent, global mindset and cross-cultural communications in terms of language (Goh and Sullivan, 2010): Africa is multi lingua in nature. Each country has a number of local languages and general official language ranging from French to English and in some cases Portuguese. A business that must succeed in the CFTA would have to engage human resources that have the physical, psychological and cultural qualities that fit appropriately in the foreign market.

iii. It will be required of business to develop operational capacities backed by smart technology to serve and support cross-border operations. Business across the border demands that the entrepreneur have financial and human capacities to serve the expanded market. For cross-border supply chain network to be efficient and effective, financial investment must be done on transportation and storage facilities with staff that have the know-how of managing and monitoring goods in transit and at various destination points and sales channels. For effectiveness and time saving, monitoring can be done electronically through the internet and ICT

iv. There will be need for businesses to develop multiple and alternative strategies and approaches to expand rather than one-size-fits-all approach. A local business may be getting it right with a single strategy but going cross-border will definitely require changing strategies to meet the foreign market demands and cope with competition. The Manufacturing firms , to cope in the CFTA, would have to be ready to evolve business alternative strategies for expansion across the border

v. Owners of business will exert more pressure on the managers to meet new and higher financial targets in taking advantage of the CFTA. With the knowledge and awareness of CFTA as expanded market for business, owners of businesses will bring pressure to bear on their employees to take and sell products across the borders for more profits, enhancement of shareholders wealth and goodwill of governments and people of the continent who will see the business as partner in the progress of the CFTA. This definitely will be expected as businesses try to outsmart each other in the cross-border trade.

vi. The Manufacturing firms will have to step up enterprise management technologies that are usually limitedly apply in Africa. Technology is a dynamic feature

of business that changes with time. Every stage of management has specific technologies and the use of technology, though improves efficiency and profitability, can be expensive. SMs in the CFTA era will be forced to adopt the application of ICT for supervision, a management function, which enlarges the span of control across border. Without the application of technologies, supervising, coordinating, communicating and controlling of production facilities and supply chains that are spread across many countries will be very difficult and meeting targets will be less than realistic

vii. The Manufacturing firms that will serve the CFTA will, over time, shift from relying more on local partners and supply chain relationships. At the outset, local partners will be the best for businesses. But with time, for successful businesses to succeed more and meet customers' needs, they will be required to have operational facilities in place for production and distribution of goods and services in the foreign market within the CFTA

viii. Necessity to develop flexible multiple supply chains, with each targeted at meeting the needs of specific markets backed by capacities, capabilities and talents developed and acquired locally or from foreign land: The CFTA is an enlarged market to be served by Manufacturing firms and big companies. The business will be required to have supply resources that meet its target customer at the right time, place quality, quantity and competitive price. To achieve this, the business may apply the use of local partners outside its base country as authorized dealer of its goods, direct sales which is possible upon successful penetration and establishment of presence in the cross-border market, overtime establish operational base for production, transportation and logistics in the foreign market and establish multiple foreign operational outfits in many countries (Kim and Wright, 2013) within the CFTA. These four approaches can equally be the stages through which a financially successful business can pass through periodically in the free trade area.

2.8.3. ACFTA Operational Instruments

The ACFTA will be governed by five operational instruments, i.e. the Rules of Origin; the online negotiating forum; the monitoring and elimination of non-tariff barriers; a digital payments system and the African Trade Observatory (ECA, 2019).

2.9. Summary of literature Review and Gaps observed in the Literature

Ethiopia has embarked on a transformational journey of becoming a low middle-income carbon-neutral economy by 2025. To attain this goal, Ethiopia needs to sustain the high growth episodes that have been observed over the last decade by deepening structural change in its economy. The Second Growth and Transformational Plan (GTP II) (2015/16-2019/20) envisages an emergence in the form of desirable outcomes of structural transformation in a relatively shorter period of time as in the case of South East Asian countries. This is to be achieved by shifting economic activities from low productivity to high productivity sectors, especially in the manufacturing sector (Eshetie, 2018). Although Ethiopia has emerged as one of Africa's fastest-growing economies, its manufacturing sector is still far from being an engine of growth and economic transformation (Oqubay, 2018). One of the challenges of the Ethiopian manufacturing sector that hindered its growth is the weak supply chain integration (Eshetie, 2018)

supply chain integration (SCI) consists of aligning and coordinating the resources, decisions, methods, business processes and employees of the different stakeholders in the supply chain to improve their ability to work together in a continuous improvement process (Palomero & Chalmeta, 2014).

Supply Chain Integration considers all actors in the upstream and downstream of the supply chain that play a major role in the success or failure of a manufacturing firm and the writer of this research believes that most of other challenges of the manufacturing sector described above are interlinked with supply chain and solving this challenge (Weak supply chain integration) would solve most other challenges of the sec-

tor.

Having understood the weak supply chain integration of the Ethiopian manufacturing industries, most of the researches that had been conducted in this regard are limited to identify only the challenges and the causes of low performing SCI, but way of improving the weak SCI had not been discussed. On the other hand the researches that had been conducted focused on a single company SCI challenges or on few group of companies only. These researches did not show generalized common SCI challenges of Ethiopian manufacturing industries. For instance, Abate studied the effect of SCI on the operational performance of an Ethiopian food company (Abate, 2018), Daniel Atnafu investigated the challenges of SCI on Ethiopian soap and detergent manufacturing companies (Atnafu, 2018), Betegeorgise studied the level of SC integration in different seven manufacturing industries (Betegeorgise, Thobe, & Seifert, 2014) .

While the Ethiopian manufacturing sector is grabbed with many challenges including the weak supply SCI, On 21 March 2018 in Kigali, 44 member States of the African Union including Ethiopia signed an agreement establishing the African Continental Free Trade Area (ACFTA) (United Nations, 2018).

ACFTA is meant to create a tariff-free continent that can grow local businesses, boost intra-African trade, rev up industrialization and create jobs. The agreement creates a single continental market for goods and services as well as a customs union with free movement of capital and business travelers. Countries joining ACFTA must commit to removing tariffs on at least 90% of the goods they produce.

On the other hand ACFTA is a new phenomenon for most African countries including Ethiopia though similar low level regional agreements such as COMESA are being practiced. ACFTA has not been implemented yet and due to this reason actual benefits and challenges have not been realized. In this regard, this research tries to give highlight about ACFTA for the Ethiopian manufacturing industries ahead of its implementation. In addition, as far as knowledge of the researcher is concerned the ACFTA had not been discussed in connection with SCI of Ethiopian manufacturing firms.

So to stay competitive in ACFTA, the Ethiopian manufacturing firms need to prepare ahead of the implementation of ACFTA in every business aspect. Otherwise, their existence in the ACFTA would be in question.

Finally, the literature gaps that this research tried to fill are summarized below:

I. Many researchers conducted their study on identifying the challenges and the causes of low performing SCI, of individual manufacturing firms, but way of improving the weak SCI had not been discussed. This paper tried to aggregate SCI challenges of different manufacturing firms and proposed a SCI improving model.

II. ACFTA has not been implemented yet and due to this reason its actual benefits and challenges with Ethiopian context have not been realized. However, this paper tried to envisage these benefits and challenges in view of existing manufacturing industries and tested experience of Similar CFTAs in other continents. In addition, as far as knowledge of the researcher is concerned the ACFTA had not been discussed in connection with SCI of Ethiopian manufacturing firms. This paper interlinked the SCI of Ethiopian manufacturing industries with ACFTA.

2.10. Theoretical Frame work

For an Ethiopian manufacturing company to compete efficiently and effectively with the African competitors in ACFTA setup; it is necessary to reduce costs and improve the general service delivery. One of the management techniques that manufacturing companies can utilize to improve their level of competitiveness is improving their level of supply chain integration especially the external supply chain. Improving the level of Supply chain integration can be achieved by improving the flow of materials, information and money flow among the supply chain actors involved in the whole supply chain. To improve these flows the supply chain drivers and Business processes of the companies have to be strategically designed and implemented.

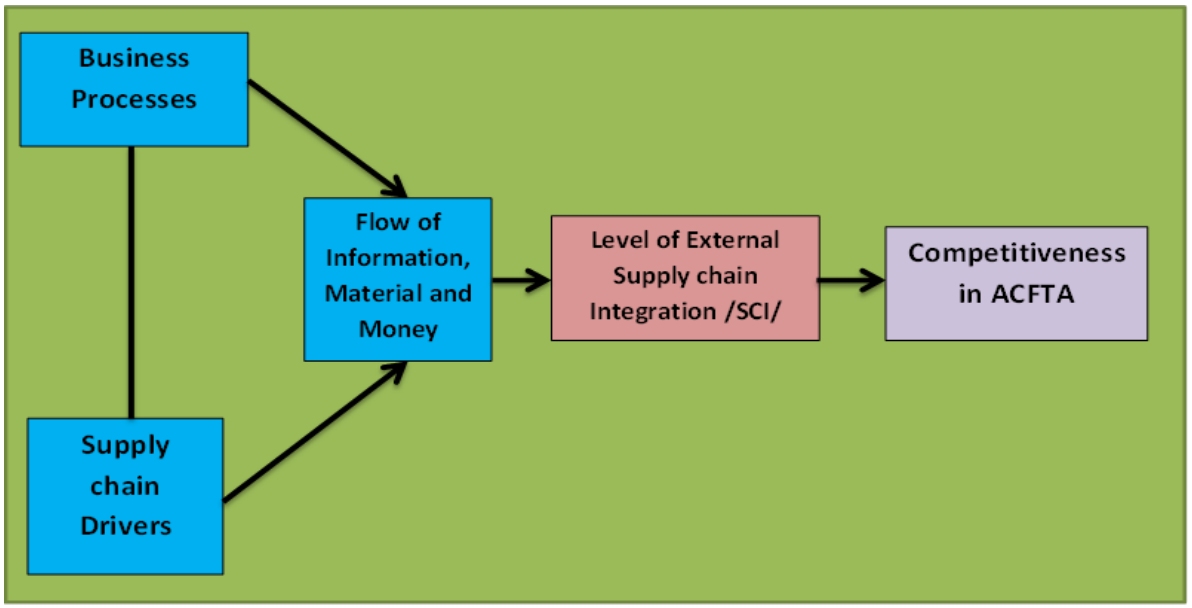


Figure 5 Theoretical Framework

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Research methodology

Research methodology is a set of systematic technique used in research. This simply means a guide to research and how it is conducted. It describes analysis methods, throws more light on their limitations and resources, clarify their pre- suppositions and consequences, relating their potentialities to the twilight zone at the frontiers of knowledge (Igwenagu, 2016). The general flow of research methodology that the researcher followed is represented diagrammatically in Figure 6.

3.2. Research Approach

The research approaches that the researchers used to analyses the data and reach a conclusion is qualitative with elaborative quantitative result. Qualitative approach to research is concerned with subjective assessment of attitudes, opinions and behavior. Research in such a situation is a function of researcher's insights and impressions. Such an approach to research generates results either in non-quantitative form or in the form which are not subjected to rigorous quantitative analysis. (C.R.Kothari, 1990)

3.3. Research Design

A research design is a systematic plan to study a scientific problem. The design of a study defines the study type (descriptive, correlational, semi-experimental, experimental, review, and sub-type (e.g., descriptive-longitudinal case study), research question, hypotheses, independent and dependent variables, experimental design, and, if applicable, data collection methods and a statistical analysis plan. Research design is the framework that has been created to seek answers to research questions.

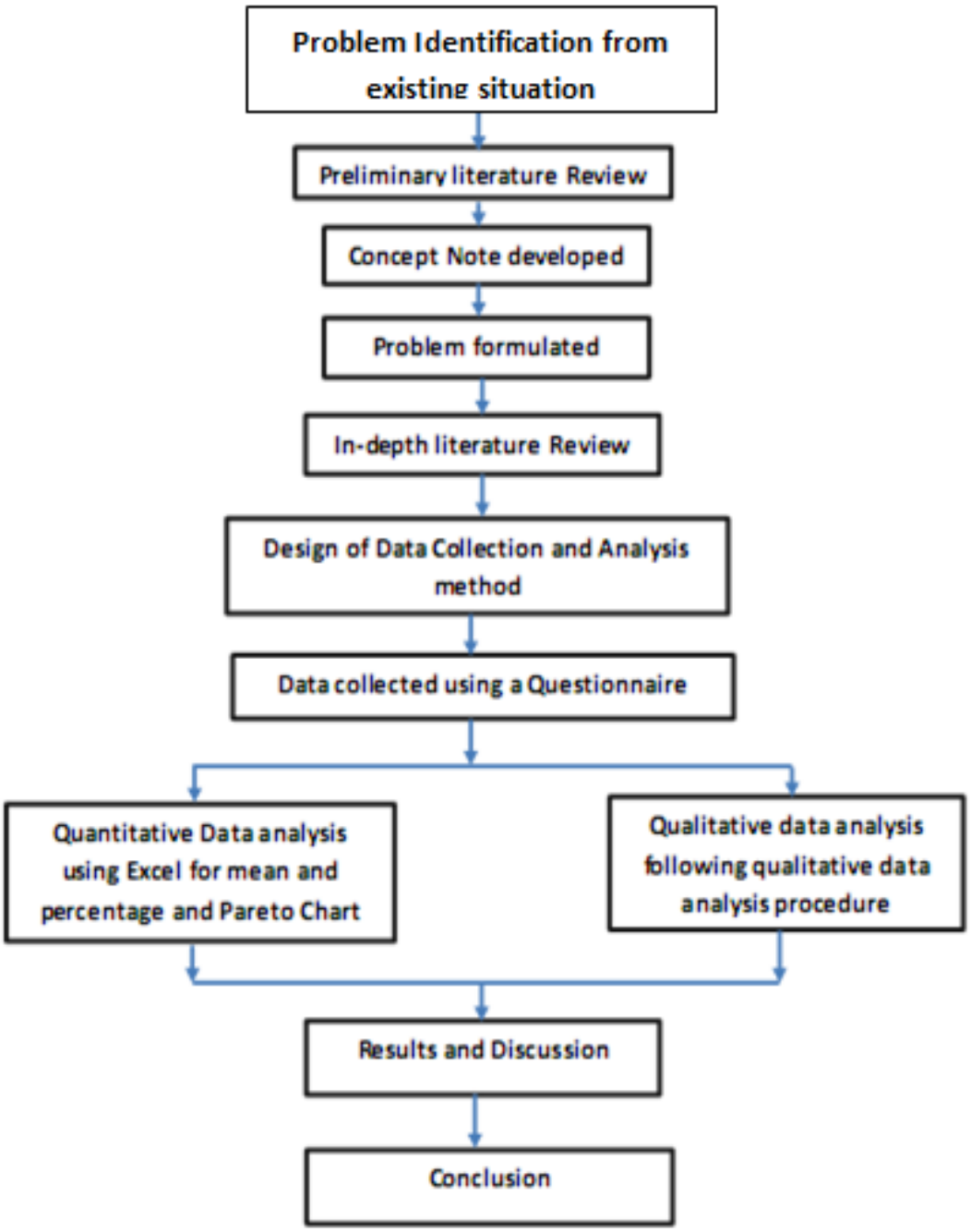


Figure 6 Research methodology Diagram

The research type in this paper is Descriptive and Expository. Descriptive research includes surveys and fact-finding enquiries of different kinds. The major purpose of descriptive research is description of the state of affairs as it exists at present (C.R.Kothari, 1990). Descriptive research is also called a "case –study research". It involves studying a specific situation to ascertain whether any general theories may

arise out of it whether an existing theory are borne out by specific situations (Igwenagu, 2016).

Expository Research is a research based purely on existing information and normally leads to "review –type reports". It involves reading widely on a field, comparing and contrasting, analyzing and synthesizing all points of view and developing new insights (Igwenagu, 2016).

3.4. Sampling & sample population

The units of analysis of this research paper are the large and medium size Ethiopian manufacturing industries located in Addis Ababa. There are more than 748 different large and medium scale manufacturing industries in Addis Ababa (AACCSA, 2014). To distribute the questionnaire, the researcher tried to find the list and contact address of manufacturing industries in Addis Ababa from Ethiopian Yellow pages (Etyellowpages , 2014). Accordingly, the researcher found 173 registered manufacturing companies with their address on the yellow page. Therefore, based on 173 population size (N), the sample size (n) is calculated using online sample size calculator, with Z=critical value at a confidence level of 95%, P=sample proportion= 10%, e=margin of error 5% and α=0.05 (Select -Statistical Services, 2020).

This resulted in sample size of 78. A questionnaire was sent via email to more than 50 % of these manufacturing industries selected randomly. However, only two reacted. This was mainly due to the current situation of the Corona Virus spread. Therefore, the situation demanded the need to change the data collection method as described below.

3.5. Source of data and Instruments used

The necessary data for this study was collected from both primary and secondary sources. The secondary data was collected from different electronic literature related to the study and the primary data was collected by administering a questionnaire to at least 2 senior managers in each sample manufacturing firm. The secondary data was supplementary for the data collected from the primary sources.

Primary data

The primary data was collected by administering a questionnaire to at least two senior managers in each of the sample manufacturing firms selected randomly. As described above, due to the corona virus the researcher modified his method of the primary data collection as follows.

1. Used owns personal business network in manufacturing firms

2. Contacted managers of manufacturing organization which are still in operation via telephone and sent them a questionnaire via e-mail or Telegram

So, based on these two methods, the researcher collected 27 filled questionnaires from 14 different manufacturing firms.

Secondary data

The secondary data was collected from different literature (Articles, Reports, Website, conference proceedings etc.) related to the study .The secondary data was supplementary for elaborating the data collected through the primary sources.

3.6. Techniques of Data Analysis

The data collected through the questionnaire were more of qualitative. These data were analyzed following a qualitative data analysis procedure (Gibson, 2003). On the other side, some of the qualitative data were interpreted in to quantitative form (percentage and mean values) using Excel to elaborate the organized qualitative data. Pareto chart was also used in the analysis.

The qualitative data analysis Procedure used:

1. Organizing the data
2. Finding and organizing ideas and concepts
3. Building overarching themes in the data
4. Finding possible and plausible explanations for findings

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1. Primary Data Analysis

The researcher organized, categorized, analyzed and summarized the responses of all respondents under each question of the questionnaire as follows:

Part I

1. **Are you informed of the ACFTA?**

As the main objectives of the research was to improve the SCI for competitiveness of manufacturing industries in ACFTA and ACFTA is a new phenomenon to Ethiopia, it was necessary to know whether the managers in the manufacturing industries were informed of ACFTA. For this reason, understanding at least how many of the managers in the manufacturing industries under study were informed about ACFTA would help to proceed to the next questions. Accordingly, the research revealed that of the 27 managers participated in the study only 11 (40%) were informed about ACFTA. This showed the current understanding of managers about ACFTA was low.

2. **If yes for (1), do you think your company benefit from ACFTA?**

Of the 11 managers who replied 'yes' for the question No. 1 above, only 5 of them were sure that their company can benefit from ACFTA. The rest 6 were not sure. This indicates that, those respondents who were informed of ACFTA were not well aware of what ACFTA was.

3. **If 'yes' or 'May be' for question No. 2 above, what benefits does your company expect from ACFTA?**

The benefits that the respondents expect from ACFTA were categorized by the researcher in to four main groups:

i. **Tax free trade-** As ACFTA is the free trade area for Africa, manufacturing industries in Africa including Ethiopia will benefit from both tax free imports and exports.
ii. **Access to new suppliers and customers in Africa**. ACFTA will provide new market area with new customers for most Ethiopian manufacturing industries which were not imagining beyond their domestic market. This encourages the export business which is currently at a lower level. It also provides access to new raw material suppliers at competitive price. In general, ACFTA creates new supply chain for the manufacturing industries in Ethiopia.
iii. **Knowledge and experience sharing** - From the transactions and interaction the manufacturing industries can get the chance to acquire new knowledge of doing business, production technology, alternative raw materials etc. Besides the free labor movement gives the chance of getting skilled labor and experts at a lower cost. The international experience that can be acquired through ACFTA enhances competitiveness and gives also the courage to participate in the market outside ACFTA.
iv. **Foreign currency gain:** The increase in export market and the increase in FDI due to the free trade allow the increase in foreign currency earning of the individuals firms in particular and the country in general.

4. **Do you think your company's SC efficient enough to stay competitive in the ACFTA?**

Of the 27 managers, who participated in the research only 9 (22%) were confident in their manufacturing firms' SC efficiency to stay competitive in ACFTA. About 37% of respondents were not confident in their firms' SC efficiency to compete in ACFTA. The remaining 41 % of respondents did not respond for this question as they were not well aware of ACFTA or not aware of their firms' SC efficiency.

5. **If 'Yes' for (4) give reasons. If 'No' give reasons.**

Based on the answers of the respondents, the main reasons that made those 22% respondents to be confident in their SC efficiency in ACFTA were: having previous experience in international business, strong financial strength, having latest technology of production machinery, energetic management & staff and good quality products. On the other hand those 37 % respondents were not confident in their firms' SC efficiency to compete efficiently in ACFTA due to high internal cost, poor SCM, low financial capacity, low product quality, Poor information exchange platform, lack of skilled manpower, lack of focus due to diversified products, low product quality, low production capacity, low delivery capacity, poor condition production machinery and poor technology infrastructure, poor packaging problem etc.

6. **What Challenges do you expect from the ACFTA?**

The researcher categorized the responses for this question into the following groups based on the importance of the idea and frequency of occurrence.

i. **Increment of competition**: the increment of competition from the ACFTA members was repeatedly raised by most of the respondents. As most Ethiopian manufacturing industries are gripped with many problems, it is not a surprise that most manufacturing industries fear the competition from ACFTA members. The competition can be by product quality, packaging quality, way of doing business, information system to be used etc. Unless the manufacturing firms in Ethiopia enhance their competitiveness they can be pushed out of the market and the probability of total closure would be high.
ii. **Need for additional investment for efficient SCM with efficient information system:** Establishing efficient SC needs good SCM which in turn need skilled manpower, efficient information exchange system, good logistics etc. These need huge investment to have it in the standard of international custom-

er; especially the existing information exchange and management tools have to be replaced with the latest tools.

iii. **Meeting international standards**: To participate in an international market, meeting international standards or at least standard of the importing or exporting countries is mandatory. For this reason, Ethiopian manufacturing industries need to work hard to meet the international standards, which can be a challenge for most of the firms.

iv. **Custom clearance, logistics and bank system:** It is a known fact that the current Ethiopian custom clearance procedure, logistics and bank system are lengthy and are not suitable for fast transaction. This would definitely give a challenge for the firms which would like to participate in the ACFTA. The bank payment system especially, needs to be improved to interact with other fellow African countries with regard to payment.

v. **New local regulation in respective countries**

Though ACFTA is expected to have own regulation that can be used as a common language for all participating countries, different countries have different local regulation in their respective country which they do not want to be broken. For instance, one of the respondents who work for a firm that produces Alcoholic drinks has a fear of being prohibited to export their Alcoholic drinks to some African countries.

Part II

1. **What are the main products of your company?**

The researcher collected data from different manufacturing industries located in Addis Ababa. This question was actually to know what type of manufacturing industries were participated in the study. Accordingly, the firms that participated in the study were producers of : hygienic disposable material like baby diaper, Logo and label producer for textile products , Metallic and wooden machinery and furniture , Particle board , shirt , Beer , Packaging materials, concrete pole producing

companies , corrugated steel sheet and galvanized pipes, glass and bottle, cement, leather products , Alcoholic drinks etc.

2. **Who are your major raw material suppliers?**

Of the 14 companies from which data was collected, seven of the companies get their raw material from both local and foreign suppliers. Five companies get their raw material from foreign suppliers. Only two companies get their raw material from local source. This shows that 86 % of the manufacturing industries are dependent on foreign supplies. Therefore, ACFTA would have significant positive impact on these firms.

3. **Where are your major customers located?**

Of the 14 manufacturing firms under study, eight of them have major customers inside the country; five of the firms have major customers both inside and outside the country. Only one firm's major customer is located outside the country. This shows that 93 % of the customers of the firms under study are locate inside the country. When ACFTA is implemented, unless the firms improve their SCI to keep their customers with them, other competitors from the ACFTA will overtake them.

4. **Who are your competitors?**

Of the 14 companies understudy, seven of them have competitors from both domestic and foreign companies, but five companies competitors are only from domestic companies. Only two companies have competitors from outside the country. This indicates about 64 % of manufacturers under study have competitors from foreign countries. This means foreign companies have experience on Ethiopian market either directly or through their agents. Whereas, as the previous data shows, 93% of the Ethiopian manufacturers' customers are located inside the country and experience of reaching customers in other countries is limited. So

when ACFTA is implemented the Ethiopian manufacturers have to work hard to export and participate in other African countries market.

5. **Previous researches found out that SCI of Ethiopian manufacturing firms is weak. What main causes can you list with respect to your company?**

The researcher categorized the responses of the respondents to this question in to two groups: challenges that source from internal factors and challenges that source from external factors.

i. **SCI Challenges that source from internal factors**

- Internal management problem: Low management commitment, owners interference in total management activities, lack of on time decision, dependency on foreigners in technical things, low management skill to use management tools, employees and management team attitude towards integration, lack of SCI knowledge, poor SCM, weak procurement system, management team willingness to work closely with suppliers and customers,
- Working capital shortage due to low finance level of manufacturing firms.
- Weak internal integration between departments and between projects or sister companies,
- Wrong demand prediction or sales forecast,
- Delay due to unforeseen causes: delay of product delivery, delay of payment, delay of raw material supply, delay of information exchange etc.
- High cost of production which is associated with high cost of freight and Inland Revenue, high price of raw material.
- Low production capacity- which affects the demand fulfillment

ii. SCI Challenges that source from external factors

- Lengthy importing procedures coupled with slow and long custom clearance procedure , shipment delay, in-land transportation problem,
- Foreign currency shortage for import activities

- Suppliers commitment for raw material supply (Quality of raw material, Sufficient quantity of raw material)
- Unavailability of good rental warehouse closer to customers area ,
- Country's instability due to political and ethnic issues
- High cost of both import and export processes
- lack of channel trust and commitment

6. **If you believe that your company's SCI is strong in contrary to previous studies findings, what are the main causes for the strength of your SCI with your suppliers or customers?**

   i. **Maintaining good relationship with suppliers and customers:** by delivering good quality products on time, settling payments on time, regular contact with customers and suppliers, reacting on complaints and creating satisfaction in different ways.
   ii. **Operating in the industrial parks** is described as one of the causes for the strength of some companies SCI. This is because the industrial parks are under the attention of the government and firms get different services (bank, insurance, custom clearance, logistics etc.) in one building which help to facilitate the SC.
   iii. **Financial strength**
   iv. **Experienced personnel and management team**

	Business Process level frequency							
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**
Excellent	3*5=15	2*5=10	0*5=0	2*5=10	3*5=15	2*5=10	3*5=15	0*5=0
Good	15*4=60	13*4=52	11*4=44	11*4=44	9*4=36	5*4=20	3*4=12	10*4=40
Fair	5*3=15	7*3=21	11*3=33	9*3=27	8*3=24	11*3=33	11*3=33	9*3=27
Poor	4*2=8	5*2=10	3*2=6	4*2=8	7*2=14	6*2=12	9*2=18	8*2=16
Very poor	0	0	0	1*1=1	0	3*1=3	1*1=1	0
Total	98	93	83	90	89	78	79	83
Mean	3.63	3.44	3.1	3.3	3.3	2.88	2.92	3.1

7. Business Process

Table 2 Business Processes level frequency

Where: Excellent =5 Good=4 Fair=3 Poor=2 Very poor =1

Business Processes: (A) Customer relationship management, (B) Customer service management, (C) Demand management, (D) Order fulfillment, (E) manufacturing flow management, (F) Procurement, (G) Product development and commercialization, (H) Return Process

Of the 8 main business processes that help firms to strategically strengthen their SCI, Customer relationship management was one of the business processes that the manufacturing industries evaluated themselves to be good with a mean value of 3.63 followed by customer service management and order fulfillment with a mean value of 3.44 and 3.1 respectively.

On the other side, the business processes "procurement" and "product development and commercialization" were the main processes where the firms under the study were weak with the mean value of 2.88 and 2.92 respectively.

Based on the mean values of the frequencies of levels, a Pareto Chart was also developed as shown in figure 7. According to this Pareto chart, six of the eight Business processes accommodate 80% of the higher level as per respondents' perception. These Business Processes were - A, B, D, E, C & H. In contrary, two of the business pro-

cesses (F & H) were leveled to be low. This indicates that the manufacturing industries have to work more on "Procurement" and "Product development and Commercialization" to improve their SCI as compared to the first six business processes.

Business Process	Mean Value	cumulative	percentage
A	3.63	3.63	14%
B	3.44	7.07	28%
D	3.3	10.37	40%
E	3.3	13.67	53%
C	3.1	16.77	65%
H	3.1	19.87	77%
G	2.92	22.79	89%
F	2.88	25.67	100%

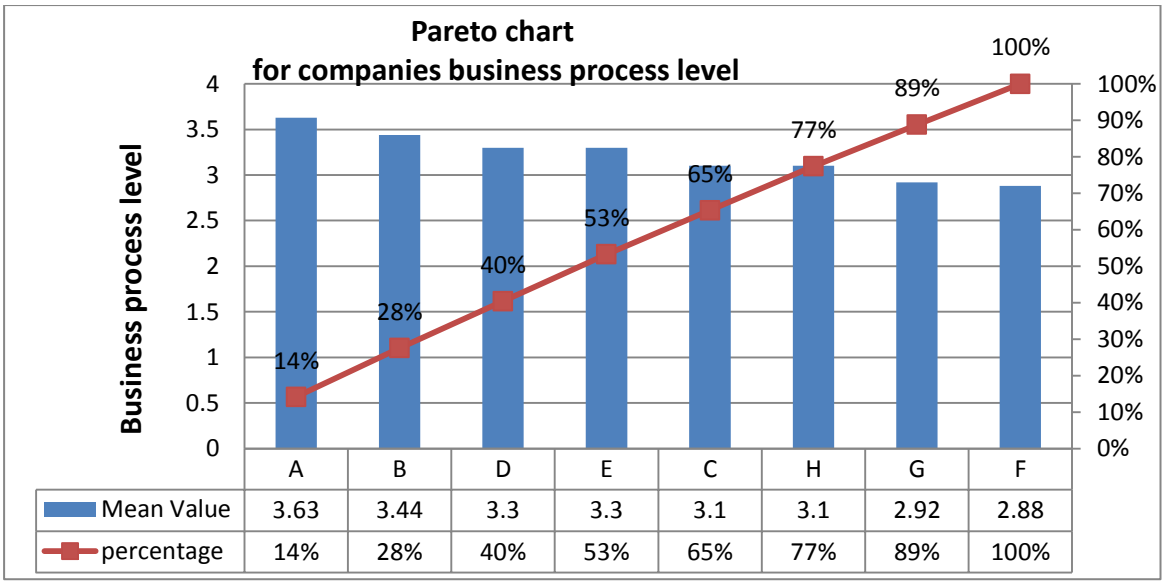


Figure 7 Pareto chart for business process

8. Supply chain drivers

	Supply chain drivers				
	Production	Inventory	Location /warehousing	Transportation	Information
Excellent	9*5=45	6*5=30	3*5=15	4*5=20	3*5=15
Good	4*4=16	7*4=28	12*4=48	9*4=36	4*4=16
Fair	7*3=21	11*3=33	6*3=18	9*3=27	7*3=21
Poor	2*2=4	3*2=6	5*2=10	5*2=10	9*2=18
Very poor	0	0	1*1=1	0	4*1=4
Total	76	97	91	93	74
Mean	2.81	3.59	3.37	3.44	2.74

Table 3 Supply chain driver's level

Where: Excellent =5 Good=4 Fair=3 Poor=2 Very poor =1

Based on the information collected from the firms under study, it was noted that the firms were responsive to their SC by maintaining good level of Inventory. This is expressed in terms of respondents' evaluation which resulted higher mean value of 3.59 as compared to other supply chain drivers. On the other side they were weak in production capacity and information system application with mean values of 2.81 and 2.74 respectively. Therefore, to improve the SCI, the manufacturing industries have to work hard on information system and the Production capacities development.

Based on the Pareto chart Analysis (Figure 8) also three of the supply chain drivers (Inventory, Transportation and location) accommodate 80 % of respondents' higher level of perception. On the other side, Production and Information are evaluated to be low. Therefore, to improve the SCI of the manufacturing industry, the industries have to work more on the improvement of these two supply chain drivers.

Supply chain Drivers	Mean Values	cumulative	Percentage
Inventory	3.59	3.59	23%
Transportation	3.44	7.03	44%
Location/Ware housing	3.37	10.4	65%
Production	2.81	13.21	83%
Information	2.74	15.95	100%

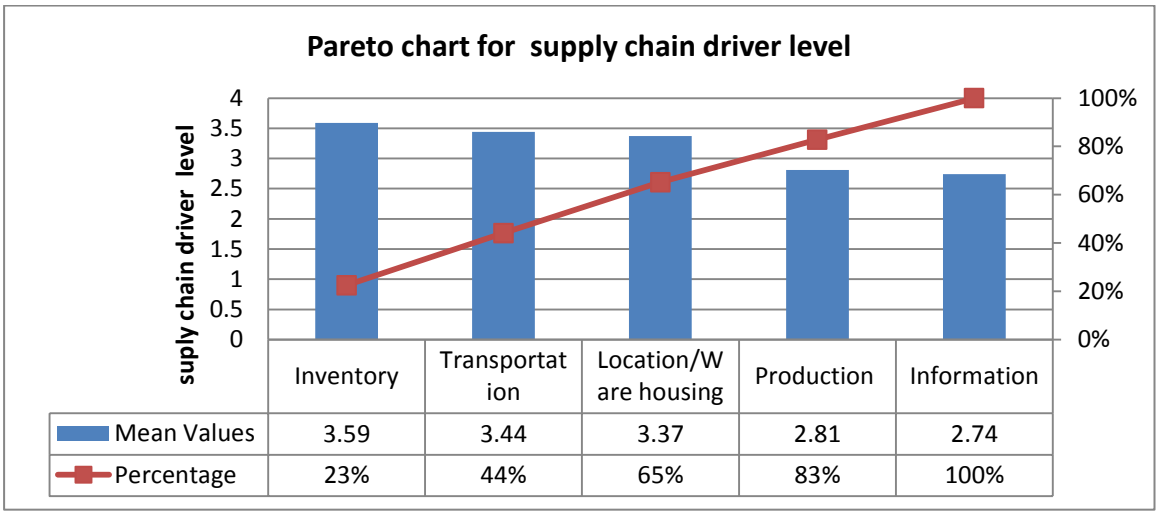


Figure 8 Pareto Chart for Supply Chain drivers

9. **Did your company ever take any successful measure to improve the supply chain integration with suppliers or customers? If yes, please specify what.**

Only five of the respondents reacted on this question and the successful measure that they thought their company took were:

- Monthly discussion with all SC actors on agendas related to their supply chain problems and solutions
- Stocking of enough quantity raw material for a year and more to mitigate the shortage of products on the market, which at the end affects the whole supply chain.
- Use air cargo to supply raw materials or products , though it is expensive
- Use own source of foreign currency to avoid raw material import delay due to shortage of foreign currency.
- Conducting regular customer need survey and suppliers audit
- Establishing committee for customer need assessment and management,

4.2. Summary of the Results

As the main objectives of the research was to improve SCI for the competitiveness of manufacturing industries in ACFTA, it was necessary to know, in the first place,

whether the managers in the manufacturing industries were informed of ACFTA. From the data collected, it was found out that only 40% were informed about ACFTA. Even those who were informed know little about the benefits of ACFTA. Some of the benefits told by the respondents were: Tax free trade, access to new suppliers and customers in Africa market, knowledge and experience sharing and foreign currency gain**.**

In terms of SCI efficiency, only 22% of those mangers who were informed of ACFTA were confident about their firms' SCI efficiency to stay competitive in the ACFTA. The reasons that built their confidence were having previous experience in international business, strong financial strength, having latest technology of production machinery, energetic management & staff and good quality products. 37 % respondents were not confident in their firms' SC efficiency to compete efficiently in ACFTA due to high internal cost, poor SCM, low financial capacity, low product quality, Poor information exchange platform, lack of skilled manpower, lack of focus due to diversified products, low product quality, low production capacity, low delivery capacity, poor condition production machinery and poor technology infrastructure, poor packaging problem etc.

ACFTA will bring not only benefits, but also challenges. Some of the challenges expected by the respondents were categorized in to five main groups.

i. **Increment of competition**: the increment of competition from the ACFTA members was repeatedly raised by most of the respondents. As most Ethiopian manufacturing industries are gripped with many problems, it is not a surprise that most manufacturing industries have the threat of fierce competition from ACFTA members. The competition can be by product quality, packaging quality, way of doing business, information system to be used etc. Unless the manufacturing firms in Ethiopia enhance their competitiveness they can be pushed out of the market and the probability of total closure would be high.

ii. **Need for additional investment for efficient SCM with efficient information system:** Establishing efficient SC needs good SCM which in turn need skilled manpower, efficient information exchange system, good logistics etc. These need huge investment to have it in the standard of international customer; especially the existing information exchange and management tools have to be replaced with the latest tools.

iii. **International standards Qualification**: To participate in an international market, fulfilling international standards or at least standard of the importing or exporting countries is mandatory. For this reason, Ethiopian manufacturing industries need to work hard to meet the international standards, which can be a challenge for most of the firms.

iv. **Custom clearance, logistics and bank system upgrading:**

It is a known fact that the current Ethiopian custom clearance procedure, logistics and bank system are lengthy and are not suitable for fast transaction. This would definitely give a challenge for the firms which would like to participate in the ACFTA. The bank payment system especially, needs to be improved to interact with other fellow African countries with regard to payment.

v. **New local regulation in respective countries:** Though ACFTA is expected to have own regulation that can be used as a common language for all participating countries, different countries have different local regulation in their respective country which they do not want to be broken.

In the research data was collected from fourteen different manufacturing firms. These firms were producers of: baby diaper, Logo and label for textile products, metallic and wooden machinery and furniture, Particle board, shirt, Beer, Packaging materials, concrete pole, corrugated steel sheet and galvanized pipes, glass and bottle, cement, leather products and Alcoholic drinks. .

When we talk of ACFTA in connection to external supply chain integration, it was necessary to know whether the suppliers, customers, and competitors of these firms were domestic or foreign based so that the SCI model would address this fact. Ac-

cordingly, the research found out that 86 % of the firms under study were dependent on foreign supplies, 93 % of the customers of the firms under study were domestic customers and 64 % of firms had competitors originated from abroad. From the result, the researcher understood that foreign companies had a good experience in Ethiopian market either by supplying raw material or products. In contrary the Ethiopian firms are bounded inside the country and experience of reaching customers in other countries is limited. So, when ACFTA is implemented the Ethiopian manufacturers have to work hard to protect their domestic market share and penetrate into the African market.

Literature revealed that SCI of Ethiopian Manufacturing firms are weak. Based on respondents' experience, the causes for the weaknesses of the SCI are listed below after being categorized in to two main groups by the researcher: Those causes that source from internal factors and those causes that source from external factors.

Causes from internal factors:

- **Internal management problem**: Low management commitment, owners interference in total management activities, lack of on time decision, dependency on foreigners in technical things, low management skill to use management tools, employees and management team attitude towards integration, lack of SCI knowledge, poor SCM, weak procurement system, management team willingness to work closely with suppliers and customers,
- **Working capital shortage** due low finance level of manufacturing firms.
- **Weak internal integration** between departments and between projects or sister companies,
- **Wrong demand prediction or sales forecas**t,
- **Delay due to unforeseen cau**ses: delay of product delivery, delay of payment, delay of raw material supply, delay of information exchange etc.
- **High cost of production** which is associated with high cost of freight and Inland Revenue, high price of raw material.
- **Low production capacity**- which affects the demand fulfillment

- **Having diversified Products and thus having diversified inputs**
- **Inflexible organization system,**

Causes that source from external factors:

- **Lengthy importing procedures** coupled with slow and long custom clearance procedure , shipment delay, in-land transportation problem,
- **Foreign currency shortage** for import activities
- **Suppliers commitment** for raw material supply (Quality of raw material, Sufficient quantity of raw material)
- **Unavailability of good rental warehouse** closer to customers area ,
- **Country's instability due to political and ethnic issues**
- **High cost of both import and export processes**
- **lack of channel trust and commitment**

Few of respondents who believed their SCI to be strong in contrary to the literature expressed the reasons of their strength to be:

i. **Maintaining good relationship with suppliers and customers:** by delivering good quality products on time, settling payments on time, regular contact with customers and suppliers, reacting on complaints and creating satisfaction in different ways.
ii. **Operating in the industrial parks** is described as one of the reasons for the strength of some companies SCI. This is because the industrial parks are under the attention of the government and firms get different services (bank, insurance, custom clearance, logistics etc.) in one building which help to facilitate the SC.
iii. **Having financial strength**
iv. **Experienced personnel and management team**

According to the literature (Lambert and cooper 2000), eight business processes were identified to be important for SCI and five Supply chain drivers matters for efficiency

and responsiveness of any SC. To improve the weak point of the SCI, it was necessary to identify where or what the weak points were. (Van der Vorst and Beulens (2002) cited in Vorst 2004).

Accordingly, using the Pareto analysis, the business processes were analyzed to identify which business processes were weak or strong in the Ethiopian firms. Six of the business processes accommodated 80% of the higher level as per respondents' perception. These Business Processes were A, B, D, E, and C & H (see Figure 7). In contrary two of the business processes (F & H) were leveled to be weak. This indicated that the manufacturing industries have to work more on "Procurement" and "Product development and Commercialization" to improve their SCI as compared to the first six business processes.

Similar analysis for the Supply chain drivers revealed that Inventory, Transportation and location accommodate 80 % of respondents' higher level of perception. On the other side "Production" and "Information" are evaluated to be weak in Ethiopian firms' context. Therefore, to improve the SCI of the manufacturing industry, the industries have to work more on the improvement of these two supply chain drivers.

CHAPTER FIVE

CONCLUSTION AND RECOMMENDATION

5.1. Conclusion

From the results of the data analysis, it was noted that only few managers were informed about ACFTA. This shows that the general Knowledge about ACFTA in Ethiopian firms is low. Those who were informed about ACFTA believe that ACFTA will benefit them. The benefits described by the respondents in the study and the general benefit of FTA listed in the literature matches. As per the perception of the respondents, the existing efficiency of the Ethiopian manufacturing firms to stay competitive in ACFTA is low.

As the first objective of the research was to find out the challenges that can emerge with the ACFTA implementation, the research revealed many challenges. Some of the challenges were: Increased competition from ACFTA members, Need for additional investment for efficient SCM, Need to meet different international standards, Need for improvement of Custom clearance, logistics and bank system, New local regulation in respective countries, Necessity to adopt flexible and responsive global best practices, Sourcing for human resources with the qualities required for cross border trade, requirement to develop operational capacities backed by smart technology to serve and support cross-border operations , more pressure on the managers to meet new and higher financial targets in taking advantage of the ACFTA, Need for businesses to develop multiple and alternative strategies and approaches to expand rather than one-size-fits-all approach, to have operational facilities in place for production and distribution of goods and services in the foreign market within the ACFTA, Necessity to develop flexible multiple supply chains.

To operate in ACFTA efficiently, resisting the emerging challenges identified above, the causes for the existing weak supply chain of the Ethiopian manufacturing industries had to be identified. To identify the causes it was necessary to know the nature of the SC actors of Ethiopian manufacturing industries. Accordingly, the research found

out that 86 % of the firms under study were dependent on foreign supplies, 93 % of the customers of the firms under study were domestic customers and 64 % of firms had competitors originated from abroad. From the data, the researcher understood that foreign companies had a good experience in Ethiopian market either by supplying raw material or products. In contrary, the Ethiopian firms are bounded inside the country and experience of reaching customers in other countries is limited. So, when ACFTA is implemented the Ethiopian manufacturers have to work hard to protect their domestic market share and penetrate into the African market.

As the second objective of the research was to identify the aggregate causes of weak SCI, the causes for weak SCI of Ethiopian firms were collected from the primary and the secondary sources. These causes were categorized in to two main groups after analysis of the data.

Causes from internal factors: Internal management problem (Low management commitment, owners interference in total management activities, lack of on time decision, dependency on foreigners in technical things, low management skill to use management tools, employees and management team attitude towards integration, lack of SCI knowledge, poor SCM, weak procurement system, management team willingness to work closely with suppliers and customers) , Working capital shortage due low finance level of manufacturing firms, Weak internal integration between departments and between projects or sister companies, Wrong demand prediction or sales forecast, Delay due to unforeseen causes: delay of product delivery, delay of payment, delay of raw material supply, delay of information exchange etc. High cost of production which is associated with high cost of freight and Inland Revenue, high price of raw material, Low production capacity- which affects the demand fulfillment, Having diversified Products and thus having diversified, Inflexible organization system.

Causes that source from external factors: Lengthy importing procedures coupled with slow and long custom clearance procedure , shipment delay, in-land transportation problem, Foreign currency shortage for import activities, Suppliers commitment for raw material supply (Quality of raw material, Sufficient quantity of raw material), Unavailability of good rental warehouse closer to customers area , Country's instabil-

ity due to political and ethnic issues , High cost of both import and export processes , lack of channel trust and commitment

Having known these causes of weak SCI of Ethiopian firms, the level of Business process and the level of supply chain drivers' was evaluated in order to have successful Supply chain integration. Accordingly, the Pareto analysis conducted on the business processes found out that "Procurement" and "Product development and Commercialization" are poorly practiced in Ethiopian manufacturing industries. Similarly, the Pareto Analysis for the supply chain drivers revealed that "Production" and "Information systems" were main causes for weak SCI as these drivers were evaluated to be low as per the Pareto analysis.

From the results of the data analysis the researcher noted that the benefits of integrated SC match with the benefits that can be achieved from ACFTA. This indicated that SCI and ACFTA are complementary and it can be concluded that improving SCI improves the competitiveness in ACFTA. In reverse also, ACFTA can help to improve the SCI of manufacturing firms.

Finally, after investigating the benefits and challenges of ACFTA, after identifying the causes for the Weak SCI, and after analyzing the level of the Business processes that Support SCI and Supply chain drivers, the following SCI model (Figure 9) was developed by the researcher.

Description of the Model

The model was developed based on the findings of the research. Many causes for the weakness of the SCI of Ethiopian firms have been identified. These causes are categorized in to two groups namely causes that source from internal factors and causes that source from external factors. All these causes can be managed by proper management of the SC drivers and the Business Processes. The supply chain drivers and Business Processes have significant importance for the External supply chain integration improvement. As the Model shows, the Supply chain drivers have a direct impact on the Business Processes and the Business Process will have impact on the SCI between

Supplier, manufacturer and the Customer. Therefore, properly managing the SC driver with especial emphasis on Production and Information will improve the performance of each Business processes which in turn improves the supply chain integration between the Supplier, manufacturer and the customer. This integrated SC definitely helps to be competitive in ACFTA. On the other side the researcher noted that the requirements of ACFTA also help to improve the SCI in reverse direction.

5.2. Recommendations

1. For Ethiopian Manufacturing industries to succeed in ACFTA a clear understanding and consensus about ACFTA should be made by all responsible bodies of the business community especially the manufacturing sector.
2. Noting the challenges to emerge with ACFTA, all the manufacturing industries have to get prepared ahead of ACFTA's enactment.
3. Those few manufacturing industries who responded as having strong SCI should review their strength after clear understanding of the ACFTA requirements.
4. SCI model developed should be tested on sample manufacturing industries
5. Researchers should conduct similar research on other sectors of the business (service, construction, Agriculture etc.) for national success in ACFTA endeavor.
6. The Ethiopian government in general and the manufacturing sector in particular has to work in developing the Production capacity and the information exchange platform in view of success in ACFTA.
7. Manufacturing sector managers need to work more on their external SCI based on the Business processes with special attention to procurement and Product development.
8. National business community Associations like the Ethiopian Chamber of Commerce and the Addis Ababa chamber of Commerce should take the initiative and leading role in organizing the business community for the preparation of ACFTA implementation.

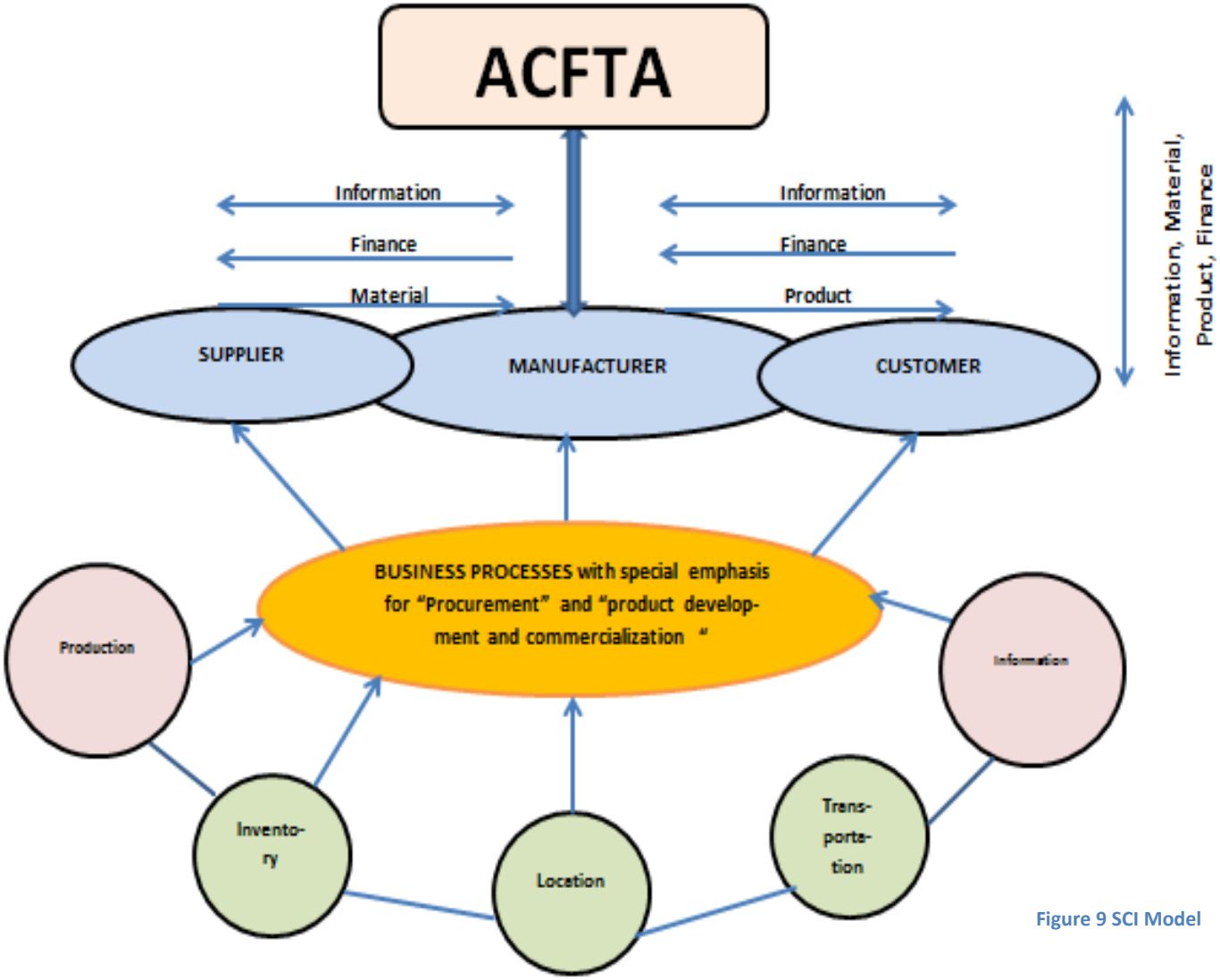


Figure 9 SCI Model

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APPENDIX I – Questionnaire

Addis Ababa University
Institute of Technology - School of Mechanical and Industrial Engineering
Master Thesis Research questionnaire

Dear respondent, I am Teshome Tessema, Student of AAU, conducting a Thesis research titled **"Improving Supply Chain Integration (SCI) for Competitiveness in the African Continental Free Trade Area /ACFTA/ - The case of Ethiopian manufacturing Industries in Addis Ababa" for** partial fulfillment of MSc degree in Industrial Engineering. I would like to extend my deep appreciation to you and your company for the willingness and cooperation in undertaking this valuable research. I request your kind cooperation in answering the questions as truthfully as possible. The information obtained through this questionnaire will be kept confidential and will be used only for this research purposes. The questionnaire has two parts: **Part I** is about ACFTA and **Part II** is about Supply chain integration of your company.

NB: It is not necessary to write your name. Please try to address all questions.

PART I

About African Continental Free Trade Area (ACFTA)

1. **Are you informed of the ACFTA?**
   A. Yes B. No
2. **If yes for (1), do you think your company benefit from ACFTA?**
   A. Yes B. No C. May be
3. **If 'yes' or 'May be' for (2), what benefits does your company expect from ACFTA?**
   _____
4. **Do you think your company's SC efficient enough to stay competitive in the ACFTA?**
   A. Yes B. No
5. **If 'Yes' for (4) give reasons. If 'No' give reasons.**

   _____
6. **What Challenges do you expect from the ACFTA?**

   _____

PART II

About your company's Supply Chain integration (SCI)

1. **What are the main products of your company?**

   _____

2. **Who are your major raw material suppliers?**

   A. Domestic Suppliers B. Foreign Suppliers C. Both

3. **Who are your major customers?**

   A. Domestic customers B. Foreign Customers C. Both

4. **Who are your competitors?**

   A. Domestic companies B. Foreign companies/importers C. Both

5. **Previous researches found out that SCI of Ethiopian firms is weak. What main causes can you list with respect to your company?**

   _____

6. **If you believe that your company's SCI is strong in contrary to previous studies findings, what main reasons can you list for the strength of your SCI with your suppliers or customers?**

   _____

7. **Evaluate the level of the following SCI business processes of your company with supply chain actors (suppliers and customers of your company)? (please mark (√))**

S. N	Business process	Level of business process				
		Excellent	Good	Fair	Poor	Very poor
A	**Customer relationship management** (specifying service level agreements with key customers)					
B	**Customer service management** (providing the customer with real-time information on promised shipping dates and product availability through interfaces with the organizations' production and distribution operations)					
C	**Demand management**(Balancing the customer's requirements with the firms supply capability)					
D	**Order fulfillment** (delivering products and meeting customer need dates)					
E	**Manufacturing flow management** (pulling product through the plant based on customer needs)					
F	**Procurement** (developing strategic plans with suppliers to support the manufacturing flow management process and development of new products)					
G	**Product development and commercialization** (Customers and suppliers must be integrated into the product development process in order to reduce time to market)					
H	**Return Process** (Aligning process to realize an efficient return of re-usable items)					
I	**Other processes that your company SC integrates (if any)** ----------					

8. **Evaluate the support of your Supply chain drivers for your supply chain integration with suppliers and customers (please mark (√)**

Supply Chain Driver	Support level of the SC driver				
	Excellent	Good	Fair	Poor	Very poor
Production (Responsiveness of production capacity for market demand)					
Inventory (Responsiveness can be enhanced by stocking high levels of inventory for a wide range of products)					
Location/warehousing (Responsiveness and Efficiency can be achieved by aggregating its warehouses to a central location)					
Transportation (Responsiveness and efficiency can be achieved by transporting products and raw materials fast in larger batches)					
Information (Type of technology used for fast and reliable information sharing among SC actors)					

9. **Did your company ever take any successful measure to improve the supply chain integration with suppliers or customers? If yes, please describe what.**

Thank you again!

APPENDIX II- Plagiarism Test Report

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