# SUPPLY CHAIN INTEGRATION FOR PERISHABLE GOODS SUPPLY PERFORMANCE, THE CASE OF ETHIOPIAN HORTICULTURE EXPORTERS

**By**

**SAMUEL FIKRU**

**GSE/0166/08**

**A Thesis submitted to Addis Ababa University, College of Business and Economics, School of Commerce for the partial fulfillment of the Degree of Masters of art in Logistics and Supply Chain Management.**

**Advisor: Teklegiorgis Assefa (Asst. Prof)**

**June, 2018**

**Addis Ababa, Ethiopia**

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## Declaration

I, the undersigned, declare that this thesis entitled as "Supply chain integration for perishable goods supply performance, the case of Ethiopian horticulture exporters" is my original work and has not been presented for the award of any degree in this or any other university. All sources of materials used in the thesis have been duly acknowledged.

_____ _____

Samuel Fikru Date

## Certificate

This is to certify that Samuel Fikru has carried out this research work on the topic entitled "Supply chain integration for perishable goods supply performance, the case of Ethiopian horticulture exporters" under my supervision. This work is original in nature and has not been presented for a degree in any University and it can be submitted for the partial fulfillment of the requirements for the award of the degree of Masters of Art in Logistics and Supply Chain Management.

_____ _____

Advisor: Teklegiorgis Assefa (Asst. Prof) Date

ADDIS ABABA UNIVERSITY

SCHOOL OF COMMERCE DEPARTMENT OF LOGISTICS AND SUPPLY CHAIN MANAGEMENT

SUPPLY CHAIN INTEGRATION FOR PERISHABLE GOODS SUPPLY PERFORMANCE, THE CASE OF ETHIOPIAN HORTICULTURE EXPORTERS

BY

SAMUEL FIKRU

Approval Board of Advisors

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| **Internal Examiner** | **Signature** | **Date** |

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# Acronyms and Abbreviations

| | |
|---|---|
| **SC** : | Supply Chain |
| **SCI** : | Supply chain integration |
| **EHPEA** : | Ethiopian horticulture producers' exporters association |
| **EHDA** | Ethiopian horticulture development agency |
| **EFDR-MoANR** : | Ethiopian Federal Democratic Republic Ministry of Agriculture and Natural Resources |
| **SI** : | Supplier integration |
| **CI** : | Customer integration |
| **II** : | Internal Integration |
| **Third party LSP** : | Third party logistics service provider |

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The Researcher

# Abstract

*Supply chain integration was identified as a tool to assist an organization to survive in a competitive marketplace. SCI directly relates to performance and that internal and external integration influence each other along with performance. The purpose of this research is the show the importance of the supply chain integration over the Ethiopian horticulture producers and exporters firms' performance in regards to the supply/delivery. The research focused on the Ethiopian horticulture producers' exporter's association members and used a census method as a sampling technique. The research used explanatory research design where both qualitative and quantitative (descriptive) methods of analysis were applied. Based on the output of the data analysis, the key factors identified are Supplier integration, internal integration, customer integration and third party LSP integration as an independent variable which shows a strong relationship with the supply performance of the firm. The overall performance of the firms supply operation was concluded as weak. Accordingly, capacity building, networking and information management technology applications recommended as a possible improvement interventions.*

*Key words: Supply, chain, integration, Horticulture, performance*

# CHAPTER ONE

## 1. INTRODUCTION

This chapter highlights the theoretical aspects of supply chain management and specifically about the merits and challenges of supply chain integration supply chain integration. It also give a basics on Ethiopian horticulture industry followed by the backgrounds of this specific research.

### 1.1. Background of the Study

Supply chain integration is defined as "the extent to which all activities within an organization, and the activities of its suppliers, customers, and other supply chain members, are integrated together" (Kim & Narasimhan 2002). Stevens (1989) classifies supply chain integration into three levels, from functional integration to internal integration and to external integration, functional integration is being a pre-requisite for all firms to implement and achieve Internal Integration (Otchere *et al*, 2013). Internal integration is regarded as supply chain activities that are carried out by several functions within the firms (Flynn, Huo, & Zhao, 2010). And external integration is generally referred to the integration among supply chain partners across firm's boundaries that encompasses of upstream and downstream supply chain with the aim is to create value to the entire supply chain (Sun, 2012).

The dominant belief is that supply chain integration (SCI) is a useful approach to improve various measures of firm performance (Van der Vaart and Van Donk, 2008). The basis of integration can therefore be characterized by cooperation, collaboration, information sharing, trust, partnerships, shared technology, and a fundamental shift away from managing individual functional processes, to managing integrated chains of processes (Pagell, 2004). Wisner (2003), studied over the implication of supply chain management on firm's performance and have revealed the importance of integration within supply chain context.

Horticulture industry as it is the engagement of handling perishable goods; the value and impact of supply chain integration is with high importance. Both realizing the expected benefit and possible loss of resources and capital are highly dependent on the performance and strength of

the entire supply chain activity and most importantly on the integration and adequate level of communication between each stakeholders.

## 1.2. Horticulture in Ethiopia

The Ethiopian Horticulture industry, regardless of the young age of the industry, (only 12 years) it has shown a significant progress and contribution to the nation's economic development and this was possible by generating high foreign income and creating huge employment opportunity. In figure horticulture is the fifth foreign revenue generator to Ethiopia next to coffee, pulses and oil seeds, gold and chat. In 2015/2016 the industry has generated 274.62 million USD, this has been considered as an exponential improvement compared to what was registered in the year 2004/2005 being 28.5 million USD and in 2015/16 it reached 274.62 million USD. The industry has also created over 183,000 employment opportunity out of which 85% are women. (EHPEA, 2017)

From the total area/land of Ethiopia that can be used for horticulture (11,371 hectares), floriculture, the 80% of foreign revenue earner of the sector, is practiced on only 1,442 hectares of land. This is only 11%. There are 136 investments in Ethiopia in export of flower, fruits and vegetables. Among these investments 71 are foreign direct investments, 12 of them are joint ventures and the rest 53 are owned by local investors. These show the very positive perspectives of the industry. (EHPEA, 2017)

Among the advantages of why to invest in Ethiopia in horticulture is, the nation's proximity to the middles east and Europe markets and good flight links to major and emerging market destinations. And also there are some positive improvements, the availability of fertile land for vegetable together with cold chain facilities at air ports and rapidly improving road and rail transport network. The Ethiopian cargo, being the only cargo operator serving the horticulture sector in transporting the products flies to over 24 cargo destinations. Among the main export markets are Netherlands (80.3%), Germany, Saudi Arabia, Norway, Belgium, UAE, Japan, USA, France & Italy. (EHPEA, 2016)

## 1.3.Statement of the Problem

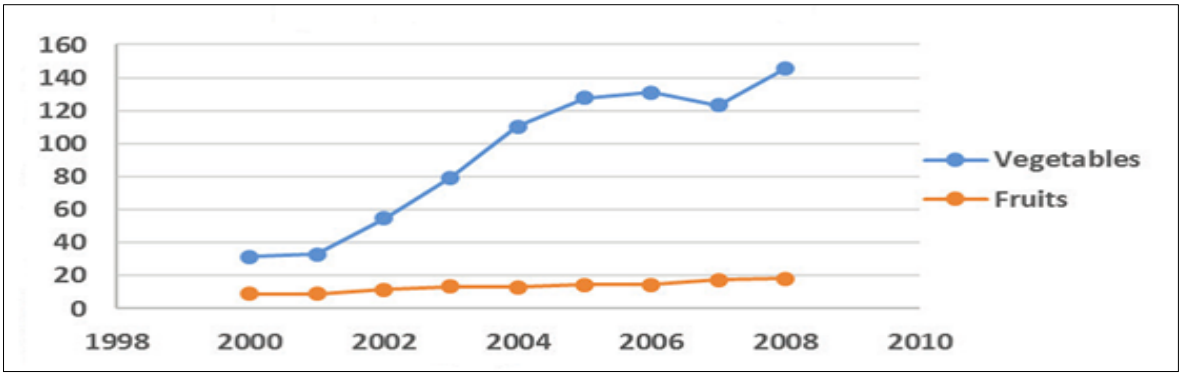
According to the Global Supply Chain Forum, SCM is 'the integration of key business processes from end user through original suppliers that provide products, services, and information that add value for customer and other stakeholder' (Chan & Qi, 2003). We can only talk about SCM if there is a proactive relationship between a buyer and supplier and the integration is across the whole SC, not just first-tier suppliers (Cox, 2004). Most SCM related-problems stem either from uncertainties or an inability to co-ordinate several activities and partners (Turban E. *et.al* 2004).

With regard to the nature and productivity of the Ethiopian horticulture industry Post-harvest waste is very high and estimated to be between 20 – 40%. (EFDR-MoANR, 2017)

Despite all the challenges and infrastructure poor organization over the industry, the industry is growing significantly from year to year. This signifies that the need of interventions to resolve the challenges of the industry in order to boost the performance of the industry.

The below graph shows the growth of the amount of productions per year

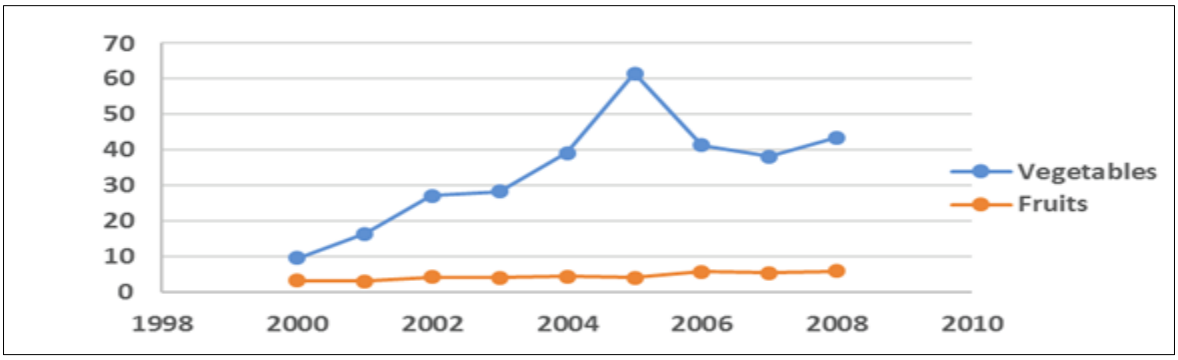
Figure 1. The amount of productions per year




*Source: (National Horticulture dev't& Marketing Strategy, 2010) (EFDR-ANRM)(ET calendar)*

*The below graph shows the value of export growth and revenue in USD from year to year*

Figure 2. Export growth and revenue in USD from year to year




*Source: (National Horticulture development & Marketing Strategy, 2010) (EFDR-ANRM)(ET calendar)*

Again despite the growth of the industry in generating value to the nation the export market structure is seem to be limited to only the very close countries. The below figure can show the contribution or market share of the export market.

Table 1. National Vegetables & fruits Product export destinations

| Type | Destinations | Percent |
|---|---|---|
| Vegetables | Europe | 3.9 % |
| | Middle East | 0.6 % |
| | Neighbor countries (Djibouti, Somalia & Sudan) | 95.5 % |
| Fruits | Europe | 0.7 % |
| | Middle East | 5.2 % |
| | Neighbor countries (Djibouti, Somalia & Sudan) | 94.1 % |

*Source: National Horticulture development & Marketing Strategy, 2017*

The figures in the table above shows the majority of the exports 95.5% and 94.1% both for Vegetables and Fruits respectively are done mainly to the neighboring countries only. It implies that there must be a logistic related challenge that blocks the vegetables and fruits export not to perform well in Middle East and European markets.

We can also deduce that the growth of the infrastructure and system development towards logistics and supply chain management is not in line with the demand of the growing horticulture industry. This is specifically concerning the use of sea transport and temperature controlled transport capacity. EHPEA and MAERSK Line agree to work together to

substantially reduce the cost of reefer containers in Ethiopia today and to avail enough reefer containers to Ethiopia so as to effectively boost the export of fruit and vegetables from the country (Wiersinga & Jager 2009).

On the other side the flower production has almost all its market in Europe because it uses air transport which is expensive. Bole Airport is the only airport in Ethiopia that handles international flights. Bahir Dar, Dire Dawa, Gondor, Mekele, and Arbaminch have airports capable of handling international traffic but, as yet, no international flights use these destinations. Ethiopian airlines had a good cargo facility with a cooling facility for cargo pallets. A constraint at the moment is the building of pallets, regularly causing long queues of trucks waiting to be off loaded (Wiersinga&Jager 2009).

Additionally the industry has a demand for other input materials like packaging supplies. Available packing material in Ethiopia does not yet meet the required high standards. Therefore most vegetable export grower's import there packing material from Netherlands or Israel (Wiersinga&Jager 2009).

In the fruits and vegetables sector, there are two privately owned cold stores in Ethiopia, namely the Ethio flora and Tippu Valley cold stores at Ziway. In the public sector, Etfruit and the two state enterprises have cold store operations. The stores are not designed to rapidly reduce field heat and are not of sufficiently high standard. There is only one private cold store at Bole airport (Wiersinga&Jager 2009).

## 1.4.Research Question

This research will answer the following questions:

1. What are the key factors that affect the supply chain integration of the Ethiopian Horticulture industry?
2. How does the supply chain integration (supplier, internal and Customer integration) affect the firm's delivery/supply performance?
3. What is the significance of supply chain integration for the Ethiopian Horticulture industry?
4. What are the main challenges faced by the horticulture industry towards Supply chain integration?
5. How can an integrated supply chain of the Ethiopian Horticulture industry be improved?

## 1.5.Research Objectives

**Genera Objective:** The general objective of this research is to determine the impact and significance of supply chain integration on the performance of Horticulture industry in Ethiopia.

The research also focused to achieve the following **specific objectives**:

- To identify factors affecting the supply chain integration of Ethiopian Horticulture industry
- To determine the effects of the firm's supply chain integration so as to improve the delivery/supply performance.
- To measure the current supply chain integration of the Ethiopian Horticulture industry and its effect on the performance of the industry.
- To identify the major challenges of supply chain integration of Ethiopian horticulture industry.
- To develop a model which improves the supply chain integration of the Ethiopian Horticulture industry ( to enhance its performance).

## 1.6.Significance of the Study

Specifically the supply chain integration has become the very interest of the horticulture industry due to the sensitive and time dependent nature of the supply chain over the logistic performance. The importance feasible integration can be seen from different perspective of the attributes of the process.

The dominant belief is that supply chain integration (SCI) is a useful approach to improve various measures of firm performance (Van der Vaart and Van Donk, 2008). The basis of integration can therefore be characterized by cooperation, collaboration, information sharing, trust, partnerships, shared technology, and a fundamental shift away from managing individual functional processes, to managing integrated chains of processes (Pagell, 2004). Wisner (2003), studied over the implication of supply chain management on firm's performance and have revealed the importance of integration within supply chain context.

Successful supply-chain integration can improve a firm's performance and competitive advantage (Wiengarten*et al*. 2010). In addition supply chain management (SCM) seeks to enhance competitive performance by closely integrating the internal cross-functions within a

company and effectively linking them with the external operations of suppliers, customers, and other channel members to be successful (Kim, 2006). This means that a firm that is pursuing SCM practices needs to pay attention to supply chain integration (SCI) and its implementation (Hussein &Nassar, 2010).

Moreover, supply chain integration (SCI) helps firms to reconfigure their resources and capabilities internally and externally to consolidate their supply chain as a whole in an effort to improve long-term performance (Horvath, 2001) SCI has both operational and financial performance benefits.

Although financial performance has been widely used as a key output measure of supply chain performance (Boyer, 1999), Therefore, in this study, the researcher plan to adopt both operational and financial performance to measure the benefits of supply chain integration.

This study is important as it will help the government to enact appropriate legislation in order to enhance proper supply chain management of horticulture in the country; Investors needs the information in order to determine the viability of investing in horticulture industry by considering the current nature of the industry and thus profitability in the long run.

## 1.7.Scope of the Study

The study was conducted within the frame work of the following factors. And it is due to access and capacity of the student researcher. Geographically the study conducted only in Addis Ababa and only exporters who are the members of the Ethiopian Horticulture producers and exporters association. And also from other stakeholders point of view the study considered the input of the public office which is responsible for the development of the horticulture sector (Ethiopian Horticulture Development Agency). Which means the study did not have a direct focus on input suppliers and consumer groups of the products due to again almost all the location of these sectors are outside Ethiopia. It is planned to get the status of the degree of the external integration from the feedback of the organizations which are under the scope of this study.

## 1.8.Limitation of the Study

The study was limited in terms of time and finance. In addition the variables which are under the study were limited from the perspective of the adopted model. The study tried to see the

factors of the basic integration variables from internal and external integration point of view. Stevens (1989) classifies supply chain integration into three levels, functional integration, internal integration and external integration. On this study the research focused only on internal and external integration, because functional integration is a pre-requisite for all firms to implement and achieve Internal Integration (Otchere *et al*, 2013).

## 1.9.Operational Definition of Terms

**Supply chain (SC):** The management of the flow of goods and services, involves the movement and storage of raw materials, of work-in-process inventory, and of finished goods from point of origin to point of consumption. Interconnected or interlinked networks, channels and node businesses combine in the provision of products and services required by end customers in a supply chain.

**Supply Chain integration (SCI)**: is the extent to which all activities within an organization, and the activities of its suppliers, customers, and other supply chain members, are integrated together" (Kim&Narasimhan 2002).

**Horticulture: is** the science and art of producing, improving, marketing, and using fruits, vegetables, flowers, and ornamental plants

**Refer Container:** is an intermodal container (shipping container) used in intermodal freight transport that is refrigerated for the transportation of temperature sensitive cargo.

**Cold Chain**:is an intermodal container (shipping container) used in intermodal freight transport that is refrigerated for the transportation of temperature sensitive cargo

**Neighboring countries**: as per this study. These are Sudan, Djibouti, Somalia & Kenya

**Third party LSP**: Third party logistics service providers

## 1.10. Organization of the Study

The study report is organized into five chapters. The first chapter deals with background of the study, scope of the study, research questions, objectives of the study, definition of terms, significance of the study and delimitation of the study.

The second chapter presented the review of the related literature, values and importance of SCI, diversified application of the SCI and its output, merits of performance SCI. Approaches and application of evaluation of SCI. Chapter three deals with research design and methodology, sample and sampling technique, sources and tools of data collection, procedures of data collection and method of data analysis.

In chapter four, the results and findings of the study, interpretation and discussion of the result by judging against the reviewed literature is presented. Then, the final chapter covered the summary of the findings, conclusion, and recommendation of the study.

# CHAPTER TWO

## 2. REVIEW OF RELATED LITERATURE

The following chapter presents the review of the related literatures to the study subject matter. Both theoretical and empirical literatures had been revised and points which were found very relevant to this study are explained. Again these references are used as supportive justifications for prepositions made later in the analysis and discussion section.

### 2.1. Theoretical Literature Review

#### 2.1.1. Challenges and implementation process of Supply Chain Integration

Supply chain management (SCM) executives face unique challenges, with respect to integrating supply chain specific strategies with the overall corporate business strategy; hence seamless coordination is rarely achieved in practice (Otchere *et al*, 2013). Most SCI related problems emanate, either from uncertainties or an inability to co-ordinate several activities and partners. Simultaneously, customers have become more discerning and are demanding better quality products, higher levels of service and reduced prices, (Sweeney, 2013). Unfortunately, obtaining supply chain integration has been an elusive quest for many companies (Fawcett & Magnan, 2002). Studies have revealed that, unlike other endeavors that a firm undertakes, there is no blueprint for integration and aggregate measure of overall supply chain performance from which a firm could compare performance with other industry members.

After extensive review of different perspectives from previous publications on supply chain integration challenges, they tried to introduce a comprehensive source, which will contain all the challenges mentioned in the literature in one paper as follows: Transaction Costs, strategy and planning, customer order management, logistic management, manage operation and flexibility, setting up standards of trade, procurement management, enterprise integration, application integration, extranet adaption challenges, business process integration, culture and change, supplier competence requirements, globalization, data and information integration (Hussain and Nassar, 2010).

Many authors have therefore, proposed several drivers as benchmark for implementation process, measuring best practices and performance of SCI. Every implementation process and performance

measure represents a broader field or area of measurement, such field or area of measurement is termed as significant category. The elements of the significant category are referred as "drivers" of supply chain performance (Soni and Kodali, 2010).

### 2.1.2. The effect of SCI on firm performance

In this study, operational performance was adopted to measure the benefits of SCI. Internal integration can help functions to leverage each other's resources and capabilities to jointly design products, ensure product quality and reduce duplicated tasks (Swink*et al*., 2007). For example, Tan (2001) found that internal integration could create a close link between manufacturing and distribution processes to deliver products and services in a timely and effective manner. Efficient external process integration allows manufacturers to speed up product delivery processes, improve production planning and reduce inventory obsolescence using accurate information about customer demands and preferences (Swink *et al*., 2007). Further, process integration with suppliers helps manufacturers reduce mistakes and enhance product quality through information sharing and joint planning, which are directly related to the manufacturers' operational performance (Petersen *et al*., 2005). Product integration with suppliers and customers can enhance manufacturers' new product development capabilities, promoting product quality, flexibility and innovation in addition to product competitive advantage (Koufteros *et al*., 2007).

Many studies have investigated the relationship between SCI and financial performance, and it is generally accepted that the former enhances the latter. For example, Frohlich and Westbrook (2001) concluded that manufacturers with the widest degrees of supplier and customer integration achieve the best performance improvements in terms of market share and profitability. Droge *et al*. (2004) found that both internal and external integration were related to financial performance through time-based performance. Manufacturers with the greatest degrees of external customer and supplier integration achieved the highest overall performance improvement. The literature suggests that internal and external process and product integration can directly contribute to manufacturers' financial performance. Furthermore, it indicates that operational performance plays an important role in the relationship between SCI and financial performance.

### 2.1.3. Performance and Competitive Advantage

A number of researchers have also found that higher levels of integration generally lead to better performance (Stock *et al*. 1998). Some researchers have use all three integration variables in assessing the effect of supply chain integration on performance and found that, SCI directly relates to performance and that internal and external integration influence each other along with

performance. However, internal integration's impact on performance depends on the functional areas that are being integrated and the level of external integration (Stank *et al*. 2001; Zhao *et al*. 2011; Flynn *et al*. 2010). In line with other papers from 2000 onwards discussing SCI and performance Stock *et al*. (2000); Frohlich and Westbrook, (2001) found that the levels of integration correlate and influence each other positively. Furthermore, it is difficult to come to a conclusion that integration clearly affects performance, since most of the studies in this field are discernable enough that integration and performance have been defined and measured variously and mostly limited way (Fabbe-Costes and Jahre, 2007). Firms have realized that enhanced competitiveness requires that companies ceaselessly integrate within a network of organizations. It is the extent to which organizations integrate with their supply chain "partners" that determines their competitiveness (Christopher, 2011).

From the above presented chapter it was tried to point out the importance of supply chain integration from the factors of the integration angles. And also the sited references highlight the value of supply chain integration on the firm's general supply chain performance. However, there seen a lack of depth insight of the importance of the supply chain integration specifically for perishable goods supply performance and in general the studies doesn't specifically detail the unique nature of the perishable goods supply that supply chain integration would contribute to improve its performance.

## 2.2.Empirical Literature Review

### 2.2.1. Supply Chain Management (SCM)

As many of the academicians and researchers agreed the Supply chain Management concept has been growing and becoming the significant factor for one's organization development and sustainability. As well the concept of "supply chain management (SCM)" has gone through huge developments globally. SCM seeks to enhance competitive performance by closely integrating the internal cross-functions within a company and effectively linking them with the external operations of suppliers, customers, and other channel members to be successful (Otchere *et al*, 2013). The objective of supply chain management is to maximize the overall value generated rather than profit generation (Otchere *et al*, 2013). Although the importance of supply chain relations is widely acknowledged, seamless coordination is rarely achieved in practice coupled with several challenges (Hussain and Nassar, 2010; Otchere *et al*, 2013).

### 2.2.2. Supply Chain Integration (SCI)

As the application and the interest is growing the understanding and definitions of the term also becoming diverse. Among the many definitions of supply chain management integration "the extent to which all activities within an organization, and the activities of its suppliers, customers, and other supply chain members, are integrated together" (Kim & Narasimhan 2002). SCI has three independent variables in its original scale they are: internal, suppliers and customer integrations. Some also considers integration in two levels: internal integration and external integration (Tutucu and Kucukusta, 2008).

### 2.2.3. Internal Integration

As the term indicates this involves cross functional teams that may bring together a carefully selected array of specialists who share information and make product, process, and manufacturing decisions, jointly and simultaneously (Koufteros, Vonderembse & Jayaram, 2005). Internal integration is defined as a process of inter-functional interaction, collaboration, coordination, communication and cooperation that bring functional areas together into a cohesive organization (Flynn *et al*, 2010). Furthermore, Supply chain partners who exchange information regularly are able to work as a single entity, and can understand the needs of the end customer better and hence can respond to market change quicker (Stein, 1998). A prerequisite for successful SCM is internal integration (Lambert, Cooper & Pagh, 1998). Also, companies with a low internal integration strategy will achieve low level of external integration and companies implementing the full internal integration strategy will have the highest levels of external integration (Gimenez and Ventura,

2005). Generally, it is believed that firms achieve a relatively high degree of internal integration before they attempt to develop a higher degree of external integration (Otchere *et al*. 2013). Internal integration can be accomplished through automation and standardization of each internal logistics function, the introduction of new technology, and continuous performance control under formalized and centralized organizational structure (Otchere *et al*. 2013).

### 2.2.4. External Integration

Being effective in maintaining an internal integration doesn't proof that the firm have a successful Supply chain integration. As the competitive environment is becoming increasingly challenging, firms are undertaking efforts to compete along multiple fronts. However, many firms find it difficult to compete in the market by relying on their internal resources and competencies alone. They have turned to collaborate with their customers and suppliers to obtain information and complementary resources, which they can deploy to build competitive advantage. External supply chain integration reveals two major areas of emphasis. They are: Customer integration (CI) and Supply integration (SI). Supplier integration also called "backward" integration (Frohlich and Westbrook, 2001) refers to the process of interaction and collaboration between an organization and its suppliers to ensure an effective flow of supplies (Zhao *et al*, 2011).

Customer integration, also called "forward" integration (Frohlich & Westbrook, 2001) refers to the process of interaction and collaboration between an organization and its customers to ensure an effective flow of products and/or services to customers (Flynn *et al*. 2010). Customer integration involves sharing demand information, help the manufacturer to understanding better the customer needs and to forecast better customer demand, as well as collaborative involvement of customers with respect to product design, provision of better quality products at lower cost and more flexibility in responding to customer demand (Flynn *et al*. 2010).

### 2.2.5. Supply chain integration and performance

#### 2.2.5.1. Logistic integration and performance

Increasing competition not only guides organizations to improve their internal operations (process control and inventory management) but also focuses on the integration of suppliers and customers in the entire processes of chain. Thus, suppliers‟ involvement in delivering value to customers causes competitive capabilities such as quality, delivery, flexibility and cost (Prajogo & Olhager, 2012) Logistics was defined as "process of scheduling" run and control the flow, storage of raw materials, inventory in manufacturing, final product and its related information at the minimum cost.

According to this definition, the entire process of logistics, combine a large number of activities with suitable integration in order to implement the right to meet customer needs to reach smooth flow of operations through the chain and the most portion of profit for organization and customer. According to Stock *et al* (2000), Logistics integration refers to specific logistics practices and operational activities that coordinate the flow of materials from suppliers to customers throughout the value stream. In other words, higher levels of integration are characterized by increased logistics-related communication, greater coordination of the firm's logistics activities with those of its suppliers and customers, and more blurred organizational distinctions between the logistics activities of the firm and those of its suppliers and customers. (Prajogo & Olhager, 2012).

The goal of logistics management is planning and coordinating all activities which are necessary to achieve desired levels of quality and customer service with the lowest possible cost. Logistics is thus a link between marketing and operational activities. Logistics working area within the organization start from supply and management of raw materials to delivery final product to market and customers. Logistics integration decreases various problems such as bullwhip effect and gives the organizations and partners the opportunity to benefit from vertical integration (quality, reliability, planning and control and lower cost). Improved logistics integration between supply chain partners yields a number of operational benefits, including reduction in costs, lead time, and risks as well as improvement in sales, distribution, customer services, and service levels and customer satisfaction. (Stock *et al*, 1998).

#### 2.2.5.2. Information integration

In supply chain, the importance of coordinating activities is important. This point is also noticeable for information management in the chain, information management systems and the data transaction. Coordinated and appropriate information between partners will lead to growing impacts

on the speed, accuracy, quality and other aspects. Effective information management will lead to greater coordination in the chain. Information integration is the extent that operational, tactical and strategic information are transferred between business partners and the central company. Downward flow of material in supply chain should be supported through information flows from bottom to top. Significant progress in supply chain management can be achieved through the integration of business processes and information flow between business partners. Jayaram and Tan (2010) concluded that information integration has positive relationship with performance of an organization.

Emphasis on information technology without the willingness to share critical information will not significantly associate organizations together. So they may fail in integrating their logistics. In other words, that organizations notice both side of information integration can then use the maximum benefits of integrated logistics. Using information technology has the potential of developing supply chain partners in order to work together for efficient delivery of products to consumers.(Harnowo, 2015)

Information technology allows the supply chain partners act as a single entity. (Harnowo, 2015) information technology is a mixture of telecommunications achievements, methods and strategies for problem solving and leadership skills using computer knowledge and include issues related to advanced science and computer technology, computer design, information systems implementation and their applications. Dorudchi & Nikmehr, (2007) knows information technology as compilation of traditional computer science and information technology for storage, processing and exchange of any data (including text, sound and image, etc.) Information (and communication) technology plays a central role in supply chain management in the following aspects. First, IT allows firms to increase the volume and complexity of information which needs to be communicated with their trading partners. Second, IT allows firms to provide real-time supply chain information, including inventory level, delivery status, and production planning and scheduling which enables firms to manage and control its supply chain activities. Third, IT also facilitates the alignment of forecasting and scheduling of operations between firms and suppliers, allowing better inter-firms coordination. Prajogo & Olhager (2012) explained that integrated information technology, is a key factor for supply chain integration. When suppliers are scattered across the world, integration of activities within and outside the company becomes important. This requires an integrated information system, which leads to information-sharing.

Devaraj *et al* (2007) have concluded that information technology affects information integration and production in supply chain and Supplier integration has a positive impact on organizational performance. Prajogo & Olhager (2012) defined that IT has a positive impact on logistics integration. While the technological aspect of information integration is important, it is the frequency, the quantity and the quality of information that is shared that really matters. Information sharing means "supply chain companies" willingness to give accurate, timely, related and common information to each other in order to create harmony at all levels of the supply chain." Information sharing in organizations causes better decisions, capacity allocation, production and materials planning through increased transparency, demand, supply and inventory.

#### 2.2.5.3. Supplier integration

In the supplier-facing component of integration, a number of studies have found a positive association between supplier integration and operational performance (Devaraj *et al*. 2007). Nevertheless, others have reported no direct association between supplier integration and operational performance (e.g., Stank *et al*. 2001; Flynn *et al*. 2010) or supplier integration and business performance (e.g., Flynn *et al*. 2010), and yet others find a negative association (e.g., Stank *et al*) between supplier integration and operational performance. Although failing to uncover direct effects, Flynn *et al*. (2010), for instance, find that the interaction between the external dimensions of integration is associated with operational performance. As for business performance, similar to customer integration, the few existing studies focusing on this aspect have not found a direct positive association between supplier integration and business performance (Flynn *et al*. 2010).

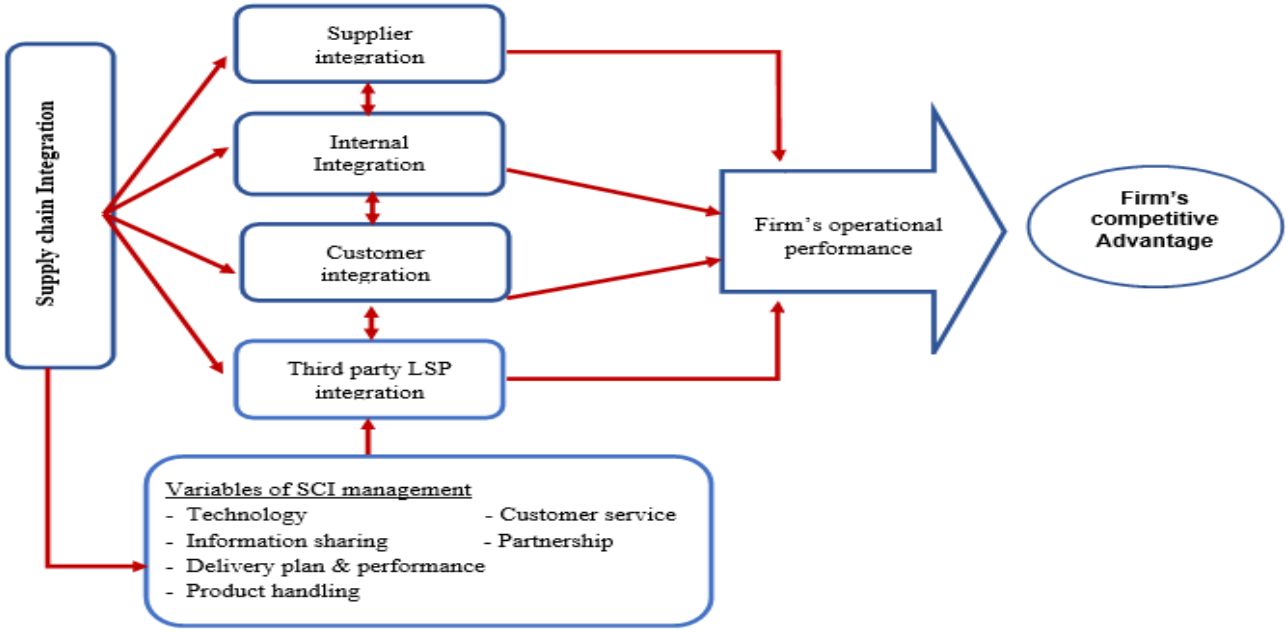
#### 2.2.5.4. Customer integration

For the customer-facing component of integration, the literature indicates that this dimension is directly (Flynn *et al*. 2010; Wong *et al*. 2011) and indirectly (Devaraj *et al*. 2007) associated with improved operational performance. However, other studies contradict the customer-facing to operational performance association (Swink *et al*. 2007). As for business performance, studies have not found a direct positive association between customer integration and business performance (e.g., Flynn *et al*. 2010) and the link seems to remain under investigated and unclear.

## 2.3. Conceptual framework

Supply chain integration (SCI) helps firms to reconfigure their resources and capabilities internally and externally to consolidate their supply chain as a whole in an effort to improve long-term performance (Horvath, 2001).

Figure 3. Supply Chin integration conceptual framework




*Source: (Otchere et al. 2013; Adopted with modification from Koufteroset al, 2005 and Lee, et al. 2007*

The conceptual framework explain that the variables of supply chain integration (supplier, internal, customer and third party LSP) by interacting with each other and also independently influence the firm's operational performance. The ultimate goal of the firm's operational performance is to achieve a competitive advantage.

## 2.4. Research gap

In this research it was possible to found out that the values and importance of the variables of supply chain integration was discussed very well by different scholars and researchers. The link for each variables towards to the firm's supply and operational performance was also elaborated. It was also possible to find a relation between the theoretical and empirical references to the particular nature of this study. Therefore, according to the existing fact and nature of the study subject one cannot find the value of the supply chain integration on the unique nature of the horticulture industry supply performance. Mainly the value of the information integration and value or significance of the coordination between the actors and or the variables of the supply chain integration not seen or presented. Moreover, it was only the importance of the variables mentioned not the challenges while ones try to implement them.

# CHAPTER THREE

## 3. METHODOLOGY OF STUDY

This chapter describes the employed methodologies used while conducting the research. And it focuses on the research approach, research design, sampling, data sources and types, data collection procedures and finally it explain how the collected data is organized and analyzed.

### 3.1. Description of the study

The study focused on the supply chain performance of the horticulture industry in Ethiopia. More specifically on the supply chain practices and challenges faced by private producers and exporters. As detailed in the introduction part the horticulture industry in Ethiopia is becoming an interesting are for value creation for the country in terms of employment and foreign currency generation. But despite its promising progresses over the last decade the developments of the required infrastructure is not adequate.

Due to the high dependency characteristics of the horticulture products in the coordination and effectiveness of the supply chain management, the logistics and supply chain infrastructure and system development take the lion's share of the challenge. A simple gap in the coordination/integration of the chain would result in a huge capital loss and market risk.

Thus, this study tried to see the value of the supply chain integration over the industry. This was performed by looking in to the current structure and supply chain practice of exporters. To do this it is planned to compute a correlation and regression analysis by making supply chain integration performance and a dependent variable and the other supply chain integration components as well as drivers as an independent variable. By this it is possible to deduce that the supply chain integration visibility will be seen on the performance of the entire supply chain management over the industry.

## 3.2. Research Approach

Based on the purpose of the research and the nature of the focus area the study used explanatory research design as a general frame work. In line with the research design Mixed (descriptive and qualitative) statistical analysis methods were employed.

## 3.3. Research Design

Based on the purpose of the research and the nature of the focus area, the study used explanatory research design as a general frame work. In line with the research design descriptive and qualitative statistical analysis methods were employed. Both questionnaire and interview check list were also being developed and applied as data collection tools in addition to the industrial records as a secondary data.

## 3.4. Population and Sample frame

The population sample size refers to the number of units or people that are chosen from which the researcher wish to gather information or data (Evans *et al.,* 2000). The study population for this study is horticulture producers and exporters who are the members of the Ethiopian horticulture producer's exporters association. The total number of members of EHPEA is 114 and the active members are 83. Therefore, the entire active members (population) were treated as the 'sample' using Census method in order to achieve accuracy and reliability of data.

## 3.5. Data Sources and Types

When conducting this research, combinations of the following methods were used to collect a relevant information or data. The study relied on both quantitative and qualitative types of data in order to arrive at reliable conclusions for the research questions. With regard to sources of data, both primary and secondary sources were used for generating valuable and relevant data.

Primary source includes data collected through interview and questionnaire and secondary data were collected from publications, journals of the association, meeting reports and bulletins from the exporter's association data archive and library, Ethiopian horticulture development agency (EHDA), Ethiopian shipping and logistics services enterprise, Ethiopian Airlines Cargo Services and Ethiopian Export Promotion Agency.

## 3.6. Data Collection Procedures

Questionnaire: Adopted from:

Masters Thesis by Evans m. Mose "Impact Of Supply Chain Integration Strategies on Performance of Pork Processing Industry In Rwanda, Case Of German Butchery In Kigali" European Centre for Research Training and Development UK, 2015

Masters Thesis by Tsion Alemu, "Supply Chain Integration to Enhance the Performance of Ethiopian Footwear Industry" Addis Ababa University 2017.

The questionnaire with attachment letter was prepared which explain the purpose of the study and information about significance of the study. During data collection clarification were given for question that was raised by the respondents. Then questionnaire were collected up on the agreed time convenient for respondent with proper acknowledgment and closing. The respondents were the General manger/administration, supply chain or logistics manager of each company.

Structured Interview, this also followed the above procedure with regard to getting access, acknowledgment and closing as well. But here the data were collected using a structured interview and only the respondent's feedback was registered. The respondents for the interview were employees responsible for logistic and supply chain functions.

Secondary data were collected from the above mentioned institutions and organizations by physically accessing their respective data archives and libraries after securing the required permissions from the respective officials.

## 3.7. Ethical Consideration

The data was collected after obtaining authorizations from Addis Ababa University School of commerce and the Ethiopian horticulture producers and exporters association from which data were collected. Participants were ensured that they completely understood the purpose and methods to be used in the study. The participants were informed to understand that they have the right to withdraw from the study at any time. A consent message were included in the questionnaire and availed to the participants. Assurance that all the information provided by the respondents' were treated with utmost confidentially were also be confirmed.

## 3.8. Data Analysis

There were applications of different statistical techniques to analyze both the qualitative and quantitative data mainly descriptive statistics. The qualitative data were coded and treated with Statistical Package for Social Science (SPSS). Based on SPSS, both descriptive and inferential statistics were also being used. Descriptive statistics involve summarizing and describing quantitative information. Such as, frequency distribution, measures of central tendency and data variability to present quantitative descriptions and describe the basic features of the survey data.

Quantitative data were addressed by using percentage computation, mean and standard deviation. Then it is reported by using tables, charts and diagrams. Delivery performance of suppliers was analyzed for customer request for each supplier.

Pearson's correlation and Regression analysis were employed to measure the association and degree of dependence of variables with the outcome.

## 3.9. Reliability Test

Cronbach alpha coefficient generated by the use of SPSS was used to ascertain reliability of the questionnaire. The value generated was compared with the threshold of 0.7 to confirm reliability. Cronbach alpha value above 0.7 indicates reliability of the measurement procedure as recorded by (Morgan *et al.*, 2007).

### Table 2 Reliability

Total average reliability

**Case Processing Summary**

| | | N | % |
|---|---|---|---|
| Cases | Valid | 56 | 81.2 |
| | Excluded[a] | 13 | 18.8 |
| | Total | 69 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .884 | 28 |

## Supplier integration reliability

**Case Processing Summary**

| | | N | % |
|---|---|---|---|
| Cases | Valid | 69 | 100.0 |
| | Excluded[a] | 0 | .0 |
| | Total | 69 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .797 | 7 |

## Internal Integration reliability

**Case Processing Summary**

| | | N | % |
|---|---|---|---|
| Cases | Valid | 69 | 100.0 |
| | Excluded[a] | 0 | .0 |
| | Total | 69 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .928 | 4 |

## Customer integration reliability

**Case Processing Summary**

| | | N | % |
|---|---|---|---|
| Cases | Valid | 68 | 98.6 |
| | Excluded[a] | 1 | 1.4 |
| | Total | 69 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .894 | 6 |

## Third party LSP reliability

**Case Processing Summary**

| | | N | % |
|---|---|---|---|
| Cases | Valid | 56 | 81.2 |
| | Excluded[a] | 13 | 18.8 |
| | Total | 69 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .917 | 5 |

## 3.10. Validity Test

The validity of the questionnaire was assured by distributing it to four experts who are working in Ethiopian horticulture producers exporters association. Their experts' feedback was collected before the survey conducted and accordingly corrections had been made on the content of the questionnaire.

# CHAPTER FOUR

## 1. Results, Discussion and Interpretation

### 1.1. Introduction

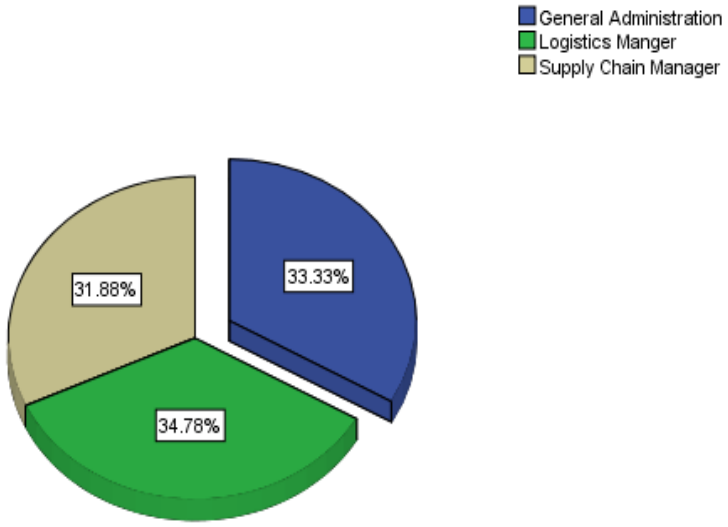
This chapter presents the analysis of the collected data using the method of analysis which is explained in chapter one. The analysis is followed by presentation of the findings. The data was collected as per the plan of the data collection and tools. The main data collection tools was a questionnaire which were distributed to the study population. The questionnaire was mainly focusing on collecting information in regards to the Supply chain integration factors (independent variables) which are Supply chain integration, internal integration, customer integration and third party integration. And also about the dependent variable, which is the firm's operational (Supply) performance. Additional data was also collected in terms of closed and open ended questions concerning other characteristics of the industry.

Interview checklist was also being used to collect data from the horticulture development agency, horticulture freight forwarding companies and Ethiopian Air lines cargo division. The data is analyzed using descriptive statistics method and correlation and regression analysis are also used. There is also a tabular and graphical data presentation to make the analysis easy for understanding.

### 1.2.Profile of respondents

As per the method of the sampling technique used the questionnaire was distributed to all the active 83 (100%) firms which are the active members of the Ethiopian horticulture producers' exporters Association. From the census the respondent rate was 69 (83%).

Figure 4. Current functional position




*Source: own survey, 2018*

The date presented below explained that among the targeted respondents 46 (68%) was being Logistic and or supply chain professionals and the rest of 22 (32%) was Administration staffs who handles also the logistic and supply chain function. From this it is expected that the information from the respondents was credible enough because it was given by this who are close to the field on study and professional at the same time.

The companies which are covered by the study are established since from year 2008 to 2016 in European calendar where 52 (75%) of them become operational between 2010 and 2013 where we can say the industry is in its early stage. With regard to the work force they have in logistic and or supply chain function ranges from 1 to 4. This is associated with the size of the firm in terms of the total work force employed. In addition the portfolio of the study target firms in terms of the main products they produce are being 34 (49%) Flowers/cuttings, 20 (29%) fruits and 15 (22%) vegetables.

Table 3. Portfolio of firms

| Firm's portfolio | Frequency | Percent | Cumulative Percent |
|---|---|---|---|
| Flower/Cuttings | 34 | 49.3 | 49.3 |
| Fruits, Vegetables | 20 | 29.0 | 78.3 |
| Vegetables | 15 | 21.7 | 100.0 |
| Total | 69 | 100.0 | |

*Source: own survey, SPSS Analysis output 2018*

One of the determinant factors for the supplier chain integration was found to be the type of relationship they have with their respective suppliers when it comes to purchasing of inputs and services. Thus, as per the below presented data 35 (50%) of the firms are working with short term contract and other 31 (45%) are using a mix of short term contract, open one time bid, long term and few partnership level. This implies that majority of the firms doesn't have a reliable working structure with their own suppliers that ultimately have an impact on their supplier integration.

Table 4. Purchasing structure of the firms

| Purchasing type | | Frequency | Percent | Cumulative Percent |
|---|---|---|---|---|
| Valid | Partnership | 3 | 4.3 | 4.3 |
| | Short term contract | 35 | 50.7 | 55.1 |
| | Short term contract, Open Bid, Long term Contract | 15 | 21.7 | 76.8 |
| | Short term contract, Partnership | 16 | 23.2 | 100.0 |
| | Total | 69 | 100.0 | |

*Source: own survey, SPSS Analysis output 2018*

## 1.3. Descriptive Statistics for Supplier integration

From the table below we can understand that the mean of the supplier integration they have was found to be 2.6. Which is weak or there is a Disagreement that there is working supplier integration. This can be further inferred from the above data where they have a short term contract agreement with their suppliers in sourcing their production inputs.

Table 5. Descriptive Statistics, Supplier integration

| Supplier integration questions | Mean | Std. Dev. | Variance |
|---|---|---|---|
| You have effective communications with your suppliers on production capacity, production schedule, research activities and new product development | 2.46 | 1.244 | 1.546 |
| You and your supplier have transparent information about each other's inventory status. | 2.55 | 1.119 | 1.251 |
| You and your suppliers provide each other's production plan. | 2.01 | .993 | .985 |
| You collaborate with your supplier development program(s). | 2.30 | 1.102 | 1.215 |
| You and your suppliers are aware of each other's? Medium-term and long-terms strategies. | 2.64 | 1.137 | 1.293 |
| You and your suppliers share technical information with each other if required. | 3.12 | .978 | .957 |
| You have long-term relationships with your suppliers. | 3.04 | .962 | .925 |
| Supplier integration | 2.5901 | .66553 | .443 |

N = 69

*Source: own survey, SPSS Analysis output 2018*

## 1.4.Information integration

Jayaram and Tan (2010) concluded that information integration has positive relationship with performance of an organization. Using information technology has the potential of developing supply chain partners in order to work together for efficient delivery of products to consumers. Harnowo (2015) IT also facilitates the alignment of forecasting and scheduling of operations

between firms and suppliers, allowing better inter-firms coordination. Prajogo & Olhager (2012) explained that integrated information technology, is a key factor for supply chain integration.

The study revealed that 49 (71%) of the firms are using information technology as a tool to augment and facilitate supply chain integration from the point of adequate and on time information sharing in between the supply partners including the internal integration between functions.

Table 6. Use of Information technology

| Use of Information technology | Frequency | Percent | Cumulative Percent |
|---|---|---|---|
| No | 20 | 29.0 | 29.0 |
| Yes | 49 | 71.0 | 100.0 |
| Total | 69 | 100.0 | |

*Source: own survey, SPSS Analysis output 2018*

The rest 20 (29%) of the firms do not have a developed or working information technology usage. They justified the lack of IT implementation due to the reason that they lack a required infrastructure mainly availability if internet service with the respondent rate of 49 (71%).

## 1.5. Descriptive Statistics for Internal integration

As it is also presented in the table below it is possible to we can be aware of that the mean of the internal integration appeared to be 3.2. Which is not a strong or there is neither a disagreement nor an agreement or there is a little indication that there is a working internal integration.

Internal integration is defined as a process of inter-functional interaction, collaboration, coordination, communication and cooperation that bring functional areas together into a cohesive organization (Flynn *et al*, 2010).

A prerequisite for successful SCM is internal integration (Lambert, Cooper & Pagh, 1998). Also, companies with a low internal integration strategy will achieve low level of external integration and companies implementing the full internal integration strategy will have the highest levels of external integration (Gimenez and Ventura, 2005). Generally, it is believed that firms achieve a relatively high degree of internal integration before they attempt to develop a higher degree of external integration (Otchere *et al.* 2013). Internal integration can be accomplished through automation and standardization of each internal logistics function, the

introduction of new technology, and continuous performance control under formalized and centralized organizational structure (Otchere *et al*. 2013).

Despite its value and the use of information technology the current internal integration of the study population was not implemented effectively.

Table 7. Descriptive Statistics, Internal integration

| Internal integration questions | Mean | Std. Dev. | Variance |
|---|---|---|---|
| You have effective communications between different departments regarding a new product or process development program and other relevant information. | 3.30 | 1.075 | 1.156 |
| Different but related production sections have integrative inventory management. | 3.38 | 1.016 | 1.032 |
| Different departments in your company provide each other's' production plan(s). | 3.10 | 1.059 | 1.122 |
| Different departments in your company share technical information regarding horticulture production with each other quickly | 2.86 | 1.179 | 1.390 |
| Internal integration | 3.1594 | .73261 | .537 |

N = 69

*Source: own survey, SPSS Analysis output 2018*

## 1.6. Descriptive Statistics for customer integration

Among the factors of supply chain integration it is customer integration. This as well depends on the number and types of the customer group ones have and the degree of focus over customer management. Due to the nature of the industry the firms are expected to have customers both locally and internationally.

There are customers who have to a maximum of 20 local customers and the maximum international markets covered by a single firm are 14. The numbers of local and international markets for different firm products are different due to a number of logistics related issues. National Horticulture development& Marketing Strategy (2017) shows that more than 94 % and 95% of Fruits and vegetables respectively exports are done only to neighbor countries. Unlike this figures flower and cuttings are having a high market in European markets. The main reason for these flower exporters is they are using Ethiopian airlines relatively in a higher rate than the other products exporters. Again the reason for this is due to the bulky nature of the fruits and vegetables in order to use air freight as a mode of export which makes it very expensive.

Table 8. Descriptive Statistics, Customer integration

| Customer integration questions | Mean | Std. Dev. | Variance |
|---|---|---|---|
| You have effective communication with your customers on market information, your research activities and new product development | 2.68 | 1.219 | 1.485 |
| You share transparent information about the available inventory with your major customers and have quick ordering system | 2.84 | 1.080 | 1.165 |
| You and your customers provide each other's production plan. | 2.65 | 1.211 | 1.465 |
| You and your customers are aware of each other's medium-term and long-term strategies. | 2.58 | 1.168 | 1.365 |
| You and your customers share technical information with each other if required. | 2.88 | 1.278 | 1.633 |
| You have long-term relationships with your customers. | 2.93 | 1.083 | 1.174 |
| Customer integration | 2.7581 | .89757 | .806 |

N = 68

*Source: own survey, SPSS Analysis output 2018*

The mean of the customer integration is also not strong or respondents are in disagreement with the performance of the level of the current integration their firm have with its customers.

Despite the above fact about the use of Ethiopian airlines, there are still challenges to use the maximum possible capacity of the airline. For the question that if the firms have a partnership agreement with the airline there are 28 (40%) of the study population are not working as per a

long-term agreement. That leads them to incur high cost of logistics handling because the airline gives a priority to the customers which are having a contract agreement.

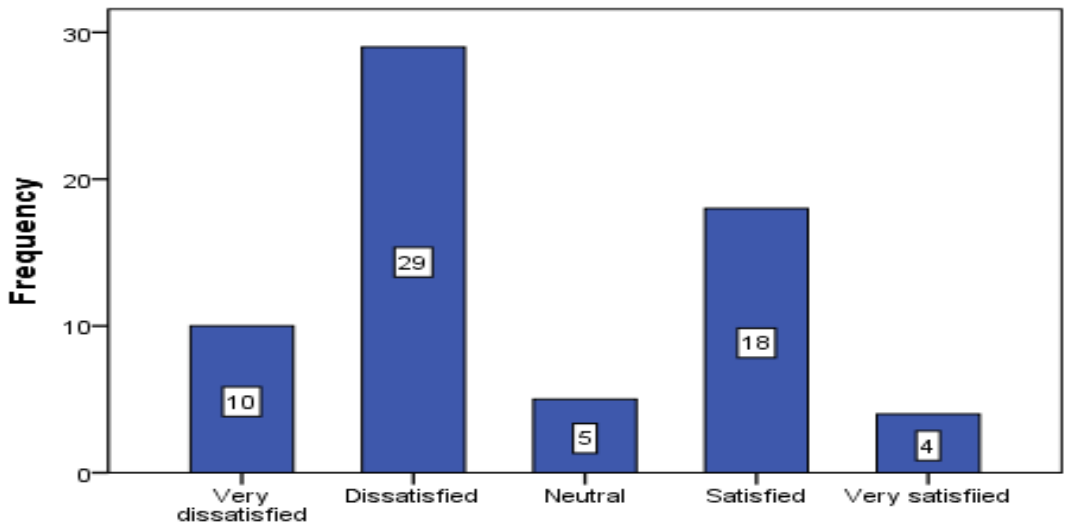
Table 9. Agreement with Ethiopian Airlines

| Agreement with EAL | Frequency | Percent | Cumulative Percent |
|---|---|---|---|
| No | 28 | 40.6 | 40.6 |
| Yes | 41 | 59.4 | 100.0 |
| Total | 69 | 100.0 | |

*Source: own survey, SPSS Analysis output 2018*

For the others 41 (60%) of the firms which are using Ethiopian airlines there was a question in regards to the level of service satisfaction 29 (42%) are dissatisfied. Including the very dissatisfied respondents the total level of dissatisfaction is 56 %. This shows that the customers are not getting the required and expected level of service from Ethiopian airlines cargo. Ethiopian airlines has to enhance the level of customer service management specifically to this industry as they are handling a time sensitive perishable cargo.

Figure 5. Satisfaction level of firms against Ethiopian airlines service




*Source: own survey, SPSS Analysis output 2018*

The other option in using air fright for export is to use other airline's cargo service. And the study population responded as below, Yes 32 (46%) and No 37(54%).

Table 10. Use of the service of other cargo airlines services

| Other cargo service use | | Frequency | Percent | Cumulative Percent |
|---|---|---|---|---|
| Valid | No | 37 | 53.6 | 53.6 |
| | Yes | 32 | 46.4 | 100.0 |
| | Total | 69 | 100.0 | |

*Source: own survey, SPSS Analysis output 2018*

The main reasons for not using other airline's services are also described as lack of access 18 (26%) and lack of infrastructure 19 (27%) among the total 37 (53.6%) respondents which said they are not using the services of other airlines.

The other topic regarding the export of horticulture products is exporting using sea mode or using containerized shipment. For this the horticulture industry needs a temperature controlled (reefer container) which is relatively expensive than the normal container due to its running cost. In addition, 54 (78%) of the respondents reported that they do not have a service relationship with Ethiopian shipping and logistics service enterprise.

Table 11. Service relationship with Ethiopian Shipping & Logistics Services Enterprise

| Service relationship with ESLS | Frequency | Percent | Cumulative Percent |
|---|---|---|---|
| No | 54 | 78.3 | 78.3 |
| Yes | 15 | 21.7 | 100.0 |
| Total | 69 | 100.0 | |

*Source: own survey, SPSS Analysis output 2018*

The there is no organized information system managed by the government or any other responsible body which can give adequate information regarding the container movement in and out of the country.

On the other side firms proved that they do not get all the required information for them to use a sea shipment for export of horticultural products specially fruits and vegetables. This was further confirmed by 60 (87%) of the respondents said that they do not get information regarding the reefer container movement.

Table 12. Information, reefer container movement in and out of the country

| Information, reefer container | Frequency | Percent | Cumulative Percent |
|---|---|---|---|
| No | 60 | 87.0 | 87.0 |
| Yes | 9 | 13.0 | 100.0 |
| Total | 69 | 100.0 | |

*Source: own survey, SPSS Analysis output 2018*

## 1.7. Descriptive Statistics for Third party logistics service providers integration

The forth factor that was considered in supply chain integration was a relationship with third party logistics providers. And the mean value is 2.2, this found to be more weak that the other factors. The respondents proved that the level of the third party integration is not satisfactory or they disagree the third party integration is strong. They disagree that these service providers are structured in was to entertain the industry service requirements and they do not have enough capacity as well.

Moreover, based on the interview made with the stake holders, Ethiopian horticulture development agency and Ethiopian cargo service, there should be more cold Chain warehouses with good capacity and required technology. And also there is a need for adequate number of cold chain trucks. These infrastructure development is not easy to develop as the technology is expensive but on the other side the value of the post-harvest waste is significantly increasing and a huge amount of wealth is lost every time. This is estimated to be between 20 – 40%. (EFDR-MoANR, 2017)

Table 13. Descriptive Statistics, Third Party logistics service providers integration

| | N | Mean | Std. Deviation | Variance |
|---|---|---|---|---|
| Required infrastructure | 61 | 2.20 | .946 | .894 |
| Enough Capacity | 59 | 2.56 | 1.087 | 1.182 |
| Operation management system | 59 | 2.66 | 1.409 | 1.987 |
| Communication and planning | 59 | 3.00 | 1.462 | 2.138 |
| Industry knowhow | 59 | 2.64 | 1.283 | 1.647 |
| Third party LSP | 64 | 2.1531 | .92472 | .855 |

*Source: own survey, SPSS Analysis output 2018*

The dependent variable, which is Firm operational performance, was also measured to know the level of the opinion of the respondents.

## 1.8. Descriptive Statistics, Firms' supply operational performance

And the overall operational (supply) performances of the firms are not satisfactory as well. The mean value is 2.7.

This implies that the aggregate value of the independent variables was not strong enough to influence the dependent variable. Therefore from this we can say the there is a weak supply operational performance by the firms and this in turn will affect the supply chain integration of the firm and the industry in general as well.

Table 14.Descriptive Statistics, Firms' supply operational performance

| Supply operational performance questions | Mean | Std. Dev. | Variance |
|---|---|---|---|
| You have a competitive advantage over the competition because of the quality of your products | 2.96 | 1.333 | 1.777 |
| Your customers are satisfied with the quality of customer service you deliver | 3.03 | 1.294 | 1.676 |
| Your customers enjoys continual improvement of your product delivery service. | 2.90 | 1.139 | 1.298 |
| You have a successful delivery performance (order processing, meeting lead time, order fill rate, on time delivery) | 2.54 | 1.158 | 1.341 |
| You have a post-delivery customer feedback management system and your customers are happy about it. | 2.58 | 1.288 | 1.659 |
| Your customers are satisfied with the logistic facilitation structure you have | 2.70 | 1.298 | 1.685 |
| Firm operational Performance | 2.7825 | .78420 | .615 |

N = 69

*Source: own survey, SPSS Analysis output 2018*

## 1.9.Correlation Analysis

As described in the above sections supported by related literatures the supply chain integration concept took in to consideration the main factors to be Supply integration, which focuses on the integration and level of interaction between the study population firms and their respective suppliers. Internal integration, which mainly focuses on the collaboration and relation of different functions within the companies. Customer integration, this look in to the performance of the companies towards their integration level they have with their customers. And also Third party logistics service providers' integration, where it is concerned about the relationship the firm has with the other logistics service providers (transport, warehousing, custom processing etc.)

In this particular study, the dependent factor is defined as the Firms' supply operational performance measured against the above supply chain integration factors as an independent factor.

The correlation analysis showed that all the four factors are significant at $p< 0.01$ level, Where each factor has a different level of correlation with the dependent variable.

### 1.9.1. Supplier Integration

The supplier integration and the operational performance of the firms are positively correlated at a level of .461** ($P< 0.01$). This shows the independent factor has a positive relation or direct relation with the dependent variable. The value seems to be moderate, yet it means that the variable can explain the dependent factor positively. This can also be interpreted as, if there will be any activity done to increase the supplier integration, it will also replicated positively or over the forms supply operation performance.

### 1.9.2. Internal Integration

The internal integration variable shows a relatively low level of relationship with the dependent factor. The correlation value is .354** ($p<0.01$). Based on this research any interventions that will be made to improve supply operational performance by improving an internal integration will not bring the level of expected change. But in another research paper done in Uganda and Ethiopia on supply chain integration this factor found to be highly correlated. And as this result is only reflecting the current (weak) practice of the Ethiopian horticulture supply chain integration

practice from the point of internal integration, performing activities to improve internal integration will result in a positive result.

Table 15. Correlations

| | | Firm operational Performance | Supp_integ | Intern_integ | Cust_integ | ThirdpartyLSP_integ |
|---|---|---|---|---|---|---|
| Firm operational Performance | Pearson Correlation | 1 | | | | |
| | Sig. (2-tailed) | | | | | |
| | N | 69 | | | | |
| Supp_integ | Pearson Correlation | .461** | 1 | | | |
| | Sig. (2-tailed) | .000 | | | | |
| | N | 69 | 69 | | | |
| Intern_integ | Pearson Correlation | .354** | .326** | 1 | | |
| | Sig. (2-tailed) | .003 | .006 | | | |
| | N | 69 | 69 | 69 | | |
| Cust_integ | Pearson Correlation | .839** | .488** | .452** | 1 | |
| | Sig. (2-tailed) | .000 | .000 | .000 | | |
| | N | 69 | 69 | 69 | 69 | |
| ThirdpartyLSP_integ | Pearson Correlation | .541** | .296* | .470** | .473** | 1 |
| | Sig. (2-tailed) | .000 | .017 | .000 | .000 | |
| | N | 64 | 64 | 64 | 64 | 64 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

*Source: own survey, SPSS Analysis output 2018*

### 1.9.3. Customer integration

The correlation of customer integration with the operational performance of the firms is very strong and being a high correlation among the other independent factors. The correlation coefficient value is 0.839**($p<0.01$). This will make the customer integration being the priority variable to act on it to improve its performance and positively and highly influencing the overall supply operational performance. In addition, this factor will respond quickly than any other variables in this research due to its high degree of relationship with the dependent factor.

### 1.9.4. Third party LSP integration

The third party logistics integration has a good relationship next to the level of the customer relationship with the supply operational performance of the firms. The correlation coefficient for this factor is 0.541** ($p<0.01$)and also efforts to improve the third party LSP performance will have again a positive and direct implications to the firms supply operational performance.

In general terms it is seen that the degree of relationship between the dependent and independent factors is positive and among those customer integration and third party LSP integration are relatively high. Therefore, as it is seen in other researches all the four factors are having a high integration and it is advisable to consider all the independent variables as a means to improve the firms supply performance. Specifically from this study we can conclude that the priority to take improvement actions should be first for Customer integration, second Third party logistics service providers, third supplier integration and finally internal integration.

## 1.10. Regression Analysis

Regression analysis had been also performed to show the explanatory strength of the independent variables over the dependent variables. All variables were entered.

Table 16. Independent variables Entered/Removed

| Model | Variables Entered | Variables Removed |
|---|---|---|
| 1 | Third party LSP, Supplier_integ, Internal_integ, Custinteg | No |

*Source: own survey, SPSS Analysis output 2018*

The value of R square becomes 73%. Which means all the independent variables can explain the dependent variable 73%. This shows also there is a strong tie between the factors and the dependent variable. And this can be used as a base to do any interventions as per the respective degree of the correlation level of the variables. The rest 27% of the changes in the dependent variable is explained by other factors.

Table 17 ANOVA

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 28.101 | 4 | 7.025 | 40.565 | .000[b] |
| | Residual | 10.218 | 59 | .173 | | |
| | Total | 38.319 | 63 | | | |

a. Dependent Variable: Firm operational Performance

b. Predictors: (Constant), Third party LSP, Supplier_info, Internal_info, Customer integration

Table 18. Regression Model Summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .856[a] | .733 | .715 | .41615 | .733 | 40.565 | 4 | 59 | .000 |

a. Predictors: (Constant), Third party LSP, Supplier_info, Internal_info, Customer integration

b. Dependent Variable: Firm operational Performance

*Source: own survey, SPSS Analysis output 2018*

From the ANOVA table we see that the p-value of the F-test with a p-value of zero to three decimal places and hence the model is statistically significant. The R-squared is 0.733, meaning that approximately 73% of the variability of the firm's operational performance is accounted for by the variables in the model. In this case, the adjusted R-squared indicates that about 71% of the variability of the firm's operational performance is accounted for by the model. The coefficients for each of the variables indicates the amount of change one could expect in firm's operational performance given a one-unit change in the value of that variable, given that all other variables in the model are held constant.

Table 19. Regression Coefficients

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | 95.0% Confidence Interval for B | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Lower Bound | Upper Bound | Tolerance | VIF |
| 1 | (Constant) | .807 | .268 | | 3.012 | .004 | .271 | 1.343 | | |
| | Supp_integ | .375 | .090 | .465 | .830 | .010 | .105 | .254 | .736 | 1.359 |
| | Internal_integ | .216 | .084 | .311 | 1.388 | .070 | .284 | .051 | .708 | 1.413 |
| | Customer_integ | .642 | .075 | .746 | 8.599 | .000 | .493 | .791 | .601 | 1.664 |
| | Third party LSP | .187 | .068 | .221 | 2.737 | .008 | .050 | .323 | .692 | 1.446 |

a. Dependent Variable: Firm operational Performance

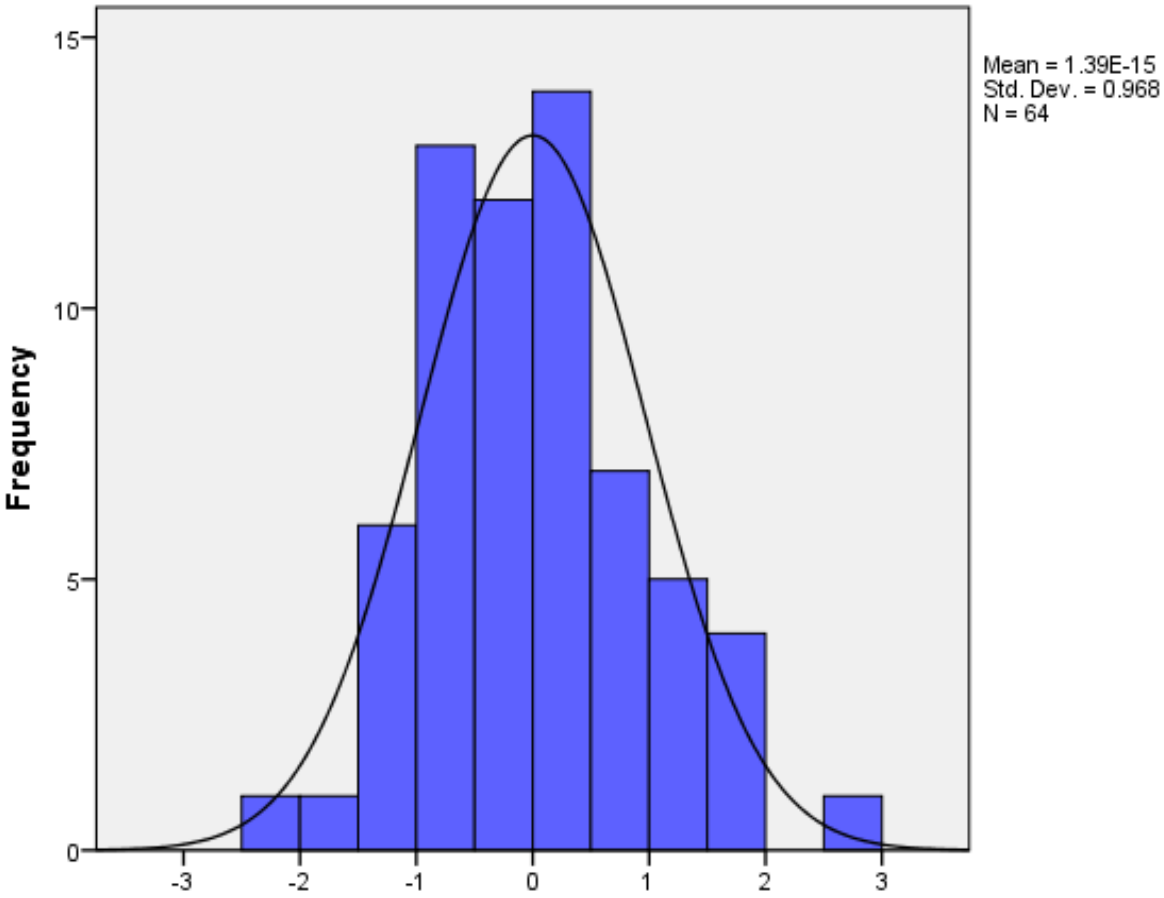
*Source: own survey, SPSS Analysis output 2018*

The coefficients shows that both customer integration and supplier integration are more impactful in creating a change in the firm's operational performance (dependent variable) followed by third party integration. And internal integration is not significant enough to affect the operational performance of the firms. This also can tell an improvement interventions have to be done to make the latter two more effective and being an impactful over the dependent variable. But these two variables are found to be with high significance in a research done by Tsion Alemu (2017).

The coefficient of the collinearity factors are within the acceptable limit. And tolerance is more than 0.2 and the VIF is less than 10. All the results were obtained with confidence interval of 95%.

The distribution was a normal distribution curves with a standard deviation of 0.968.

Figure 5. Retraction standard residual – Distribution




*Source: own survey, SPSS Analysis output 2018*

# CHAPTER FIVE

## 2. SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

### 2.1. Summary of Findings

Based on the output of the data analysis the main objectives of this research are answered. As the main study variables, both dependent and independent variables were analyzed and accordingly different levels of integration level have been seen.

The questionnaire was distributed to 83 firms and 69 questionnaires were able to be collected. In addition data was also collected using a structured interview from different stake holders to understand more the existing characteristics of the Ethiopian horticulture industry.

Based on the feedback from the respondents it was possible to understand the industry is a young industry only 12 years old while focusing mainly on flowers and cuttings, fruits and vegetables production and marketing (exporting). The level on information sharing was not developed in between the actors of the supply chain integration across the industry despite the use of information technology.

Being one of the main determinant factors for the performance of the supply chain integration, the purchasing structure of the firms is not based on a long term and a partnership level. This was supported by that 35 (50%) of the respondents have already a short term purchasing contract with their suppliers. And another 31 (45%) are with a mix of short term and long term contract where the use of short term contract increased. This will have a negative contribution to the performance of the supply operation of the firms.

Regarding the independent variables (Supplier integration, internal integration, customer integration and third party LSPs) analysis it was observed that all the variables found to have a positive correlation with dependent variables. And the regression analysis showed that all the independent variables are entered or in another way there was not an independent variable rejected by the analysis. This assures the variables are all relevant for the change in the dependent variable. Though there was a significant relationship and the degree of the relationship was high between

the dependent and independent the firms' supply operation performance was found to be low. The mean value was 2.78.

The industry supply chain integration was also being subjected for the influence by other factors. These factors can be included as a third party list of services. Among the findings of the study with regards to these factors are, the majority of the firms do not have a contract agreement with Ethiopian airlines and that reflected on the dissatisfaction on the qualities of the services of Ethiopian airlines.

The other service relationship is with Ethiopian shipping and logistics service enterprise, likewise the majority of the firms do not have a work relationship with the enterprise. That resulted in a lack of information regarding the container movements especially there was no information access towards the refer container movement. That leads to the poor performance of exporting trough the sea shipment modality in order to create access to distant markets. Due to the lack of organized information to coordinate logistic information the industry is focusing only to neighboring countries to sell fruits and vegetables.

In general the findings of the study are summarized as below,

- The factors affecting the supply chain integration are identified and they are supplier integration, customer integration and third party LSPs. While the high correlated factors are customer integration and Supplier integration. That makes supply chain integration significant for firms supply performance.
- The effects of the key factors of the supply chain integration have been identified with their respective degree level of relationship with correlation coefficient,
- Supplier integration, at .461** ($P< 0.01$), Internal integration, at .354** ($p<0.01$), Customer integration, at 0.839** ($p<0.01$) & The third party logistics integration, at 0.541** ($p<0.01$).
- The overall level of the supply chain integration performance of the firms was found as low. The mean was 2.78.
- Other factors affecting the performance of the Ethiopian horticulture supply chain integration have been identified. Like information integration challenge (lack of centralized logistic information service) and poor infrastructure development.

## 2.2. Conclusions

According to the objective of the research the findings of the data analysis are organized and a conclusion developed as to answer the main and specific objectives of the research. The findings are based on the targeted factors or variables determined as independent (Firms supply performance) and dependent (supply integration, Internal integration, customer integration and third party logistics service providers integration).

Moreover, the analysis of other related factors are also taken into consideration to formulate the conclusion. Because the influence of other factors seen as well by having an impact on dependent variable. This other factors have an impact on the final supply operational performance either directly by influencing the operational performance or indirectly by influencing the main factors identified to end up in a change of the operational performance.

The main research conclusions are as follow:

Lack of long-term and partnership level relationship between the actors and mainly between the suppliers and the firms is contributing to the low level of supplier integration. The priority should be for the customer and third party LSP integration than the internal integration and supplier integration in order to perform improvement actions. Despite the benefit and value of the supply chain integration the performance of the firms' supply operation is not strong.

Moreover, there is a gap seen in regards to adequate information sharing and alignment between the actors of the supply chain integration. The other form of the lack of information is seen to be the lack of the public or private entity to work on the information coordination. And finally, the marketing done by the horticulture producers and exporters association is not strong enough to support the customer integration in expanding market access and organizing a logistical support.

## 2.3. Recommendations

Recommendations have been made taking in to consideration the above conclusions drawn towards the overall nature of the supply chain integration of the horticulture industry and specifically the supply performance of the firms'.

The recommendations made in line with the summary of finding s and conclusions are believed to be inputs with high importance for the implements or policy makers and as a good foundation for further more detailed research in the area.

- Institutional Capacity building initiatives have to be developed and implemented in order to improve the relationship between firms and suppliers.

- As the current level of Supply chain integration of the horticulture industry is not strong, a high level attention should be given in any interventions aiming to improve the horticulture industry development.

- Best practices of other well performing countries should be evaluated against our level and be adopted in order to come up with working industry strategies. Like Kenya, Tanzania & Ghana.

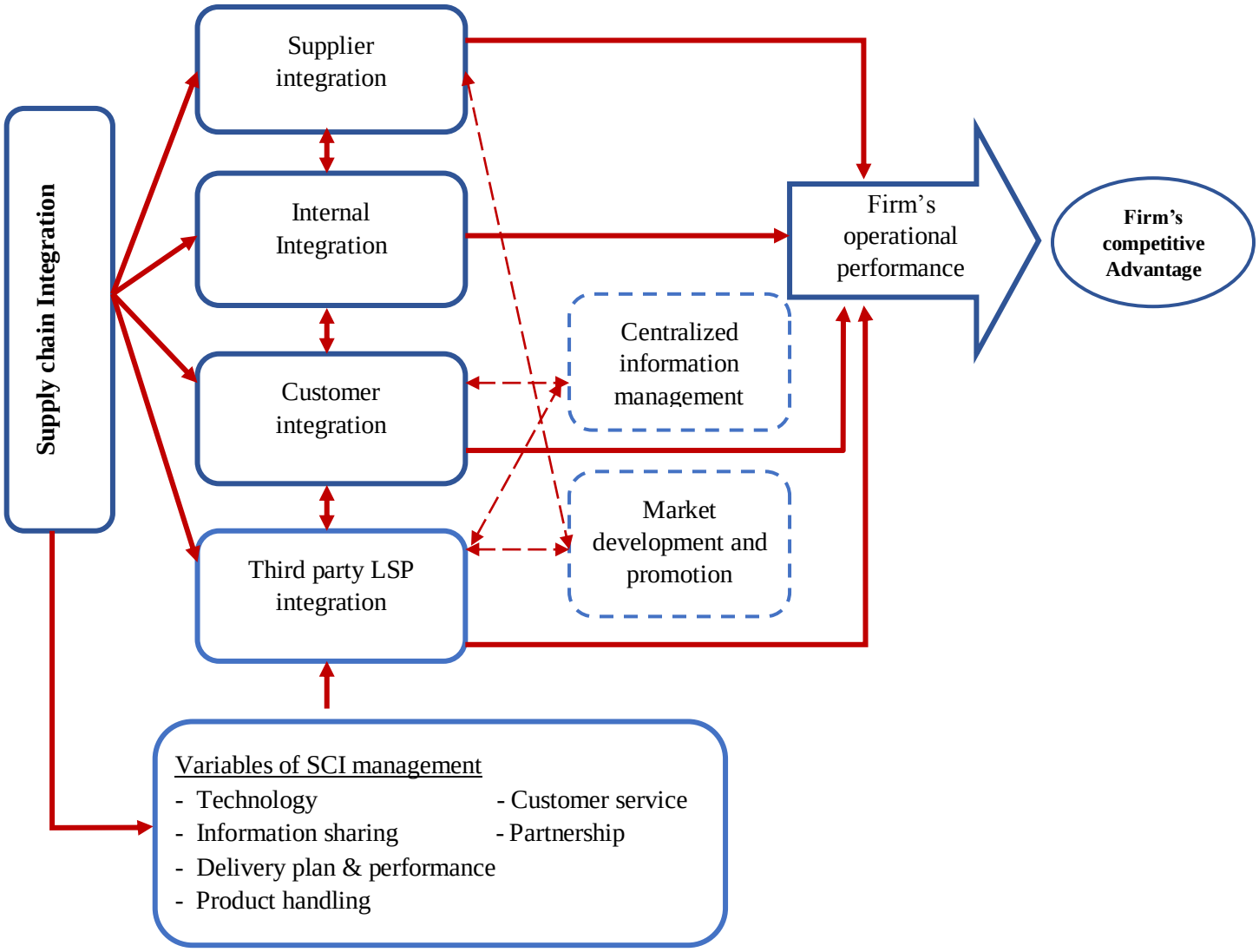
- There should be an entity working as an agent for information coordination for any logistical requirements in order to save and ensure acceptable use of valuable resources. And supported with information system technologies like industrial ERP.

- Ethiopian horticulture development agency and the horticulture producers association should be given a support from the government as they are working in key areas of promotion and networking.

- The third party logistics service providers' capacity should be strengthened and lead by the industry requisites not vice versa.

- The supply chain integration model (conceptual frame work) is proposed for amendment as below,

Figure 6. Revised Supply chain integration framework/model




*Source: Revised model for supply chain integration and originally sourced from Otchere et al. 2013; Adopted with modification from Koufteros et al, 2005 and Lee, et al. 2007*

## 2.4. Direction for future research

In regards to the limitation of the research and the very importance nature of the subject matter I recommend that further research should address the below topics. Moreover, the industry can be considered as a young industry which needs a special support and focus to develop it more and make it an important contributor to the economy. With all existing facts and challenges today the industry made it to be the 5$^{th}$ foreign currency generator to the nation. Having this consideration, one can deduce that if those challenges could be solved it could make it to the top three performer when it comes to generation foreign currency and other values to the economy.

- The value of information integration on the performance of supply chain integration
- A strategic insight on how to develop and organize a system based communication between the actors and related stake holders of the industry
- A strategic insight on developing a workable infrastructure development manly focusing on the industry. Logistical infrastructure and possibilities of developing a platform where a shared resource use between other industries can happen.

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## 1. APPENDIX - 1

# ADDIS ABABA UNIVERSITY

### School of Commerce

### Logistics and Supply Chain Management

Questionnaire to be distributed for the Managing Director/Supply chain Manager/Operation manager of the Horticulture producer firm

For the use of the research under the title

**Significance of Supply chain integration for perishable goods supply performance, the case of Ethiopian horticulture exporters**

Dear Participants;

I am Samuel Fikru conducting a thesis entitled- "Significance of Supply chain integration for perishable goods supply performance, the case of Ethiopian horticulture exporters" for partial fulfillment of M.A degree in Logistics and supply chain Management from AAU.

With sincerity I would like to extend my deep appreciation to your company and respondents for the willingness and cooperation in undertaking this valuable research. I request your kind cooperation in answering the questions as truthfully as possible. If you have questions pertaining to this study, please contact Addis Ababa University, School of Commerce, department of Logistics and Supply Chain Management. The information obtained from this questionnaire will be kept confidential and will not be used for any other purposes.

**NB:**

- ♣ It is not necessary to write your name
- ♣ Try to address the entire question given below
- ♣ For the closed ended questions use (√ or ●) mark for your choice in the given box

samifikru@gmail.com

1. Profile

Position _____

Qualification: _____

2. General Information

This part of the questionnaire just tries to gather some general information about your company's purchasing, supply, distribution and sales, activities.

2.1 Year of establishment of your company: _____

2.2 Total number of employees: _____

2.3 How many people work in your purchasing and supply management department?

_____

2.4 What are your company's main product(s)?

Fruits ☐ Vegetables ☐ Flower/Cuttings ☐

2.5 How do they purchase from suppliers (contractual, separate bid, long term suppliers,)

Shier term Contract ☐ Long term contract ☐

Separate Bid ☐ Partnership ☐

2.6 How many suppliers you have

Local? _____External? _____

3. Questions on Supplier Integration

4. Do you have information technology systems in use for Supply chain Integration systems

| No. | Items | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
|---|---|---|---|---|---|---|
| 1 | You have effective communications with your suppliers on production capacity, production schedule, research activities and new product development | | | | | |
| 2 | You and your supplier have transparent information about each other‟s inventory status. | | | | | |
| 3 | You and your suppliers provide each other‟s production plan. | | | | | |
| 5 | You collaborate with your supplier development program(s). | | | | | |
| 6 | You and your suppliers are aware of each other's‟ medium-term and long-terms strategies. | | | | | |
| 7 | You and your suppliers share technical information with each other if required. | | | | | |
| 8 | You have long-term relationships with your suppliers. | | | | | |

Yes No

5. If your answer is no above, what are the factors that hinders your company to implement those systems

Lack of infrastructure (internet) Lack of interest

Lack of know how No awareness about the benefits

6. Questions on Internal Integration

| No. | Items | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
|---|---|---|---|---|---|---|
| 1 | You have effective communications between different departments regarding a new product or process development program and other relevant information. | | | | | |
| 2 | Different but related production sections have integrative inventory management. | | | | | |
| 3 | Different departments in your company provide each other's' production plan(s). | | | | | |
| 4 | Different departments in your company collaborate with the company's development program(s). | | | | | |
| 5 | Different departments in your company share technical information regarding horticulture production with each other quickly. | | | | | |

7. Number of local customers you have

   Local _____ International _____

8. Type and number of Markets you have

Local (Eth) _____ European Countries _____

Neighboring countries _____ Asian Countries _____

Other African countries _____ North America _____

Middle East Countries _____ Others _____

Total _____

9. Questions on Customer Integration

| No. | Items | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
|---|---|---|---|---|---|---|
| 1 | You have effective communication with your customers on market information, your research activities and new product development | | | | | |
| 2 | You share transparent information about the available inventory with your major customers and have quick ordering system | | | | | |
| 3 | You and your customers provide each other's production plan. | | | | | |
| 4 | You collaborate with your customers' development program(s). | | | | | |
| 5 | You and your customers are aware of each other's medium-term and long-term strategies. | | | | | |
| 6 | You and your customers share technical information with each other if required. | | | | | |
| 7 | You have long-term relationships with your customers. | | | | | |

10. Does your company has an agreement memorandum of understanding withEthiopianAir lines?

Yes ☐ No. ☐

Why?

_____

_____

_____

11. How satisfied are you with the service of Ethiopian Air lines

| Very Satisfied | Satisfied | Neutral | Dissatisfied | Very Dissatisfied |
|---|---|---|---|---|
| | | | | |

12. Does your company uses the service of other cargo airlines services?

Yes ☐

If not why?

Lack of access ☐ Lack of Marketing and promotion ☐

Not interested in business volume ☐ Lack of infrastructure (Government support) ☐

13. Have you ever use a sea transport for export purposes (please escape this if not applicable)

Yes, ☐

If no why?

Lack of service access ☐ Lack of infrastructure ☐

Lack of capacity ☐ Lack of support from government ☐

14. Does your company has service relationship with Ethiopian Shipping & Logistics Services Enterprise

Yes ☐

No, Why?

_____

_____

_____

15. Does your company has access for information regarding reefer (temperature controlled) container movement in and out of the country?

Yes, ☐

No Why?

Lack of sources of information/ structure ☐ Lack of established systems ☐

Lack of collaboration ☐ Other ☐

16. Are the freight forwarding companies existing in Ethiopia and custom agents up to the Service requirement level of your company?

Yes, ☐

No Why?

Lack of adequate communication ☐ Lack of information technology ☐

Lack of service standards ☐ Lack of knowhow of the business/industry ☐

Lack of required infrastructure ☐ Poor partnership performance ☐

17. Do you have a partner's ship with other service providers (cold chain storage, cold chain transport providers?)

Yes, ☐

No, Use own infrastructure ☐

18. If yes above , How do you rate the service of service providers you have in regards to your requirements and the below factors

| No. | Item | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
|---|---|---|---|---|---|---|
| 1 | Required infrastructure | | | | | |
| 2 | Enough Capacity | | | | | |
| 3 | Operation management system | | | | | |
| 4 | Communication and planning | | | | | |
| 5 | Industry knowhow | | | | | |

19. Does your company has insurance coverage

Yes Local ☐ Yes International ☐ No ☐

20. If Yes, How do you rate the service of insurance companies in regards to your requirements and the below factors

| No. | Item | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
|---|---|---|---|---|---|---|
| 1 | Required infrastructure | | | | | |
| 2 | Enough Capacity | | | | | |
| 3 | Operation management system | | | | | |
| 4 | Communication and planning | | | | | |
| 5 | Industry knowhow | | | | | |

21. Supply/Delivery Performance of your company

| No. | Item | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
|---|---|---|---|---|---|---|
| 1 | You have a competitive advantage over the competition because of the quality of your products | | | | | |
| 2 | Your customers are satisfied with the quality of customer service you deliver | | | | | |
| 3 | Your customers enjoys continual improvement of your product delivery service. | | | | | |
| 4 | You have a successful delivery performance (order processing, meeting lead time, order fill rate, on time delivery) | | | | | |
| 5 | You have a post-delivery customer feedback management system and your customers are happy about it. | | | | | |
| 6 | Your customers are satisfied with the logistic facilitation structure you have | | | | | |

22. General remark? What can be done to improve the supply chain challenges?

**Thank you**

## 2. APPENDIX - 2

**Interview check list**

- What are the main tasks and responsibilities of your organization in regards to the Ethiopian horticulture products supply chain integration development
- What are the performance and achievements of the organization against the objective set towards horticulture industry supply chain integration
- What are the challenges faced over the management of horticulture supply chain integration
- What types of corrective actions are taken to mitigate the challenges faced above
- What are the lessons learned and how do you plan to incorporate corrective actions for the future strategy development
- What is the level of interaction you have with other stake holders in the same subject area
- What are your expectations from the investments, other stake holders and the government?