ADDIS ABABA UNIVERSITY SCHOOL OF COMMERCE GRADUTE STUDIESDEPARTMENT OF LOGISTICS AND SUPPLY CHAIN MANAGMENT

ASSESSING FACTORS THAT AFFECT THE LOCAL FRUITS SUPPLY CHAIN AND FRUITS JUICE PROCESSING INDUSTRIES,
(THE CASE OF THREE FRUIT JUICE PROCESSING COMPANIES)

BY - NIGUSSIE G/MARIAM ABDI

ADVISOR - Dr. BERHANU DENU

A Thesis Submitted to the School of Graduate Studies of Addis Ababa University School of Commerce in Partial Fulfillment of the Requirement for the Degree of Master of Arts Degree in Logistics and Supply Chain Management.

Addis Ababa, Ethiopia
June, 2019

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In Partial Fulfillment of the Requirement for Master of Arts Degree in Logistics and Supply Chain Management complies with the regulation of the university and meets the accepted standards with respect to originality and quality.

By

NIGUSSIE G/MARIAME ABDI,

APPROVED BY BOARD OF EXAMINERS AND ADVISOR

Berhanu Denu (PhD)	----------	----------
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Internal Examiner	**Signature**	**Date**
Dr. Mesfin Tesfaye (PhD	----------	----------
External Examiner	**Signature**	**Date**

Declaration

I declare that this thesis is a result of my independent research work on the topic entitled "Assessing Factors that Affect the Local Fruits Supply Chain and Fruits Juice Processing Industries, (The Case of Three Fruit Juice Processing Companies)" in Partial fulfillment of the requirements for the Degree of Master of Art in Logistics and Supply Chain Management at Addis Ababa University School of Commerce. This has not been submitted for a degree to any other university. All the references used in the study are duly acknowledged.

Nigussie G/Mariam Abdi	……..	……..
Researcher Name	**Signature**	**Date**

Confirmation

This is to certify that Mr. Nigussie G/Mariam Abdi has carried out this research work on the topic entitled "Assessing Factors that Affect the Local Fruits Supply Chain and Fruits Juice Processing Industries, (The Case of Three Fruit Juice Processing Companies)" carried out under my supervision. This work is original in nature and has not been presented for a degree in any University. Hence, it can be submitted for the partial fulfillment of the requirements for the award of the degree of Master of Arts in Logistics and Supply Chain Management.

Berhanu Denu (PhD)	_____	……..
Advisor	**Signature**	**Date**

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I am so thankful to our coordinator Mr. Zelalem who consulted me to select this topic and forwarded me insightful ideas how to go about it, Moreover, I am indebted to all individuals and organizations those were generous and willing in my field research work through providing genuine information and willingly interviewed, specially Mr. Sami Logistics Manager of Petram PLC.

Exceptional thanks also deserved to Dr. Matiowos Ensermu who is my Examiner and thoughtful instructor of supply chain field that has provide valuable suggestions to complete my study.I would also like to extend my sincere appreciation to the staff and lecturers of the Department of Logistics and Supply Chain Management for their effort to strength our field of discipline and support students to carry out their tasks.

Last but not least, I would like to take this opportunity to extend my grateful appreciation to my family for their moral contribution to finalize my study, especially for AtoTeshome Tesfaye who stimulated me and gave invaluable support to have MA degree in the field of Logistics and Supply ChainManagement.

List of Acronyms and Abbreviations

AAiT	**Addis Ababa Institute of Technology**
CSA	**Central Statistical Agency**
EARO	**Ethiopian Agricultural Research Organization**
EARI	**Ethiopian Agricultural Research Institute**
EIC	**Ethiopian Investment Commission**
EP	**Enterprises partners**
FBPIDI	**Food, Beverage & Pharmaceuticals Industry Development Institute**
EHDA	**Ethiopian Horticulture Development Agency**
EHPEA	**Ethiopian Horticulture producers and exporters Association**
FVPIA	**Fruits and Vegetables Processing Industry Association**
GDP	**Gross Domestic Product**
GIZ	**German Development cooperation**
GVP	**Growth Value of Production**
FAO	**Food and Agriculture Organization**
MoTI	**Ministry of Trade and Industry**
MOANR	**Ministry of Agriculture and Natural Resource**
SC	**Supply Chain**
SHM	**Supply Chain Management**
UNISA	**University of South Africa**
UNIDO	**United Nations Industry Development Organization**

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ABSTRACT

Manufacturing industries can achieve their competitive advantage only if they get continuous supply of raw material and operate with better capacity utilization. Supply chain management is one of the strategic factors for not only ensuring sustainable supply but also increasing the organizational efficiency and it is a means for achieving the expected objectives. The objective of SCM is to achieve a sustainable competitive advantage (Handfield, Monczka, Giuinipero& Patterson, 2009).Supply chain is considered as critical element for firm's long term success in terms of boasting competitiveness, increasing profitability and customer satisfaction.

The purpose of this research is to identify the factors that affect the local fruits supply chain and fruits processing industries taking the cases of the three mango fruit juice processors (Great Abyssinia plc, Petram PLC and Afran Global PLC). In this study the researcher focused on organizational performance, supply chain strategy and supply chain performance of these companies. In designing these measures due emphasis is given to relate with efficiency, capacity utilization, reliability, responsiveness, flexibility, cost and asset management. In the study the researcher used descriptive research design where both qualitative and quantitative methods of analysis are applied. In the findings a number of factors are identified as a cause and most of the factors can be managed by implementing efficient supply chain management system.

The findings of the study show that the supply chain management practice of the fruits juice processors are very weak. It is also investigated that agricultural production of fruits and industry productivity of fruits juice are at a very low level. Despite the huge agricultural potential available in the country, the industry is highly dependent on semi processed imported input. Processing companies are operating at low level of capacity utilization; there is high supply driven market and huge gap between demand and supply of locally processed fruits juices.

Hence, the sector needs special attention where every stakeholder including government and processing companies has to take the recommendations forwarded in to consideration to improve the sector competitiveness.

Key words:-Supply Chain Management, competitive advantage and capacity utilization

CHAPTER ONE

1. INTRODUCTION

1.1 Background of the Study

The term "supply chain'' encompasses all activities associated with the flow and transformation of goods from the raw materials production stage (extraction), to end users, as well as the associated information flows. (M.C., Lambert, D.M., & Pagh, J. 1997)The supply chain includes systems management, operations and assembly, purchasing, production scheduling, order processing, inventory management, transportation, warehousing, and customer service. Supply chains are essentially a series of linked suppliers and customers; every customer is in turn a supplier to the next downstream organization until the finished product reaches the ultimate end user. Rasheda H. Keane, John Herbohn and Geoff Slaughter defined the SCM as "A Supply chain management is the integration of these activities through improved supply chain relationships to achieve a sustainable competitive advantage.

The concept of "supply chain" is well established in the literature and is generally referred to as the alignment of firms that bring products or services to market (Lambert, Stock and Ellram, 1998).The supply chain includes manufacturer, suppliers, transporters, warehouses, wholesalers, retailers, other intermediaries and even customers themselves. Any product traded on the consumer goods market, in its evolution from raw material to finished products, undergoes a series of successive transactions on the business to business market. (mihaiFelea and Irina Albăstroiu Vol. XV No. 33 pp 75)

Some of the major supply chain execution functions are, managing the flow of products from agricultural production source to the manufacturers from manufacturers to distributors then to retailers and finally to customers in order to ensure the accurate delivery of products. Supply chain also includes providing information about the status of orders being processed so that the vendors could provide the exact delivery dates to customers and tracking the shipment and accounting for the products that have been returned or are to be repaired and serviced. Thus Supply Chain Management includes services such as inventory management, transportation operations, management, distribution strategy, operational analysis and design materials

handling, warehouse design project management and computer systems. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third party service providers, and customers. In essence, supply chain management integrates supply and demand management within and across companies.

Successful supply chain management is very effective especially for the agricultural commodities to be converted in to value added products particularly goods that have perishable nature. Fruits and vegetables have higher risk of deterioration, warehouse management and post harvest loss. Countries that have installed efficient supply chain management system are benefiting a lot As study show us the postharvest loss of fruits and vegetables in developed countries indicate that is between 10- 20%, while in developing countries like Ethiopia is almost 50% of the total production. (W/yohanis, F.2017) and (FAO 2013)

In order to minimize the post harvest loss of fruits and increase the production and productivity, processing companies need to work jointly with farmers as a partnership starting from the cultivation up to production and harvest so that quality will be maintained and loss will be minimized. The importance of logistics and supply chain management (SCM) has been increasingly recognized in the manufacturing environment. While a supply chain consists of a number of partners or components (such as suppliers, manufactures, distributors and customers), its effective management requires integration of information and material flow through these partners from source to users. It is a network of autonomous or semi-autonomous business entities involved, through upstream and downstream links, in different business processes and activities that produce physical goods or services to customers. (Samaranayake, 2005)

According to FAO study report, "total food losses in Sub-Saharan Africa are estimated to be worth $4 billion per year, an amount which can feed 48 million people" (FAO, 2013). Losses on cereals are estimated to be high and account for about 25% of the total crop harvested. These losses can be even greater in perishable products, and account for as high as 50% of harvested fruits, vegetables and root crops (Voices Newsletter 2006).An integrated and coordinated system of supply chain management has great impact on the efficiency and competitiveness of the processing industries that convert raw fruits and vegetables in to value added products like fruit juices, canned and preserved fruits. (Zegeye A.A H &Y. B et al, 2014)

Fruits production in Ethiopia has a comparative advantage in a number of horticultural commodities due to its favorable climate, proximity to European and Middle Eastern markets

and cheap labour. However, the production of horticultural crops is much less developed than the production of food grains in the country. According to the survey report made in 2013/14 by Ethiopian Central Statistics Authority, fruits crops grown by private peasants is about 71,507.13 hectares of land. Banana contributed about 57.84% of fruits crops followed by mangos that contributed 14.47% of the area. More than 4,991,837.64 quintals of fruits was produced in the Country. Banana, papaya, mangoes oranges and avocado took up 68.11%, 6.33%, 14.46%, 6.25%, and 3.65 of the fruits production, respectively. (CSA 2013/14)

Ethiopia has significant cost advantages for production and export of fruits and vegetables. The country's climatic conditions allow for a year-round growing season, and low factor costs, including water, power, land, and labor for producing and processing of a wide range of fruits and vegetables. Most of the fruits and vegetables production is under small farmers and about twelve commercial farms are engaged in partly on production and export of fresh fruits and/or vegetables. Although the country has better comparative advantage with diverse climate condition to produce, the production land size & productivity is very low. (GebreE.2006)

Ethiopia is already exporting tomato, green beans, papaya, peppers, potatoes, citrus fruit, peas, and onions, and more recently, strawberries, passion fruit, avocados, pomegranates, guava, fresh herbs, and bananas in a raw form. However, the production and productivity is still below even by African standard due to a number of factors including farm management, technology and post harvest losses. (KOICA, 2013, page 41)

According to FAO study countries like china, Brazil, India and most of European countries produce much of the fruits and vegetables through irrigation system. In World fruits production, China is the leading in the list of fruit production with 154.364 million tons (MT) in 2013 followed by India (82.631 MT), Brazil (37.774 MT), USA (26.986 MT), Spain (17.699 MT), Mexico (17.553 MT), Italy (16.371 MT) and Indonesia (16.003 MT). Grapes occupy the premier position in exports with 107.3 thousand tones 2014-15. Other fruits which attained significant position in exports are banana and mango. (FAOSTAT, 2015)

1.2 Background of the Organizations

The major fruits produced in Ethiopia are classified into tropical and temperate fruits. Tropical fruits are citrus, Banana, Mango, papaya, Avocado, Grapevine and Pineapple. Temperate fruits are Apple, peach, pear, walnut, Nectrcue and precut. (Ethiopian Horticultural development Enterprise web site) About 71,507.13 hectares of land is under fruit crops in Ethiopia. Bananas contributed about 3.4 million quintals or 58.59% of the fruit crop area followed by mango produce721, 869 quintals or14% of the area. More than 4,991,837.602 quintals of fruits was produced in the country. Bananas, mangoes, avocados, papayas and oranges took up 67.94%, 13.21%, 8.20%, 6.36% and 2.61% of the fruit production respectively. *(CSA, 2013/2014)*

Ethiopia has significant cost advantages for production fruits and vegetables both for import substitution and export market. The country's climatic conditions allow for a year-round growing season, and low factor costs, including water, power, land, and labor, position it for production and processing of a wide range of fruits and vegetables. (KOIKA, 2013) Although the country has a better opportunity with favorable and diverse climate condition, the production land size and the existing productivity is very low. Ethiopia has a potential of irrigable land of 4.26 million ha land but the existing irrigation land is only 247,520 ha, which is almost 5.8%. (Gebre E., 2006, p6)

According to the information obtained from the MoTI, Food institute report of 2008 EC, there are about 12active medium and large scale fruits processing companies operating in Ethiopia. They are listed below. Most of these companies use mango fruit as raw material and two of them use a mix of mango and strawberry. Almost all processing companies are selling their products to local market except Africa juice tibila farm producing passion fruit concentrate for export. From all the different fruits producers in our country, the researcher has selected three mango processing companies to make a study on the factors that affect the local fruits supply chain and fruits processing industries. Though, Ethiopian has a lot of fruits types, the fruits processing companies mostly use mango as raw material for further processing. (W/yohanis F., 2017) In addition to the twelve companies operating there are around four projects which will be expected to be operational in the coming years. These are 7 stare fruits industry, 3D juice factory, Amine juice factory and Sadura juice industry.

Table 1-1 List of fruits juice producers operating in the country

N.O	Name of company	Product type/Brand	Source of Raw material	Location	Eth Year of Establishment
1	Upper Awash Agro.	Orange jam, tomato paste	Local source	Mertijeju	1978
2	Guli Foods	Mango juice/Dada mango	Imported	Dukem	2009
3	Great Abyssinia	Mango juice/ PREGAT	Imported	Sululta	2003
4	Afran Global	Mango juice/ Bonjo juice	Imported	Sendafa	2008
5	Africa Juice Tibilla	Passion fruits concentrate	Local	Sodera/Arssi	2001
6	Pico Juice	Mango juice /Pico	Imported	Kaliti	2004
7	Petram Juice	Mango juice/ MAAZA	Imported	Sebeta	2006
8	Sebeta Agro industry/	Cocktail Juices/ Mixed	Imported	Sebeta	1996
9	ASKU PLC	Ethiopikana juice/Mango	Imported	Burayu	2005
10	Ethio-Takamole PLC	Mango/SaFa mango juice	Imported	Gerji	2009
11	Zamelic juice factory	Mango juice	Imported	Lebuind. Zone	2005
12	Estifanos juice factory	Mango Yami juice	Imported	Kaliti	2007

Source (Fbpidi report 2010 companies list)

The selected three companies are Great Abyssinia (PREGAT Juice),PETRAM PLC(MEAZZA Juice)and Afran Global (Bonjo juice)which have relatively big capacity and which are not very far from Addis Ababa. Great Abyssinia is a corporate group very well known in Agro industry manufacturing business especially in bottled water and roasted coffee. As part of diversification, Great Abyssinia fruits processing company was established in 2003. The company is located in Sululta town 25 k/m from north of Addis Ababa producing mango juice by the franchise brand called PREGAT Juice. The second company is PETRAM Private limited company located at Sebeta town 25 K/M from South West of Addis Ababa, producing MAZZA mango juice. The

company had been an importer and distributor of MAZZA mango juice from India.(LMconsults,2018) The third company study area is Afran global agro industry located at Legetafo town 20 k/m in the Eastern part of Addis Ababa, established in 2008 producing mango juice by the brand called Bon juice.

These companies have a positive impact on the livelihoods of the society especially for people living around the company area in terms of creating job opportunity, and on the economy as a whole in value addition and bringing higher incomes, substituting imports. PETRAM PLC is doing research and development to use local mango source from local commercial farm producers to have sustainable supply of fresh mango from agricultural sources. With regards to the raw material supply, companies are all importing mango concentrate called mango pure from abroad mainly from India and Israel.

1.3 Statement of the Problem

The Government of Ethiopian has given agro industry sector strategic focus for its role in value addition, job creation and import substitution. The fruit and vegetable sub-sector provides huge opportunity for job creation, as it is a labor-intensive area, it can accommodate considerable workforce. Agro-industries require trained manpower at all levels. Workers trained at high, middle and low levels have rooms in the business of agro-processing. (Zegeye A., A H. & Y. B et al, 2014)

It has been said that the country is endowed of diversified agro ecology and that can give a comparative advantage to produce different crops in excess of household consumption and be supplied to manufacturing industries as input. (MOANR, 2008 EC)However, most of the manufacturing industries including fruits juice processing companies are operating at below 50% of their capacity utilization. (MOTI, GTP report, 2008) The report further indicated that the main problem of not operating at full capacity is shortage of raw material supply. Most of the fruits produced in Ethiopia is either directly exported fresh or sold to local market with long value chain with involvement of non-value adding element. Moreover, much of the production is wasted during harvesting and transportation.

Supply chain management is the systematic, strategic coordination of the traditional business functions and the tactics across these business functions within a particular company and across businesses within the supply chain, for the purposes of improving the long-term performance of

the individual companies and the supply chain as a whole (Mentzer et al., 2001). The supply chain not only includes the manufacturer and suppliers, but also transporters, warehouses, retailers, and customers themselves. Effective supply chain management is very critical for processing companies especially for perishable goods like mango fruits. Companies can benefit from effective supply chain in getting quality product and reduced lead times, so also farmers, in forecasting, planning and scheduling, maintain quality, reduced costs and inventory levels, improved decision-making, improved customer service and improved quality levels. Manufacturing industries can only survive and be profitable if they can get continuous supply of raw material and operate at better capacity utilization. (LM consults 2018p18)

Nevertheless, the Ethiopian processing companies are not sufficiently getting the benefits of SCM due to lack of the practice of integration, collaboration and not having knowledge as well as willingness and the practice of managing supply chains. Supply chain management practice in Ethiopia is at infant stage. There are a few numbers of companies practicing the modern supply chain management system integrating with their organizational system. Most of the companies are using traditional way of managing SC from suppliers to customers is just a buy and sale relationship or arms- length transaction Transactional, (Belay 2011).

In Industrial processing, fruits are processed in to a variety of products such as juices and concentrates, pulps, canned and dehydrated products, Jams and jellies, and pickles. (FAO, 2012)As raw materials are converted in to processed products the value addition has advantage of job creation and better income generation. Horticultural crops play a significant role in a developing country like Ethiopia, both in income and social spheres for improving income and nutrition status. Further, it provides employment opportunities as their management is labor intensive, production and processing of these commodities should be encouraged in labor abundant and capital scarce countries like Ethiopia. (Rolein Wiersinga and Andre daJager, 2014)

With regards to fruits products supply linkage in Ethiopia, processing industries and other relevant parties have faced a lot of critical problems which are becoming a challenge for organizational performance. The market price of raw fruits is highly volatile due to seasonality of harvesting, some times more expensive than the world market price, weak linkage of raw material supply from farmers to processors, shortage and inconsistent supply of raw materials. (W/yohanis, F. 2007)Moreover, high level of reject, unreliability of suppliers is all causes for weak supply linkage between farmer's producers and manufacturing companies. As a result

processing companies are optional to buy the semi processed mango pulp or concentrate from abroad.

Although there are some trials to link the raw material demand from local farmers who produce mango, farmers are not showing dependability due to the price change in the retail market. Mostly they shift to other customers because of the weak relationship they have with processors. This happens with the involvement of middle men to retail trade. (FBPIDI, 2009) Infrastructure is also another problem for breaking the relationship like transportation facility as middle men go to farm to negotiate and collect the raw material from source area. The local market price for raw material is high because of high transaction cost since the supply chain starts with a very large number of smallholders, each producing a very limited quantity. (J. Wijnands (LEI), J. Biersteker, & R. Hiel., 2007). Collecting small quantities from each small holder farmers and fulfill the required quantity of processor entails extra efforts for middlemen and collectors to fulfill the required quantity and quality suitable for processing. Except for few big commercial farms like RAJA in Asosa, JITU in Bishoftu and Elantote farm in Zewaye, most of the fruits farmers and middle men do not have quality logistics facility /cold chain trucks/ that preserve the fresh fruits to arrive freshly at customers' gate. Quality cold chain logistics are very important to minimize the post-harvest losses that occur during transportation and warehouse handling. Logistics and transportation are key supporting activities in the global fruit and vegetable value chain. These functions ensure that perishable product reaches its destination in good condition. Some of the challenges or gaps in production are shortage of high yield, poor quality or improved variety of seed, poor harvesting technology, disease and insects. (EARO, 2006) All these challenges can easily be managed if both parties would have a strong relationship to work together with some sort of agreement and that is creating supply chain linkage.

Therefore, for a country like Ethiopia where there is huge irrigable land suitable for fruits production at least twice a year, importing semi processed mango for fruits as an input for processing will have a negative impact on the economy. This research has been motivated by the existing gaps or weak relationship between the local fruits production and processing companies that hindered to use the local mango fruits as a raw material for processing industries.

1.4 Research Questions

1. What are the current supply chain management practices of fruits production and processing?
2. How is the integration between the producers or suppliers and the processors of fruits juices?
3. What factors affect the local fruits supply chain performance?
4. How responsive is the supply chain management process of the supply chain?
5. What are the critical challenges of not using the local fruits as an input for processing companies?

1.5 Research Objectives

The general objective of the study is to identify the factors that affect the local fruits supply chain and fruits processing industries performance.

The specific objectives of the study are:-

- To assess the supply chain management practices used by fruits producers and juice processing companies.
- Identify the integration or relationship between the suppliers and the juice processors
- Stipulate the factors affecting processing companies' performance due to weak supply chain practice.
- To suggest recommendation based on the research findings.

1.6 Significance of the Study

This study is initiated at a time where the practice of supply chain Management has yet to develop in Ethiopia, especially in agricultural supply chain where our country is having better comparative advantage. Taking some world best practices, some processing companies have made trial to sustainably link their raw material demand with farmers and farmer's cooperatives. But these trail activities were not supported by law since the contract farming and out growers scheme development activities are not enforced by law. Moreover, Supply Chain Management discipline in Ethiopia is at its developmental stage, where there are limited bodies of extent knowledge in the area as well as the growing importance of the sector in the country. Hence, this research will contribute for the development of the SC discipline.

The Ethiopian industrial policy suggests that manufacturing is the basis in transforming the economy from agriculture to industrialization, and is taken top of the agenda as it is playing a

role in value addition, job creation and better income generation.(GTP II 2008-2012) In general, processing can add-value and contribute to rural employment and is an additional source of foreign exchange earnings. (AAiT, ZegeyeA. 2014)

Fruits Processing companies are operating at below 50 % capacity utilization due to a number of factors mainly shortage of raw fruits supply. (FBPIDI 2009) These companies are sourcing semi processed mango from abroad with long process of lead time since getting foreign currency is not easy. On the other hand farmers are producing fruits like mango with high level of pre and postharvest loss due to poor harvesting technology and logistics. Farmers are selling their products to retail market through middle men. Although it is said that Ethiopia has an irrigable land about 4.5 million ha. suitable for horticultural product until now only half million ha.is utilized.

As the researcher tried to see, most of the literatures of supply chain management depict that efficient supply chain management creates strong position for the company as well as for the rest of the supply chain actors. This efficient supply chain system makes companies to have competitive advantages over their competitors. Furthermore in this globalized market basic raw materials have to be sourced from genuine source and preferably it is more advantageous to get it from local sources by linking both the producers and processors keeping the interests of both mutual benefit and targeting long term advantage.

According to (Kluyver and Pearce, 2006, p. 4), the ultimate goal of SC strategy is "long-term, sustainable superior performance." Such superior performance now depends on the ability of a manufacturing organization to become a fully integrated partner within a supply chain context (Cooper et al., 1997), thus all manufacturing organizations required to adopt a supply chain strategy. Such supply chain strategies focus on how both internal and external business processes can be integrated and coordinated throughout the supply chain to better serve the ultimate customers and consumers while enhancing the performance of the individual supply chain members. (GreenJr, Whitten and Inman, 2008).

Applying modern supply chain management system to link the raw material supply with local producers will help companies to get the raw materials at the right quality at the right time and at affordable price. It will also enable for companies to supply the products to the market sustainably and satisfy customers. In addition, such effective supply chain benefits farmers

increase yield productivity, apply the right technology for production and harvesting so to minimize the postharvest loss.

Therefore, this research is believed to give basic understanding regarding effective Supply Chain Management (SCM) in fruits processing industries especially for mango fruits juice processing companies. The study also thought to substantiate sourcing option by linking both actors so as to improve company's productivity and capacity utilization. Besides, it helps other researchers to use it as an additional source of information to conduct similar study on this area.

1.7 Scope of the Study

This research focused on three selected fruits processing industries; these are Great Abyssinia PLC, PETRAM PLC and Afran global PLC. The researcher selected these industries as a sample because, among the mango juice processors, they have relatively big capacity and not very far from Addis Ababa.(FBPIDI, 2009)The basic reason for selecting mango is that most of the processing companies use mango base for industrial processing. The data was collected from the company management staff including Managing Directors, supervisors and lower level workers involved in the production process, Quality control, sales, warehouse and procurement of the three companies. Moreover, from external sources it is important to observe the role of development partners, line ministries and Research institutes and Associations. The topic covers the areas of raw material sourcing integration with farmers, internal process, information flow and integration with local fruits processors.

1.8Limitation of the Study

One of the limitations of this research was getting full cooperation of the respondents and their commitment to completely fill the questionnaires. The other limitation of the research is that sample did not incorporate all the supply chain participants like farmers, middle men or input suppliers and final end users or consumers due to time and budget constraint.

Since the supply chain management strategy of each company (Great Abyssinia, Petram PLC and Afran global PLC) is peculiar to itself, it is difficult to generalize the findings of the study to all. Besides the study assessed the factors that affect the supply chain strategy practices from the stand point of the representative three companies.

1.9 Definition of Terms

Supply Chain: - A supply chain is the group of manufacturers, suppliers, distributors, retailers and transportation, information and other logistics management service providers that are engaged in providing goods to consumers (Chow, Heaver and Henriksson, 1999)It is also defined as a Supply Chain is a group of interconnected participating companies that add value to a stream of transformed inputs from their source of origin to the end products or service that are demanded by the designated end consumers. (DeweiLu, 2011p. 9)

Supply Chain Management: - SCM practices have been defined as the set of activities undertaken in an organization to promote effective management of its supply chain (Li et al., 2006).

Supply chain network: - is defined as a dynamic and integrated system in which all firms integrated to increase the value of every chain. Integration is the process of redefining and connecting parts of a whole in order to form the new one. (Hussain A. H. Awad, 2010 Vol I.)

1.10 Structure of the Study

Thisthesishas five chapters, Reference and Appendix.

Chapter one: Introduction :- this chapter deals with the background of the study and the organizations; statement of the problem, basic research questions, objectives of the study, definition of terms, significance of the study, limitation of the study, scope of the study and organization of the study.

Chapter Two: Review of Related Literature: - This part of the study deals with the literature relevant to the proposed study and conceptual framework. Both the theoretical and empirical review is seen.

Chapter Three: Research Methodology: -This includes the research design, study area, study participants, sampling technique and sample size; data collection instruments, data collection procedure, method of data analysis, ethical considerations of the study and data quality assessment.

Chapter Four: Findings, Results and Discussion: -This chapter will summarize the results, and findings of the study; interpretation and discussion of the findings.

Chapter Five: Summary, Conclusions, Recommendations and references.

CHAPTER TWO

2. Review of Related Literatures and Conceptual Framework

For manufacturing companies to be competitive in the global market they have to have an efficient and effective supply chain management system. Because of technology advancement, globalization and market complexity, the world is characterized by liberalization of international trade massive cross boarder financial, information and material flows (Dollar and Kraay, 2002). As most of the operational costs are associated with the input purchases, transportation, warehouse handling and distribution, companies with a more effective and efficient supply chain can have more advantage over its competitors. Thus, supply chain management, as a source of competitive advantage has become a big challenge for the companies in different industries (Mentzer, 2004). Supply chain management provides a unique opportunity for creating added value to customers by leveraging the competencies and knowledge of the entire trading alliance. It involve lowering costs, providing superior customer service, allowing flexibility and attaining faster innovation, cost, quality, customer service at optimal level.In this literature review, the researcher tried to review both the theoretical and empirical review regarding supply chain management and fruits juice processing for local market.

2.1 Theoretical Literature Review,

The theoretical part of review is divided into supply chain, supply chain management, supply chain strategy, key elements in SCM, and Supply Chain Management as a Source of Competitive Advantage.

2.1.1What is Supply Chain?

There are lots of definitions written by many scholars and supply chain researchers of the sector.All imply the importance of the discipline that supply chain management is becoming more and more important subject for organizational decision making purpose and achieve better competitive advantage. Therefore, some of the definitions are referred for this academic research paper as follows.

The Supply Chain is defined as a group of inter-connected participating companies that add value to stream of transformed inputs from their source of origin to the end products or services

that are demanded by the designated end customers. (Dr. Dawei LU 2011). In this definition, there are three key characteristics used to portrait a SC. (involvement of more than two stakeholders, these involved parties legally are independent or they do not belong to the same company and all parties have a commitment to add value to the stream of material flow that run through the SC and get benefited)

A Supply Chain comprises both the external and internal associates for the corporate. Ayers (2001) defines Supply Chain as life cycle processes involving physical goods, information, and financial flows whose objective is to satisfy end consumer requisites with goods and services from diverse, connected suppliers.

Supply chain is a linkage of various organizations and the chain comprises producers or vendors that supply raw materials, producers who convert the raw material into finished product, warehouses that store products, distributor's that deliver products to retailers and retailers who deliver products to the ultimate consumer through upstream and downstream linkages in different kinds of activities and processes (Christopher,1998).

Supply chain performance is measured by four categories. The first is customer service; Customer service measures the ability of the supply chain to meet the expectations of its customers. Depending on the type of market being served, the customers in that market will have different expectations for customer service. Customers in some markets both expect and will pay for high levels of product availability and quick delivery of small purchase quantities. Customers in other markets will accept longer waits for products and will purchase in large quantities. Second is Internal efficiency refers to the ability of a company or a supply chain to operate in such a way as to generate an appropriate level of profitability. As with customer service, market conditions vary and what is an appropriate level of profit varies from one market to another. Third is demand flexibility measure the ability to respond to uncertainty in levels of product demand. It shows how much of an increase over current levels of demand can be handled by a company or a supply chain. It also includes the ability to respond to uncertainty in the range of products that may be demanded. The fourth is Product Development which involves a company's supply chain's ability to continue to evolve along with the markets it serves. It measures the ability to develop and deliver new products in a timely manner. This ability is necessary when serving developing markets.

Supply chain management practice; defined as approaches applied in managing integration and coordination of supply, demand and relationships in order to satisfy consumers in effective and profitable manners, (Ibrahim and Hamid, 2014). Lambert, Cooper, (1998)

2.1.2 What is the Supply Chain Management (SCM)?

Supply chain management is basically concerned with managing the chain involving all participants of the supply of a particular product or service starting at the very core of the business. It includes not only customers but competitors are also considered as a part of the supply chain network and managed under the chain. (DaweiLu2011) As a result SCM is considered to be an integral part of the core competencies of the business, enhancing competitive advantage over its competitors. (Rasheda. H.Keane, John Herbohn and Geoff) Another author called Stock and Boyer (2009) defined SCM as "The management of a network of relationships within a firm and between interdependent organizations and business units consisting of material suppliers, purchasing, production facilities, logistics, marketing, and related systems that facilitate the forward and reverse flow of materials, services, finances and information from the original producer to final customer with the benefits of adding value, maximizing profitability through efficiencies, and achieving customer satisfaction". (Abdallah et al., 2014)

SCM is a set of approaches that efficiently integrate and coordinate the materials, information and financial flows across the supply chain so that merchandise is supplied, produced and distributed in the right quantities, to the right locations, and at the right time, in the most cost-efficient way. Supply chain management is one of the major tools that play a vital role to enhance organizational efficiency. (Sintayehu, 2016) Every organization needs to have efficient supply chain management through good financial planning, timely and high quality of service; elimination of duplicates and wastes, information systems integration, collaboration and teamwork; measurements, continuous improvements, and return on investments in supply chain.

2.1.3 Supply Chain Strategy

A supply chain strategy aims to determine the benefits of operation, distribution, services, and all activities an organization is using based on specific strategy. A supply chain strategy is part of the overall business strategy, designed around a well-defined basis of competition (innovation, low cost, service, quality) (Hugo, Badenhorst-Weiss & Van Biljon, 2011: 22). Implementing appropriate supply chain strategy enables to achieve a better supply chain performance in terms

of responsiveness and efficiency over that of rivalries in a given industry. It is integrated with the marketing strategy, customers' needs, the product strategy, and power position (Hugoet al., 2011: 22; Hines, 2006: 33; Klemencic, 2006: 30). The objective of SCM is to achieve a sustainable competitive advantage (Handfield, Monczka, Giuinipero& Patterson, 2009). Organizations can use supply chain strategies to gain a competitive advantage for the supply chain. A competitive advantage can be achieved by means of low cost or by means of differentiation. However, organizations have to implement the correct supply chain strategy. (DANIE J. NEL)

There are two generic strategies in supply chain management, namely the lean and agile strategies (Hull, 2005; Simons & Zokaei, 2005; Hallgren & Olhager, 2009; Pandey & Garg, 2009; Vinodh, Sundararaj & Devadasan, 2009). Here, 'leanness means developing a value stream to eliminate all waste, including time, and to enable a level schedule', while 'agility means using market knowledge and a virtual corporation to exploit profitable opportunities in a volatile marketplace' (Manson-Jones et al., 2000: 54). Both are important for implementing the strategy or a combination of both which is called leagile supply chain. Some writer like Towill and Christopher suggested that basically, there are three different supply chain strategies. They are lean, agile and a combination of lean and agile hybrid supply chain strategies. (Towill& Christopher, 2002; Raturi & Evans, 2005)

a) **The lean supply chain strategy:** - Lean is a supply chain term defined as the 'enhancement of value by the elimination of waste' (Womack & Jones, 2003). A lean supply chain is concerned with cost reduction by operating the basic processes with a minimum of waste (Qi et al., 2009: 670). The primary objective of a lean supply chain can be realized by using the most basic forms of data communication on inventories, capacities, and delivery plans and fluctuations within the framework of just-in-time (JIT) principles (Amir, 2011: 288; El-Tawy & Gallear, 2011: 817). Some of the key features of a lean supply chain strategy are predictable market demand; a lowest-price criterion; product supply based on forecasts; a long product life cycle; and long order lead time (Gattorna, 2006: 136). Customers in lean supply chains are delivered value through 'low production cost and logistics achieved by using all available synergies and economies of scale' (Gattorna, 2006: 138). Many organizations have successfully implemented and are benefiting from lean strategies (Gurumurthy & Kodali, 2009: 274; Duarte & Machado,

2011: 330). Despite the benefits associated with lean strategies, they have been criticized as lacking in human integration and being characterized by repetitive manufacturing (Hines, Holweg & Rich, 2004: 994; Duarte & Machado, 2011: 330). As a result, many prefer an agile supply chain strategy or a combination of both strategies. (Cost reduction, flexibility, improvement of process through elimination of wastes, avoids non value adding operations. It encompasses all steps through product life cycle starting from product design to product selling from customer order to delivery.

***b*) Agile supply chain strategy:**- Agility is a comprehensive response to the business challenges of profiting from rapidly changing, continually fragmenting global markets for high-quality, high-performance, customer-configured goods and services (Iskanius, 2006: 93). Agility is an appropriate strategy when coping with turbulence and reconfiguring operations to enable individual customer specifications to be accommodated in high-volume manufacturing. Baker (2008: 28) advocated that agility not only responds to changing market conditions, but also to exploiting changing opportunities (Li, Chung, Goldsby & Holsapple, 2008: 410). Agility was applied to supply chains to transfer the winning strategy and benefits of agility to supply chains (Rahimnia, Moghadasian & Castka, 2009). Agility in the context of SCM focuses on 'Responsiveness' (Christopher &Towill, 2002: 2). Li et al. (2008: 408) professed that, in today's complex and challenging supply chains, agility is critical to global competitiveness. Agility in a supply chain, according to Ismail and Sharifi (2006: 432), is the ability of the supply chain as a whole, and its members, to rapidly align the network and its operations to dynamic and turbulent requirements of the customers (Duarte & Machado, 2011: 331). The main focus is on running businesses in network structures with an adequate level of agility to respond to changes while proactively anticipating changes and seeking new emerging opportunities (Sharifi, Ismail & Reid, 2006: 1080). The key elements of an agile supply chain include (Ismail & Sharifi, 2006: 433; Gunasekaran, Lai & Cheng, 2008: 553): being information driven (or virtual); having market sensitivity (or demand-driven); having integrated processes; and being network-based. (Amir, 2011: 287)

c) **Leagile supply chain:** - A leagile supply chain is a hybrid of lean and agile systems. This system can be defined as 'a system in which the advantages of leanness and agility are combined' (Krishnamurthy &Yauch, 2007: 591). Hybrid supply chains can be defined as the

combination of lean and agile supply chain strategies that exploit the benefits of both lean and agile supply chains (Mason-Jones, Naylor &Towill, 2000; Towill & Christopher, 2002). Leagile supply chains aim to infuse competitiveness in an organization in a cost-effective manner (Amir, 2011: 290). The transition from lean or agile to an integrated leagile supply chain can be interpreted by using an integrated approach to supply chain design, in which the real focus of supply chain re-engineering is on seeking ways to achieve the appropriate combination of lean and agile strategies (Hull, 2005: 230; Mistry, 2005: 104). In this hybrid strategy, lean focuses on waste elimination, achieving low-cost delivery of a standardized and stable product, while agility responds to complexity brought about by constant and unpredicted changes (Duarte & Machado, 2011: 334).

Industrial strategy means determining, what type and how to produce products and where to sell. Which product to be made to stock, to orders or some combination of it is decided? From where do we get the inputs? Will some of the inputs and /or manufacturing be outsourced or production moved to low cost? Do we need additional budget to do the supply linkage more agile or responsive? Changing the manufacturing strategy can be a key source of competitive advantage. Sometimes, it can also be an advantage to choose different manufacturing strategies for different products of different markets. The key drivers of manufacturing strategy are product life cycle, demand changes, and the number of product variants. (Klemencic, 2006)

2.1.4 Key Elements in SCM

From the above definitions, SCM comprises of a lot of issues related to different stages in the supply chain. SCM basically encompasses four basic elements such as customer integration, internal integration, supplier integration and information sharing. Customer integration includes different activities and practices such as integrated problem-solving initiatives, direct customer contacts, managing customer complaints, increasing customer satisfaction, and establishing long-range relations with customers.

Supply chain integration involves effective communication among all supply chain members (Turner, 1993). Integration is the term used to describe the various relationships that exist between departments within one company or the relationship between various companies. For example, internally and externally, companies can integrate different activities within the

operating company. This activity became apparent (such as product flow, finance, marketing, measurement, etc.) or intangible (such as relationships, information, etc.). Integration not only offers knowledge but also introduces many problems. Because of the collaboration between members of the chain, SCM gives significant opportunities for partners involved in terms of cost reduction, revenue enhancement, flexibility, customer satisfaction, speed and economy of time (Hoole. R, 2005).

Internal integration deals with integrating and linking information among different organizational departments, creating an easy access to inventory information, developing an easily accessed integrated database that encompasses main operational data, integrating production processes using advanced information systems, and linking production and marketing departments. In another study it is also explained that internal integration is a systematic way of creating inter-functional interaction, collaboration, coordination, communication and cooperation that takes functional areas together to create a cohesive organization. (Flynn et al, 2010)

Supplier integration is characterized by various aspects and activities such as information sharing, coordination, trust, shared technology, integrated processes, long-term contracts, assisting suppliers to improve production processes, fostering quality improvements, investing in supplier's assets, including suppliers in new product development, improving supplier's overall capabilities, risk and reward sharing, and shared gains from development efforts. According to Jonsson (2008), strategic sourcing and the development of the supplier relationship is really significant for the company's and supply chain performance. The efficiency and the competitiveness of the company's supply chain can be affected by the choice of sourcing strategy, collaboration strategy with suppliers. Suppliers are as equally important as the customers for a company's performance and competitiveness.

The advancements of information technology have greatly contributed to the evolution of sharing information throughout the SC. Information sharing can vary from strategic to tactical & from information about logistics activities to general market & customer information (Mentzer et al. 2004). Information sharing enables supply chain actors to perform as a single body (Stein & Sweat, 1998). It may also include information about quality, logistics, customer and general market information, and design information (Singh, 2013).

The impact of information sharing on SCM depends on what information is shared, quality on shared information, and company's capability in using and translating the information in to a

supply chain strategy and operational activities (Moberg et al, 2002). As Whang stated, poor information sharing between actors in a supply chain will result in poor coordination that will lead to many serious problems such as high inventory levels, inaccurate forecasts, low resource utilization, and high production costs (Hana, 2016). The quality of the shared information becomes a critical aspect of effective supply chain practice. For that reason, organizations need to view their information as a strategic asset & ensure that it flows with minimum delay & distortion. (Feldman et al. 2003)

2.1.5 Supply Chain Management as a Source of Competitive Advantage

Many scholars have defined the concept of competitive advantage, such as Li et at (2006) stated that competitive advantage is the capacity of an organization to create and maintain defensible position over its competitors. Furthermore, Tracey et al. (1999) argue that competitive advantage comprises of distinctive competencies that sets an organization apart from competitors, thus giving them an edge in the marketplace (Thatte, 2007).

Competitive strategies usually drive a firm to compete as cost leader, differentiator, or as a focused provider (Porter, 1980). In manufacturing firms, the competitive business strategy is translated into competitive priorities and executed through operational action plans (Hayes and Schmenner, 1978; Hayes and Wheelwright, 1984; Koufteros et al., 2002). Competitive priorities are the strategic business objectives and goals of the manufacturing organization (Koufteros et al., 2002). In the manufacturing environment, there are five traditionally accepted competitive priorities: cost, time, innovativeness, quality, and flexibility (Boyer and Lewis, 2002; Krajewski and Ritzman, 1999; Leong, Snyder, and Ward, 1990; Safizadeh, Ritzman, Sharma, and Wood, 1996; Skinner, 1974; Ward et al., 1998).

In order to facilitate SCM implementation and create a true SCM environment, different firms in different industries have developed suitable business and management concepts for them (Svensson, 2003). Modern supply chain practices need to be highly proactive, horizontally integrated, information driven, network based, and technology enabled.

Long term objectives of SCM include improving efficiency and effectiveness of supply chain partners, improving market share and profits, and increasing customer satisfaction. Improved Collaboration is the other benefit of SCM. Short term objectives of SC include increasing

productivity, and reducing cycle time and inventories. (Ayman et al., 2014) A SCM is also improves cycle times and ensures that raw materials are provided when businesses need them so that companies never have to stop production. Lack of basic knowledge of SCM amongst the business practitioners and even though some of the practitioners have realized the importance of SCM, they lack an understanding of what constitutes a comprehensive set of SCM practices. (Makena, 2014) The benefits of implementing supply chain management in the manufacturing sector include, improve forecasting; improve quality, Improve delivery of services; Improve income due to better monitoring of the markets; and Improve utilization of resources. Improve planning & scheduling; Increase asset utilization. It is also helpful in reducing lead times; Reduce inventory levels and Reduce costs for logistics.

2.1.6 Supply Chain Practices and Performance in Ethiopia

The practice of SCM is to complete set of actions which are done in organizations towards improving the effectiveness in the internal supply chain. SCM practices are defined also as approaches applied in managing integration and coordination of supply, demand and relationships in order to satisfy consumers in effective and profitable manners, (Ibrahim and Hamid, 2014). The implementation of SCM involves identifying the SC members with whom it is critical to link, what processes need to be linked with each of these key members and what types /level of integration applies to each process link. In Ethiopian context, although the agricultural sector accounts for 55% to the GDP (Gross Domestic Product) and provides 85% of employment, the contribution of Vegetable and fruit production and consumption is relatively limited. Small-scale farmers, who account for 90% of the agricultural output, cultivate an estimated 96% of total harvested land. (AAiT, 2014) The CSA 2013/14 report shows that Fruit production showed a relatively low increment trend from 4,599,851 to 4,793,360.64quintals compared to the remarkable increment achieved in vegetable and root crop production during these years. (AAiT, 2014)

Although, significant quantity of fruits are produced, the supply linkage to value addition is very poor, much of the products is either exported fresh or sold to the domestic market. (EHDA, 2007) With the exception of self-integrated processing companies like upper awash agro industry and Africa juice Tibila farm, which are managing the raw material sources from their own farm land, there is no other processing industry linked with local production.

The Upper Awash Agro-Industry Enterprise is operating in Oromiya and Afar national regional states. The company was founded as Government enterprise in 1978. It is the biggest producer and supplier of fruit and vegetable in Ethiopia market. It is also the main producer of and supplier of processed tomato paste, tomato juice, orange marmalade and guava nectar in the country. Its total land holding is 7,417 ha of which 6,903 is arable. It has four farms and a processing plant. Fruits are produced in all the four farms and processed in the processing plant. (GebrMariamS.2003) From this land about 2,200 hectare of the land is occupied by perennial crops (1,200 hectare of citrus, 400 hectare of mango, and the remaining papaya, guava, lemon, lime and grape vine).

During the year 2014, the survey made to review the company's capacity utilization by the AAiT team reported that the farm is supplying 60 % of the capacity only. The company has extra capacity to produce but did not look for additional raw material produced from other farms. (AAIT, 2014)PETRAM PLC started working with a knowledge team where internal and external experts/partners are involved like MAAZA international, farmer cooperatives, national pulp makers, Agrana (Austria) and the F.B.PI. D.I. to establish a sustainable supply chain from local farmers to produce mango pulp locally. (LM consultancy & local fruit, 2018) This linkage is an appreciable effort though at preliminary stage of development. The company had been an importer and distributor of MAZZA mango from India.

Another company selected for this study purpose is Great Abyssinia fruits juice processing company; it is one of relatively the biggest companies registered in Ethiopia fruits industry, Great Abyssinia fruits processing company was established in 2003.Currently the company is located in Sululta town producing mango juice by the brand called PREGAT Juice for the last eight years. Great Abyssinia juice factory also produces carbonated soft drinks. (Company's report 2009) The company is sourcing raw materials mango pulp from abroad mainly from Israel using the input standard of the mother company.

The other study area is Afran global Business PLC. It is located at Legetafo town and was established in 2008EC. The Company is producing mango juice importing fruits concentrate input from Israel. Afran Global Business PLC is a manufacturing, import and distribution company. Afran produces mango juice in PET bottles under the brand name "Bon Jus" with different packaging size from half to one and half liter. (LM consultancy & local fruits 2018) Therefore, what we assess is almost all companies have weak supply linkage with local

sources.These processing companies have a positive impact on the livelihoods of many Ethiopian people especially for people living around the company area in terms of creating job opportunity, and on the economy as a whole in bringing higher incomes, substituting imports. All fruits processing companies, although they are operating at low level production capacity, they are making profit. In addition, Companies like PETRAM PLC is exercising local mango sourcing from commercial farm producers to have sustainable supply of raw mango.

The annual report of fruits and juice producers association indicated three major critical factors that are affecting the sectors competitiveness that needs to be addressed; these are shortage of raw material and other input supply, powers shortage and skilled manpower in processing.(EFVPA, 2009)

Hence, why all companies are importing raw material input (mango concentrate or semi processed mango) from abroad is an issue to be researched through SCM. There are a number of factors that are cited as a critical cause for companies not sourcing from the local source. Even if there is a significant increase in agricultural production, the volume of fruits supplied to processing industries is very limited. (Leggese E., 2017).

2.2 Empirical Literature Review

The empirical part includes the findings of researchers about the relationship of supply chain management practices of fruits juice processing industries.

2.2.1 Supply Chain Management and Operational Performance

The horticultural sub-sector in Kenya comprises mainly fruits, vegetables and cut flowers, and accounts for 10 percent of urban food consumption and a much larger percentage in rural areas. Vegetables dominate horticultural production, followed by fruits and cut flowers. (FAO, 2004/05) A strong SCM carefully implemented would enable Kenyan manufacturing firms to compete favorably locally and internationally in today's difficult business environment; where firms are constantly searching for improvement in product production, systems management and customers. (FAO, 2003) The sector is given due attention by the Government and looks after for strong supply chain for input and seed provision. In 2003, a total area of 373,000 hectares was dedicated to horticultural production, producing 4.35 million tons of horticultural products, valued at US$494.4 million. The sector contribution to Gross Domestic Product (GDP) was 3.5 percent and 14.5 percent to Agricultural Gross Domestic Product (FAO 2003).This shows a

strong relationship between organizational performance and SC management practices in Kenya. Kenyan Fruit and vegetables are also important sources of foreign exchange earnings, which ranged between US$260 and US$350 million in recent years, ranking second to tea, and accounting for 21percent of total domestic exports in 2003. Mango has been the third most important fruit in terms of area and total production.

Similarly the study made in Germany in 2005 due to strong supply chain practices, the export share of the processing industry for fruit and vegetables is approximately 20%, in which possible re-exports are already included. For 2003, the official statistics in Germany show exports of processed fruit of 1.456 million tons with a value of 1.36 billion €. In the same year 0.334 million tons of processed vegetables with a value of 0.4 billion € were exported. (Statistisches Bundesamt, 2005) A researcher (Mustefa, 2014) conducted study on the SCM practices and firm performance in case of Awash Tannery P.L.C. a leather industry on the relationship between SCM practices with operational performance and organizational performance. The research found out that there is strong relationship between SCM practices, operational performance and organizational performance. The study showed that due to strong SCM relationship practice has an influence both on operational performance and organizational performance.

According to a study made by Belay Mengistu for academic purpose UNISA 2011 to evaluate the Ethiopian cement industry performance pointed out that, for processing industries to operate in a better level of efficiency, the different chain actors be internal or/and external have to have strong relationship to maximize the operational performance. Both internal and external integration does not come by itsown; it needs commitment and collaboration among the supply chain members. (MengistuB., 2011)

Internal integration proved to be the most contributing SCM practice to SC efficiency. Also, the interaction effect of competitive intensity on the relationship between internal integration and SC efficiency was significant and positive. The findings implied that whether the markets are characterized by low competition or intensive competition, internal integration represents a crucial SCM tool to improve SC efficiency. (Abdallah et al., 2014) A study conducted by Natnael Gebreyesus on Employees' Perception on the Effects of Supply Chain Management Strategy on Firm Performance in MOHA Soft Drinks Industry S.C. Addis Ababa, Ethiopia indicated that the correlation test conducted on customer service strategy and supply chain

performance is strong and positive relation between customer service strategy and supply chain performance. (Gebreyesus N., 2016)

A value chain study made in 2004 by GIZ to promote investments opportunity for passion fruits farming and passion fruits concentrate processing, indicated that Ethiopia has better comparative advantage if both farming and processing tasks are integrated together. Based on this study document a Company called Africa Juice Company was established in Ethiopia by A group of investors of South Africa and Netherlands at Arssi Sodere area. The company is currently doing both passion fruits plantation of 1200 ha, of land and produces passion concentrate for international market. Nevertheless the progress of Africa juice is not as expected. Most of the farm land did not yet planted with passion fruits; the shortage of raw passion is a critical problem. Until now theyplanted 250 ha, of their own and planned 125 ha. Passion fruitsfarm of out-growers did not move more than 25 ha. The factory is using 40% of the capacity due to supply problem. (MOTI, 2008 EC)

With the assistance ofdevelopment partners the company Africa Juicetried to link its sourcing with farmers of Sothern region Arbaminch area and received two roundsupply of fruits in one season. After planning to do more in the next season farmers refused and did not continued to work together due to price in negotiation.(F.B.P.I.D.I)

All these researchresults indicate that manufacturing industries that have strong SCM system would benefit more & perform better. Benefits like maintaining consistent supply of quality inputs, improve customer service, minimize lead time, improve delivery of services, improve internal system, increase productivity, improve income due to better monitoring of the markets, and improve utilization of resources. Etc.

2.2.2 Fruits and Vegetables production and market

The main export market destination of Ethiopian fruits and vegetables are in the neighboring countries like Djibouti, Somalia, and Sudan, the Middle East countries and Europe. (MoTI2008) According to the report of EHDA (2010), the Ethiopian fresh fruits and vegetables export market is increasing from time to time. More volume of vegetables is exported than fruits. Though the major share is cut flower, mango, avocado tomato and banana are also exported and almost all are exported fresh. The potentials from the international markets side are also ever increasing. There is well demonstrated international market demand for Ethiopian fruits and vegetables due

to its organic nature and proximity to buying countries like Djibouti, Somalia and UAE. The increasing international market demand for these products, not only boost export earning but also attract additional market destinations. (EFVPA, 2008)

In spite of the country's immense potential to increase more its production and productivity of fruits and vegetables and significant increment of the international market demand, the production, processing and marketing system of fruits and vegetables is said to be full of challenges for all involved partners. Some of the challenges are production (farming is dominated by small holder farmers), seed variety- shortage of high yield, poor harvest lose, weak production and market chain, disease and insects are some of the challenges. (EARO, 2008)

Table 2-1 Production, area coverage &Productivity of selected fruits in Ethiopia

No.	Fruits type	production & productivity 2013/14			production & productivity 2016/17			Remark
		Covered area in ha	Total Production	Productivity/ha	covered area in ha	Total Production	Productivity/ha	
1	Mango	10,344.51	721,869.77	69.78	15,413.76	1,046,462.6	67.85	
2	Avocado	10,590.59	182,063.62	17.19	17,834.58	649,821.1	36.44	
3	Papaya	2,467.63	315,882.51	128.1	3,489.47	503,961.25	144.4	
4	Orange	3,244.80	311,826.52	96.10	2,619.80	206,559.48	78.85	
5	Banana	41,356.88	3,400,125.8	82.21	63,212.97	5,383,023.1	85.16	
6	Lemon	1,128.00	46,609.50	41.31	1,426.25	77,814.52	54.56	
7	Guavas	2,039.71	8,502.82	4.31	3,248.50	43,265.32	13.32	
8	Pineapple	*	*	*	645.19	12,758.3	-	
	Total	**71,507.13**	**4,991,837.63**		**107,892.5**	**7,923,665.67**		

Source (CSA 2013/14/- 2016/17 SURVEY REPORT)

As it is illustrated in table 2-1 above the production and productivity of selected fruits show that there is a potential to promote value addition of some products with better productivity like mango, papaya and orange and supply them to processing companies.Because of the small holder farming, collection faces avery long chain and different transaction risksand costs due to inadequate coordination among the chain actors. This ultimately resulted in loss of quality and deterioration which is considered as a reject during quality inspection for industrial input. Although some chain actors like FBPIDI and EHDA are trying to link farmers and cooperative

unions with processing industries the result gained was not as expected. This is because of the problems observed from both side i.e. farmers and processing industries. Challenges of the processing side are insufficient and inconsistent supply, poor quality and variety of products and expensive price relative to the world market. (W/yohns F., 2017) The involvement of middle men also has its own negative contribution in linking producers with processing industries. The middle men are of two types, on one side, some want to directly export to abroad and secure the foreign currency which in effect use the currency for importation, While others want to sell it in the local market. (Local fruits, 2018) One of the most challenging tasks in fruits and vegetables marketing in Ethiopia is therefore, reducing the market chain of the product, maintaining quality and productivity.

World production of fruits and vegetables is growing more than other crops, According to data from the Food and Agriculture Organization of United Nations (FAO 2011), fruits and vegetables claimed an increasing share of world agricultural trade, from a nominal value of $3.4 billion (10.6%) in 1961 to nearly $70 billion (16.9%) in 2011. During this period there had also been important changes in the categories of products traded. Fruit and vegetable juices more than doubled their share of total global export value for fruits and vegetables, from 3.6% in 1967-1971 to 8.7% in 1997-2011. Similarly, the share of vegetables and their products increased from 26.0 to 32.7%, while that of fruits and their products (excluding juices) declined from 48.5 to 39.1%. Hence, this increased demand can only be fulfilled through implementing strong supply chain practices in both production and all other actors of the supply chain.

2.2.3 Conceptual Framework

A conceptual framework is a basic structure that consists of certain abstract blocks which represent the observational, the experimental and the analyticalaspects of a process or system being conceived. (Alan S. Kaufman and Nadeen L. Kaufman, 2005) In this study the conceptual framework proposes that the SCM practices like supply chain strategy, supply chain performance and organizational performance have an effect onsustainable supply. As part of the organizational strategy the supply chain strategy is aligned and contributes to the firm's objective fulfillment. Supply chain performance also a factor to the reliability, responsiveness and

flexibility of the system. Similarly organizational performance is seen in-terms of the profit, value and volumeof sales.

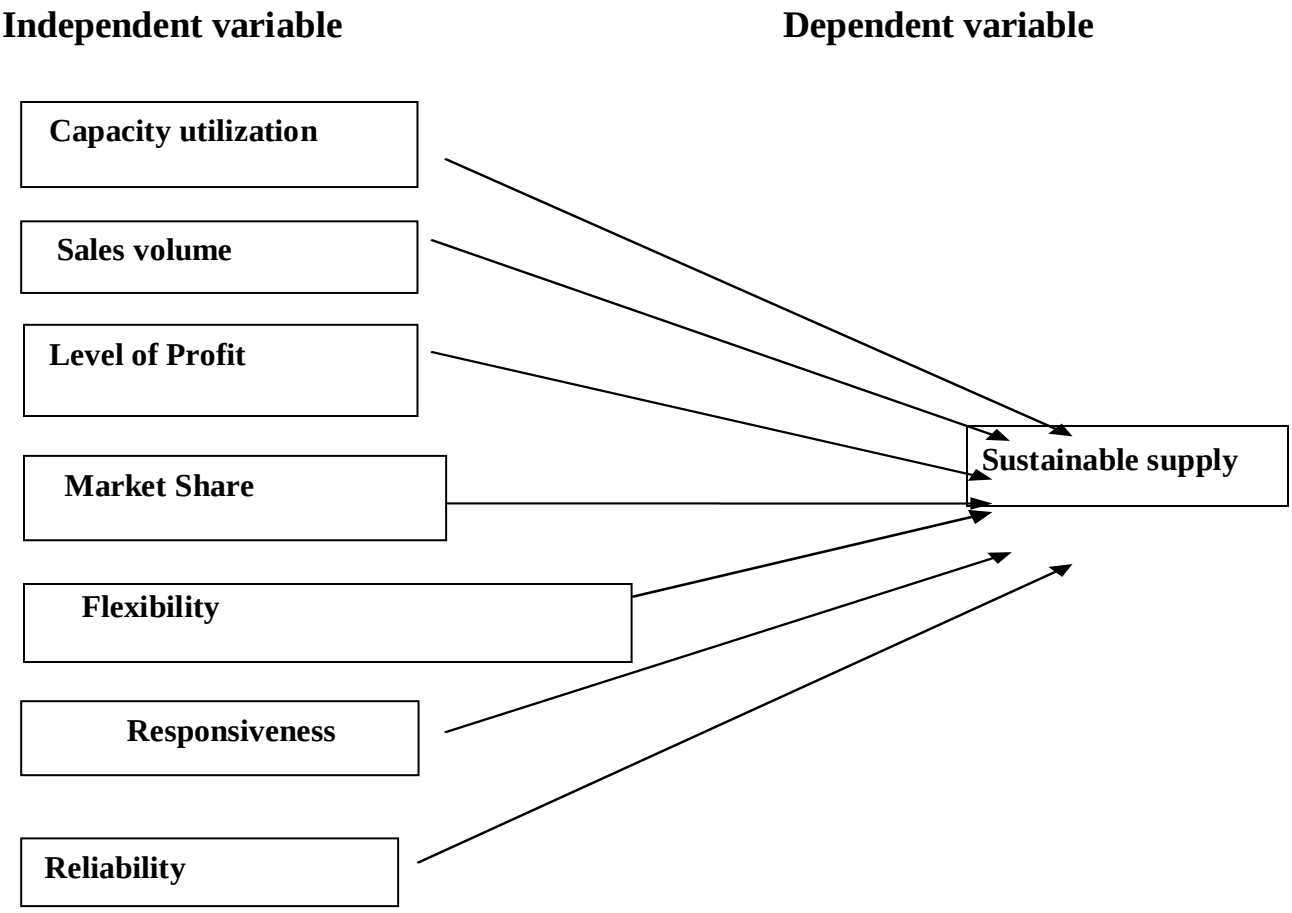

Figure 1- Conceptual Framework, Adopted from the research works of Ng (2006), and Vaggelas and Pallis (2015)

Therefore, the research is guided by the conceptual framework that is indicated in the above diagram. The variables in the left sides are; capacity utilization, sales volume, market share, flexibility, reliability and responsiveness are determinants of sustainable supplywhich are identified from the literature. The determinant variables are believed to influence the performance of thefruits juice processing companies.

CHAPTER III

3. Research Design and Methodology

This chapter deals with discussion of the research methodology used in this study. It discusses effective approaches used throughout the research process and is organized into study area, research design, target population and sample, method of data collection and research instruments, reliability test, data analysis techniques and ethical consideration. This is important in ensuring that the study addresses the set objectives and in turn answers the research questions on which it is founded.

3.1 Research design

The design part is a general framework of how the researcher intends to go about answering the research questions and the data analysis the researcher conducts. (Leedy and Ormarod, 2010)In this research descriptive survey research method is employed as the researcher wants to assess and identify the factors affecting local fruits supply chain and fruits processing industries.

3.2 Study Area

The purpose of this study is to make an assessment of factors that affect the local fruits supply chain and fruits manufacturing industries focusing on the case of three mango fruits processing industries. These companies are selected for the study because majority of the fruits processing companies are doing mango juice. Most of fruits juice companies are operating below 50% of their capacity. (FBPIDI 2009) In this research issues like "why processing companies are operating at low level of capacity utilization" is assessed and what are the factors hindered not using local fruits as input is investigated.

3.2.1 Description of the Study Area

The study area focuses on three major mango fruits juice processing industries, these are Petram PLC which is one of the major mango juice suppliers in Ethiopia established in 2006 EC. The company's plant is located in Sebeta town 30 k.m from west of Addis Ababa, The Company had been an importer and distributor of MAZZA mango from India. (Company's Audit report 2009)

Petram is the co-producer for the brand MAAZA. Although the installed Production capacity is more than 90,000 units a day, the current total production target is 60.000 units a day. Depending on season PETRAM can run 10-hour or double shifts. The raw material for juices production is based on imported mango pulp from India. The varieties Alphonso and Tutapuri are mostly used. The production process of juice making is done by mixing water, puree and additives (preservative, flavour, odour, taste, and colour). The imported mango pulps quality parameter is tested both within the company's laboratory and also made by Food, Medicine Administration and Control Agency. (FMACA)

According to the report obtained from development partner organization called Enterprise Partners (EP), an international consultant assigned to make a study about the company's product quality and product development strategy found out that PETRAM has a challenge with the quality variation of the mango pulp, used for the production of mango juice. For that reason Petram wants to improve the quality of the mango pulp using local sourced fresh mango. Hence,Petram started an integrated supply chain project with support from the expertise of MAAZA international and the FBPIDI. PetramPLC recently works with a knowledge team where internal and external experts/partners are involved (like MAAZA international, farmer cooperatives, national pulp makers, Agrana Austria and the Food and Beverage Development), to establish a sustainable supply chain from local farmers. (LM consult & local fruits 2018).

The second focus area for this academic study purpose is Great Abyssinia fruits juice processing company. It is one of the biggest companies registered in Ethiopia fruits industry, Great Abyssinia fruits processing company was established in 2003. Currently the company is located in Sululta town north of Addis Ababa 20k.m far. The company is producing mango juice by the brand called PREGAT Juice and also different flavored soft drinks. (Company report, 2009)

The third company selected for study area is Afran Global PLC located at Legetafo town 20 K.M East of Addis Ababa. The company was of established in 2008 EC producing mango juice importing fruits concentrate from India. Afran Global Business PLC is both a manufacturing, import and distribution company. Afran produces mango juice in PET bottles under the brand name 'Bon Jus (LM consultancy & local fruits 2018). As market strategy, the company focuses in regions outside of Addis Ababa. Currently, the management of the company is running an improvement plan on product safety. Similarly like Petram, Afran Global also supported by EP to improve its processing line on product development and food safety system and advised to do

the quality assurance. The annual sales of the year 2009 EC of the company was about 26 million Birr. (Company report, 2009)

3.3Research Approach

The study area of this research is more likely to be answered through a quantitative and a qualitative approach is used. Hence the approach is a mixed one. This method enables us to understand the very nature of what we are actually looking for. For the quantitative methodology, researchers use the scientific method, which starts with the specific theory and hypotheses, and where researchers quantitatively measure and analyze based on established research procedures (Swanson & Holton, 2005). For qualitative one, interview will be made with top level managers and will be analyzed and described.

3.4Population of the Study

Population refers to the target population;in this case the population for the study was mainly the employees of Petram PLC, Great Abyssinia & Afran Global PLC, the management group, and relevant partners like FBPIDI, EHDA and Horticulture Producers and Exporters Association are contacted for information purposes.According to Alan S. Kaufman and Nadeen L. Kaufman, (2005), population is a group of individuals, objects, items or it is an entire group of persons, or elements that have at least one thing in common.

3.5 Sampling Technique and Sample Size Determination

3.5.1 Sampling Technique

In this study the researcher uses probability sampling particularly both stratified random sampling and purposive sampling techniques is used to select respondents from the target population. Because the total population of the study is large and heterogeneous in type stratified sampling technique was preferred. With stratification one can ensure adequate sample sizes for sub-groups of interest, including small subgroups, or you can use stratification to improve the precision of overall estimates. (SAS/STAT, 2011) Therefore, the strata for this study were the management, supervisors and operation workers. Purposeful sampling is used so that individuals are selected because they have experienced the central phenomenon. (Creswell, 2007)

As the study used five-point Likert scale to measure a continuous variable, its sampling error is 3%. There is always a probability that the sample obtained by the researcher or investigator does not represent the true population value (Singh, Ajay S and Masuku, Micah B, 2014).

Therefore, the study was sought to gather information from 116 employees, on average forty employees from each industry. This sample is believed to be a good representation of the populations since the sample size is greater than 10 percent of the target population. (Duncan D.Nulty2008)Selection of management team was done using purposive sampling to get the specific and relevant management member.

Hence from 133 total populations of Great Abyssinia 43 numbers of samples were taken which is 32%, from Petram PLC out of 106 total population 40 samples are taken which is 37% and from total sample 80 population of Afran Global PLC 36 samples were taken which is 45% of the total staff for the survey. From 319 total populations of the three companies the number of sample size which is 119 is therefore average37% of the total population is considered.

Table 3-1 below shows the details of ample size computation.

Table 3-1 Sample Size Determination

N.o.	**Company position**	**Abyssinia**		**Petram**		**Afran Global**		**Grand total sample population**
		Total popu.	**No. of sample**	**Total popu.**	**No. of sample**	**Total popu.**	**No. of sample**	
1	Top management	5	2	7	2	4	2	6
2	Planning	6	3	5	3	4	3	9
3	Processing/manufacturing	43	18	31	15	29	13	46
4	Quality control	5	3	5	3	4	3	9
5	Marketing & sales	19	6	11	6	10	6	18
6	Procurement	9	4	8	4	6	3	11
7	Storage	11	3	8	3	8	3	9
8	Finance and Admini.	35	4	31	4	15	3	11
	Total	133	43	106	40	80	36	119

N.B relevant stakeholders(EHDA, EFVPA, MOTI, EP, and FBPIDI)

3.5.2 Data Sources and Types

The study relies on both primary and secondary sources of data. Primary data is collected from respondents using a structured questionnaire and interview of management group. Secondary data is collected from different documents of companies,Trade and Industryreports, journals and publications of relevant organizations.

3.6Data Collection Instruments

3.6.1 Questionnaire

Quantitative data is collected from the respondents using five point Likert scale questionnaires. These questionnaires were designed based on the conceptual framework and the research questions set to investigate and analyze the performance of supply chain management practices in the case of three mango fruits juice processing industries. Hence, the respondents are asked to indicate their level of agreement and disagreement using a five-point Likert scale (1= strongly disagree 2= disagree, 3= neutral 4=agree and 5= strongly agree) about the designed questions.

3.6.2. Interview

Interviewisalsomade with the company managers of the three processing industries to have more elaborated information about the study based on pre-arranged points of discussion. The checklistisattached as annex.

3.6.3 Document Review

In the document review, the researcher collected the necessary information from Annual report of the MoTI, EHDA, EFVA, unpublished study from EP and Audit and financial reports of the companies under study and reviewed.

3.7 Data Collection Procedures

While planning to collect data from all concerned parties, the researcher has taken the formal request support letter from Addis Ababa University, school of commerce department of Logistics and submitted to all including the three companies to have full interest and permission to gather data and ask additional information. Then the researcher approached the respondents by

introducing himself briefly and explaining the objective of the study. Finally, he distributed questionnaires to the respondents and collected as the respondents finalized before the deadline.

3.8 Ethical Consideration

Leedy & Ormrod (2010) identified four main ethical considerations that need to be addressed in the process of undertaking a research process. These are: protection from harm, informed consent, right to privacy, and honesty with professional colleagues. Accordingly, the researcher should inform all these basic ethical consideration specified:-

1. The procedures of the study: - Procedures should not cause confusion and harm participants. Hence, the questionnaire is prepared clearly and due care is taken not to expose any one.

2. Informed consent:-The purpose and the importance of the study were explained for the participants of the study. They were also informed that they have the right to participate or not in the filling in the questionnaire.

3. Keeping confidentiality:-The participants were informed that any information they provide is to be kept confidentially so that they can answer and discuss freely. The researcher used code for the sake of confidentiality.

4. **Reports**, the whole findings in a complete and honestly manner presented as it is.

3.9 Data Analysis Method

In general, there are two types of data analysis techniques namely: qualitative and quantitative where by the choice of these methods greatly depends on the type of information that collects by researcher. After collecting and sorting the relevant data using data collection tools, quantitative responses were sorted, coded, and computed using the Statistical Package for Social Sciences (SPSS), version 20. In this research the researchers used analysis like mean and standard deviation. Grand meanis also calculated to measure the overall judgment. Then findings are reported by using tables and charts.

3.10 Data Quality Assessment and Reliability Test

The data that is collected is reliable and valid; enough orientation about the data collection process was given to the data providers. In addition to that, the process of the data collection is made in statistical models. Reliability is tested to make the instruments measure what was

intended to measure the respondents are clearly communicated on the contents of the questioner as well as the objectives of the research.

Reliability concerns the consistency of results obtained (Gill & Johnson, 2 0 0 2), that is whether the same results would be achieved by a different researcher if the study was repeated exactly. To keep consistency of the research researcher was used cronbach Alpha. Cronbach's alpha was calculated by the application of SPSS for reliability analysis. According to Zikmud et al (2010) cronbach's alpha is a measure for the internal consistency of items to the concept. Scales with coefficient alpha between 0.8 and 0.95 are considered to have very good reliability, scales with coefficient alpha between 0.7 and 0.8 are considered to have good reliability and coefficient alpha between 0.6 and 0.7 indicates fair reliability or acceptable.

Table3-2Reliability Statistics

Cronbach's Alpha	Number of Items
0.79	85

As indicated in table3- 2, Cronbach's alpha test indicated that the instrument is reliable as 0.79 value which is in the acceptable range.

CHAPTER IV

4. Data Presentation, Analysis and Discussion of Results

In this chapter the main findings of the research are presented that have been obtained through structured questionnaires, interviews and secondary data. The topic of the study is assessing factors that affect the local fruits supply chain and fruits processing industries the case of three fruits juice processing companies. These companies were selected on the basis of their market size, brand and nearness to the capital city. This is a purposive sampling approach. The findings of the research were analyzed and presented in the form of descriptive statistics. The analysis and interpretation of data was guided by the research objectives from which a discussion of findings has been made.

4.1 Response Rate

A total of 116 questionnaires were distributed to the employees of the three processing industries (Petram PLC, Great Abyssinia P.L.C & Afran Global) and out of 116 only 89 of them responded, which is 76% response rate. The rest 24% were not collected, due to probably reluctant to replay or n not being in the work place during the time of collection and due to inability to understand the matter. However, According to vice-chancellors committee and careers council of Australia (2001) which is cited Duncan D. Nulty (2008) regarded an overall response rate of 70% is to be desirable and achievable. With regards to the interview due to time factor the willing managers were interviewed and the findings are stated below.

Table 4-1 List of Respondents

N.O.	Name of industry	No. questionnaire		Questionnaire not collected	Response rate %
		distributed	collected		
1	Petram	41	32	9	78.1
2	Great Abyssinia	42	31	11	73.8
3	Afran Global	33	26	7	78.78
	Total	116	89	27	76.01

Source (Survey data report 2019)

The response rate of each company is different from the total sample response rate in that, the response rate for Petram PLC is 41 questionnaire were distributed and 32 were returned back hence the return rate is78%. For Great Abyssinia 42 respondents were asked and only 31 returned the questionnaire hence the response rate is73.8%. While Afran Global total of 33 respondents were asked to reply to the questionnaire and only 26 replied and the response rate is 78.78%.Hence the average rate of responseis76.1%.

4.2 Respondents Demographic Data

The demographic profile of the sample respondents were presented and analyzed below. Assessing respondents' age, sex, has its own purpose in determining whether or not the researcher considered heterogeneity of sample units. At the same time assessing the work experience and educational level of the respondents' is that, while the respondents are more skilled and educated they have better know how to understand the case and give better response than the less educated and less experienced ones.

Gender frequency of the respondents shows that, the number of males respondents were two third of female respondents. Nearly 62% of the respondents were males while 38% are female respondents with none of the invalid. Gender frequency distribution of fruits processing industries of this survey indicates that the study covered under juice processing industries is more dominated by Male than females. On the other hand the respondents of the work area are dominated by production section which is 40% of the respondents and this shows that the supply chain activities are impacted in the processing areas.

With regards to the position of the respondents in the organizations specifies that most of the respondents are lower level workers or called operational workers which are 29% and Department managers (27%). The remaining are supervisors (22 %) and top managers (11 %). The respondents have different work experience that range between one and above five and most of them (26%) of the respondents are between 1-2 year experience and 3-4 years of them are (25%) similarly less than one year also 25% and the least year of experience is more than 5 which is only (13%) of the total sample. This indicates that because the sector is relatively new in our country the number of experienced people 50% is between 1-4 years of experience.

Table 4-2 Respondents Profile / Demographic Data of the respondents

Respondents classification	Demographic data	Frequency	Percent	Valid Percent	Cumulative percent
1 Gender	Female	34	38.2	38.2	38.2
	Male	55	61.8	61.8	100
	Total	89	100	100	
2 Education	12 complete	15	16.8	16.8	16.8
	Diploma	33	37.1	37.1	53.9
	1st Degree	34	38.2	38.2	92.1
	2nd degree & above	7	7.9	7.9	100
	Total	89	100	100	
3 Job Title	Top Managers	11	12.4	12.4	12.4
	Department Managers	27	30.4	30.4	42.8
	Supervisory level	22	24.6	24.6	67.4
	Lower level worker	29	36.6	36.6	100
	Total	89	100	100	
4 Work Experience	Less than 1 year	25	28.1	28.1	28.1
	1-2 years	26	29.2	29.2	57.3
	3-4 years	25	28.1	28.1	85.4
	5 and above	13	14.6	14.6	100
	Total	89	100	100	
5 Age Group	19-30	35	39.3	39.3	39.3
	31-40	29	32.5	32.5	71.8
	41-50	17	19.1	19.1	90.9
	51 and above	8	9.0	9.0	100
	Total	89	100	100	
6 Work Area	Sales & Marketing	16	18	18	18
	Production	41	46.1	46.1	64.1
	Procurement	8	9.0	9.0	73.1
	Finance & Admin	18	20.2	20.2	93.3
	Others (Quality, package	6	6.7	6.7	100
	Total	89	100	100	

Source (own survey result output 2019)

4.3 Local Fruits supply chain & Fruits Juice Processing Industries Supply Chain Practices

4.3.1 Descriptive Data Analysis,

As the researcher tried to explain in the methodology part, the designed method is descriptive statistical analysis. It is recognized that descriptive statistical procedures allow researchers to describe a group of individual events, examine the relationship between different variables at the same time measure differences between groups.

The analyses were on: Organizational performance, supply chain strategy and Supply chain performance based on the five perspectives. The above listed items are the most critical parts of the conceptual framework and basic research variables of this paper. For the analysis of all these variables, mean and standard deviation is used. Particularly mean value of the respondents has considered as an important indicator to the extent of the local Mango fruits juice supply chain practices on each items.

To conclude, the overall performance of the case each supply chain practices on each variable, group mean was calculated and used. The mean and group mean statistical values approaching to 2.00 and below indicates very poor and poor performance, point 3.00, is average/moderate whereas 4.00 and 5.00 indicates higher and very high/excellent performance of the company on that particular item and variable respectively. As it was briefly mentioned in the literature part of this study, the most common supply chain management practices are supply chain strategy, organizational performance and supply chain performance. This study focused on the case of three mango fruits juice processing companies SCM practices. For each practices different items were developed and measured based on their mean and group mean values.

4.3.2 Descriptive data analysis of organizational performance

Organizational Performance: - The performance of any company, especially business oriented, is measured basically in terms of sales volume and value, profit level, production capacity, market share. Hence respondents tried to depict these points as follows:-

Moreover, customers satisfaction and supplier relationship, sourcing options, quality issues are also discussed in the secondary data interview to see the supply chain performance of the firms.

Table 4-3 Section one: Organizational performance analysis

Variables	N	Mean	Std. Deviation
optimum production capacity	89	1.42	.654
high market share	89	1.94	.858
Market share is increasing from time to time	88	1.78	1.098
sales value and volume is increasing	89	1.67	.914
company profit margin is increasing from time to time	87	2.83	1.269
company profit margin is big	88	3.17	1.448
company has a long term plan to increase production capacity	87	1.87	.998
long term plan to go to international market	88	1.57	1.258
Valid N (listwise)			
Group/Aggregated Mean		**2.03**	

Source (own survey result 2019)

As it is shown in table 4-3 above regarding the optimum capacity utilization majority of the respondents replied that it is weak, the mean result (X=1.42) meaning that companies are not using even below average level of capacity, few respondents say that it is on average level of production non-of the respondents say it is fair or good capacity utilization as the maximum value is 3. In case of market share, some responded that there is high market share but most of the respondents replied that it is below average or poor market share as the mean indicates that it is (X=1.94) hence less than 2 means it is unsatisfactory.

The growth in market share is also a variable that is seen and some of the respondents disclosed that, the market share growth is very weak; the mean value is (X=1.78) which would suggest that less than 2 means very weak. Similarly the sales value and volume is not increasing (X=1.67) means that it is unsatisfactory. The companies' profit margin is relatively increasing (x=2.83) and the mean value is greater than 2 means that it shows progress. With regards to size of profit margin it is justified that is big since the mean value (x=3.17). Moreover, the tendency that companies have a long term plan to increase production capacity is weak as the value (X=1.87), similarly the plan to look for international market is very weedy as the value (X=1.57). Although most of the findings show poor performance, companies are getting attractive profit.

Therefore, with regards to the Organizational Performance the overall analysis or findings indicates that the fruits juice processing companies are weak as the grand mean value (X=2.03)

4.3.3 Descriptive data analysis of Supply chain strategy

A supply chain strategy is an alignment with customer's needs, it is designed in such a way that the strategy fit between what the market wants and what the supply chain can deliver and how the alignment can be sustained over time and strategic goals are achieved. Hence in-order to see the level of fruits processing industries supply chain strategy the following data is taken for analysis.

Table 4-4 Analysis on Supply Chain Strategy

Variables	N	Mean	Std. Deviation
SC strategy aligned with firm strategy	89	2.10	.978
aware that corporate strategy influences the supply chain strategy	88	2.56	1.240
The SC strategies are well communicated to all staff members	89	2.35	1.315
The SC strategies are well communicated to critical suppliers	88	2.31	1.235
The Company has the ability (skill and knowledge) to react and adopt to current market changes	89	2.44	1.022
The company treats local and international suppliers flexibly	89	3.12	1.116
Your company considers quality as binding criteria in selecting suppliers,	89	3.58	1.355
The company is applying new strategies in cost effective manner	89	2.43	1.196
There is strong strategic partnership with major suppliers	89	3.31	1.221
Grand/Aggregated Mean		**2.69**	

Source (own survey result 2019)

In this aspect of supply chain strategy the respondents replied differently as it is shown in table 4-4 above, that the mean value (X= 2.1) for supply chain strategy is aligned with firms strategy that is a lower than average since 2 is weak result. With regards to creating awareness that corporate strategy influences the supply chain respondents on average mean result X=2.56 which is unsatisfactory. Similarly in communicating the strategy to stakeholders like critical suppliers it is weak as the mean value (X= 2.31). Also to communication to the staff members show that is weak as the mean value show (X= 2.35) hence, internally supply chain strategy communication

is not successful. Successful implementation of SCM concept largely depends on human assets of organizations (Bowers ox *et al.*, 2000; Mentzer, 2001).

For testing whether the strategy is agile or not the level of ability or skill to react and adapt to market change, respondents said that it is weak that the mean value (X=2.44). The finding show that the companies are somehow treating suppliers flexibly is relatively good, as the mean value (X=3.12). With regards to quality matter companies are using strong criteria to evaluate quality as the mean value X=3.58. Again like weak performance in strategy orientation, applying new method of doing or strategy implementation is very weak in juice industries as the mean value (X=2.43). But having strong strategic partnership with major suppliers is critical because the sector is highly dependent on imported input supplied from few suppliers hence the mean value X=3.31indicate same. Hence, as a whole overall supply chain strategy of mango fruit juice processing companies can be generalized as weak level since the grand mean value (X=2.69).

4.3.4 Descriptive Data Analysis of Supply Chain Performance

Table 4-5 Analysis the supply chain performance

Variables	N	Mean	Std. Deviation
Reliability the company is sourcing quality input from local sources	89	1.27	.559
the company is sourcing quality input from international sources	89	3.75	1.121
the company offer high quality products to customers	89	3.45	1.098
the company offer products of fruits juices that are highly reliable	89	3.52	1.447
Grand Mean		**3.00**	
Responsiveness the company is ready to respond to good quality input suppliers from local source	89	2.31	1.007
the company has established internal coordination mechanism	89	3.18	1.192

The company provide dependable delivery to products ordered	89	2.20	1.110
The company has standard time to solve customer complaints	89	1.82	.732
Grand Mean		**2.38**	
Flexibility The company considers the local input suppliers to source	89	2.19	1.054
The delivery system is fast enough to reach on time to our customers	89	2.70	1.335
The company is doing fast research and development to introduce new products to the market	89	2.13	.968
Grand Mean		**2.34**	
Cost and Asset Management The raw material purchase price is fair as we compare with similar industries	89	3.13	1.325
The market price of our product is lower than our competitors	89	3.18	1.275
The company turnover is very high	89	3.81	1.010
The experience sharing between departments is strong	89	2.99	1.301
Grand Mean		3.28	
Valid N	89		
Grand/Aggregated Mean		2.77	

Source (own survey result 2019)

As it is presented above in table 4-5 the supply chain performance is measured in terms of four areas like reliability, Responsiveness, Flexibility, cost and asset management. The analysis is described below:-

1. Reliability: -

In this aspect, to test the reliability of the fruits juice products, the respondents were asked if the company is sourcing quality inputs from both local and international sources and the majority of respondents replied that the mean value (X= 3.75) means that quality inputs are sourced from abroad. Whereas the local source mean value (X=1.27) which indicates that it is unreliable. With regards to offering high quality products in the market, most of the respondents mean value indicates that (X=3.45) which is good. Similarly mean value (X=3.52) shows about the reliability of supplying quality juice is most respondents replied that there is reliable quality supply. In case of reliability the group mean X=3.0 indicates that the supply chain performance is moderate.

2. Responsiveness

Responsiveness is more related to readiness to react to urgent matters like responding to suppliers, market, etc. Here, as presented in the table 4-5respondents disclosed that the readiness to respond to good quality input suppliers from local source is X=2.31 which is below or not responsive. Respondents also were asked to know the companies established internal coordination mechanism and they indicated that the mean value (X= 3.18) which shows that it has good coordination mechanism is installed. In the case of dependability of timely delivery, the mean value is (X=2.2) which is unsatisfactory. Companies are weak in providing dependable delivery of orders. On the other hand, the standard time to manage the complaints from customers mean is 1.82 which implies that companies are weak or have no standard time to address customer's complaints if any. With regards to responsiveness, the group mean scored X=2.38 indicates that the supply chain performance is not responsive. This tells that the management is not reactive towards fast changes and development of market.

In both likret data collected and interview made with all concerned people, there is shortage of fruit juice in the local market, or we can say that there is unsatisfied demand from the market side. Hence, delivery is inconsistent and obviously complaints are common. Due to this unsatisfied demand, companies are not in a position to look for market feedback, missing the task of assisting the level of customers' satisfaction.

3. Flexibility,

As it is shown in table 4-5to test the level of flexibly, the respondents were asked about three issues their practice of whether the company considers the local input suppliers to source or not and the majority of the respondents (65.18%) disclosed that the companies are not considering the local input suppliers to sources, the mean value X=2.19.

On the other hand the delivery system of final product to the marketnearly53% of the respondent released that the companies' are not fast enough to reach to customers on time. The mean value (X= 2.70) which shows below average. As the market is supply driven, there is shortage of supply and customers have to wait for a week to get the product. This is a common problem in all companies under this study. With regards to research and new product development, respondents explained that almost more than half of the respondents (66.3%) said that it is weak, that is also seen by the mean value (X=2.13) which shows it is not flexible.

In the interview made with top level managers also it was investigated that non-of the companies are getting their raw materials from local source. All are importing semi processed mango concentrates from abroad. But it is identified that Petram PLC has started doing assessment to link with local variety mango seed to use for processing in cooperation with the international suppliers. As a whole regarding flexibility the grand mean scored X= 2.34 indicates that the fruits juice processing companies supply chain performance flexibility is weak.

4. Cost and Asset Management

As it is presented in above table 4-5, the response of respondents regarding cost and asset management is matters like price of raw material, market price of juice, turnover and experience sharing variables are seen. Regarding the raw material price respondents feedback is positive as the mean value (X=3.13) which shows that purchase of raw material in terms of price is fair. Similarly the product price compared with the competitors price is lower in which the mean value (X= 3.18). Similarly the turnover is also high that the mean value (X=3.81). This has been ensured during face to face interview as well as by the secondary data of the financial documents of profit and loss statement of the companies. With regards to the experience sharing between departments the mean value is (X=2.99) which indicates that it is weak. The grand mean value X=3.28 shows that in terms of cost and Asset management the supply chain performance of

companies under study is relatively good. This has been testified by the interview and also in secondary data that all companies are profitable even at a very low level of capacity utilization. Therefore, as a whole the aggregate mean of the supply chain performance is analyzed and mean score X= 2.75 imply that still it is weak since it was not responsive and flexible.

4.4 Findings of the open ended questions

In this study about three basic questions and one comment were asked in the open ended questions. The first question was to know whether there is a gap or not in implementation of supply chain management practices in the companies. Most of the respondents said that there is no gap seen, however, few respondents replied yes, there is a gap and stated the following: - inconsistent supply of raw materials, late delivery of orders, less number of skilled workers in the sector, high down time, variation between the planned sales and target. Respondents also recommended that companies need to install efficient supply chain system to use optimum capacity.

The second open ended question was about the use of local fruits as input for the industry.Themajority of the respondents replied thatbuyinginput from local source is not yet started by juice processing companies. With regards to local fruits specifically mango fruits,some said that local fruits not good in quality, and others stated that local fruits supply is very small and few said that there is huge wastage due to handling. There is also a comment on the price volatility due to seasonality nature and the involvement of dealers or traders. Most of the respondents appreciated the importance of linking local fruits with processing industries.

The third question was asked to get suggestion with regards to modernizing company's supply chain system. Most of the respondents stated that companies can increase their work efficiency by installing better way of managing the supply chain management. Others suggest to focus on research and development work to improve the mango variety. Very few respondents also stated additional comment and information about the supply of local inputs to look as option for local source is better than only depend on the imports.

4.5 Findings of the interview questions

As it was stated in the research design part of the research approach, in addition to quantitative approach, qualitative approach is also employed and analyzed by interviewing top level management members of the three fruits juice companies. For this purpose the researcher designed an interview check list and forwarded in advance to make them ready for reply. The interview check list contains three job areas (Company manager, Supply chain managers and Quality managers). About eight different questions were forwarded to the Company managers and procurement managers while only four questions to quality manager, as annexed.

Out of the three job areas of interview some of the officials were notaccessible for the interview; the detail of the situation is depicted under table4- 6 below

Table 4-6 list of Companies managers list for interview questions

Name of Co.	G. Manager	SC Manger	Quality Manger	Remarks
Great Abyssinia	**X**	√	√	Un reachable
Petram	**X**	√	√	Out of Country
Afran Global	√	**X**	√	Vacant place

(Own survey report 2019)

In this research finding of interview, questions like company's organizational structure, long and short term plans, capacity utilization, import of raw materials and challenges, sourcing from local sources are forwarded to company managers. Unfortunately out of the three managers the researcher able to get only the Manager of Afran global. Accordingly the Afran Global manager replied that "The Company has modern organizational plan but not fully functional, some job positions are not opened and assigned with people particularly supply chain management is cited. In Afran PLC all the activity of supply chain management is handled by procurement division this is because of the slow transaction in the business does not demand departmental level".

Although, Afran explained this way the reality is same in other firms. Therefore, from this findings, we see that companies are not giving due recognition for SCM functions. The same in the theoretical part of review depicted that SCM practices of our companies are at infant stage.

With regards to having long term plan to link local raw material sourcing and how far dependable in import of raw material, the Manager replied that: - Because,

- The local mango variety is not suitable for industrial processing due to high fiber in it.
- Producing concentrate at industrial level requires huge investment.
- You need to establish "state of the art technology". Hence currently Afran is not in a position to think of local sourcing and fully dependent on importing semi processed mango.

This implies that it needs research and development work to improve the local variety, but to do so companies should be part of the game and this requires some enforcement, allocating budget and assigning senior level experts.

The company manager also explained the critical challenges of not using optimum capacity,

- Shortage of raw material input.
- Shortage of foreign currency,
- power shortage,
- Turnover of experienced workers" are recurrently observed problems.

Questions like annual sales target, profit and similar statistical matters are explained in the financial report of the company, which is already explained under the secondary data analysis part of the study.

The other management body involved in the interview was supply/procurement managers; fortunately the researcher accessed both Petram and Great Abyssinia SC managers and forwarded them questions to get reply to "how is the structural arrangement of SC position in the company, and what are the main responsibilities of the department", "what type major inputs are used, what proportion of input is sourced from local source, what critical problems are observed from local mango fruits suppliers or producers" are raised and discussed.

The findings of the interview is somehow similar answers were given from both SC managers.

- The SC manager of Petram has the Title of Logistics Manager and mostly focused on areas of procurement not the real supply chain tasks while that of
- Great Abyssinia SC manager is doing all expected tasks under the Title of Supply Chain Manager,
- Both are directly responsible to the General Manager of the company.

In case of major input both are using similar inputs like,

- Mango pulp or concentrate, flavors,Sodium benzoate, citric acid, colors, Bopp, plastic labels, sugar and packaging materials. Almost 90% of the inputs are imported from abroad except sugar, carton for external packaging.

With regards to the critical problems observed in local fruits supplier's and major factors affecting local fruits supply, their reply is same as the company manger but added that:-

- Local mango processors are not ready to supply to the industry and also difficult to get them directly that needs involvement of third party. This is clearly shows that the processing companies have very poor relationship with local suppliers and the role of middle men is so tantamount to create local supply linkage of fruits. Therefore, it is critical to consider traders while planning to make supply chain arrangement especially in agro based products supply chain.

The third management body involved in the interview was quality managers. The researcher luckily received important ideas and replies from three company quality representatives Questions like "what quality parameters are used to accept or reject inputs, how do you measure the qualities of incoming inputs and goods, what proportion is rejected and what are the major causes for rejection" were posed and noted during the discussion.

The results of the interview obtained from the three responsible people are again similar, in that:-

- All are using the parameters of Ethiopian national standard to receive inputs or reject. Incoming inputs and other goods are strictly measured by appropriate instruments before deciding to buy and receive. Most of the instruments for measuring the level of acceptance is within their own laboratory few items are made by outsourcing to private and Government confirming institutions like BLESS Agri laboratory and Ethiopian Conformity Enterprise

With reference to reject level and causes for reject all have classified in to local and imported, the latter have negligible level of reject because inputs are sourced from Franchise Company and strict quality control is made to ensure the quality. While earlier sourced inputs like sugar and packaging materials have 10-20% reject and wastage.As the fruits juices are sensitive food element it is mandatory to have stringent safety and quality of the input to get quality output.

4.6 Secondary Data Analysis

Company's Financial Reports are also taken as secondary information to analyze the situation of the companies' operational position. The information indicates the production capacity, actual production of two years, sales and profit. For this study a three years data is seen in table 4-7 and analyzed below,

As it is illustrated in the table, organizational performance can be measured by the capacity utilization, volume of sales and profit, performance is measured by comparing from year to year growth and development.

Table 4-7 Data Collected from Company's Financial Report of the three Mango Juice processing companies

N.O.	Name of company	Production in tons				Sales/Revenue in ,000 birr for **2008**Budget year		Sales/Revenue in, 000 birr for 2009Budget. year		Sales/Revenue in ,000 birr for 2010 Budget year		Profit in ,000 birr in budget years			No. of staff		
		Installed capacity	Actual production												M	F	Total
			2008	**2009**	**2010**	**planned**	**Actual**	**planned**	**Actual**	**Planned**	**Actual**	**2008**	**2009**	**2010**			
1	**Petram PLC**	8,000	1,846	1,825	3,390	450,000	38,219	500,000	40,973	500,000	84,465	1,247	1,059	9,141.6	52	54	106
2	**Great Abyssinia Plc**	25,000	11,386	11,846	12,100	450,000	188,554	450,000	201,715	450,000	206,825	36,129	40,000.0	40,072.0	82	51	133
3	**Afran Global Plc**	15,000	714	1,080	891	400,000	10,644	400,000	35,180	400,000	28,530	671	2,434.4	1,972.6	49	31	80
	Total	48,000	13,946	14,751	16,381	**1,300,000**	**237,417**	**1,350,000**	**277,866**	**1,350,000**	**319,820**		**4,933**	**51,186**	**183**	**136**	**319**

Source (Company's reports 2009/10)

Capacity utilization is calculated by dividing installed capacity by actual capacity of production

1. *(PETRAM 1846/8000= 23% in 2008, 1825/8000=22.8% in 2009 and in 2010 it was 42 %.),*
2. *(G. Abyssinia 11386/25000= **45.5%** in 2008, 11,846/25,000=**47%** in 2009 and in2010 was12100/25000=**48.5**%),*
3. *(Afran Global 714/15000=**4.7%** in 2008, 1080/15000=**7.7%** in 2009 and 891/15000=**6%**in2010).*

As it is indicated in table above, there is fluctuation in revenue or sales from year to year. The problems mentioned in the problem statement and also in the findings of this research (Under capacity utilization) can be a contributing factor for market or sales fluctuation. Even though the three organizations are taken as they are in a better status of operation in juice industry sector, this does not mean that they are perfectly managing the operation.

- **Sales/Revenue: -**As we compare from company to company, Great Abyssinia PLC has better sales volume (206 million Birr) than PETRAM PLC(84.4 million birr).Afran Global 28.5 million birr in 2010 which is the lowest. Similarly in year 2008 and 2009Great Abyssinia PLCwas leading both in sales volume and also in profit. But the volume of sales as well as the profit level of all companies varies from year to year. Afran recorded decrease while Petram show bigger growth and Great Abyssinia show slight increment. As it was explained in the interview the main cause is shortage of raw materials that make them to work under capacity.

- **Capacity utilization: -**In general juice processing industries have performed less than 50% of their capacity. The least capacity utilized is Afran global PLC which is 4.7% in 2008 and the highest capacity utilized is by Great Abyssinia which is 45.5.3% of the capacity in the same year. The maximum utilized was 48.55 by Great Abyssinia in 2010. The major cause of underutilization mentioned in both interview and questionnaire is due to shortage of raw material supply (semi processed mango concentrate).This has been already stated by most of the respondents of the study.

- **Profit:** - All companies under study are profitable even with minimum capacity utilization like Afran Global with 4.7% capacity which gained a profit of 6.3% of the totalsales in 2008.Whereas Great Abyssinia with 47% capacity of production the profit level is 19.8% in 2010.

  Hence, even though there is huge market gap, very weak supply chain management system and high level of under capacity, all are enjoying profit from sales. This wasalsoobtained from the result of open ended questions as well as from the secondary data collected from financial statements of the companies. It is also testified in the interview made with top level managers that the sector is profitable despite the challenges mentioned.

4.7 Export Import statistics of Fruits and vegetable in Ethiopia

Ethiopia's export earnings from fruits and vegetables amounted to 31 million USD last year (2009/10 fiscal year). It was 13 million US dollars five years ago. Banana, Pineapple, mango, orange, grape, tomatoes and other mixture of different flavor juices are among the major items the country has been exporting.

Major importing countries are Djibouti 8.17 million, Netherlands 6.2 million, UAE 5.4 million, India 2.87 million, Sudan 1.98 million USD and others like Somalia, Yemen, Singapore, Saudi Arabia, France, Italy, Russia and Kuwait are also good customers. Much of the export is Fresh fruits & vegetables to Djibouti and the second market destination is the Emirates. This data excludes the export cut flowers.

On the other hand Juice import to Ethiopia has been growing annually by around 2 million kilograms since 2006. It is close to 15.6 million US dollars at the current exchange rate source 2009/10. (Ethiopian Revenue and Customs Authority) Therefore, Ethiopia is a net importer of fruits and vegetables and almost all are exported fresh and imported the final products. Hence from this we have to do something urgently to narrow the gap between import and export by using the local raw materials as input for industries for processing.

5. CHAPTER V

Summary, conclusion and recommendations

5.1 Summary of findings

This research has investigated the factors that affect the local fruits supply chain and fruits juice processing industries in the case of three fruits juice processing companies. These are PETRAM PLC (MAZZA Mango brand), Great Abyssinia (PREGAT Juice brand), and Afran Global Plc (Bon jus brand).

The research used both quantitative and qualitative data for the study. The quantitative data were collected from all top and middle level managers', supervisors and lower level workers using five point Likret scale. Moreover, information gathered by face to face interview with top and middle level managers are used as part of primary data. Similarly secondary data were collected from the company's communication sources, financial statements, published and unpublished journals and reports of Ministries and sector institutions.

In the case of primary data collection, two third of the respondents are males. Regarding age group, most of the respondents are young between the ages of 19-30. Having young and educated work force would help the company to perform better. From all different departments workers of the production department takes larger share of participants. It is about 46%.of the total sample population.The role of production has more impact than the rest of work areas.

In terms of educational status most of the respondents are degree holders, which is 38% of the total coverage. Of all the respondents of the study, workers who have experience of 1-2 years take more shares it is about 29%. This is due to the fact that industrial juice processing in Ethiopia is a new entrant to manufacturing. Since supply chain is one of the strategic decision making area, the involvement of top level management in the study is not simple about 11% of the participants are top level managers were involved in the survey. Selected company managers were also interviewed to strength the study.

5.2 Major Findings,

The findings of this study support the importance of looking the factors that affect the local fruits supply chain. Fruits juice processing companies are found to be underutilized capacity.

with regards to the Organizational Performance the quantitative result showed that their market share is weak, sales volume and value do not have significant change, have no long term plan to increase capacity the overall analysis or findings indicates that the fruits juice processing companies are weak as the grand mean value (X=2.03). The secondary data findings indicate that fruits juice companies are profitable even with low capacity utilization, which needs further study.

In terms of supply chain strategy alignment with firm's strategy the findings show that is strategy is weak. With regards to creating awareness that corporate strategy influences the supply chain strategy is unsatisfactory. Similarly in communicating the strategy to staff members and stakeholders, like critical suppliers it is weak. Successful implementation of SCM concept largely depends on human assets of organizations (Bowers ox *et al.*, 2000; Mentzer, 2001).The findings show also fruits juice industries under study are not fast enough to react to market changes, the level of ability or skill to react and adapt to market change is weak. Hence, as a whole the finding of overall supply chain strategy of mango fruit juice processing companies are using weak supply chain strategy.

The findings Supply chain performance in-terms of reliability of sourcing quality input from local source is not reliable, quality products to the market show reliability therefore, we see that supply chain performance is moderate. While the SC performance in-terms of responsiveness to the customers and coordination aspects and timely delivery of goods to the market is weak in providing dependable delivery of orders. At the same time no standard time to address customer's complaints. Therefore, the findings indicate that the supply chain performance is not responsive. This tells that the management is not reactive towards fast changes and development of market.

The findings of the fruits juice industry level of flexibly is also not the expected level in that the companies do not consider the local input suppliers to source, the research and new product

development, is also weak, it was investigated interview that non-of the companies are getting their raw materials from local source. All are importing semi processed mango concentrates from abroad. As a whole regarding flexibility the grand mean scored X= 2.34 indicates that the fruits juice processing companies supply chain performance is not that much flexible.

The findings also indicate that purchase of raw material in terms of price is fair. Similarly the product price compared with the competitor's price is lower; hence in both (raw material and final product price) there is a competitive advantage. The fruits juice market turnover is high. This has been ensured during interview as well as by the secondary data of the financial documents of profit and loss statement of the companies. Hence in terms of cost and Asset management the supply chain performance of companies under study is relatively good. Moreover, the findings of interview depicted that the industry is facing with high workers turnover and shortage of skilled labor force.

Therefore, the findings of the study imply that the supply chain management challenges seen by fruits sector is highly hampered the performance of the juice processing companies. Based on the bivariate conclusion of the findings, the supply chain challenges have negative impact on the performance of the processing companies.

5.3 Conclusion

The purpose of this study is to assess the factors that affect the local fruits supply chain and fruits processing companies. The empirical evidence from this study indicates that there are a number of factors that affect the local fruits supply chain and fruits juice processing companies.

Ethiopia has huge potential and comparative advantage to produce fruits and vegetables like mango that can satisfy the demand of processing companies as well as the retail market. The variety problem from agriculture side and technology problem from processing side added with the weak supply chain management in the fruits juice industries do not able to use the opportunity.

The analysis was able to assess supply chain management practice in the case of the three-processing companies. Accordingly, from this analysis, the following facts have become apparent.

The companies consider quality as number one criterion in importing input and also in producing and selling juices. They have strong relationship with international suppliers to maintain quality.

Even if the sales result shows the profit level of juice processing companies is high, still shortage of supply, late delivery of orders; shortage of skilled human power; affects the companies' competitiveness in the market. Hence this is due to weak supply chain practices that has to be addressed.

Because there is input supply problem as indicated in both in the problem statement and result of the findings, the processing companies should give equal attention to look for local sources.

The overall supply chain strategy and supply chain performance of mango fruit juice processing companies result show that it is weak therefore, it needs improvement in all aspects including orientation and information sharing with internal staff is significantly contribute improve the organizational performance.

Finally improving the capacity utilization of industries by using local resources and inputs is also an advantage to go for more level of value addition. Research and development work is a step forward to go for further value addition.

5.4 Recommendations

The findings of the study clearly indicate that the overall supply chain management practices is very weak especially in fruits juice processing that is depicted by low level of capacity utilization and ignored the local input sourcing. Hence, based on the findings of the study the following recommendations are forwarded:-

- Fruits juice processing companies need to take the initiation to start thinking for overcoming the factors affecting the local fruits supply chain. Companies should focus on or consider flexibly the alternative option of local fruits supply sourcing in their middle term strategy than totally depend on the importation of semi processed mango.
- Government should impose policy at least to use some percent of the local fruits as input for companies than fully dependent on imported inputs.
- Companieshavetoestablish supply chain department and allocate budget for enhancing and to have responsive supply chain system starting from local raw material sourcing and linkage with farming.
- Support Institutions like FBPIDI, EFVPA should think of orienting companies to implement efficient supply chain management system. Companies implementing SCM must first have a supply chain orientation, (mentzer' et al, 2001).
- Relevant infrastructural facilities including cold chains must be made to minimize the postharvest loss which is estimated to be more than 40% of the total production of fruits.
- Government institutions must work closely with companies and other stakeholders to overcome skill related challenges through short term training and experience sharing.
- Though the current juice market is supply driven, companies have to design means for looking after sales performance and collect feedback from market and customers. Evaluating customer's satisfaction is part of customer relationship which would help to make corrective measures even to maintain the current market.
- In order to upgrade the level of ability or skill to react and adapt to market change companies should make their management staff alert to the current global market competition.

Areas of further study

The study must be seen from its strategic view that Agro Industry is becoming the basis of future economic base, and this study is made to identify factors that affect the local fruits supply chain and fruits processing companies. Therefore, the study would recommend that similar studies should be made on the following areas,

1. What types of infrastructural facilities are needed to minimize the postharvest loses of fruits seed so that most of the production will go to the market so that the supply chain is strengthened.
2. Which type of improved mango seed is suitable for our agro ecology, so that Ethiopia will plant and supply for industrial processing?
3. What type of technology would be suitable for processing our mango seeds in to mango pulp or manage puree and substitute the huge amount of imports?

References List

Alan S. Kaufman and Nadeen L. Kaufman, (2005), *Essentials of Research Design and Methodology:* Published by John Wiley & Sons, Inc., Hoboken, New Jersey.

AdmasuZ.(2014), *Fruits and vegetables industry Development Strategy*, Addis Ababa University institute of Technology.

Andreas Wieland, Carl Marcus Wallenburg, (2012): *effects of supply chain risk management (SCRM) on the performance of a supply chain*: International Journal of Physical Distribution & Logistics Management, Vol. 42, No. 10, pp. 887–905

Beamon, B. M. &Balcik, B. (2008), *Performance measurement in humanitarian relief chains:* International Journal of Public Sector Management, vol. 21, no. 1, pp. 4-25.

Beamon, B. M. (1999), Measuring supply chain performance, *International Journal of Operations & Production Management*, vol. 19, no. 3, pp. 275-292.

Bonney, J. (2003). *The ultimate logistics challenge*: The Journal of Commerce", Volume, 4, no.49, 4-6, Retrieved on October 10, 2015, from Google scholar.

Chopra, S. (2007), *Supply chain management:* strategy, planning and operation: Upper Saddle River, New Jersey: Pearson.

CSA, (2009): *Agricultural sample survey: report on area and production for major crops*,statistical bulletin 427. Addis Ababa, Ethiopia,

CSA, (2014): *Agricultural sample survey for 2013/2014 cropping season*. Report on Area and production of major Crops. Addis Ababa, Ethiopia

Elias. A, (2007);*Technical Assessment on Viability of Integrated Fruits Processing in Ethiopia*; Master of sciences, Thesis; Addis Ababa, Ethiopia.

Fornell and Lacker, (1981), Factor Analysis and Discriminates Validity: A Brief Review of Some Practical issues research methods, Aston business school, Aston University, Birmingham.

FAO, (2007), *Agro-industrial supply chain management:* Concepts and applications. AGSF OccasionalPaper17Rome. Available from (*Http:*//www. fao. org/ ag/ ags/ publications/ docs/ agsfop17.)

https://www.researchgate.net/publication/265251123_Competitive_Advantage_through_Supply_Chain_Responsiveness_and_Supply_Chain_Integration [accessed Dec 25 2018]

KOICA (2013), *GTP and Sector Analysis,* Business Cases and Policy Recommendation based on the Korean experience, Korean Development Agency.

Joosten F (2007). Development Strategy for Export Oriented Horticulture in Ethiopia.on line available from http://library.wur.nl/way/bestanden/clc/1891396.pdf.

Kassa Melese Ashenafi, (2011) *opportunities and potential in Ethiopia for production of Fruits and Vegetables*, A graduate study senior paper, Haromaya University.

MoFED,(Ministry of Finance and Economic Development) (2010). *Growth and Transformation Plan* (GTP) 2010/11-2014/15. Addis Ababa: Ministry of Finance and Economic Development of the Federal Democratic Republic of Ethiopia.

M.C., Lambert, D.M., &Pagh, J. (1997) *Supply Chain Management*: More Than a New Name forLogistics. The International Journal of Logistics Management Vol 8,

Ndiame Diop and Steven M. Jaffee (2002) *Fruits & Vegetables Global Trade And Competition,* In Fresh and Processed Product Markets.

Ndiame Diop and Steven M. Jaffe (2001) *Fruits And Vegetables: Global Trade And Competition* In Fresh And Processed Product Markets.

OECD-FAO Agricultural Outlook (2012-2021)(www.oecd.org/site/oecd-faoagriculturaloutlook/) 2019pdf

Richerd E. Crandall (2007) *Principles of supply chain management*Taylor& Francis Group, an informabusiness.

RolienWiersinga and André de Jager Business opportunities in the Ethiopian Fruit and Vegetable Sector, Final version, (2009)Wageningen University and Research Centre – LEI

Susana G. Azevedo, Helena Carvalho, and V. Cruz-Machado, (April 2011), *A proposal of Large Supply Chain Management Practices and a Performance Measurement System*, International Journal of e-Education, e-Business, e-Management and e-Learning, Vol. 1, No. 1, p7-14

www.wto.org/statistics.trade profiles 2017.[accessed April 7 2019]

Annex-1

Questionnaire,

Addis Ababa University School of Commerce Logistics and supply chain management program,

1. Dear Respondents, First of all I would like to forward my thanks for your cooperation.

- My name is **Nigussie G/mariam** I am a student of Logistics and Supply Chain Management Program at Addis Ababa University, School of Commerce. Currently I am conducting this study as partial fulfillment for the award of Master of Art Degree in Logistics and Supply Chain Management.

  Dear respondents,

  The purpose of this study is to "assess the factors that affect the local fruits supply chain and fruits juice processing industries" And the aim of this questionnaire is to collect data on the above mentioned research topic. The information is for academic purpose only and treated with strict confidentiality. Therefore, I kindly request you to provide the required information to the best of your knowledge by filling out this questionnaire.

2. **Confidentiality**: - The information you forward me will be kept fully confidential and will be used only for academic research purpose. Your cooperation to give timely response will be extremely important.
3. **Informed consent**: - Participation in this study is completely voluntary. If you choose not to participate in the study or if you decide to stop participating in the study you will continue to be treated normally. You can stop participating in this study at any time, even if you have already given your consent and if for any reason you would wish to rejoin

again after withdrawal, I will be willing to accept you to continue with the study. Hence I thank you in advance for cooperation.

- **Contact Address: -** If you have any query, please do not hesitate to get me and I am available as per your convenience at (Mobile: 0910-12-86-90 and e-mail: nig2us@yahoo.com)
- **General Instructions: -** There is no need of writing your name. Where answer options are available please tick **(√)** in the appropriate circle for part I, part II and part III please write your answers freely on the blank spaces. In part IV interview questions with discussion.

This questionnaire consists of two parts. Please make sure your respond to both. (Respondent's profile and subject matter issues)

PART I: - Respondent's profile (Demographic Information)

1. **Sex/ Gender** ◯ **Male** ◯ **Female**
2. **Age group** ◯ **19-30** ◯ **31-40** ◯ **41-50** ◯ **above 50**
3. **Educational Status** ◯ **12complete** ◯ **Diploma** ◯ **1st Degree** ◯ **Masters and above**
4. **Your position in the company: -** ◯ **Manage** ◯ **Division head** ◯ **supervisor**◯ **lower worker**
5. **How long have you been in this company?** ◯ **Less than 1 year** ◯ **1– 2 years** ◯ **3 – 4 Years** ◯ **5 years and above**
6. **Your department/ work unit,** ◯ **sales & marketing** ◯ **production** ◯ **procurement** ◯ **Finance & Admin.**
7. **Mention if any----------**

PART II: - Organizational Performance, Supply Chain Strategy and Supply Chain Performance

Please thick (" √") in the appropriate box to indicate the extent to which you agree or disagree with each statement. The item scales are five-point Likert type scales with 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 =agree, 5 = strongly agree.

A. Section one: Organizational performance

1	Organizational performance	Strongly disagree	Disagree	Neutral	Agree	strongly agree
		1	2	3	4	5
1.1	The company is using optimum production capacity					
1.2	The company has high market share					
1.3	The Market share is increasing from time to time					
1.4	The sales value and volume is increasing					
1.5	The company profit margin is big					
1.6	The company profit margin is increasing from time to time.					
1.7	The company has a long term plan to increase production capacity					
1.8	The company has a long term plan to go to international market					

B. Section two supply chain Strategy: - With regard to SC Strategy of your firm, please `thick the appropriate box to indicate the extent to which you agree or disagree with each statement.

The item scales are five-point Likert type scales with 1 = strongly disagree, 2= disagree, 3 = neutral, 4 =agree, 5 = strongly agree.

1	Supply Chain Strategy	Strongly disagree	Disagree	Neutral	Agree	strongly agree
		1	2	3	4	5
1.1	The company has supply chain strategy aligned with firm's strategy					
1.2	We are aware that corporate strategy influences the SC strategy.					
1.3	The SC strategies are well communicated to all					

	staff members					
1.4	**The SC strategies are well communicated to critical suppliers**					
1.5	**The company has the ability (skill & knowledge) to react and adopt to current market changes**					
1.6	**The company treats local and international suppliers flexibly**					
1.7	**Your company considers quality as binding criteria in selecting suppliers,**					
1.8	**The company is applying new strategies in cost effective manner**					
1.9	**We have strong strategic partnership with major suppliers**					

C. Section three, Supply Chain Performance (Reliability, responsiveness, flexibility and cost management)

In this part is just to see the level of the company's S C performance. Hence, please thick the appropriate box to indicate the extent to which you agree or disagree with each statement. The item scales are five-point Likert type scales with 1 = strongly disagree, 2= disagree, 3 = neutral, 4 =agree, 5 = strongly agree.

C	**Supply Chain Performance**	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**strongly agree**
	1. Reliability	**1**	**2**	**3**	**4**	**5**
1.1	**The company is sourcing quality inputs from local sources.**					
1.2	**The company is sourcing quality inputs from international sources.**					
1.3	**The company offer high quality products to customers**					
1.4	**The company offer products of fruits juices that are highly reliable**					
	2. Responsiveness					

2.1	**The company is ready to respond to good quality input suppliers from local source**					
2.2	**The company has established internal coordination mechanism**					
2.3	**The company provide dependable delivery to products ordered**					
2.4	**The company has a standard time to solve customer complaints.**					
	3. Flexibility					
3.1	**The company considers the local input suppliers to source.**					
3.2	**The delivery system is fast enough to reach on time to our customers**					
3.3	**The company is doing fast research and development to introduce new products to the market**					
	4. Cost and Asset management					
4.1	**The raw material purchase price is fair as we compare with similar industries**					
4.2	**The market price of our product is lower than our competitors**					
4.3	**The company turnover is very high**					
4.4	**The experience sharing between departments is strong enough**					

PART III Open-ended Questions

1. Do you see some gap of implementation in supply chain management in practices in your company? Yes or no?

_____

1. **If your answer for the above question is yes what are they?**

_____

_____

_____

2. **What do say about the use of local fruits as input for your company's fruits juice processing?**

_____

_____

_____

3. **What is your suggestion for your company's improvement regarding modernizing the supply chain management?**

_____

_____

_____

4. **If you have any additional comment or information necessary for the study please write_____**

_____

_____

_____.

Thank you for your time and participation!

Part IV Interview Check List & Points for Discussion

A. Company manager	B. Supply chain Manager/ Procurement Manager	C. Quality manager/department
1 How is your organizational structure design?	Supply chain department structure and main responsibilities under each unit	What is your quality parameter to accept or reject input and raw material for fruits?
2, Have you planned to make long term plan of supply chain arrangement with local raw material suppliers or producers	What is your major input for fruits processing?	How do measure the quality of incoming input goods?
3, What is your current production capacity utilization?	What proportion of input is sourced from local source?	What proportion of the inputs is rejected?
4, What are the causes for not utilizing the optimum capacity?	What critical problems are observed from local fruits suppliers or producers?	What are the major causes for rejected inputs?
5, What is your annual sales target?	Do you have supplier selection criteria?	
6,What is main reason for not meeting your annual target?	Major factors affecting the local fruits supply chain	
7, How dependable is the imports of raw material	What are factors affecting suppliers selection and the entire supply chain)	
8, Do you plan to expand the use of local inputs?	How do you measure the performance of the suppliers?	

Thank you for your time and participation!!