ST. MARY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

SUPPLY CHAIN MANAGEMENT PRACTICES AND PERFORMANCES OF FAFFA FOOD SHARE COMPANY

BY

SAMI TEWFIK

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ADDIS ABABA, ETHIOPIA

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A THESIS SUBMITTED TO ST.MARY'S UNIVERSITY SCHOOL OF GRADUATE STUDIES IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION

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LIST OF ABBREVATIONS/ACRONYMS

COGS……Cost of Goods Sold

DC…….Design Capacity

EC…….Effective Capacity

EDI……Electronic Data Interchange

ERP……...Enterprise Resource Planning

FEFO……First Expire First Out

FIFO…….First In First Out

FP…….Finished Product

ICT……...Information Communication Technology

KPI……...Key Performance Indicator

LAN…….Local Area Network

LC……Letter of Credit

PSA…….Product and Service Agreement

RFID……...Radio Frequency Identification

RM……..Raw Material

SC……...Supply Chain

SCM……Supply Chain Management

SCOR model……...Supply Chain Operations Reference model

WIP……..Work In Process

WLAN…….Wireless Local Area Networking

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ABSTRACT

In most Ethiopian food manufacturing industries including Fafa, the supply chain strategies and activities were not clearly described and articulated. The supply chain decisions in this sector are mostly intended to gain short term returns. In addition, the customer focused and internally focused performance attributes of the supply chain system were not diagnosed and evaluated for improvement and benchmarking.

The general objectives of the study are to investigate the supply chain management practices and performances of Faffa Food Share Company. Descriptive and quantitative methods of research were used and data were collected by interview questions, document review and questionnaires. Open and close ended questionnaires were used to describe the supply chain practices and supply chain performances using data obtained from secondary data sources.

It was found that, sourcing strategy and relationship management with majority of suppliers is reactive supplier selection and supplier dominant arm's length respectively. Low capacity utilization and efficiency for majority of production lines is not favorable for product focus production strategy. Reliability and responsiveness of the supply chain is good. Customer satisfaction on pre transaction and transaction supply chain services is strong. But, it is weak with post transaction supply chain services.

It is concluded that, the supply chain practices and performance is not bad despite many internal and system wide challenges. Number of specific recommendations revolving around sourcing, relationship management, and make or buy decisions were given. In addition, it is recommended to invest and work more in streamlining the SC system integration with supply chain partners through objective alignment, collaboration, data visibility, streamlining processes through removing unnecessary steps, and increasing responsiveness and resilience.

CHAPTER ONE: INTRODUCTION

1.1. Background of the Study

Organizations are facing different kinds of challenges in their effort of competing in today's dynamic global markets. The new paradigm in modern business management is that, competition is no longer among individual business organizations, but rather among inter-networks in the supply chain (Drucker, 1998).

The Global Supply Chain Forum describes Supply Chain Management as the integration of key business processes and resources from end user through original suppliers that provide products, services, and information that add value for customer and other stakeholders (Lambert, Cooper, & Pagh, 1998). The main goals of having Supply Chain Management are to offer good service to the final customer, while keeping costs and lead times low (Trkman, Stemberger, Faklic, & Groznic, 2006). Performance and efficiency improvement initiatives through Supply Chain Management are now becoming important factor in maintaining competitive advantage over competitors (Dannese & Romano, 2011).

The food processing industry is the dominant manufacturing sub-sector in Ethiopia. It includes 9 industrial groups consisting of 200 factories and public food factories dominate the sub-sector (EBDSN, 2013). According to Balda (2011), the supply chain practice in most Ethiopian manufacturing industries including food is traditional. It is characterized by non collaborative relationship with suppliers and customers in terms of aligning strategies and operations.

The general objectives of the paper are to study the supply chain management practices and performances of Faffa Food Share Company. The finding from this study will help a lot in designing and implementing an effective and efficient SC system to offer good service to final customer while keeping costs and lead times low.

1.2. Company Background

Faffa Food Share Company, the pioneer food processing industry in Ethiopia, was established in 1962 as an Ethio-Swedish joint venture with the objective of reducing the risk of malnutrition among children in Ethiopia by providing low cost and high protein weaning food. The factory was expanded in 1974 and 1984 with around 9 million birr obtained from Swedish government and total capacity has reached 21,600MT/annum. The company produces 11 groups of food products used for infants, children and adults prepared in multiple varieties and forms in terms of content and packaging. Currently, there are 195 employees in Faffa among which 85 are technical staffs. The supply chain includes multiple in country/foreign suppliers, Faffa food Share Company, sole distributors, retailers, and customers (Faffa Foods SC - Business Plan, 2013-15 GC).

According to preliminary interview with the management team, Faffa food Share Company was privatized since August 2009 to Petram Private Limited Company. Currently the production capacity of the factory has reached 22,000 MT/annum. Petram before acquiring Faffa was involved in import and distribution of food and beverages. That means, Petram has substantial capital, managerial talent, market know how in the business. So, the backward integration had given the company strategic opportunity for cost reduction, quality adherence, and timely delivery of their products.

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1.3.Statement of the Problem

In manufacturing industries including food, supply chain is the most costly activity requiring significant attention, effective strategy, and management. These industries need to have clear supply chain strategy and direction that support firms' business strategy. In addition, the supply chain management including; the production planning, inventory control, distribution, and logistics processes should be well integrated and coordinated to reduce costs and increase contribution margins (Heizer, 2011).

In most Ethiopian food manufacturing industries including Fafa, the supply chain strategies and activities were not clearly described and articulated. The supply chain

decisions in this sector are mostly intended to gain short term returns. In addition, the customer focused and internally focused performance attributes of the supply chain system were not diagnosed and evaluated for improvement and benchmarking (Faffa Foods SC - Business Plan, 2013-15 GC).

According to preliminary interview with the management team, Faffa before privatization has inherited operational problems and technical challenges. The sales revenue was totally dependent on relief aid sales with limited commercial products. The supply chain system was characterized by its inefficiency. There was no clear and articulated supply chain strategy to source, produce, and distribute products. Ad hoc and in efficient supply chain system to source, produce, and distribute has resulted in poor supply chain performance (reliability, responsiveness, flexibility, and asset management efficiency). Commercial customer satisfaction in Faffa's products and supply chain performance is not satisfactory. In addition, demand for relief aid products was consistently declining through time.

Following privatization, Faffa Food Share Company has consistently worked to reform the business structure, expand the revenue base, and increase earning through business expansion. As a result, it was believed that, significant achievements were made in solving inherited operational problems, technical challenges, and dependency on relief aid products. Specifically, the company has worked a lot in improving the sourcing, production expansion, production efficiency, production line expansion, and product line expansion. It has also improved and optimized the distribution system by establishing distribution centers through sole agents and efficient door to door delivery and transportation. Even though, the supply chain is well considered in the business strategy the performance is not quantified and described (Faffa Foods SC - Business Plan, 2013-15 GC).

According to anecdotal information from customers at different level, the system lacks consistency in delivering right product of right quality, in the right quantity and time. Specifically:

- Reliability as described by order fill rate by type and quantity is believed to lack consistency or performance figures for this indicator is not stable and consistent

throughout. In addition, the company has problems in availing the right quantity in the right time mostly due to poor optimization and supply chain integration.

- Asset Management Efficiency as described by months of stock on hand and inventory turnover is the other important supply chain indicator believed to have problem and affecting profitability a lot.
- Last but not least, idle capacity due to low capacity utilization and efficiency of all lines is also affecting the company's supply chain performance and profitability a lot.

1.4.Research Questions

- What are the supply chain strategies and practices of Fafa Food Share Company?
- How is the supply chain performance of Faffa as described by reliability, responsiveness, and asset management efficiency?
- What is the level of satisfaction of Fafa's sole agents on the company's supply chain performance?

1.5. Objectives of the Study

General objective

The general objectives of the study are to investigate and study the supply chain management practices and performances of Faffa Food Share Company.

Specific objectives

- To study the supply chain strategies and practices of Fafa Food Share Company.
- To evaluate supply chain reliability of Faffa using order fill rate by item and quantity.
- To evaluate responsiveness of Fafa's supply chain using delivery lead time.
- To evaluate asset management efficiency of Fafa using inventory days of supply, machine capacity utilization, inventory turnover, percentage invested in inventory, and weeks of supply.
- To assess the level of satisfaction Fafa's sole agents on the supply chain performance and product of the organization.

1.6. Definition of Terms

- **Supply Chain:** is an integrated manufacturing process and linked set of resources to acquire raw materials, convert them into final products, and then finally to deliver to the ultimate customer with or without involvement of whole sellers and retailers (Beamon, 1998).
- **Supply Chain Management:** is the integration of key business processes from end user through original suppliers that provide products, services, and information that add value for customer and other stakeholders (Lambert, Cooper, & Pagh, 1998).
- **Supply Chain Management Practices**: are set of activities undertaken in an organization to promote effective management of its supply chain (Beamon, 1998).
- **Supply Chain Performance:** is the performance of the supply chain system in terms of customer and internally focused attributes (SCC, 2010).
- **Asset Management Efficiency**: is an internally-focused SC performance attribute describing the ability to efficiently utilize assets (SCC, 2010).
- **Capacity Utilization:** is actual production output as percent of design capacity which is theoretical maximum output of a system in a given period of time (Heizer, 2011).
- **Production Efficiency:** is actual production output as percentage effective capacity which is the capacity a firm can expect achieve given its product mix, methods of scheduling, maintenance, and standards of quality (Heizer, 2011).
- **Order Fill Rate**: is purchase orders filled as per request. Fafa resupplies sole distributors based on annual sales target desegregated by month. So, annual sales performance as described by percentage sales performance against plan could be taken as proxy indicator for order fill rate (USAID | DELIVER PROJECT, Task Order 1, 2006).
- **Delivery Lead Time**: is the time interval between when new stock is ordered and when it is received and available for use (USAID | DELIVER PROJECT, Task Order 1, 2011).
- **Inventory Turnover:** is an indicator that measures the number of times the inventory turns over in a given time period (USAID | DELIVER PROJECT, Task Order 1, 2006).

1.7. Significance of the Study

Supply chain is key strategic area requiring significant attention and effective management. It is one of the most expensive activity and improving or optimizing the supply chain will have significant impact on company's performance in terms of profitability and customer satisfaction. Because, effective supply chain will help a lot in delivering the right product/service, in the right quantity, to the right place, at the right time, with the right quality, and in the right cost. Therefore, the findings and recommendations from this study will be an interest for food manufacturing industries and relevant government policy makers working at different level in the industry sector. Specifically, the finding will be significant in the following aspects.

1. It will provide baseline information on the current supply chain practices, strategies, challenges, and bottlenecks of the food manufacturing industries.
2. It will help in identifying weak links in the supply chain to prioritize interventions accordingly
3. It will help in diagnosing and evaluating customer focused and internally focused performance attributes of the supply chain for benchmarking and further improvement.
4. It will also be used as an input in designing and implementing effective and efficient supply chain strategy that will significantly improve company's performance in terms of profitability and customer satisfaction.
5. The study will contribute on the limited knowledge in the area of SCM of food manufacturing companies of Ethiopia.

1.8. Delimitation / Scope of the Study

The scope of the study will be investigation and evaluation of the supply chain practices of Fafa Food Share Company from suppliers to customers. The study will not include the supplier's supplier and the ultimate customer of the product due to time and budgetary constraints. Information regarding suppliers supply chain practices and performance will be obtained from Faffa due to limitation of contact with suppliers. Only three among the

five SCOR performance attributes were selected to evaluate the supply chain performance of Faffa Food Share Company due to limitations in documentation and knowledge of the subject matter.

CHAPTER TWO: REVIEW OF RELATED LITERATURE

2.1. Supply Chain Management Theories and Concepts

Organizations are facing different kinds of challenges in their effort of competing in today's dynamic global markets. The new paradigm in modern business management is that, competition is no longer among individual business organizations, but rather among inter-networks in the supply chain (Lambert *et al*, 1998; Drucker 1998). The supply chain is becoming more critical these days due to a number of factors like rising of manufacturing costs, resource constraint, shortened product life cycle, and globalization of market economies (Beamon, 1998).

Supply chain (SC) is a linked set of resources and processes that begins with the sourcing of raw materials and extends through to the delivery of end items to the final customer.
Supply chain (SC) is a linked set of resources and processes that begins with the sourcing of raw materials and extends through to the delivery of end items to the final customer (Trkman, Stemberger, Faklic, & Groznic, 2006). That is, various business entities (suppliers, manufacturers, distributors, and retailers) are expected to work together to deliver the right product or service at the right time. It is a network that begins with the sourcing of raw materials and extends to the delivery of end items to the final customer. The supply chain constitutes all functions within and outside an industry, which enable the value chain to make products and provide services to customers. That is, SC involves and requires collaboration of value chains within and outside of industry to make products and provide services to customers (Beamon, 1998). Nowadays, supply chain is receiving significant attention because it is an integral part of a firm's strategy and supply chain costs as a percent of sales are often significant (Heizer, 2011).

Supply-chain management is management of activities in the supply chain including procurement of materials/services, transformation into intermediate goods and final products, and delivery through a distribution system. The major processes involved in the supply chain include: production planning, inventory control, distribution, and logistics

processes. These processes interact with one another to produce an integrated supply chain (Heizer, 2011).

According to the Global Supply Chain Forum,

> "*SCM is the integration of key business processes from end user through original suppliers that provide products, services, and information that add value for customer and other stakeholders"* (Lambert *et al*, 1998, pp 1)

SCM is also defined as a sourcing technique that involves proactive relationship between a buyer and supplier and the integration is across the whole SC, not just first-tier suppliers (Cox, 2004).

All in all, SCM encompasses the planning and management of all activities involved in sourcing and procurement, conversion, and all Logistics Management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third-party service providers, and customers. In essence, SCM integrates supply and demand management within and across companies" (Ballou, 2007).

As can be seen above, different authors defined the SCM differently. Some in operational terms involving the flow of products and information, some viewed it as a management philosophy, and some viewed it in terms of a management process. These different perspectives suggested a multi-dimensionality of SCM that covers set of activities and processes from upstream, firm's internal operations to downstream of the supply chain.

Successful SCM requires integration of internal operational level activities along with external suppliers and customers to attain supply chain performance goals like reliability, responsiveness, agility, and cost effectiveness (Samarnayake, 2005). Performance and efficiency improvement initiatives through SC integration are now becoming important factor in maintaining competitive advantage over competitors. Specifically, SC integration

programs do mostly focus on information flow and management, inventory planning, and/or partnership (Dannese & Romano, 2011).

There are six generic Supply Chain strategies used in sourcing products from suppliers to be adopted based on different organizational and environmental factors. These strategies involve negotiating with many suppliers, developing long term relationship with suppliers, vertical integration, joint venture, keiretsu, and virtual companies (Heizer, 2011).

An effective supply chain strategy that is in line with company's business and product strategy is vital. Specifically, demand patterns and characteristics are major product related factors for having effective and efficient supply chain strategy. Physically efficient supply chain is the right SC strategy for stable low margin functional products intended to satisfy basic needs. Responsive supply chain will be the right supply chain strategy for innovative products characterized by high profit margin and volatile demand (Fisher, 1997).

Main objectives for implementing SCM include reducing cost of operations, improving inventory, lead time and customer satisfaction, increasing flexibility and cross functional communication, and remaining competitive (Tummala *et al*, 2006). The main goals of having efficient SC system are to offer good service to the final customer, while keeping costs and lead times low (Trkman *et al*, 2006). Enhancing competitiveness and profitability of the whole supply chain network are among the main objectives of SCM (Cooper, Lambert, & Pagh, 1997). According to Habib (2011); the major purposes, benefits, and reasons for SCM include operation efficiency, better outsourcing, profit maximization, enhancing customer satisfaction, improving product/service quality, tackling competitive pressures, increasing importance of E-commerce, and growing complexity of supply chains. It is now being seen as a means of generating innovations which can generate performance (Burgress & Sing, 2003). There are many factors and reasons in relation to suppliers and customers that have raised interest in the supply chain. Greater differentiation, competition, changing operating environment, product quality improvement, and shipping products in cost effective manner. Whereas consumer level includes customer's sensitivity to quality, safety, health, nutritional factors, place of origin,

means of production, and environmental sustainability. The four SCM strategic and operational success factors include building customer supplier relationship, implementation of ICT, re-engineering material flow, and creating corporate culture (Tummala *et al*, 2006).

SCM-related problems are mostly due to demand uncertainties and/or difficulty in coordinating several activities and processes in the supply chain. Bullwhip effect is incomplete information about the needs of others resulting in increase in inventory levels and fluctuation in its demand relative to others down the chain; local instead of global optimization as described by optimizing individual performance without considering others in the supply chain; and human factors described as subjective decisions based on non objective criteria like human resource performance system. So, seamless and efficient information flow and data visibility are among the major factors required for success of the supply chain system (Trkman *et al*, 2006; Heizer 2011).

2.2. Evolution of Supply Chain Management

2.2.1. The Past

Pre 1950 is dormant era in SCM and logistics. In this era, logistics is a term to describe procurement, maintenance, and transportation of military facilities, materials, and personnel. 1950-60 was an era where manufacturing firms started recognizing physical distribution management as a separate organizational function. The importance of total cost approach rather individual transportation cost was highlighted. But, inbound movement of goods and purchasing were not considered as such. The concept of physical distribution and logistics has emerged in 1960s. Here, business logistics is relatively broader concept encompassing physical distribution and inbound of goods in the manufacturing firm. In conclusion, even though physical distribution and logistics management activities were recognized to be critical for product flow in the supply chain, the coordination among the core functions (purchasing, production, and physical distribution) was minimal. And, the coordination by itself affects product flow a lot (Ballou, 2007).

2.2.2. The Present

The concept has emerged with new name and broader concept than logistics and physical distribution to include coordination and collaboration with channel members. These channel members are suppliers, intermediaries, third-party service providers, and customers (Trkman *et al*, 2007).

2.2.3. Future

According to Ballou (2007), the contemporary view is designing and operating the supply chain to enhance the revenues of the firm in such a way as to maximize contribution to profit. A revenue generation strategy for the supply chain or a new objective to capture revenue enhancement effects of the supply chain will emerge. And, it is called ROSCA.

$$\textbf{ROSCA} = \frac{\textbf{Revenue} - \textbf{Cost}}{\textbf{Asset}}$$

- Revenue……SC's contribution to the sales of the firm
- Cost..…….Expenses incurred in SC process
- Asset…….Investments made in facilities and equipments to support SC processes

2.3.Supply Chain Management Practices

SCM practices are defined as a set of activities undertaken in an organization to promote effective management of its supply chain. Supply Chain Management is now recognized as a critical business process for companies manufacturing or distributing products. This is because customers' demand for most products are ever more demanding in response time, in choice and in seeking more competitive prices and thanks to globalization, customers can choose from an increased number of suppliers (Lazarevic, Sohal, & Baihaqi, 2007).

The SCM practices of an organization could be described in terms their supply strategy to source raw materials and as a set of interlinked activities under production planning, inventory control, distribution, and logistics. The detail activities under these processes

include: raw material scheduling and acquisition, manufacturing process design and scheduling (Process focus, repetitive focus, and product focus), material handling design and control, design and management of storage policies and procedures for raw materials/work in process/final product inventories, management of inventory retrieval, transportation, and final product delivery (Beamon, 1998)

Cox (2004) has described four sourcing options for buyers which guide the focus of relationship with suppliers and the level of work scope with suppliers and supply chain. Supplier selection and supply chain sourcing are reactive sourcing strategies whereby, suppliers from one or many tiers are chosen among many competing ones. The relationship management with these sourcing options is arm's length or non collaborative. Supplier development and supply chain management are pro active sourcing strategies whereby, buyers and suppliers at the first or many tiers collaborate more on long term basis. The relationship management with these sourcing options is collaborative.

Relationship management as an organizational core process is comprised of strategic and operational components. The strategic process provides the structure for integrating the firm with suppliers. This is to identify key suppliers for organizational success and to decide on development and maintenance of the relationship. The operational process is to segment suppliers based on their value overtime and identify opportunities for longer term relationship. The operational teams will be responsible to develop the standard and tailored product and service agreement (PSA) to different supplier segments (Lambert, & Schwieterman, 2012).

Information sharing practice among companies, customers, and suppliers is an important component required to improve visibility of information to achieve seamless integration within the supply chain. The practice could be described in terms of type (quantity), quality, and level of participation. The type of information to be shared could vary depending on the level of relationship and vision alignment. It could be strategic, operational, market, consumer, and/or logistics. Forecast, product related, satisfaction, and

logistics related information is the most commonly shared information among the supply chain partners (Zailani & Rajagopal, 2005; Huang, Sheoran, & Wang, 2004).

Information and communication technology (ICT) being process and product communication enabler is very important strategic factor for SC integration. It will help a company a lot in streamlining communication and developing efficient- responsive system. The most important issue to consider while implementing ICT is extent of coordination with SC partners and compatibility with other relevant technologies used in the SC system. Major types of ICT used in interaction with suppliers and customers include e-mail/fax, bar-coding/scanning, EDI, WWW, e-commerce, intranet, ERP, and Baan (Tummala *et al*, 2006). ICT implementation should go along with the required process changes and re design activities executed through incremental processes (Power, 2005).

In addition, (Cooper *et al*, 1997) has developed framework encompassing three interrelated elements to describe SCM and the level of integration of a system. The combination of these three elements captures the essence of SCM. Supply chain network structure includes members of supply chain (primary and supporting), structural dimension of the network (horizontal structure, vertical structure, and horizontal position), and the links between members of the supply chain. In addition, it includes business processes links for activities producing a specific output of value to the customer (managed, monitored, not-managed, and non member). The seven key business processes to be integrated across the supply chain are customer relationship management, customer service management, demand management, order fulfillment, manufacturing flow management, procurement, product development and commercialization, and return. The management components of SCM include the physical/technical and managerial/behavioral group. The former component is the most visible, tangible, and easy to change component. Whereas, the latter component is less tangible and visible and are therefore, often difficult to assess and alter.

Organization's internal operation and logistic system as described by production strategy, capacity utilization, inventory control practices, warehousing, and distribution are also

very important variables used in describing supply chain management practices of an organization (Beamon, 1998).

Perishable products like food and pharmaceuticals require well functioning and effective inventory control system to avoid wastage due to expiry without compromising consistent availability. The following simple inventory management procedures implemented by experienced staffs will help a lot to achieve the above mentioned objective. That is:

1. Experienced and trained staffs to fully benefit from the learning curve effect and reducing the probability of making mistakes while ordering.
2. Understanding target stock level and order patterns to have successful inventory management.
3. Creating and maintaining transparency of inventories in order to calculate right order quantities.
4. Keeping inventory procedures simple which reduces making mistakes that would lead to unnecessary wastage
5. Keeping stock fresh and monitoring remaining shelf life to avoid unnecessary wastage.
6. Collaborating with other departments that are not directly involved in the inventory management process (Stanger, Wilding, Yates, & Cotton, 2012).

Decision variables or design aspects like Production/distribution scheduling, the amount and location of every raw material, sub-assembly, and final assembly storage, number of stages (echelons), distribution center (DC) - customer assignment, plant- product assignment, critical aspects of the buyer-supplier relationship, product differentiation step (specialization), and number and product types held in inventory to optimize the supply chain performance (Beamon, 1998).

In summary, SC practices of an organization could be described in terms of sourcing options and relationship management with suppliers, internal operations and logistics, information sharing practices, ICT implementation, and network structure.

The table below describes theoretical framework used in describing the SC practices of an organization.

SCM Operations	SCM Practices	Major References
Sourcing options	• Supplier selection, Supply Chain Sourcing, Supplier Development, and Supply Chain Management	Cox, 2004
Internal Operations	• Raw material acquisition and scheduling • Manufacturing process strategies and design • Production scheduling and plant-product assignment	Beamon, 1998 and Heizer, 2011
Inventory control	• Setting up optimal and minimum raw, WIP, and finished product inventory. • Design and management of storage policies and procedures for raw materials, WIP, and final product inventories. • Inventory management practices in place (ABC, record keeping system/accuracy, and cyclic counting) • FEFO and FIFO employment • No of product types held in inventory • Models for determining reorder frequency and quantity and policy on inventory levels to be held	Heizer, 2011, Ruteri and Xu, 2009
Distribution	• Retrieval and transportation from warehouse to whole sellers and retailers. • Distribution scheduling • Number of echelons (stages) • Distribution center (DC) - customer assignment	Beamon, 1998 and Wong, 2005
Information sharing practices	• Type (strategic, operational, market, consumer, and logistics) • Coordination with distributors on demand forecasting and annual sales target development • Quality (accuracy and validity)	Huang *et al*, 2004
ICT implementation	• Type (Fax/internet, bar-coding/scanning. Intranet…) • Extent of coordination among SC partners • System compatibility	Tummala *et al*, 2006
SC network structure	• SC members (Primary Vs Secondary members) • Structural dimension of the network (horizontal structure, vertical structure, and horizontal position)	Cox, 2004
Relationship management	• Arm's Length and Collaborative	Cox, 2004

Table 2.1: Theoretical Framework for SCM practices used in this study

The figure below conceptually summarizes the relationship among major supply chain operations.

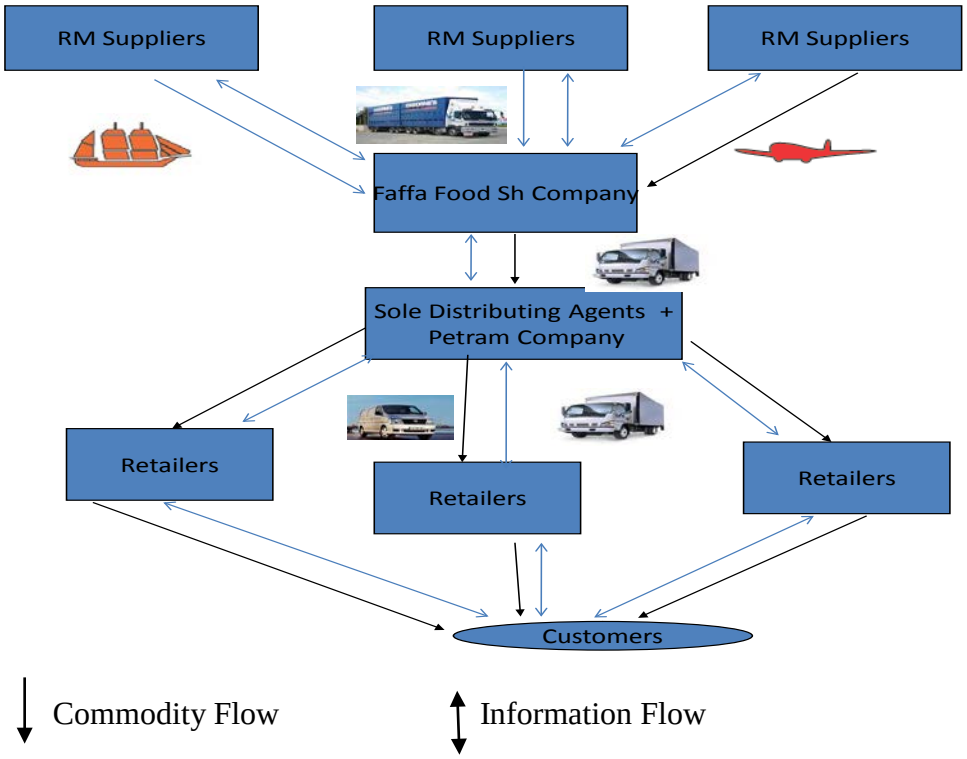

Figure 2.1: Conceptual Framework for Supply Chain Management Practices of Faffa Food Share Company

2.4. Supply Chain Performance Measures

Establishment of appropriate performance measures is an important component and step in design and analysis of supply chain. It measures efficiency and/or effectiveness of an existing system and bench mark standard/good practices from alternative systems (Zailani & Rajagopal, 2005).

Supply chain performance measures could be either qualitative or quantitative. They could also be categorized as internally focused and customer focused performance attributes. The qualitative performance measures include customer satisfaction (pre transaction, transaction, and post-transaction), flexibility, information and material flow integration, risk management, and suppliers' performance in terms of delivering the right good in the

right time. There are also quantitative measures based on cost and based on customer responsiveness. Measures based on cost include cost minimization, sales maximization, profit maximization, inventory investment minimization, and return on investment maximization. Measures based on customer responsiveness include fill rate maximization, product lateness minimization, customer response time minimization, and lead time minimization (Beamon, 1998).

The Supply Chain Operations Reference (SCOR®) model provides a common framework for supply chain processes and performance metrics along with bench marks and best practices. The metrics in SCOR provide a solid foundation for measuring performance and identifying priorities. SCOR has five core supply chain performance attributes broadly grouped under customer focused and internal focused. Reliability, responsiveness, and agility are customer focused attributes. Whereas, cost and asset management efficiency are internally focused performance attributes. The key performance indicators are order fulfillment rate, delivery lead time, flexibility, adaptability, cost of goods sold, supply chain management cost, capacity utilization, and inventory days of supply (SCC, 2010).

- Reliability is customer focused attribute describing system's ability to deliver the right quantity and quality on the right time. The SCOR KPI is Perfect Order Fulfillment.
- Responsiveness is customer focused attribute describing the speed at which tasks are performed and mostly expressed by cycle-time metrics. The SCOR KPI is Order Fulfillment Cycle Time.
- Agility is customer focused attribute describing the ability to respond and change according to external influences. The SCOR KPIs include Flexibility and Adaptability.
- Cost is internally focused attribute describing the cost of operating the process (labor, material, and transportation costs). The SCOR KPIs include Cost of Goods Sold and Supply Chain Management Cost.
- Asset Management Efficiency is an internally-focused attribute describing the ability to efficiently utilize assets. Asset management strategies in a supply chain include inventory reduction and in-sourcing vs. outsourcing. Metrics include: inventory days of supply and capacity utilization. The SCOR KPIs include: Cash-to-Cash Cycle Time and Return on Fixed Assets.

In summary, SC performance of an organization could be described in terms of customer satisfaction, suppliers' performance, reliability, responsiveness, and asset management efficiency.

The table below could be described as framework for assessing the supply chain performance of SCM.

Supply chain performance attributes	Measures and KPIs	References
I. Qualitative performance measures		
Customer satisfaction	• Pre-transaction satisfaction (service elements prior to product purchase) • Transaction satisfaction (service elements during physical distribution of products) • Post transaction satisfaction (support provided for products while in use)	Beamon, 1998
Suppliers performance	• Consistency of suppliers in delivering raw materials on time and in good condition.	Beamon, 1998
II. Quantitative performance measures		
Reliability	• Order fill rate by item and quantity	SCC, 2010 and Beamon, 1998
Responsiveness	• Delivery lead time	SCC, 2010 and Beamon, 1998
Asset management efficiency	• Inventory days of supply • Machine capacity utilization and efficiency • Inventory turnover • Percentage invested in inventory • Weeks of supply	SCC, 2010 and Beamon, 1998

Table 2.2: Theoretical Framework for SC performance measures

2.5.Empirical Findings on SCM Practices and Performances

The forward vertical integration for distribution is used to be only explained by governance efficiency as described in Transaction Cost Theory (TCA). That is the ownership is to lower marginal transaction cost arising due to market imperfection and uncertainty. Range of internal and external factors could also explain the motive to integrate forward for distribution. External factors include customer demand and the potential benefits involving differentiation, increased information about customers, and supply chain efficiency improvement. Whereas, the most important internal factor driving the integration is company's Supply Chain positioning strategy. And, this affects company's functions, roles, required resources, added value, and competitiveness. All in all, the forward vertical integration for distribution creates potential for selling more products (Guan & Rheme, 2012).

Evangelista, Mogre, Perego, Rospagliesi, and Sweeney (2012) have used resource based perspective to describe and understand the relationship between IT adoption, logistics capabilities, and firm's performance. Accordingly,

- A positive correlation between data gathering technologies (EDI, bar code, radio frequency, and RFID) and performance related to efficiency (asset utilization improvement), effectiveness (operation improvement, customer service improvement, and flexibility improvement), and transactional capabilities (packing, labeling, and order management).
- A positive correlation between enterprise information technologies (LAN, WLAN, and ERP) and financial performance (turnover improvement, market expansion, and increased customer).
- Adoption of CRM and mobile phones is correlated to efficiency performance (asset utilization improvement)
- A positive correlation between transactional capabilities (packing, labeling, and order management) performance measures in relation to asset utilization efficiency.

Supply chain integration as described by integration of supplier, customer and internal operation do have positive influence on supply chain performance. These performances are described in terms of raw material purchasing cost, transport cost, distribution cost, asset turnover and inventory holding cost (Patrick, 2013).

According to Makwemba and Xu (2009), uncoordinated information flow in Tanzania's food industry sector has resulted in a lot of wastage and product recalls. Bullwhip effect due to unreliable data was the major reasons for all these wastages. In addition, food products have relatively shorter shelf lives which make product recovery more difficult and expensive. Inventory management strategies and practices as described by setting optimal reorder and stock level, FIFO/FEFO, and stock evaluation practices were poor in all except in multinational companies. This along with *produce-to-stock* production strategy has resulted in stock piling, spoiled product, increased distribution recall costs, increased inventory cost, and significant decrease in profit margin. Poor forecasting along with production planning/scheduling activities that are not systematic and strategic has resulted into overstocking when the demand becomes low and or shortages when the demand turns to be high. Other challenges like technical knowhow, research and development, capital, difficulty in securing primary and secondary (packing) raw materials, and managerial/physical infrastructures were identified as bottleneck for the sector.

Deres (2011), in his comparative study on the level of SCM practices and performance in five selected medium and large footwear firms has found out that, the level of SCM practice implementation and performance among case firms varies depending on the SC variables. Specifically, the difference in performance with regard to; strictness of major customers' delivery requirement, cooperativeness in relationship with customers and suppliers, joint product planning with customers, in the occurrence of meeting with suppliers, internal material flow management, and made to stock production and modular system application is statistically insignificant. Whereas, statistically significant difference was observed among case organizations with regard to their compliance to customers' requirement, joint product planning with suppliers, accepting and implementing suppliers' improvement suggestion, participation in the sourcing decision of suppliers, new product

development, flexibility of production process, innovation, continuous improvement adoption, employees' professional skill, management know-how regarding supply chain, the extent of made to order production and production process automation, their information sharing practices (forecast, product related, adequacy, formal and informal information sharing agreement), in implementation of up to date automated ordering system with major suppliers, implementation of electronic ordering system with major customers and its adequacy, and in implementing automated production system.

According to Balda (2011), Kality Food Factory's Supply Chain practices and performance were not satisfactory. Specifically, the degree of relationship across the supply chain as described by joint product planning decision making is low and characterized as transactional or the traditional one. Even though; the company has good automated quality control and moderate flexible production system, innovation and efficiency in utilizing the available resource is weak. Good information sharing practices were observed among the supply chain partners even though the quality of information shared is under question mark. But, sales forecast information sharing with suppliers and customers is weak. Implementation and usage of information technology/tools in the company was found to be weak. And finally, the level of customer satisfaction in the supply chain performance of the company was also found to be low.

CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY

3.1. Research Design

The study has adopted explanatory design to describe and explain the supply chain practices and to further identify the reason for good or poor supply chain performance of Fafa Food Share Company. Descriptive study design was used to describe and evaluate performance of Fafa's supply chain using selected key performance indicators from SCOR model.

Qualitative approach was used to describe the supply chain practices and quantitative approach was used to evaluate Fafa's supply chain performance. The study was mostly cross sectional carried out in snap shot. But, longitudinal data was used to calculate and analyze trends for some of SC performance indicators.

The variables used to describe the supply chain practices of the organization are manufacturing process strategies, production scheduling, inventory control and distribution system, information sharing practices, ICT implementation, SC network structure, and relationship management.

The variables used to describe and evaluate the supply chain performance of the organization are customer satisfaction on the SC service, order fill rate, delivery lead time, weeks of supply, month of stock, percentage invested on inventory, inventory turnover, machine capacity utilization and efficiency, and production performance.

3.2.Population and Sampling Techniques

The basic unit of analysis for the study is Faffa Food Share Company supply chain; which involves suppliers, Faffa Food Share Company, and sole whole sale distributors.

SCM practices of Faffa Food Share Company (see Table 2.1) and supply chain performance (see Table 2.2) was discovered by the study.

The participants of this study in Faffa were relevant professionals working at different levels in Fafa supply chain system. Study samples were selected purposively in Faffa to include relevant professionals and subject matter experts for key informant interview. Study samples selected were Manufacturing Director, Acting Sales and Marketing Director, Procurement and Material Management Director, Central Planning, RM Store Manager, and Finished Product Store Managers.

The whole population in the sampling frame of nine sole distributing agents was included in this study. But, eight out of nine responded or response rate was 88.9 %.

3.3. Types of Data and Tools/Instruments of Data Collection

Primary data sources were used to describe the supply chain practices and to further elaborate the reason for good or poor supply chain performance of Faffa Food Share Company. Data were collected through key informant interview.

- First, semi structured interview was conducted with the General Manager and the Manufacturing Director to get preliminary understanding on the general company background, SCM practices, and sole distributing agents. In addition; pre transaction, transaction, and post transaction services provided in relation to the supply chain management practices were identified during this session. This has assisted the development of key informant interview questions and questionnaires.
- Open ended interview questionnaires with tailored questions for core processes in the organizations were designed (Procurement, Manufacturing, Sales, and Store). Structured questionnaires were designed in five likert scale to assess the level of satisfaction Faffa's sole agents on the supply chain performance of the organization. And, structured questionnaires with grouped scale were designed to measure reliability and responsiveness of Faffa's supply chain as perceived by sole distributing agents.
- Open ended interview questionnaires were used to interview key and relevant officials in Faffa to describe the supply chain practices of the organization. Key informants in this interview were General Manager, Manufacturing Director, Acting Sales and Marketing Director, Procurement and Material Management Director, Central

Planning, and Product Store Managers. The purpose was to describe in detail supply chain practices and factors affecting the supply chain performance of Faffa.

- Structured questionnaires designed in five level Likert scale were used assess the level of satisfaction Faffa's sole agents on the supply chain performance of the organization. General Managers and sales supervisors in the territory were participated in the assessment. Structured questionnaires with grouped scale were used to measure order fill rate and delivery lead time of Faffa's SC as perceived by sole distributors.

Data obtained from secondary data sources like balance sheet, income statement, annual sales performance report, production performance report, and business plan were used to evaluate the supply chain performance of the company in terms of reliability, responsiveness, and asset management efficiency. Specific key performance indicators include order fill rate, delivery lead time, inventory turnover, months of stock, weeks of supply, and machine capacity utilization and efficiency.

3.4. Procedures of Data Collection

Relevant officials to be interviewed were communicated ahead of time for them to get prepared in advance. The interviewer have asked and probed using open ended specific questions.

For questionnaires, Faffa's sole distribution agents were communicated ahead of time for their consent. Then, the researcher filled the questionnaires by asking participants orally.

3.5. Methods of Data Analysis

The supply chain practice of Fafa were described and analyzed qualitatively as per the discussion outputs from key informant interview. These include sourcing option, internal operation, logistics and distribution, information sharing practices, ICT implementation, Supply Chain network structure, and relationship management.

Suppliers' reliability by product group was analyzed based on the average perceived order fill rate for individual product groups. Individual, overall, and cumulative percentage of grouped order fill rates of local and foreign suppliers were calculated and compared. Supplier's responsiveness by product group was analyzed based on the average perceived delivery lead time for individual product groups. Individual, overall, and cumulative percentage of grouped order fill rates of local and foreign suppliers were calculated and compared.

Descriptive statistics like mean, standard deviation and percentages were used to describe, analyze, and compare Reliability (Order fill rate) and Asset Management efficiency (inventory days of supply, inventory turnover,…) of Fafa. The variables used in calculating these figures were obtained from the company's annual expense and performance report, business plan, and balance sheet. That is, the table below shows formulas to calculate variables along with source document to obtain figures.

Variables	**Formula**	**Source Document**
Order Fill Rate	Actual sales in ton in a year / Annual Sales Plan in ton in a year *100	Sales performance report
Machine Capacity Utilization within	Actual line output in ton in a year / Line DC in ton in a year * 100	Production performance report and business plan
Machine efficiency	Actual line output in ton in a year / Line EC in ton in a year * 100	Production performance report and business plan
Production Performance	Actual line output in ton in a year / Planned line output in ton in a year * 100	Production performance report and business plan
Inventory turnover	Annual COGS in birr / total inventory investment in birr	Income statement and balance sheet
Percentage invested in inventory	Total inventory investment in birr / total asset in birr * 100	Balance sheet
Months of Stock	Total inventory investment in birr / (Annual COGS / 12 month) * 100	Income statement and balance sheet
Weeks of Supply	Total inventory investment in birr / (Annual COGS / 52 weeks) * 100	Income statement and balance sheet

Table 3.1: Formulas to calculate SC KPIs along with secondary data sources.

The pre transaction, transaction, post transaction, and overall satisfaction of Faffa's sole agents on the supply chain performance were analyzed using descriptive statistics like mean, standard deviation, and percentage. Mean scale was calculated to come up with satisfaction figures for pre transaction, transaction, and post transaction SC services. Based on this average figure; between 1 and 2 shows very strong satisfaction, between 2 and 3 shows strong satisfaction, between 3 and 4 shows weak satisfaction, and between 4 and 5 shows very weak satisfaction. The pre transaction, transaction, post transaction, and overall customer satisfaction levels between Addis and region based distributing agents were compared using Mann Whitney U test (Non Parametric Test) based on exact P-value. This is because; the sample size is small and less than 61. The analysis was based on the following hypothesis.

H_o1: There is no statistically significant difference in pre transaction customer satisfaction between Addis based and region based distributing agents.

H_a1: Pre-transaction customer satisfaction of Addis based sole distributing agents is better than region based ones.

H_o2: There is no statistically significant difference in transaction customer satisfaction between Addis based and region based distributing agents.

H_a2: Transaction customer satisfaction of Addis based sole distributing agents is better than region based ones.

H_o3: There is no statistically significant difference in post transaction customer satisfaction between Addis based and region based distributing agents.

H_a3: Post-transaction customer satisfaction of Addis based sole distributing agents is better than region based ones.

H_o4: There is no statistically significant difference in overall customer satisfaction on SCM performance between Addis based and region based distributing agents.

H_a4: overall customer satisfaction on SCM performance of Addis based sole distributing agents is better than region based ones.

Fafa's supply chain performances as described by order fill rate and delivery lead time as perceived by sole distributing agents is analyzed using descriptive statistics like mean, standard deviation, and percentages.

CHAPTER FOUR: RESULTS and DISCUSSIONS

4.1.Results/Findings of the Study

4.1.1. Introduction

Primary data collected through interview and questionnaires were presented after summarizing and grouping them logically. In addition, relevant information obtained through reviewing relevant documents was presented after analysis, summary, and grouping. This information was used in assessing and evaluating SC practices of Faffa Food Share Company.

4.1.2. SCM Practices

a. Supply Chain Network Structure

The interview result with the Procurement and Material Management and Manufacturing Director was used to describe the supply chain network structure of Faffa as follows:

The primary members of Fafa's supply chain or members that perform operational and/or managerial activities in the business processes designed to produce specific output for particular customer or market include:

- International raw material suppliers like Si Lessafre, Naturex, Molino, and others providing semi processed raw materials used as input for producing majority of products produced in the company
- Local raw material suppliers like Hand to Hand, Mesoud Hamza, farmers around Bako, and others provide unprocessed cereals used to be processed further.
- International and local packing material suppliers like Flexible, Burayu, Kimiya, and others provide different packets, packing films, and corrugated cartoons used in packing finished products.
- Customers or consumers are also primary members of the supply chain as they provide feedback and input that will be used in improving product functionality and quality.

Supporting companies in terms of providing resources, knowledge, utilities or assets are insurance companies, banks, custom and clearance, transit companies, transportation and logistics companies, and advertising agencies.

As part of the horizontal network structure, Faffa has outsourced the cutting and wrapping of flat plate sheets used in packing Abay and Soya food products to Ethiopian Crown Cork.

As part of the vertical network structure, there are more than 20 local and international suppliers and 11 customers at the first tier level of the supply chain system.

b. Sourcing Options and Relationship Management

The interview result with the Procurement and Material Management Director was used to describe the sourcing options and relationship management of Faffa as follows:

Fafa sources and obtains non-processed and semi processed raw materials from multiple foreign and local suppliers. That is the company imports 21 types of raw materials from abroad and obtains 11 types from local market. Segmentation approach is used to source products from suppliers depending on the type of product, power relationship with the supplier, nature and type of the supplier.

Dairy products like full fat milk powder are obtained through Global Diary Trade (GDT), an auction platform (manual or automated to bid via internet) for internationally traded commodity dairy products. So, the negotiation strategy is market based price model, that is, the price is based on published auction and index price.

Faffa produces Magi mix-bread improver under license of the French company- Si Lessafre. There is more collaboration with first tier supplier on long term basis in terms of technical bonds and investment to maintain and improve product's functionality. There is long term operational relationship between buyers and sellers, supplier sets price and quality trade off, and buyer is paying whatever is required to receive given quality standards.

Faffa procures and stocks un-processed agricultural products like maize and corn from local suppliers and state farms during peak harvest period. This allows the company to take advantage of quantity discounts and hedge against future inflations. Specially, there is close collaboration between Fafa and farmers around Bako in producing quality enhanced yellow maize through Bako agricultural research institute. There is long term operational relationship between buyers and sellers, Fafa and the supplier share relatively equally the commercial value created, and buyer and supplier agree price and quality tradeoffs.

c. Production

The interview result with the Manufacturing Director was used to describe the production process of Faffa as follows:

Fafa produces 12 groups of products for the commercial market segment and 2 for relief market segment. Most products are produced in different variations in terms of size and packaging to address multiple groups of customers. Product groups manufactured in Fafa do have their own distinct line since each group require and have specific operational and process requirement for production. But, some like wheat flour manufacturing line has dual purpose: one is to produce wheat flours in different packages as an output for customers and the other is used as raw material for different products. There are eight production lines to manage the production of all product groups. These are:

- Relief product line is to produce Famix Relief product. Design and achievable capacities are 27,551 and 22,041 tons respectively.
- Cerifam line is to produce nine varieties of Cerifam baby nutritious foods. Design and achievable capacities are 932 and 745 tons respectively.
- Extrusion line is to produce large bulk product mixes like Famix commercial, Fafa relief, Fafa commercial, Favena, Barley Mix, and Dube powder. Design and achievable capacities are 846 and 677 tons respectively.
- Cornflakes and snacks line is to produce cornflakes 250gm and snack foods. Design and achievable capacities are 113 and 90 tons respectively.

- Wheat flour line is to produce wheat flours to customers packed in different sizes and for factory's consumption as raw material for different products. Design and achievable capacities are 2,400 and 1,500 tons respectively.
- Milk and Soya product line is to produces Abay milk in six varieties in terms of size (400, 900, and 2500gm) and packaging (Sachet and Tin), Edget milk in 250 and 400gm sachet, and Saba (Soya) milk in 200gm. Design and achievable capacities are 2,820 and 2,256 tons respectively.
- Bread improver line is to produce Magi mix-bread improver in 10 and 500 kgs. Design and achievable capacities are 3,000 and 1,200 tons respectively.
- Bread making line is to produce loaves of good quality breads for the consumer market. Design and achievable capacities are 400,000 and 30,000 tons respectively.

d. Logistics and Distribution

The interview result with the Sales and Marketing acting Director and the Store Manager was used to describe the logistics and distribution system of Faffa as follows:

The company has three group of warehouses intended to store raw materials, spare parts, and finished products. On average, around 20 product types are held in these warehouses.

Standard warehousing and inventory management practices like labeling, categorization, and record keeping are well implemented in both raw material and finished product warehouses, even though, there is no any racking system in place. FEFO- First Expiry First Out, a policy that enforces issue by expiry is well practiced and product arrangement in the warehouse facilitates the implementation of the policy.

Major activities in warehousing operation of raw materials and final products include receive, inspection, recording, location, and issue. Completing standard record, formats, and vouchers is also an important component in the standard operating procedure of material warehousing

Stock keeping and transaction records like Bin Card, Store Issue Voucher, and Good Receiving Note are used to track, monitor, and document movement and storage of products in and out of the warehouses. In addition, reporting formats like Store Requisition

Forms, Purchase Requisition Forms, and Product Return Note are used to transfer essential data needed for decision from one level to another. The records have reasonable level of accuracy because the ending balance matches the physical control for majority of products in the inventory.

There is no any inventory management system in place to classify, categorize, and prioritize products in the warehouse. And, there is no inventory control model in place that helps in deciding quantity and time of order at supplier and customer level.

Fafa has benchmarked coca cola while designing and optimizing its distribution system. The system is designed for products to go solely through 9 sole distributors, 6 in Addis Ababa and 3 in major capital cities all over country. These sole distributors will in turn access the ultimate customers through more than 10,000 retailers. Fafa's sister company Petram is sole distributor for Magi mix-bread improver. The company has substantial capital, managerial talent, market knowhow in the business, because it used to import and distributes the product from abroad. Distribution center (DC) - customer assignment is based on sales volume, client load, and distributor's performance. The system is direct delivery or collection system to all distributors based on agreed upon quarterly sales quota and the stock on hand during resupply. The company has assigned sales officers in each territory for them to provide support in product marketing and movement.

e. Information sharing practices

The interview result with the Procurement and Material Management Director, Manufacturing Director, Sales and Marketing Acting Director, Central Planning, and Store Manager was used to describe information sharing practices in Faffa as follows:

The type and extent of information sharing practices of Fafa with suppliers depends on the sourcing options and relationship management styles adopted. It is more advanced when the relationship management is more collaborative. That is:

- The type and extent of information sharing practices with majority of suppliers is limited operational and logistics related. Specifically; price, volume, delivery schedule, and other logistics related information is shared.

- The extent of information sharing and integration with Si Lesafre, supplier for Magi mix-bread improver line, is relatively more advanced. The company is involved even in production lay out, arrangement, quality control, operation, and marketing activities. The company also sponsors and invests on post transaction sales services.
- Fafa even have more advanced and rigorous information sharing practice with state and private agricultural firms. The company shares strategic, technical, and logistics related information like long term demand, forecast, delivery schedule, and product related technical requirements mostly through meetings.

Information sharing among core businesses within the organization is improving a lot through time especially after privatization. Fafa is in the process of automating the internal information sharing practices among core internal business processes. That is:

- The production department uses internal information from planning, logistics, and sales department to develop their production plan and schedule. That is, the information will be used as an input to develop and optimize rate of output for finished products.
- The planning department uses information from production, sales, and supply to produce annual sales and production plan.
- The sales and marketing department uses information coming from production and supply to manage the marketing and sales activities.

In addition, there is formal coordination mechanism in place between core processes to optimize resources and to continuously monitor performance towards objectives. This is materialized through monthly meetings between cross functional teams in the core processes.

The type of information shared with sole distributors is mostly logistics and customer related. Stock and transaction related information like available stock on hand, resupply quantity, type, and delivery schedule are among the most common logistics related information shared with sole distributors.

f. ICT implementation

The interview result with the Procurement and Material Management Director, Manufacturing Director, Sales and Marketing Acting Director and the Store Manager was used to describe ICT implementation in Faffa as follows:

They are using e-mails and websites to communicate and do business with suppliers and customers. Online auction to procure dairy products from international market could also be taken as typical example. The company is in the process of implementing oracle based inventory and sales management system. The inventory management system is designed to automate routine inventory, storage, and information management practices in the warehouse producing outputs like stock status report and deliver note. The sales management system automates basic operations in relation to sales and marketing producing out puts like cash and credit sales invoices. Outstanding challenges like change management and resistance to change is observed specially with senior staffs.

4.1.3. Supply Chain Performance

a. Suppliers Performance

The table below shows reliability as descri1bed by order fill rate of local and foreign raw and packing material suppliers.

RM/Pck Supplier Groups	Order fill rate by product group (Average) in percentage							
	Local				Foreign			
	≤ 25	26 - 50	51 - 75	76 - 100	≤ 25	26 - 50	51 - 75	76 - 100
Fafa Commercial				x				x
Dube Powder 2 kg				x				x
Cerifam Product Groups			x					x
Famix Commercial 500 grams				x				x
Favena /500 grams/				x				x
Corn flakes and snack foods			x				x	
Barley Mix			x					x
Abay Product Groups		x					x	
Bread Improver 500 gm (Magi mix)		x					x	
Saba (Soya) milk 200gm				x				x
Percentage	**0**	**20**	**30**	**50**			**30**	**70**
Cumulative Percentage	**20**		**80**		**0**		**100**	

Table 4.1: Order fill rate for suppliers by product group as perceived by Fafa

As can be seen above, performance of foreign suppliers in delivering the right quantity is better. That is, order fill rate for all is greater or equal to 50% and 70 % even have figures above 75%. But, the figure for local suppliers is lower. That is, 20 % local companies in the vertical and horizontal network structure of the supply chain have order fill rate below 50 %.

The table below shows responsiveness as described by delivery lead times of local and foreign raw and packing material suppliers.

RM/Pck Supplier Groups	Delivery Lead Time in months									
	Local					Foreign				
	≤ 3	3 -6 (inc.)	6 - 9 (inc.)	9 - 12 (inc.)	> 12	≤ 3	3 -6 (inc.)	6 - 9 (inc.)	9 - 12 (inc.)	> 12
Fafa Commercial	x					x				
Dube Powder 2 kg	x					x				
Cerifam Product Groups	x					x				
Famix Commercial 500 grams	x					x				
Favena /500 grams/	x					x				
Corn flakes and snack foods	x						x			
Barley Mix	x					x				
Abay Product Groups		x				x				
Bread Improver 500 gm (Magi mix)	x					x				
Saba (Soya) milk 200gm	x					x				
Percentage	**90**	**10**				**90**	**10**			
Cumulative Percentage	**100**		**0**			**100**		**0**		

Table 4.2: Delivery lead time for suppliers by product group as perceived by Faffa

There is no as such variation among local and foreign suppliers in delivering the products timely. The exception here is also Ethiopian Cork and Corn flakes foreign suppliers. The company has a scoring system in place to evaluate suppliers service and quality performance based on standard rating criteria. Supplier's performance is scored and compared against the maximum score. The overall score should be greater or equal to 70 out of 100 for the company to renew the contractual agreement.

b. Production Performance, Capacity Utilization, and Production Efficiency

The table below shows the actual and projected utilization and efficiency of machineries by line. The results are obtained and calculated from company's annual production performance report and business plan.

Line	Actual in Percentage					
	2004 E.C.			2005 E.C.		
	Production Performance	Capacity Utilization	Efficiency	Production Performance	Capacity Utilization	Efficiency
Relief products line	155.4	38.6	48.2	56.5	13.9	17.3
Cerifam line	32.8	21.7	27.1	48.4	25.5	31.9
Extrusion line	56.0	66.6	83.2	53.4	46.4	57.9
Cornflakes and snacks line	12.7	12.7	16.0	32.8	9.7	12.2
Wheat flour line	24.8	31.1	49.7	34.7	21.6	34.6
Milk and soya powder line	25.7	1.9	2.4	65.0	7.1	8.9
Bread improver line	14.9	2.2	5.6	90.5	7.2	18.1
Bread making line		0.0	0.0		0.0	0.1
Average	46.0	21.8	29.0	54.5	16.4	22.6
Standard Deviation	50.3	23.0	29.3	19.6	14.6	18.2

Table 4.3: Actual Production Performance, Capacity Utilization, and Efficiency for all production lines

Line	Plan (Projection) in Percentage					
	2006 E.C.		2007 E.C.		2008 E.C.	
	Capacity Utilization	Efficiency	Capacity Utilization	Efficiency	Capacity Utilization	Efficiency
Relief products line	10.7	13.4	11.8	14.7	13.0	16.2
Cerifam line	56.8	71.0	62.4	78.1	68.7	85.9
Extrusion line	46.2	57.8	50.8	63.5	55.9	69.9
Cornflakes and snacks line	26.5	33.3	26.5	33.3	31.9	40.0
Wheat flour line	62.5	100.0	62.5	100.0	62.5	100.0
Milk and soya powder line	14.3	17.9	15.7	19.6	17.3	21.6
Bread improver line	30.8	77.0	33.9	84.7	37.3	93.2
Bread making line	7.5	100.0	15.0	200.0	30.0	400.0
Average	**31.9**	**58.8**	**34.8**	**74.3**	**39.6**	**103.3**
Standard Deviation	**34.6**	34.4	21.2	59.7	20.7	124.1

Table 4.4: Planned Projections for Capacity Utilization and Efficiency for all production lines.

As can be seen above, capacity utilization and efficiency for almost all lines with the exception of extrusion line is way less than 50%. But, figures for production performance against the plan are way better than efficiency and utilization.

c. Reliability - Order Fill Rate

Fafa resupplies sole distributors based on annual sales target desegregated by month. So, annual sales performance as described by percentage sales performance against plan could be taken as proxy indicator for order fill rate.

The table below shows annual sales performance of selected tracer commercial product group. The results are obtained from secondary data (sales performance report) and primary data (the performance as perceived by sole distributing agents). And, product groups like Barley Mix and Favena which are becoming obsolete are excluded. Because, these days specialized "Baltena Firms" are producing these products in relatively lower price.

Product	Sales Performance/Order fill rate in percentage		
	2003	2004	2005
Fafa Commercial	71	45	63
Cerifam Product Groups	50	30	60
Famix Commercial 500 grams	21	18	83
Corn flakes and snack foods	47	13	29
Abay Product Groups	-	55	145
Bread Improver 500 gm (Magi mix)	-	15	205
Saba (Soya) milk 200gm	-	-	45
Total	**32**	**28**	**87**

Table 4.5: Sales Performance-Order Fill Rate of all product groups.

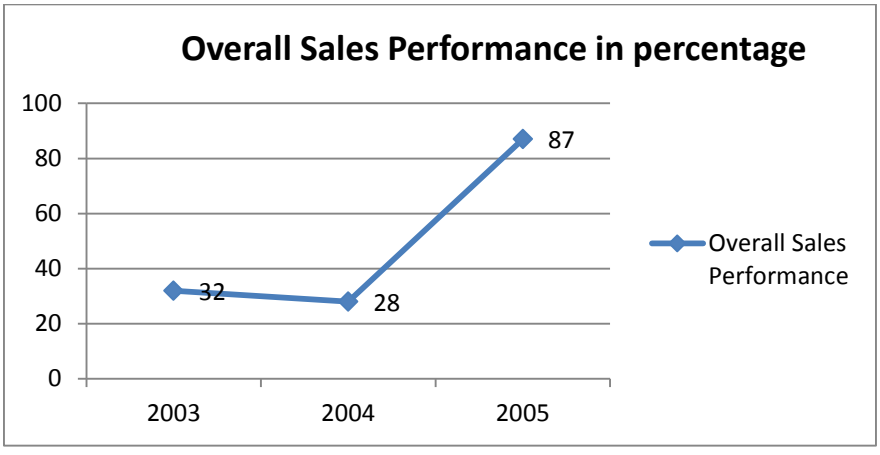

Figure 2: Trends for Overall Sales Performance from 2003-2005.

As can be seen above, the overall sales performance in 2005 is 87 % with variations among product groups (205 for Magi mix Vs 29 for Cornflakes), the figure for 2005 (87%) is relatively much higher than 2003 and 2004 figures.

d. Asset Management Efficiency

The table below shows results for asset management efficiency indicators. The results are calculated based on figures obtained from company's annual balance sheet and income statement (Inventory, Total Asset, COGS…).

Performance Indicators	Result			Plan		
	2003 EC	2004 EC	2005 EC	2006 EC	2007 EC	2008 EC
Assets commited to inventory in percentage	26.1	26.0	30.1	34.4	40.4	42.3
Inventory Turnover	1.8	3.5	2.05	2.6	2.4	2.5
Months of Stock	6.7	3.4	5.8	4.6	5.0	4.8
Weeks of Supply	29.2	14.7	25.3	20.0	21.7	20.9

Table 4.6: Overall Asset Management Efficiency

Assets commited to inventory in percentage is higher in 2005 as compared to 2003 and 2004. The company still has aggressive plan to increase these figures more in the upcoming three years. Inventory turnover in 2004 is relatively good mostly due to high sales performance on relief product line. According to the projection plan, inventory turnover will be expected to remain constant (2.5). Months of Stock levels on average are from 5-6 months.

e. Customer Satisfaction on Supply Chain Services

The tables below shows summary for customer satisfaction on pre-transaction SC services.

Pre Transaction Customer Satisfaction	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)	Mean	Std. Deviation
Contractual Agreement	100.0	0.0	0.0	0.0	0.0	1.00	0.00
Credit Facility	87.5	12.5	0.0	0.0	0.0	1.13	0.35
Flexible payment	87.5	0.0	12.5	0.0	0.0	1.25	0.71
Pre transaction training	0.0	37.5	37.5	12.5	12.5	3.00	1.07

Table 4.7: Summary of responses measuring pre-transaction customer satisfaction

As can be seen from Table 4.7, overall pre transaction customer satisfaction is very strong according to the mean which are more or less between 1 and 2. Specifically, 100 % of respondents strongly agree that Fafa's contractual agreement and management with sole distributors is satisfactory. 87.5 % strongly agree that, Fafa has satisfactory level credit facility and flexible payment model. Only 37.5 % of respondents agree for being satisfied on the pre transaction training.

The tables below shows summary for customer satisfaction on transaction SC services.

Transaction Customer Satisfaction	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)	Mean	Std. Deviation
Right Product	62.5	0.0	37.5	0.0	0.0	1.75	1.04
Right Quantity	50.0	12.5	37.5	0.0	0.0	1.88	0.99
Right Time	37.5	0.0	37.5	25.0	0.0	2.50	1.31
Right Quality	12.5	50.0	25.0	12.5	0.0	2.38	0.92
Right Cost	75.0	25.0	0.0	0.0	0.0	1.25	0.46

Table 4.8: Summary of responses measuring transaction customer satisfaction

As can be seen from Table 4.8, overall transaction customer satisfaction is strong according to the mean which are more or less between 2 and 3. Specifically, 62.5 % of respondents at least agree and 37.5 % neutral on the supply chain system's ability in delivering the right product in the right quantity. 25.0 % disagree and 37.5 % of respondents are neutral on the system's performance in delivering products in the right time. 62.5 % at least agree on Fafa's performance in delivering good quality product, whereas, 25.0 % and 12.5% of respondents are neutral and disagree respectively. 100.0 % of respondents at least agree on the costs of products being satisfactory.

The tables below shows summary for customer satisfaction on post-transaction SC services.

Post Transaction Customer Satisfaction	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)	Mean	Std. Deviation
Product recall system	0.0	25.0	50.0	12.5	12.5	3.13	0.99
Sales and marketing support system	62.5	0.0	12.5	12.5	12.5	2.13	1.64
Logistics and technical support system	12.5	0.0	12.5	62.5	12.5	3.63	1.19
Customer support system	12.5	12.5	50.0	25.0	0.0	2.88	0.99

Table 4.9: Summary of responses measuring post transaction customer satisfaction

As can be seen from Table 4.9, overall post transaction customer satisfaction is weak according to the mean which are more or less between 3 and 4. The level of customer satisfaction for product recall system and logistics support system is weak (mean between 3 and 4). That is, only 25.0% and 12.5 % of respondents for product recall system and logistics support system respectively do agree on the systems being satisfactory. 25.0 % disagree and 50.0 % neutral for being satisfied with customer support system.

The tables below shows summary for overall customer satisfaction SC services.

Overall Customer Satisfaction	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)	Mean	Std. Deviation
Overall Satisfaction	25.0	37.5	37.5	0.0	0.0	2.13	0.84

Table 4.10: Summary of responses measuring overall customer satisfaction.

As can be seen from Table 4.10, overall customer satisfaction on the supply chain performance is strong according to the mean which is 2.13. That is, 62.5% at least agree for being satisfied with the overall performance to deliver the right products, in the right quantity, in the right time, and quality.

f. Testing Hypothesis

The pre transaction, transaction, post transaction, and overall customer satisfaction levels between Addis and region based distributing agents were compared using Mann Whitney U test (Non Parametric Test) based on exact P-value.

Testing Hypothesis 1

H_o1: There is no statistically significant difference in pre transaction customer satisfaction between Addis based and region based distributing agents.

H_a1: Pre-transaction customer satisfaction of Addis based sole distributing agents is better than region based ones.

Ranks

	Group	N	Mean Rank	Sum of Ranks
Pre transaction customer satisfaction	1.00 (AA)	5	3.7	18.5
	2.00 (Region)	3	5.83	17.5
	Total	8		

Test Statistics

	Pre transaction customer satisfaction
Mann-Whitney U	3.5
Wilcoxon W	18.5
Z	-1.23
Asymp. Sig. (2-tailed)	0.219
Exact Sig. [2*(1-tailed Sig.)]	.250[b]
Exact Sig. (2-tailed)	0.25
Exact Sig. (1-tailed)	0.125
Point Probability	0.036

Grouping Variable: group (AA and Region)
N: Number of Sole Distributors in Addis Ababa and Regional Capital Cities

Table 4.11: Mann-Whitney U test to compare pre-transaction customer satisfaction of Addis and Region based sole distributing agents.

As per table 4.11, the 1-tailed exact significance value 0.125 is greater than the significance level 0.05. So, the null hypothesis “There is no statistically significant difference in pre transaction customer satisfaction between Addis based and region based

distributing agents" is not rejected or the alternate hypothesis "Pre transaction customer satisfaction of Addis based sole distributing agents is better than region based ones" is rejected.

Testing Hypothesis 2

H_o2: There is no statistically significant difference in transaction customer satisfaction between Addis based and region based distributing agents.

H_a2: Transaction customer satisfaction of Addis based sole distributing agents is better than region based ones.

Ranks

	Group	N	Mean Rank	Sum of Ranks
Transaction customer satisfaction	1 (AA)	5	3.8	19
	2 (Region)	3	5.67	17
	Total	8		

Test Statistics

	Transaction customer satisfaction
Mann-Whitney U	4
Wilcoxon W	19
Z	-1.05
Asymp. Sig. (2-tailed)	0.294
Exact Sig. [2*(1-tailed Sig.)]	.393[b]
Exact Sig. (2-tailed)	0.393
Exact Sig. (1-tailed)	0.196
Point Probability	0.054

Grouping Variable: group (AA and Region)
N: Number of Sole Distributors in Addis Ababa and Regional Capital Cities

Table 4.12: Mann-Whitney U test to compare transaction customer satisfaction of Addis and Region based sole distributing agents.

As per table 4.12, the 1-tailed exact significance value 0.196 is greater than the significance level 0.05. So, the null hypothesis "There is no statistically significant difference in transaction customer satisfaction between Addis based and region based distributing agents" is not rejected or the alternate hypothesis "Transaction customer

satisfaction of Addis based sole distributing agents is better than region based ones" is rejected.

Testing Hypothesis 3

Ho3: There is no statistically significant difference in post transaction customer satisfaction between Addis based and region based distributing agents.

H_a3: Post-transaction customer satisfaction of Addis based sole distributing agents is better than region based ones.

Ranks

	Group	N	Mean Rank	Sum of Ranks
Post transaction customer satisfaction	1.00 (AA)	5	3	15
	2.00 (Region)	3	7	21
	Total	8		

Test Statistics

	Post transaction customer satisfaction
Mann-Whitney U	0
Wilcoxon W	15
Z	-2.306
Asymp. Sig. (2-tailed)	0.021
Exact Sig. [2*(1-tailed Sig.)]	.036[b]
Exact Sig. (2-tailed)	0.018
Exact Sig. (1-tailed)	0.018
Point Probability	0.018

Grouping Variable: group (AA and Region)
N: Number of Sole Distributors in Addis Ababa and Regional Capital Cities

Table 4.13: Mann-Whitney U test to compare post transaction customer satisfaction of Addis and Region based sole distributing agents.

As per table 4.13, the 1-tailed exact significance value 0.018 is less than the significance level 0.05. So, the null hypothesis "There is no statistically significant difference in post transaction customer satisfaction between Addis based and region based distributing

agents" is rejected or the alternate hypothesis "Post transaction customer satisfaction of Addis based sole distributing agents is better than region based ones" is accepted.

Testing Hypothesis 4

H_o4: There is no statistically significant difference in overall customer satisfaction on SCM performance between Addis based and region based distributing agents.

H_a4: Overall customer satisfaction on SCM performance of Addis based sole distributing agents is better than region based ones.

Ranks

	group	N	Mean Rank	Sum of Ranks
Overall customer satisfaction	1 (AA)	5	3.6	18
	2 (Region)	3	6	18
	Total	8		

Test Statistics

	Overall customer satisfaction
Mann-Whitney U	3
Wilcoxon W	18
Z	-1.42
Asymp. Sig. (2-tailed)	0.156
Exact Sig. [2*(1-tailed Sig.)]	.250[b]
Exact Sig. (2-tailed)	0.232
Exact Sig. (1-tailed)	0.179
Point Probability	0.161

Grouping Variable: group (AA and Region)
N: Number of Sole Distributors in Addis Ababa and Regional Capital Cities

Table 4.14: Mann-Whitney U test to compare over all transaction customer satisfaction of Addis and Region based sole distributing agents

As per table 4.14, the 1-tailed exact significance value 0.179 is greater than the significance level 0.05. So, the null hypothesis "There is no statistically significant difference in overall customer satisfaction between Addis based and region based distributing agents" is not rejected or the alternate hypothesis "Overall customer satisfaction of Addis based sole distributing agents is better than region based ones" is rejected.

g. Reliability - Order Fill Rate as perceived by sole distributing agent

The table below shows percentage summary for order fill rate by product group as perceived by sole distributing agents.

Product Groups	Order fill rate by type in percentage, n = 8				Order fill rate by quantity in percentage, n = 8			
	≤ 25 (%)	26-50 (%)	51-75 (%)	76-100 (%)	≤ 25 (%)	26-50 (%)	51-75 (%)	76-100 (%)
Cerifam product group	0.0	0.0	12.5	87.5	0.0	0.0	12.5	87.5
Abay milk product group	12.5	0.0	50.0	37.5	12.5	0.0	50.0	37.5
Saba (Soya) milk product group	12.5	0.0	25.0	62.5	0.0	0.0	25.0	75.0
Corn flakes and Snack foods product group	25.0	25.0	50.0	0.0	28.6	28.6	42.9	0.0
Faffa commercial product group	0.0	14.3	28.6	57.1	0.0	14.3	28.6	57.1
Famix commercial product group	85.7	0.0	0.0	14.3	85.7	0.0	0.0	14.3

Table 4.15: Summary for order fill rate as perceived by sole distributing agents

As can be seen above in the table:

- Order fill rate by type and quantity for Cerifam product groups as perceived by majority of distributors is in the range of 76-100 %. That is, 87.5 % believe that, the figure is in the range of 76 -100 % and 12.5 % believe it to be in the range of 51-75 %. The fill rate by quantity is the also same means, whatever that was produced is filling the demand in the range of 76 -100% for majority of distributors.
- Order fill rate by type and quantity for Abay product groups as perceived by majority (50.0 %) of distributors is in the range of 51-75 %, even though some (12.5 %) believe it to be less than or equal to 25.0%. The fill rate by quantity for majority is the also in the range of 51-75% or whatever that was produced is filling the demand for majority of distributors in the range of 51-75%.
- Order fill rate by type for Saba (Soya) milk product groups as perceived by majority of distributors is in the range of 51-100 %, even though some (12.5 %) believe it to be less than or equal to 25.0%. The fill rate by quantity for majority (75 %) is in the range

of 76-100 % or whatever that was produced is filling the demand for majority of distributors in the range of 76-100 %.

- Order fill rate by type and quantity for Corn flakes and snack food group as perceived by significant portions of respondents is less than 50 %.
- Order fill rate by type and quantity for Faffa commercial as perceived by majority of respondents is in the range of 51 -100 %. 57.1 % even believed it to be in the range of 76 -100%.
- Order fill rate by type and quantity for Famix commercial is very low. That is, majority (85.7 %) believed it to be less than or equal to 25 %.

h. Responsiveness – Delivery Lead Time as perceived by sole distributing agents

The table below shows percentage summary for delivery lead time as perceived by sole distributing agents.

Delivery Lead Time as perceived by sole distributing agents, n = 8

≤ 2 weeks (%)	2 Weeks - 1 month (%)	1 month - 2month (%)	> 2 month (%)
87.5	0.0	12.5	0.0

Table 4.16: Summary for delivery lead time as perceived by sole distributing agents

As can be seen in table 4.16, majority of distributors (87.5%) believed that, delivery lead time is less than or equal to 2 weeks for all distributing agents.

4.2. Discussion

4.2.1. SCM Practices

The SCM practices of an organization could be described in terms their supply strategy to source raw materials and as a set of interlinked activities under production planning, inventory control, distribution, and logistics (Beamon, 1998).

a. Sourcing Options and Relationship Management

Cox (2004) has described four sourcing strategies for buyers which guides the focus of relationship with suppliers. Relationship management as an organizational core process is comprised of strategic and operational components. The strategic process is about identifying key suppliers and development/maintenance of relationship. Whereas, the operational process is to segment suppliers based on their value over time and identify opportunities for longer term relationship (Lambert & Schwieterman, 2012).

After privatization, Faffa has made major strategic supply chain decisions that have tremendously affected the horizontal and vertical supply chain network structure. These include; the company's decisions to make cutting and wrapping of flat tins in house (make or buy decision), since Ethiopian cork is not reliable and responsive enough in fulfilling Fafa's requirement in terms of quality, delivery lead time, and fill rate. And also, Fafa had intentionally narrowed down the number of tier one customers to free up resources and capability to manage the whole supply chain even beyond tier one customers. That is, retailers moved further down in the supply chain to be served by sole distributors. This has resulted in relatively wider and longer vertical network structure at the first tier level. But, considering second and third tier suppliers and customers, the supply chain is characterized by narrow and long network structure on the supplier side combined with short and wide structure on the customer side. All in all, Faffa is oriented closer to the customer side of the supply chain network.

The sourcing strategy adopted to obtain dairy products like full fat milk powder is special type of supplier selection. They are obtained through Global Diary Trade (GDT), an auction platform (manual or automated to bid via internet) for internationally traded

commodity dairy products. So, the negotiation strategy is market based price model, that is, the price is based on published auction and index price. The system has relatively more stable and sustainable pricing and contract scheme which is safe for food industries like Faffa. In addition, products can be purchased over different delivery time periods, known as contract periods. The relationship management style is supplier dominant arm's length relationship or buyer's non-adversarial arm's length. Because, there is short term working relationship, supplier sets price and quality trade off, and buyer is paying whatever is required to receive given quality standards. The sourcing option and relationship management with most other international suppliers like Naturex, Hexagon, and Ibercam is also the same.

The sourcing strategy to obtain the core raw material from Le safre is supplier development since the relationship is more long term and highly collaborative. The company has provided and still providing continuous technical support on Fafa's internal operation, marketing, and customer management system. This is to maintain the quality standards and reputations of Magi mix in Ethiopian market. The relationship management style is supplier dominant collaborative relationship. Because, there is long term operational relationship between buyers and sellers, supplier sets price and quality trade off, and buyer is paying whatever is required to receive given quality standards.

The sourcing strategy to obtain un-processed agricultural products from majority of local suppliers is more of supplier development since; there is long term collaborative relationship with first line suppliers. But, supply chain management is used to source quality enhanced yellow maize product with private and state farms around Bako since the collaboration and bonding goes beyond the first level suppliers. The relationship management style is buyer-supplier reciprocal collaborative relationship. Because, there is long term operational relationship between buyers and sellers, Fafa and the supplier share relatively equally the commercial value created, and buyer and supplier agree price and quality tradeoffs.

b. Production

The production strategy is product focus for all lines. It is continuous processes with long continuous production runs intended to produce high volume and low variety products. The firm has the required level of standardization and quality control system in place needed for this strategy. The product focused facilities and lines can produce differentiated products in term of packaging and size to address multiple segments of customers. And, the differentiation is actually superficial and at the end of the process. In addition, finished products are usually made to a forecast and stored. According to Heizer (2011), to gain most out of this strategy the company's volume of production and utilization should be high or the process will be too expensive for low volume and utilization. As it was described earlier, effective utilization depends on many internal and external factors like, raw material availability, and effective quality control system. And, the company should have well established, organized, and effective planning and forecasting system to gain most out of this strategy. All in all, Faffa's production process strategy is designed to achieve competitive advantage in terms of low cost business strategy with moderate level of responsiveness and differentiation.

Production scheduling depends on the forecasted sales target, which in turn is based on market demand and company's capacity to meet the demand. So, scheduling activity is concerned with establishing a rate of output to meet sales forecast.

c. Logistics and Distribution

Good and effective inventory control system is crucial for big manufacturing firms like Faffa to strike a balance between inventory investment and customer service. That means there should be a system in place to avail the optimal stock levels of, raw materials to maintain production without interruption and finished products to satisfy customer needs. And also, inventory is one of the big impact areas to consider for cost reduction. All in all, companies can never achieve low cost strategy without good inventory management system (Heizer, 2011).

Fafa holds reasonable level of raw material and finished product inventory to offset demand and supply related uncertainties. Specifically:

- Raw material inventory from international suppliers is mostly held to separate production process from material acquisition related uncertainties (supply fluctuations). The buffer or safety stock level is to maintain production during delivery lead time. System inefficiency in custom clearance, LC, and supplier inefficiency adds on the normal lead time resulting in larger safety stock level
- The company procures large stocks of unprocessed raw materials like wheat, soya, and maize from local suppliers during harvest period to take advantage of quantity discounts and hedge against future inflations.
- Finished material inventory of all types is also kept in the warehouse to minimize stock out and wastage due to expiry that might occur due to demand fluctuation and uncertainty in the system.

Standard warehousing and inventory management practices like labeling, categorization, and record keeping are well implemented in both raw material and finished product warehouses, even though, there is no any racking system in place. FEFO- First Expiry First Out, a policy that enforces issue by expiry is well practiced and product arrangement in the warehouse facilitates the implementation of the policy. The policy is crucial for firms handling products with relatively short expiry dates like food products and pharmaceuticals. That is the policy highly minimizes wastage of products due to expiry. In addition, basic standard operating procedures and workflows needed to manage products in warehouse are well in place. The warehouse by itself is designed in such a way that, it facilitates smooth flow of products. But, as the organization grows and started to manage more products, existing business processes are needed to be re designed to incorporate important processes like dispatch.

Stock keeping and transaction records used in the warehouse have important stock and transaction related information used in important Supply Chain Decisions (when and how much to order). This in turn helps a lot in maintaining optimal stock level to meet the demand and prevent wastage due to oversupply. The records have reasonable level of accuracy because the ending balance matches the physical count for majority of products in the inventory.

Faffa's vertical integration with sole distributors is realized through vertical contracts. This vertical contract is based on contract agreements between the two firms in terms of exclusive dealing, resale price maintenance, and exclusive territories. Distributing agents are selected based on their capacity and competency in terms of fulfilling the minimum requirements. The forward vertical integration gave Faffa control over how products are marketed (advertising, product positioning, and marketing channel), ability to maintain/control product quality, and ability to maintain company's reputation in such imperfect and fragile market. Distribution center (DC) - customer assignment is based on sales volume, client load, and distributor's performance. The system is direct delivery or collection system to all distributors based on agreed upon quarterly sales quota and the stock on hand during resupply. The company has assigned sales officers in each territory for them to provide support in product marketing and movement. All in all, the in-country supply chain includes 4-5 echelons depending on the type of products: local suppliers, Fafa, sole distributors, retailers, and ultimate customers. Well streamlined distribution system believed to have improved operation efficiency and customer satisfaction.

d. Information Sharing Practices

Information sharing practice among companies, customers, and suppliers is an important component required to improve visibility of information to achieve seamless integration within the supply chain (Zailani & Rajagopal, 2005).

The type and extent of information sharing practices or level of data visibility with most suppliers is only on the basic ones needed for decision making. Because, the level collaboration and trust doesn't allow sharing information beyond basic logistics related information needed for short term transaction. But, with some suppliers like Le Safre the level of collaboration and trust has allowed high level of data visibility or important strategic and operational information are shared for mutual benefits.

Even though, Faffa's internal information sharing practice and visibility is good lots of data which are not used for decision making are collected and shared. This might cause fatigue and compromise the collection of important data used in decision making.

Vertical integration through contracting has also created appreciable level of coordination and collaboration with sole distributors. Major areas for collaboration include developing joint demand planning / forecasting and technical support on marketing and distribution. So, relevant demand and production related information will be used and shared when developing the joint demand.

e. ICT Implementation

Information and communication technology (ICT) being process and product communication enabler is very important strategic factor for SC integration. It will help a company a lot in streamlining communication and developing efficient- responsive system (Tummala *et al*, 2005). Core processes in Faffa are utilizing the available basic ICT solution. The automation initiative to automate some of the activities and sub processes is also encouraging. As per Power (2005), process automation should follow process redesign and reengineering to avoid the risk of optimizing sub optimal process. Change management should also be equally considered to minimize human resistance to change.

f. Supply Chain Challenges

The interview result with all key informants has shown that, Supply chain related challenges of Faffa could be summarized under supply, internal, demand, and external factors.

f.1. Supply related challenges

In availability of raw material suppliers in the local market to provide majority of important raw materials needed as an input for production. Even the available ones lack the required technical and financial capacity to deliver the right quantity of supplies in the right time. And some times, others might not have the right infrastructure and system to produce raw and packing materials that comply with quality requirements of the food industry.

Some suppliers in the horizontal structure of the supply chain like Ethiopian cork are almost the sole enterprise for the wrap and seal service. This by itself affected the company's SC performance in terms of delivering the right products, with the right cost, in

the right time and quantity. This in turn has affected SC reliability and responsiveness of Faffa

International raw material suppliers don't have as such capacity problem to supply quality products in the right time and quantity. The challenges mostly arise in relation to country regulatory requirement, supplier power and leverage circumstances, and system inefficiency. Specifically,

- Some suppliers lack flexibility to accommodate country regulatory requirements and documents in their standard shipping documents. And, the regulatory body in the country is also not flexible enough to accommodate those variations.
- Some suppliers like Fontera are powerful enough to enforce quota based resupply system or fixed quantity at a time depending on organizational and country performance.
- System inefficiency in the country in transportation, custom, clearance, and other logistics activity do highly affects industries like food and pharmaceuticals managing products with limited shelf life.

f.2. Internal Operations

Majority of problems in relation to company's internal operations revolves around financial, technical, managerial, and infrastructure.

- Financial constraint in the organization added with limitation on LC is affecting the company's ability to fulfill demand in full capacity.
- Demand and supply uncertainty by itself affected organizational operation in terms of production scheduling, sales target, and optimization.
- Insufficient storage space to handle the volume of products needed to fulfill customer's demand.

f.3. Demand

- Demand uncertainty along with imperfect market structure did affect company's long term forecasting, planning, and marketing activities. This in turn affects the optimization effort to allocate organizational resources efficiently.

- Reliability and responsiveness of customers at all level for longer term supply chain relationship is also under question mark. Because, the market has not reached that level of maturity.
- High price based competition has discouraged the motivation and incentive to invest on innovation to come up with high quality differentiated products.

f.4. External Environment

- System inefficiency in custom, clearance, warehousing, transportation, and other logistics related services.
- The capacity to enforce the regulatory system to counteract movement of counterfeit products in the market is also questionable.

4.2.2. Supply Chain Performance

a. Suppliers Performance

According to Beamon (1998), suppliers' performance in delivering the right good in the right time is one among the qualitative Supply Chain performance measures. As it was clearly described in the result, foreign suppliers are more reliable in delivering products in the right quantity reinforcing the rational for backward integration as described in Transaction Cost Theory. Specifically:

- **Abay product groups:** the low performance level of local suppliers is due to efficiency and capacity problems of Ethiopian Cork (wrap and seal). And, even the performance of the foreign supplier (Fontera) is not as good as other foreign suppliers. This happened because; earlier Faffa was not consistent enough in collecting all consignments as to the contractual agreement due to system related problems like LC and internal capability in demand forecasting and inventory control.
- **Bread Improver 500 gm (Magi mix):** the low performance level of local suppliers is related to the capacity of packing film manufacturing firm (Chamber printing).
- **Corn flakes and snacks:** Local suppliers for yellow maize don't have enough capacity to provide the required quantity even though, Bako agricultural research institute managed to come up with the right quality.

b. Production Performance, Capacity utilization, and Production Efficiency

As can be seen from the result, low capacity utilization and efficiency clearly means availability of huge idle capacity in all lines which is attributable to limitations of finance (specially LC and foreign currency), infrastructure like electricity and water, raw and packing material availability, horizontal and vertical SC network partner efficiency, and internal operation efficiency (production, inventory control, and sales/marketing). High utilization and line efficiency is needed for product focus or continuous production lines to compensate for high fixed cost (Heizer, 2011). So, significant level of idle capacity could have been utilized through aggressive demand creation through marketing, improving internal operation (production, ICS...), and supplier relationship management. Relatively good performance in extrusion line is because; the output will also be used internally as input for the factory.

Specifically, the low capacity utilization and efficiency for milk and soya powder and bread improver lines is due to limited quota based resupply of milk products from the supplier Fontera, availability of new machineries with huge capacity to produce way above the market demand (milk and bread improver line), low market demand for Soya milk and most Cerifam products, difficulty to get sufficient foreign currency needed to import raw materials from abroad, unreliable water and electricity in the country (infrastructure), and operation and internal system capacity to utilize the available resource

Whereas, low capacity utilization of cornflakes and snack line is due to availability of relatively better quality imported products with comparable price in the market. That is, the output quality highly depends on the quality and characteristics of yellow maize, core ingredient in the production of cornflakes. The company is working hard with “Bako Agricultural Research Institute” to improve the local yield. In addition the de germination process in the line is not yet operational as needed.

As it is seen from the projection, the company has aggressive plan to improve utilization and efficiency of all production lines through; introducing alternative cost-effective energy systems and facilities (substituting furnace based boiler), establishing package seal and wrap line to internalize the operation of Ethiopian cork, implementing effective supplier

relationship management strategy with key raw material suppliers like Fontera (negotiation and discussion is undergoing with these suppliers to have better supply chain integration and collaboration), and implementing well designed and comprehensive marketing strategy to increase demands for products like Soya Milk. These are believed to help a lot in increasing production volume of all milk and baby food products.

c. Reliability

Fill rate maximization is the SCOR KPI for SC reliability, customer focused attribute describing system's ability to deliver the right quantity and quality in the right time (SCC, 2010). According to Beamon (1998), fill rate maximization is one among SC performance measures based on customer responsiveness.

c.1. Order Fill Rate – according to secondary data

As can be seen in the result, the overall sales performance in 2005 is 87 % with variations among product groups (205 for Magi mix Vs 29 for Cornflakes), showing gap in planning and optimizing the sales and production targets. In addition, several internal and external factors like consistent availability of raw and packing materials, delivery lead time, operation efficiency, capacity, and/or demand- supply situations affects the overall figure. These factors do affect each product group differently according to the product requirement in terms of raw material, demand/supply, and machine capacity.

The overall sales performance figure for 2005 (87%) is relatively much higher than 2003 and 2004 figures. The company believes that the following have line share for the improved fill rate:

- The introduction of new products like Magi mix, Cerifam, and others.
- Aggressive marketing strategy for the newly introduced products in 2003 and 2004 like flavored Cerifam product groups and Abay product groups. These strategies are based on long term collaborative relationship with sole distributing agents. Abay milk powder right now is the second chosen brand after NIDO.

- The long term collaborative relationship with Magi Mix core raw material supplier – Le safre has helped the company a lot in producing high quality product. Magi mix right now is the chosen brand in the market.

c.2. Order Fill Rate as perceived by sole distributing agent

Order fill rate by type and quantity for Cerifam product groups as perceived by majority of distributors is very good or in the range of 76-100 %. Comparing this figure with sales performance figures in Table 4.5 (60 %), the demand especially for the newly introduced product groups is somehow less than the supply.

Order fill rate by type and quantity for Abay product groups as perceived by majority (50.0 %) of distributors is good or in the range of 51-75 %. Comparing this figure with sales performance figures in Table 4.5 (145 %), the demand is much higher than the supply. As it was discussed earlier, the supply is highly constrained by two important factors like raw material and packing material availability.

Order fill rate by type for Saba (Soya) milk product groups as perceived by majority of distributors is good or in the range of 51-100 %. The fill rate by quantity for majority (75 %) is very good or in the range of 76-100 %. That is, whatever that was produced is filling the demand for majority of distributors in the range of 76-100 %. Comparing this figure with sales performance figure in Table 4.5 (45 %), the supply is much higher than the demand.

Order fill rate by type and quantity for Corn flakes and snack food group as perceived by significant portions of respondents is bad or less than 50 %. The low performance figure is also validated by low sales performance, production performance, and efficiency. The main reason as it was described is problem in specific process (de germination process) in production and availability of quality enhanced yellow maize in the right quantity.

Order fill rate by type and quantity for Faffa commercial as perceived by majority of respondents is good or in the range of 51 -100 %. The figure in line with sales performance figure in Table 4.5 (63 %) or the company is not producing the planned quantity to meet

the demand. Optimization to utilize the available resource efficiently could be the reasons for the low performance.

Order fill rate by type and quantity for Famix commercial is very bad or majority (85.7 %) believed it to be less than or equal to 25 %. High sales performance according to Table 4.5 has shown that, the company is dropping this product slowly.

d. Asset Management Efficiency

Asset Management Efficiency is an internally-focused SC performance attribute describing the ability to efficiently utilize assets (SCC, 2010). Performance metrics and indicators for this performance attribute include inventory turnover, assets commited to inventory, months of stock on hand, inventory days of supply, and capacity utilization (Heizer, 2011; Beamon, 1998; & SCC, 2010).

Assets commited to inventory in percentage is higher in 2005 as compared to 2003 and 2004. This is due to increased level of raw material and finished product inventory to increase production and sales. This was also clearly shown on line efficiency and capacity utilization data in Table 4.3. The company still has aggressive plan to increase these figures more in the upcoming three years.

Inventory turnover measures the number of inventory cycles or turnovers over a defined period of time, usually annually. It could also be described as the number of times the whole inventory was replaced. 2004 is relatively good year in terms of this indicator mostly due to high sales performance on relief product line. Because, sales and production performance for commercial products is the lowest. According to the projection plan, inventory turnover will be expected to remain constant (2.5) since the company is planning to increase both COGS and inventory level to utilize idle capacity (market and sales) and meet unmet demand.

Months of Stock levels on average are relatively good (5-6 months). Because, the average raw material delivery and production lead time for a product is 5-6 months. That means, the stock level is sufficient to serve customers on those periods without adding much on the inventory holding cost.

e. Customer Satisfaction on Supply Chain Services

Enhancing customer satisfaction is one among important objectives of SCM according to many authors (Tummala *et al*, 2006; Trkman *et al*; Habib, 2011). According to Beamon (1998), customer satisfaction (pre transaction, transaction, and post transaction) is one among qualitative supply chain performance measures.

The high level pre-transaction customer satisfaction is due to good and satisfactory contract management, credit facility, and flexible payment scheme in place. Otherwise, the level of satisfaction on the pre transaction training is not satisfactory. This shows company's focus on long term collaborative capacity building and incentive schemes like training is not as expected. Or the focus is more on short term collaborative arrangements like contract and credit arrangement.

As can be seen from the result, overall transaction customer satisfaction is strong according to the mean which are more or less between 2 and 3. Low level of supply chain integration as described by non collaborative relationship, poor communication, and information sharing practices with suppliers and customers are few among many reasons to be cited for low performance in terms of delivering the right quantity in the right time. The quality complaints and low performance in delivering the right quality are mostly in relation to tin packaging materials wrapped and made in Ethiopian cork.

As can be seen from the result, overall post transaction customer satisfaction especially for product recall system is weak according to the mean which are more or less between 3 and 4. Even though, standard recall and logistics support system for distributors is well in place in paper the company is not committed enough to implement the system to avoid short term costs. This will have long term implication in terms of profitability.

As can be seen from the result, overall customer satisfaction is strong, mean between 2 and 3. Relatively strong pre-transaction and transaction supply chain services could have contributed to the overall satisfaction.

CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1. Summary of Major Findings

- The vertical network structure of Faffa includes around 20 firms on the first tier supplier side and more than 10,000 firms (sole distributing agents and retailers) exist on the customer side. The horizontal network structure includes firms like Ethiopian Cork providing wrap and cut service.
- Sourcing strategy with all foreign suppliers with exception of Le Safre and Hexagon is supplier selection. Sourcing strategy with Le safre and Hexagon is more of collaborative or supplier development strategy. Supply chain management is also practiced as sourcing strategy with farmers producing quality enhanced yellow maize.
- The relationship management style with all foreign suppliers with exception of Le Safre and Hexagon is supplier's dominant arm's length relationship or buyer's non adversarial arm's length. Whereas, the relationship management with some suppliers like Le safre and Hexagon is supplier dominant collaborative relationship and buyer dominant collaborative relationship is the relationship management style with yellow maize suppliers around Bako.
- There is no inventory control system and model in place that helps in deciding quantity and time of order. Stock prioritization and classification techniques like ABC are also not practiced and implemented.
- The distribution system is designed for products to go solely through only six sole distributors in Addis Ababa and three in regional capital cities.
- Type and extent of information sharing practices of Faffa with raw material suppliers, customers, and within the organization is as follows:
  - ✓ It is limited to basic operations and logistics with majority of suppliers. But, more strategic and operational level information like demand plan, operation, and quality control are shared with limited suppliers like Le safre and Hexagon.
  - ✓ The internal information management system is not well integrated and harmonized to get optimal output.

- ✓ The practice with sole distributors even though not uniform is mostly on operational level information like short term demands like sales target.

- ICT implementation initiatives including the basic ones (fax, internet...) and the oracle based software is satisfactory. The implementation didn't necessarily go along with the required process changes and re design activities. The usual outstanding challenges in relation to change management and culture are also pertinent in Faffa's context.
- Capacity utilization and efficiency for all lines except for extrusion line is way below 50%.
- The overall sales performance in 2005 is 87 % with high variation among product groups (Magi mix 205 % and Corn flakes 29 %). Dramatic increase in sales performance was observed comparing the figures in 2003, 2004, and 2005. The order fill rate as perceived by majority sole distributing agents for all product groups with exception of Cornflakes is more than 50%.
- Delivery lead time for available products according to Faffa and sole distributing agents is between 1 to 2 weeks.
- Average values for Asset Management Efficiency taking calculated figures from 2003, 2004, and 2005 has shown Assets Committed to Inventory to be 27%, Inventory Turnover to be 2.4, and MOS to be 5.3.
- Customer satisfaction on pre transaction and transaction supply chain services is strong or more. But, it is weak on post transaction supply chain services and pre transaction training services.
- The 1-tailed exact significance value on Mann Whitney U test has shown that,
  - ✓ There is no statistically significant difference between Addis and Region based sole distributing agents in pre transaction, transaction, and overall customer satisfaction level.
  - ✓ The post transaction customer satisfaction for Addis based sole distributing agents is better than region based sole distributing agents.

5.2. Conclusions

The supply chain is characterized by narrow and long network structure on the supplier side combined with short and wide structure on the customer side.

Reactive sourcing strategy for majority of core raw material suppliers along with arm's length relationship management puts Faffa's supply chain performance and profitability at risk. Because, the ability to deliver right products, in the right quantity, and timely depends highly on limited suppliers.

The company is losing a lot of fortune due to poor inventory control practices as it was practically seen with Fontera. In addition, inventory is major cost saving area as it takes significant portion of the asset (27%).

The numbers of distribution centers are not sufficient to access Ethiopia's vast market.

The level collaboration in terms of technical bonding and seamless information sharing is not satisfactory. This is because; the existing level of vision alignment and relationship doesn't allow this level of integration.

ICT projects are not going along with the required process changes and re design activities. Rather, they are implemented to improve processes individually without considering the big picture.

Supply chain related challenge s of Faffa could be summarized under supply, internal, demand, and external factors.

- Supply side challenges include capacity and competency (for local suppliers), flexibility, reliability, and power/leverage circumstances.
- Challenges in relation to internal operation include capacity, competency, and motivation. Imperfect market system, demand uncertainties, and reliability are few among demand related challenges.
- Country system inefficiency, regulatory and bureaucratic procedures and requirement, infrastructure (light and electricity), and shortage of foreign currency are external factors outside the Faffa's circle of influence but still inside circle of concern.

Low capacity utilization and efficiency for all lines is not favorable for product focus production strategy involving continuous lines.

The mismatch between production plan and sales plan shows the gap in planning, optimizing, and matching sales and production targets. Introduction of new products like Abay and Magi Mix along with the collaborative relationship with Le Safre have contributed to the marginal increase in sales performance in 2004 and 2005.

The aggressive plan to increase sales performance in the coming years is mostly through increasing inventory.

Reliability – Order Fill Rate as perceived by majority of distributing agents for all product groups with the exception of Corn flakes and Famix commercial is good. The variation with sales performance figures from secondary data is related to supply and demand imbalances.

Low level of customer satisfaction on post transaction supply chain services and pre transaction training support service have the potential to affect company's long term profitability and existence. Level of dissatisfaction of Region based sole distributing agents is higher than Addis based sole distributing agents.

5.3.Recommendations

Fafa needs to make strategic supply chain decision revolving around sourcing, relationship management and make or buy decisions. Power and leverage circumstance and importance and uniqueness of the raw materials are among the main factors to be considered. Specifically:

- Backward integration to source unique and important raw materials like quality enhanced yellow maize. This will help a lot to internalize system related inefficiencies and mitigate supply side problems. But, more collaborative relationship based on mutual trust and benefit with limited reliable local suppliers should be the way to go for majority of less important raw materials.
- The relationship management with foreign suppliers should be segmented and based on mutual benefits and trust with win-win mentality. For example: The company has to work hard in improving and maintaining the relationship with Fontera, but should also look for alternative suppliers elsewhere.
- The decision to internalize the wrapping and sealing operation for packing materials should also be given high priority.
- They should also look for licensing agreement with known foreign cornflakes producer to produce the right quality for the market. This will help a lot in facilitating the knowledge and skill transfer in a short period of time.

The company should work hard and invest more to bring the required level of integration both at the suppliers and customers' side to improve customer satisfaction, sales performance, and reduce cost. This involves objective alignment, collaboration, data visibility, streamlining processes through removing unnecessary steps, and increasing responsiveness and resilience.

- Core internal processes should be integrated to optimize and utilize limited resources efficiently. This includes developing simple linear model relating sales, demand, and production. It is believed that, it will help a lot in mitigating efficiency problems arising due to poor planning and coordination as it was observed in variation in sales performance figures (Magi mix Vs Saba).

- Improving integration with first line customers through collaboration and relationship based on mutual benefit and trust (win win). Specifically, the company should invest more resource to optimize the whole supply chain through technical and financial support. And, more coordination mechanisms like joint demand forecasting should be there.

Standard inventory control system, that helps decision makers when and how much to order and maintain an appropriate stock level should be implemented. This will in turn improves profitability through minimizing shortage and oversupply. Specifically,

- Simple standard inventory control model and policy helping important decisions like how much to order, when to order, and inventory level to be held with objective of minimizing stock out and expiry cost. It depends on lead time for RM acquisition, shelf life, and safety stock levels to be held.
- Stock classification and prioritization like ABC to guide better inventory management policies. This will in turn result in better forecasting, physical control, suppliers' reliability, and ultimate reduction in safety stock.

The company should work hard and invest on improving visibility of information to achieve seamless integration with limited reliable suppliers and customers within the supply chain. In addition, improving the information management system for the operation to focus only in the collection and analysis of important data used in decision making should be priority. In addition, the importance of data in supply chain decision should also be promoted in parallel.

Process automation should follow process mapping and improvement to avoid optimization of sub optimal process. That is, ICT implementation should go along with the required process changes and re design activities executed through incremental processes. Change management activities should also be part of the overall automation initiatives to minimize risk associated with human factors mostly due to resistance to change.

Aggressive marketing and sales strategy for newly introduced but less demanded products like Soya and Cerifam without forgetting to optimize production and sales performance according to the demand level.

Work on improving the post transaction customer satisfaction through re initiating the already existing post transaction supply chain services like stock redistribution and product recall system. It is also important to give due attention to regional distributors while improving post transaction supply chain services. In addition, long term oriented SC service elements like pre service training should be considered as part of comprehensive performance based incentive scheme.

Performance based incentive system to motivate and encourage supply chain partners mostly local suppliers and customers. This will help a lot in boosting sales and improve supply chain performances especially for products with low demand like Saba. Specific interventions in this area include:

- Sales-based performance incentives like discounts to customers purchasing high volume or achieving their sales target consistently.
- Supply Chain performance based incentives to manage supplier relationship. It is incentive system to reward suppliers with high performance in delivering right product, in the right quantity and quality on timely fashion.

It is also advisable to adopt supply chain monitoring systems taking KPIs from SCOR model. This should be considered in the company's business strategy.

REFERENCES

Anley, A., (2010). 'Impact of Supply Chain Management Practices on Competitive Positioning of Ethiopian Textile Firms' (MBL Research Report, University of South Africa, 2010). Retrieved from http://hdl.handle.net/10500/4149.

Balda, A., (2011). 'Study on Supply Chain Management practices-a case study of Kality Food Share Company' (MBA Thesis Report, Addis Ababa University, 2011). Retrieved from http://hdl.handle.net/123456789/3333.

Ballou, R.H. (2007). 'The evolution and future of logistics and supply chain management'. *European Business Review*, 19 (4), 332-348. DOI 10.1108/09555340710760152.

Beamon, B.M. (1998). 'Supply Chain Design and Analysis: Models and Methods'. *International Journal of Production Economics*, 5 (5), 281-294. PIIS 09 25-52 73(98)0 007 9- 6.

Burgess, K., & Singh, P.F., (2006). 'A proposed integrated framework for analyzing Supply Chains'. *Supply Chain Management: An International Journal*, 11 (4), 337-344. DOI 10.1108/13598540610671789.

Cooper, .M.C., Lambert, D.M., & Pagh, J.D. (1997). 'Supply Chain Management: More Than a New Name for Logistics'. *The International Journal of Logistics Management*, 8 (1), 1–14. http://dx.doi.org/10.1108/09574099710805556.

Cox, A. (2004). 'The art of the possible: relationship management in power regimes and supply chains'. *Supply Chain Management: An International Journal*, 9(5), 346-356. DOI 10.1108/13598540410560739.

CSCMP (Council of Supply Chain Management Professionals) (2012). *CSCMP Supply Chain Management Definitions*. http://cscmp.org/aboutcscmp/definitions.asp (accessed in December 18, 2013).

Danese, P., & Romano, P., (2011). 'Supply chain integration and efficiency performance: a study on the interactions between customer and supplier integration'. *Supply Chain Management: An International Journal*, 16 (4), 220–230. DOI 10.1108/13598541111139044.

Deres, H., (2011). 'Supply chain performance of selected foot wear firms in Addis Ababa' (MBA Thesis Report, Addis Ababa University, 2011). Retrieved from http://hdl.handle.net/123456789/3374.

Drucker, P.F. (1998). 'Management's new paradigms', *Forbes magazine*, October 5, 1999, 152-177.

Ellinger, A., Shin, H., Northington W.M., Adams, F.G., Hofman, D., & O'Marah, K. (2012). 'The influence of Supply Chain Management competency on customer satisfaction and shareholder value'. *Supply Chain Management: An International Journal*, 17 (3), 249 - 262. DOI 10.1108/13598541211227090.

EBDSN - Ethiopian Business Development Services Network (EBDSN). The Ethiopian Food Processing Sector. Retrieved from: http://www.bds-ethiopia.net/food/index.html. Accessed on September 20, 2013.

Evangelista, P., Mogre, R., Perego, A., Rospagliesi, A., & Sweeney, E. (2012). 'A survey based analysis of IT adoption and 3PL's performance'. *Supply Chain Management: An International Journal*, 17 (2), 172 - 186. DOI 10.1108/13598541211212906.

Fisher, M.L. (1997). 'What is the Right Supply Chain for Your Product?. *Harvard Business Review*, 106-116. Retrieved from www.hbsp.harvard.edu.

Faffa Food SC (2013). "Business Plan". Unpublished company internal document.

Guan, W., & Rehme, J. (2012). 'Vertical integration in supply chains: driving forces and consequences for manufacturer's downstream integration'. *Supply Chain Management: An International Journal*, 17(2), 187-201. DOI 10.1108/13598541211212915.

Habib, M., (2011). 'Supply Chain Management (SCM): *Theory and Evolution, Supply Chain Management -Applications and Simulations,* Prof. Dr. Md. Mamun Habib (Ed.), InTech. ISBN: 978-953-307-250.

Handifield, Robert, B. (2002). *Supply chain redesign: converting your supply chain in to an integrated value stream*. New York: financial prentice Hall.

Heizer, J., & Render, B. (2011). *Operations Management*, New Jersey: Pearson.

Huan, S.H., Sheoran, S.K., & Wang, G. (2004). 'A review and analysis of supply chain operations reference (SCOR) model'. *Supply Chain Management: An International Journal*, 9 (1), 23-29. DOI 10.1108/13598540410517557.

Khan, O., Christopher, M., & Creazza, A. (2012). 'Aligning product design with Supply Chain: Case Study'. *Supply Chain Management: An International Journal*, 17 (3), 323-336. DOI 10.1108/13598541211227144.

Lambert, D.M., Cooper, M.C., & Pagh J.D. (1998). 'Supply Chain Management: Implementation Issues and Research Opportunities'. *The International Journal of Logistics Management*, 9(2), 1–20. http://dx.doi.org/10.1108/09574099810805807.

Lambert, D.M., & Schwieterman, M.A. (2012). 'Supplier relationship management as a macro business model'. *Supply Chain Management: An International Journal*, 13 (3), 337 - 352. DOI 10.1108/13598541211227153.

Lee, H.L., & Whang, S., (2000). 'Information sharing in a supply chain'. *International Journal of Technology management*, 20 (3/4), 373-387.

Makweba, R., & Xu, Q. (2009). 'Supply Chain Management and Challenges Facing the Food Industry Sector in Tanzania'. *International Journal of Business and Management*, 4 (12), 70-80. www.ccsenet.org/journal.html.

Patrick, C.K., (2013). 'Impact of Integrated Supply Chain on Performance at Kenya Tea Development Agency'. *International Journal of Social Sciences and Entrepreneurship*, 1 (5), 194-203. http://www.ijsse.org.

Petrovic-Lazarevic, S., Sohal, A., & Baihaqi, I. (2007). 'Supply Chain Management practices & Supply Chain performance in the Australian Manufacturing Industries'. (Working paper, Monash University). Retrieved from http:// www. buseco. Monash. edu. au /mgt/research/working-papers/2007/wp21-07.pdf.

Power, D. (2005). 'Supply Chain Management integration and implementation: a literature review'. *Supply Chain Management: An International Journal*, 10 (4), 252-263. DOI 10.1108/13598540510612721.

Samaranayake, P. (2005). 'A conceptual framework for supply chain management: a structural integration'. *Supply Chain Management: An International Journal*, 10(1), 47– 59. DOI 10.1108/13598540510578379.

SCC (2010). *Supply Chain Operations Reference (SCOR) model: Overview-Version 10.0*, Supply Chain Council Inc., info@supply-chain.org.

Stanger, S.H.W., Wilding, R., Yates, N., & Cotton, S. (2012). 'What drives perishable inventory management performance? Lessons learnt from UK blood Supply chain'. *Supply Chain Management: An International Journal*, 13 (3), 337 - 352. DOI 10.1108/13598541211212861.

Trkman, P., Stemberger, M.I., Faklic, F., & Groznik, A. (2006). 'Process approach to supply chain integration'. *Supply Chain Management: An International Journal*, 12 (2), 116-128. DOI 10.1108/13598540710737307.

Tummala V.M.R., Phillips C.L.M., & Johnson M. (2006). 'Assessing supply chain management success factors: a case study'. *Supply Chain Management: An International Journal*, 11(2), 179-192. http://dx.doi.org/10.1108/13598540610652573.

USAID | DELIVER PROJECT, Task Order 1 (2011). The Logistics Handbook (2nd Ed.), Arlington, USAID | DELIVER PROJECT.

USAID | DELIVER PROJECT, Task Order 1 (2008). Monitoring and Evaluation Indicators for Assessing Logistics System Performance (2nd Ed.), Arlington, USAID | DELIVER PROJECT.

Wong, Y.C., Arlbjorn, J.S., & Johansen, J. (2005). 'Supply chain management practices in toy supply chains'. *Supply Chain Management: An International Journal*, 10 (5), 367-378. DOI 10.1108/13598540510624197.

Zailani, S., & Rajagopal, P. (2005). 'Supply chain integration and performance: US versus East Asian companies'. *Supply Chain Management: An International Journal*, 10 (5), 379-393. DOI 10.1108/13598540510624205.

APPENDICIES

I. Interview Questions for Procurement and Material Management Department

Welcome!

First of all I would like to thank you for giving me your precious time for this interview. We are very interested to hear your valuable opinion on SCM practices of Fafa Food Share Company

I am Sami Tewfik a final year master of business administration (MBA) student at St. Mary's University College, School of Graduate Studies. I am conducting a research entitled "Supply Chain Management Practices and performances of Fafa Food Share Company" for my final year project.

- The purpose of this study is to investigate the SCM practices and performances of your company. We are very interested to hear your valuable opinion on SCM practices of Fafa Food Share Company.

1. Describe in your own words the supply chain practices of your organization?
2. What are the primary members of Fafa's supply chain considering the vertical structure (supplier and customer)?
3. What are the secondary members of Fafa's supply chain considering the vertical structure?
4. What are the horizontal members of Fafa's supply chain system?
5. Describe the horizontal orientation of Fafa in relation to suppliers and customers?
6. What sourcing options do Fafa uses to source raw and packing materials from international and local suppliers? Describe it along with its justification? (Supplier selection, SC sourcing, Supplier development, and SCM)
7. Describe internal and external factors affecting availability of raw materials in the right time?
8. Does the organization have well documented procurement policy and procedure?
9. Describe information sharing practices of your department with other core departments in terms of Type; Strategic, operational, consumer, and logistics, Quality: accuracy and validity, Coordination with distributors on demand forecasting and annual sales target?

10. Describe in your own words the ICT implementation and utilization in your organization in general and your department in specific?

RM/Pck Supplier Groups	Order fill rate by product group (Average) in percentage							
	Local				Foreign			
	≤ 25	26 - 50	51 - 75	76 - 100	≤ 25	26 - 50	51 - 75	76 - 100
Fafa Commercial								
Dube Powder 2 kg								
Cerifam Product Groups								
Famix Commercial 500 grams								
Favena /500 grams/								
Corn flakes and snack foods								
Barley Mix								
Abay Product Groups								
Bread Improver 500 gm (Magi mix)								
Saba (Soya) milk 200gm								
Percentage								
Cumulative percentage								

RM/Pck Supplier Groups	Delivery Lead Time in months									
	Local					Foreign				
	≤ 3	3 -6 (inc.)	6 - 9 (inc.)	9 - 12 (inc.)	> 12	≤ 3	3 -6 (inc.)	6 - 9 (inc.)	9 - 12 (inc.)	> 12
Fafa Commercial										
Dube Powder 2 kg										
Cerifam Product Groups										
Famix Commercial 500 grams										
Favena /500 grams/										
Corn flakes and snack foods										
Barley Mix										
Abay Product Groups										
Bread Improver 500 gm (Magi mix)										
Saba (Soya) milk 200gm										
Percentage										
Cumulative percentage										

11. Please help us in completing the following table which help us in evaluating supplier's performance in delivering right products, in the right quantity, and in the right time?

II. Interview Questions for Manufacturing Department

1. What are the product lists produced for commercial and relief market segment?
2. How many distinct production lines are there in Fafa? (Describe it in terms of plant-product assignment)
3. Describe the manufacturing process strategy and design by line? (Process focus, repetitive focus, and product focus)
4. Describe the production strategy and scheduling activities in your organization?
5. How do you measure the utilization of the production capacity of the available machines?
6. What are the major factors that affect the utilization of the capacity of production in the company?

7. Describe information sharing practices of your department with other core departments in terms of Type; Strategic, operational, consumer, and logistics, Quality: accuracy and validity, Coordination with distributors on demand forecasting and annual sales target?
8. Describe in your own words the ICT implementation and utilization in your organization in general and your department in specific?

III. Interview Questions for Sales and Marketing Department

1. Describe Fafa's product distribution strategy for commercial segment?
2. Describe Fafa's product distribution system operationally to deliver products to final customers? (Retrieval and transportation, delivery/collection…)
3. How are first distributors in the first tier getting resupplied?
4. Describe the post transaction marketing services provided by Fafa's sole agents to distributors?
5. Describe the foreword vertical integration practices of Fafa with sole distributor agents?
6. What are the factors considered when assigning Distribution Centers for customers?
7. What are the number echelons in the in country supply chain?
8. Describe the resupply model in terms of quantity/quota, period, and collection/deliver?
9. Describe information sharing practices of your department with other core departments in terms of Type; Strategic, operational, consumer, and logistics, Quality: accuracy and validity, Coordination with distributors on demand forecasting and annual sales target?
10. Describe in your own words the ICT implementation and utilization in your organization in general and your department in specific?

IV. Interview Questions for Store

1. In average, what are the number and product types held in inventory?
2. What are the inventory management practices and activities used to manage products in RM, WIP, and FP product warehouses?
3. What storage management practices are in place to manage products in RM, WIP, and FP product warehouses? (FEFO/FIFO, Product labeling, product organization, record keeping…)
4. Is there standard system in place to classify, categorize, and prioritize products in the store? If so, describe it (ABC, VEN…).
5. Describe basic warehouse management activities and operations in place?
6. What types of records and reports are used to track and report inventory and transaction?
7. If yes for question 6, what are the data elements?
8. How is data quality to be validated comparing data elements in record Vs report and records and physical count?
9. Is the warehouse up to standard as to the regulatory requirement from FMHACA to store food items? (in terms of size, height, ventilation, cleanliness,…)
10. Does the warehouse have the required type of arrangement to implement standard storage policies like FEFO?
11. Describe information sharing practices of your department with other core departments in terms of Type; Strategic, operational, consumer, and logistics, Quality: accuracy and validity, Coordination with distributors on demand forecasting and annual sales target?
12. Describe in your own words the ICT implementation and utilization in your organization in general and your department in specific?

V. Questionnaire for Sole Distributors

1. Company Profile

Name of the company:	
Name and address of the contact person:	
Name:	
Position:	
Work experience:	
Telephone address (optional):	
Email address (optional):	
Date:	

2. Instruction

The questionnaire is designed in Likert scale in five levels. Please select either one of the choices based on your evaluation. Please circle your answers on the box accordingly from number 1 -5. Each number designates the following meanings.

1. Strongly agree:
2. Agree
3. Neutral
4. Disagree
5. Strongly Disagree

3. Questionnaire

Questions	**Ratings**				
I. Pre Transaction Customer Satisfaction					
1. Fafa's contractual agreement and arrangement with sole distributors is satisfactory	1	2	3	4	5
2. Fafa's credit facility and arrangement is satisfactory	1	2	3	4	5
3. Fafa has flexible payment system and arrangement	1	2	3	4	5
4. Fafta's pre transaction training and customer support services are satisfactory	1	2	3	4	5
II. Transaction Customer Satisfaction					
1. Fafa's performance in delivering the right product is satisfactory	1	2	3	4	5
2. Fafa's performance in delivering the right quantity of product is satisfactory	1	2	3	4	5
3. Fafa's performance in delivering products timely (lead time) is satisfactory	1	2	3	4	5
4. Fafa's performance in delivering quality products is satisfactory	1	2	3	4	5
5. Fafa products cost is satisfactory	1	2	3	4	5
III. Post Transaction Customer Satisfaction					
1. Fafa has efficient product recall system for products having quality problem (collection and refund system)	1	2	3	4	5
2. Fafa's sales and marketing support system after transaction provided through sales agents is satisfactory	1	2	3	4	5
3. Fafa's logistics and technical support provided to redistribute products to alleviate stock out and expiry is satisfactory	1	2	3	4	5

4. Fafa's customer support systems and survey like customer satisfaction survey are satisfactory	1	2	3	4	5
IV. Overall Fafa's performance in delivering the right product, with the right quality, in the right quantity, and in the right time is satisfactory	1	2	3	4	5

On average, what are the Order fill rates of the following group of Fafa product?

Product Groups	**Order fill rate by type in percentage**				**Order fill rate by quantity in percentage**			
	≤ 25	26 – 50	51 – 75	76 – 100	≤ 25	26 – 50	51 – 75	76 – 100
1. Cerifam product groups								
2. Abay milk product								
3. Saba (Soya) milk product								
4. Corn flakes and snack food products								
5. Bread Improver (Magi mix)								
6. Faffa Commercial								
7. Famix Commercial								

On average, how long does it take for you to get your order (delivery lead time) from Fafa?

≤ 2 Weeks	2 Weeks – 1 Month	1 Month - 2 Months	> 2 Months

What are the gaps and challenges observed in relation to the supply chain practices of Faffa? What is your recommendation to fill this gap?

DECLARATION

I, the undersigned, declare that this thesis is my original work, prepared under the guidance of Dr. Matiwos Ensermu. All sources of materials used for the thesis have been duly acknowledged. I further confirm that the thesis has not been submitted either in part or in full to any other higher learning institution for the purpose of earning any degree.

_____ _____

Name Signature& Date

ENDORSEMENT

This thesis has been submitted to St. Mary's University College, School of Graduate Studies for examination with my approval as a university advisor.

_____ _____

Advisor Signature& Date