COFFEE SUPPLY CHAINS INTEGRATION:A STUDY ON SEKA CHEKORSA DISTRICT BASIC COOPERATIVE, JIMMA, ETHIOPIA

A Thesis Submitted to the School of Graduate Studies of Jimma University in Partial Fulfillment of the Requirements for the Award of the Degree of Master of Logistic and Transportation Management

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Abstract

Now a day's supply chain integration is can pave the way for more profitable operation / considered as a survival or competitive strategy for all parties involved in firms. The main objective of the study is to examine coffee supply chain integration in case of Seka Chekorsa district primary cooperatives. The integration area of Seka Chekorsa coffee product primary cooperative with suppliers and purchaser as members are information, collaboration and resource sharing and organizational linkage. The level and practice of information integration, collaboration and resource sharing, and organizational relationship linkage implementation practice has been analyzed. The main benefit and Critical factors of supply chain integration. The study deployed descriptive and diagnostic research method with representative sample of 205 respondents from the supply chain partners selected through stratified random sampling. The study is based on literature review/document, interviews and collecting data used semi-structured questionnaire. The collected data was analyzed used statistical package for social science software descriptive statistics (mean and standard deviation) and inferential statistics (correlation and regression) correlation result indicates that, there is a positive relationship between determinants and regression show statistically significant effect in the primary cooperative. The main findings of the study show that,the coffee supply chain integration practice are information integration, collaboration and resource sharing and organizational relationship linkage, at moderate level. Finally, the study recommends creating proper practice of Supply chain integration networks system.

Keywords: Information, Integration, collaboration

Declarations

I, Emiru Gemechu, declare that this Thesis proposal entitled "COFFEE SUPPLY CHAIN INTEGRATION: IN CASE OF SEKA CHEKORSA DISTIRICT BASIC COOPERATIVE UNION" is my own original work. I have carried out it independently with the guidance and suggestions of the research ad-visor. And it has not been presented in any other University.

Emiru Gemechu   _____   20/08/2020

 (The Researcher)   Signature   Date

Certification

This is to certify that Emiru Gemechu has carried out his Thesis on the topic of "COFFEE SUPPLY CHAIN INTEGRATION: IN CASE OF SEKA CHEKORSA DISTIRICT BASIC COOPERATIVES" under my Ad-visor. This work is original in its nature and it is suitable for submission in partial fulfillment of the requirement for the award of Masters of Arts Degree in Logistics and Transportation Management.

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<div align="right">Emiru Gemechu</div>

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Acronyms

BPR   Business Process Re-engineering

CRM   Customer Relationship Management

CRS collaboration and Resource Sharing

CSCI   Coffee supply chain integration

EDI   Electronic Data Interchange

ERP   Enterprise Resource Planning

II   Information Integration

IT   Information Technology

NT   Network Theory

ORL   Organizational Relationship Linkage

PAT   Principal Agent Theory

RBV   Resource Based View

SC   Supply Chain

SCCSU   Seka chekorsa coffee supply union

SCI   Supply Chain Integration

SCM   Supply Chain Management

SPSS   Statistical Package for Social Science

TCA   Transactional Cost Analysis

TQM   Total Quality Management

WHO   World   Health   Organizatio

CHAPTER ONE

INTRODUCTION`

1.1 Background of the Study

A supply chain is an integrated system where in number of business entities work together for efficient and effective flow of material and service, information and funds (Kittipong, et al., 2013). Integration is the unified control of a number of successive or similar economic or especially industrial processes formerly carried on independently (Webester, 1996). Supply chain integration is the basic tool to successfully attaining supply chain management (Grham and Mark, 2016).

In this competitive world, one of the important tools for achieving organizational objective in production/manufacturing/ service sector is integrating supply chain among the network. Organizations within the supply chain should manage the integration of business, people, technology and the process to get successful in the market (Intan, et al., 2015). Process integration and redesign is an important component of supply chain integration implementations.

Supply chain integration requires strong commitment and involvement by top management, supply chain risk management, needs to react to dynamic market changes and the factories brings high competition among them to win the market share throughout the country (Gunasekaran and Ngai, 2004).

In order to the organization fully benefit and implement supply chain management concepts, it is important to integrate efficiently with suppliers, manufacturers, warehouses and other intermediate value-adding partners. Douglas and Martha (2000) show the importance of cross-functional integration via marketing with examples of several cases. Hugo *et.al.,*(2004) also emphasize on cooperative to give high attention to integration so as to insure the main supply chain activities like sourcing, production and distribution are synchronized with customer demand, as the result the overall costs will be decreased and high level of customer service will be achieved.

Coffee is the most popular beverage in the world with global consumption (151.3 million bags) exceeding its production (148 million bags) during 2015-16 (ICO, 2016). Coffee consumption is largely driven by economic conditions in consuming countries, with such fluctuations causing uncertainty in the income received by growers, the majority of whom are small and marginal holders (roughly 70 percent). More than 90 percent of global coffee production comes from developing countries, while over 70 percent of its consumption is concentrated in developed nations (Agricultural Economists, Juiy28-Aug.2,2018).70% of the world's coffee supply is provided by smallholders cultivating less than 10 hectares in 80 countries in Africa, Asia and Latin America. However, the extreme volatility and long-term decline in coffee prices on international markets endangers the livelihoods of the 10 million small coffee farmers dependent on coffee for their primary source of income (Filagot, 2016).

About 90 percent of Ethiopian coffee is produced by smallholder farmers. The current supply chain in Ethiopia consists of smallholder (cooperative) and private estate farmers whose coffee is moved through wet and/or dry mill processing system. After the processing, the coffee is bagged and stored in the field warehouse. The coffee is loaded onto trucks and passes through the Woreda Administration Bureau where documents are issued and trucks sealed and then delivered either to the relevant ECX warehouse in the area or to cooperative warehouses. In the case of cooperative and plantations coffee, the coffee can be directly exported without passing through ECX trading system; however, ECX grades the cooperative and plantation coffee based on its quality and location (ETBUN, October 14, 2016).

Moreover, the nature of the business in the coffee supply chain requires high level of supply chain integration to win the market for the reason that, this research focusing on examining area, benefits, practice, and challenges of supply chain integration for Seka Chekorsa district basic cooperative union coffee products and recommended effective supply chain integration strategy to maximize the benefits of each partner from production to retailing as the result maximizing customers' satisfaction in terms of Price as well as products quality.

Seka Chekorsa coffee basic cooperative is the basic cooperative in Seka Chekorsa district with seated in three kebele and collected around 177886 kg Coffee bought from the farmer and sold to ECX market (report, 2018/19). So this study focused to examining the Coffee SCI practice in Seka Chekorsa basic cooperative.

1.2 Background of the Organization/ the Study area

The Area of Seka Chekorsa Coffee Primary CooperativeSCI

Geographically Seka Chekorsa district are located at Jimma Zone, south west part of Oromia region. The livelihood of the society is mainly based on production of serial crop, and production of cash crop like coffee. Coffee growing in the highlands districts of five kebeles, major of them are namely Wakito Madalu, Hunde Sakela and Andode Alega.

The main actors of Seka Chekorsa coffee supply chain that has parts in producers/farmers/, value addition are the primary cooperative, and Ethiopian Commodity exchange (Market). The product produce, process and market map is shown in the below diagram
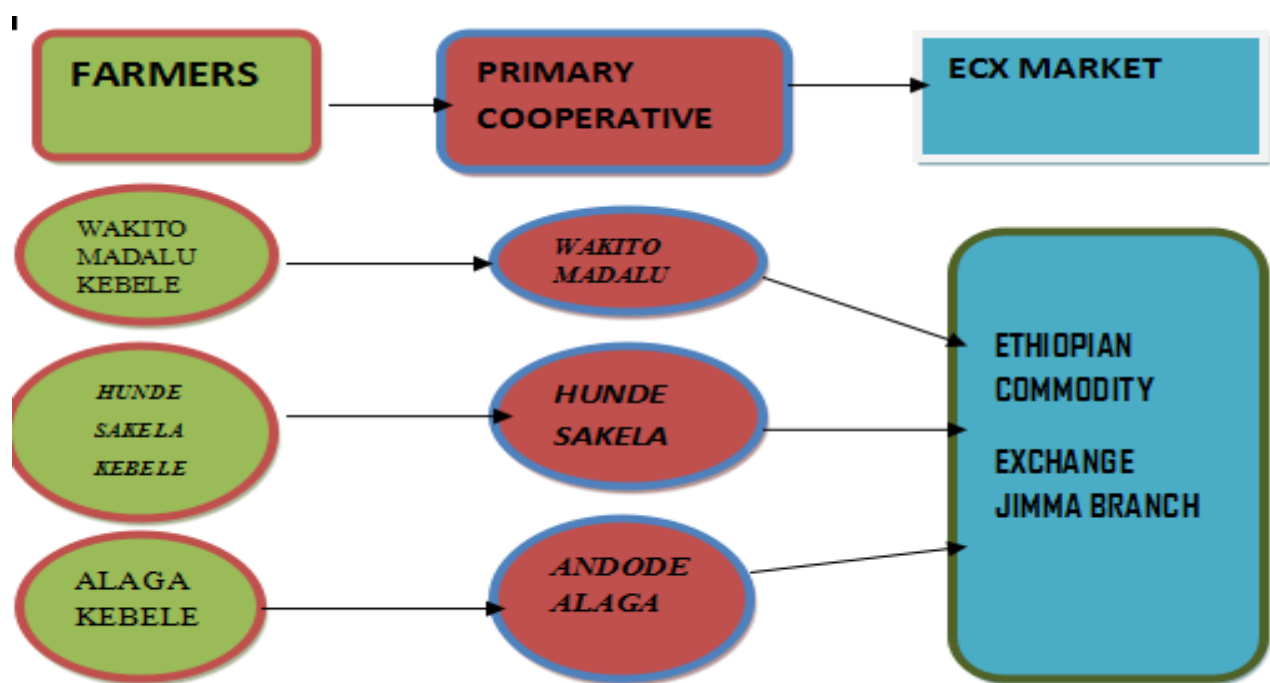
Figure 1 Area of Seka Chekorsa Coffee Primary Cooperative supply chain integration

The above map shows that, from Seka Chekorsa distirict up to Jimma towns, coffee products addressed to market through above 2823 farmers and three primary cooperatives.

1.3 Statement of the Problem

Now a day's SCI is can pave the way for more profitable operation/considered as a survival or competitive strategy for all parties involved in firms (Hoeny, 2019). Supply chains integration are set of three or more entities (organizations or individual) directly involved in the upstream and downstream flows of products, services, finances and /or information from a source to a customer (Meltzer et al., 2001).

The importance of SCI to the multinational company (MNC) lies to be gained from the ability to exploit differences in capital and product markets, to transfer learning and innovation throughout the firm, and manage uncertainty in the economic or political environment in different countries or regions (Awad and Nassar, 2010). To Organizations are secure maximum support for competitiveness in their market and it has established the positive effect it has on both operational and business performance of an organization (Sheryl, 2014).AlsoSCI isbasic tool to win the market through fulfilling the interest of all partners in the supply chain and bringing customer satisfaction; integrating all participants plays great role to ensure their common goals(Gram and Mark,2016).

However, the general understanding of the business environment in most firms are that competition has increased and the conditions under which business is made are more turbulent (Hussain and Othman, 2010). Integrating supply chain in recent business environment is increasingly challenging. Market globalization, short product life cycle, rapid technology growth, high complexities in logistics and distribution and involved manufacturing process, have led to complexities in integrating supply chains (Sheryl, 2014).

The practice of supply chain integration in Ethiopian production/ manufacturing/ service sector is at infant stage (Fasika et al., 2014). In Ethiopia, coffee is export king and major source of foreign currency to fill the market gap.About 90 percent of Ethiopian coffee is produced by smallholder farmers. The current supply chain in Ethiopia consists of smallholder (cooperative) and private estate farmers whose coffee is moved through wet and/or dry mill processing system(ETBUN, October 14, 2016).

Recently numbers of new coffee cooperative have been come into the market and the existing cooperatives are expanding their capacity and Ethiopia plans to become the world's second largest coffee producer within seven years (Ethiopian business review, 2016). To achieve the country plan, understanding and practices of the supply chain integration principles and strength the

supply chain integration is very important and only the way to achieve the intended plan. These resulted in tough and aggressive market completion:

There are several studies that have been conducted for example (Fasika, etal., 2014, Ethiopian business review, 2016**,** Fekadu, 2017, Kinati, 2017), examine the impact of supply chain management on supply chain performance. But this study focus on supply chain integration, as per the information obtained through pr-assessment interview and observation in the coffee market, the loyal consumers of coffee products are limited as compared with the total sales of the primary cooperative throughout the country and empirical literature's on the coffee supply chain integration are limited. In with this, this study focused to examine the Coffee supply chain integration practices in Seka Chekorsa primary cooperative.

1.4. Research questions

The research is guiding by the following main research questions

- ✓ What are the areas of coffee supply chain integration in Seka Chekorsa coffee supply primary cooperative?
- ✓ Which supply chain integration practices/dimensions contributing most for Coffee supply chain integration in Seka Chekorsa CSPC?
- ✓ What are the effects of this coffee supply chain integration in Seka Chekorsa CSPC?
- ✓ What are the challenges of coffee supply chain integration in Seka Chekorsa CSPC?

1.5 Objectives of the Study

The study is based on both general and specific objectives objective.

1.5.1. General objective of the study

The general objective of the study was to examine coffee supply chain integration practice in Seka Chekorsa primary cooperative.

1.5.2. Specific objectives of the study

Specifically the study addressed:

➢ To identify the areas of coffee SCI in Seka Chekorsa coffee product supply primary cooperative.

- ➤ To analyses the level and practice of supply chain integration practices/dimensions(Information integration, collaboration and resource sharing and organizational relation linkage).
- ➤ To examine the effects of coffee supply chain integration in Seka Chekorsa CSC
- ➤ To identify the challenges of supply chain integration in Seka Chekorsa CSU

1.6 Significance of the Study

Analyzing the supply chain integration supposed to have significant importance for primary cooperative specifically for Seka Chekorsa district coffee cooperative and its supply chain partners; moreover; to academicians, operation managers, and policy makers, generally for business practitioners for the source of data and idea.

The study brought some concepts on supply chain integration in primary cooperative. Likewise, the study helps primary cooperative as additional input for their improvement plan.Furthermore, this research output expecting to a basis for other researchers to fill gap and address problems that has been identifying by this study.

1.7 Scope of the Study

This study has delimited on the coffee supply chain integration in case of Seka Chekorsa primary cooperative. The conceptual scope of this study has limiting to the supply chain integration variables that information integration, collaboration and resource sharing practice and organizational relation linkage, benefits, challenges of supply chain integration in coffee cooperative.The coverage of the study included farmers, cooperatives,woreda cooperative workers, and ECX and 205 respondents were selected purposefully and randomly. The methodological scope is both descriptive and diagnosis research, use quantitative and qualitative data from primary and secondary source of data. The time scope, those secondary data from the period beginning of 2016 to end of 2019 was used.

1.8 Organization of the Paper

The paper is organized in five chapters. The first chapter presents the introduction of the study, the second chapter discuss about review of literature, the third chapter outlines methodology of the study and chapter four presents the results, analysis and interpretation. The last chapter contains conclusions, major finding and recommendation.

CHAPTER TWO

2. Related literature review

2.1. Introduction

In this chapter, different relevant literature's have been reviewed related to supply chain integration to develop the conceptual framework of the research. The main area of the literature's reviewed are the conceptual or theoretical aspect of supply chain integration which lead to come up the good understanding of supply chain integration practice, challenges and benefits to partners in the supply chain integration.

2.2. Theoretical Frame work

2.2.1. Supply chain definition

The concept supply chain has been described by different scholars in different ways. Mentzer *etal.,* (2001), argue to define the supply chain in terms of either in terms of management philosophy, the implementation part of philosophy or as a set of processes.

As John *et al.,* (2001) describe supply chain as a strategic and systematic integration of functions and strategies of business organizations for sustainable performance of the business by satisfying the ultimate customer. Supply chain also described as a network of different autonomous and semi autonomous business organization in the upstream and downstream supply chain partners who are responsible for the supply of inputs, conversion to finished and semi-finished product and distribution of product to create value at the hands of the ultimate customer (Swaminathan, *et al.,* 1996; Lee, 1995; John and Chandra, 2012).

Supply chain also described from management perspective as the management of Materials, Information and funds from the initial raw materials supplier to the ultimate consumer (Deloitte, 1999). It also described by Christopher (2011) as the management of upstream and downstream relationships with suppliers and customers in order to deliver superior customer value at low cost to the supply chain as a whole (Christopher, 2011).Stevenson (2009) also defined supply chain as

value chain and in terms of collaboration of business functions in an organization or throughout the supply chain for the purpose of demand management.

2.2.2. Supply chain integration

Most supply chain literature considers supply chain integration as the collaborative effort in linking functions and supply chain networks in terms of process, information and physical flow (Frolich and Westbrook, 2001). Mentzer et al. (2008) concluded that collaboration and collaboration with suppliers and customers is the key element of supply chain integration practices. Supply chain is an integrated system where in number of business entities work together for efficient and effective flow of material and service, information and funds (Kittipong, *et al*., 2013). Supply chain integration is the process of value to achieve sustainable competitive advantage. The flow of materials and information through a business from the purchasing activity, through the operations and out to customers, by way of distribution or service delivers activity can be described as immediate supply chain. There are often strategic benefits to be gained in integrating the flow between customers and supplier.

As Jim Langabeer and Jeff Rose (2002) description, the historical supply chain integration has focused on the efficiency and execution and has fallen short in bringing significant improvement in firm's level competitiveness. They strictly recommended that, Supply chain integration must now take the next step and incorporate the business knowledge and practice that will help the firm understand their market place and drive the firm's strategy to the operational level in order to differentiate it substantially from its completion.In this situation supply chain integration enables the business organization to be efficient and competent not the business companies within the chain but completion among supply chain.

The term supply chain management was originally introduced by consultants in the early 1980's and since then has received considerable attention. A supply chain is much wider than logistics in terms of inter company, boundary spanning concept (John and Chandra, 2012). SCM as "encompasses the planning and management of all activities involved in sourcing and procurement, conversion, and all Logistics Management activities. Importantly, it also includes collaboration and collaboration with channel partners, which can be supplier intermediaries, third party service providers, and customers, (www.cscmp.org). SCM is the integration of key business processes from end user through original suppliers that provides products, services, and information that add value for customers and other stakeholders (Croxton, et al.,2009).

The upstream supply chain incorporates the supply of raw material, store, and transport to cooperative unions while downstream supply chain includes organizations which are responsible for conversion of raw material to semi-finished or finished product, distributors and retailers who directly communicate with ultimate consumers.

2.2.3.1 Type of supply chain integration

According to Barbara, *et al*., (2010) supply chain integration is the extended forms in both directions (Upstream and downstream) strategically collaborate for achieving mutual beneficial goals. On this classification they highlighted importance of strategic collaboration as an ongoing partnership to achieve mutually beneficial strategic goals. It provokes mutual trust, increases contract duration and encourages efficient conflict resolution and sharing of information, rewards and risks.

Supply chain integration is the basic tool to successfully attaining supply chain management (Grham and Mark, 2016). There are four primary model of supply chain integration including: back ward integration, forward integration, forward and back ward integration and internal integration (John, et al., 2011)

Kanter (1994) described five type of integration in collaborative relationships that include: strategic integration, tactical integration, operational integration, interpersonal integration and cultural integration (Coughlan, *et al.,* 2003).

Supply chain integration mainly classified into two main categories; internal integration and external integration (Upstream or supply integration and downstream customer relationship). In the context of supply chain integration, internal integration and external integration play different. Internal integration recognizes that the functions of each department in the organization should be activated as part of an integrated process. However, external integration acknowledges the importance of developing close, interactive relationships with customers and suppliers (Barbara, *etal*., 2010).

2.2.3.1.1 Internal integration

Internal integration is the creating collaboration among functional departments within an organization. The internal integration, the function to function integration within the business organization can be considered as the first step of operational integration as the bases of effective supply chain integration as the benefits of external integration (Harrison and Hoek, 2008).

Identify fundamental information requirement of each functional department and creating an access of information among these department is the process of creating internal integration. This is often accomplished through a company-wide ERP system, which links internal groups via a single integrated system. ERP software applications support the re-engineering of business processes and form the foundation for an integrated organizational value system (Robert and Ernet, 2002).

The impact of internal integration on external integration characterized by high internal integration can reach a level of collaborative internal operation, with which the whole firm works like an integrated system that results in better performance and better interdepartmental effectiveness, such as cycle time reduction, better in-stock performance, increased product availability levels, and improvement in order-to delivery lead times (Harrison and Hoek, 2008).

2.2.3.1.2. External integration (upstream and downstream)

The supplier base is really an extension of the enterprise. As such, supplier relationships (face-to-face, telecommunications, or the Internet) need to be developed as aggressively and strategically as customer relationships (Frazelle, 2002).This implies that the upstream supply chain integration which give high emphasize to the supplier should be equal to downstream supply chain integration.

External integration also refers to the systems that coordinates and crates collaboration among all stakeholders with on the value chain (the supplier, manufacturer and the customer). External integration allows all partners to share critical information such as forecast demand, actual orders, and inventory levels across the supply chain. Systems used to integrate supply chain members include advanced planning systems, Internet linkages, network communications, and Electronic Data Interchange (EDI) (Robert and Ernet, 2002).

External supply chain integration described both in upstream and downstream supply chain integration as; downstream supply chain integration involves core competencies derived from collaboration with critical customers, whereas upstream supply chain integration involves core competencies related to collaboration with critical suppliers (Donal and Edward, 1989).

High level of collaboration and information sharing activities with key customers in the downstream supply chain, providing the business entity with strategic insights into market expectations and business opportunities, and enabling a more efficient and effective response to

the end customer (Schoenherr and Swink, 2012). On the other side, Germain *et al* (2008) argue that downstream integration reduces unpredictable demand and leads to better financial performance.

Effective external integration with customers may enable organizations to reduce demand-side risks, and to minimize potential occurrences of anything that may affect the business firm ability to meet the requirements of customers and end-users. Through integration with customers, companies can better understand customer needs and respond more quickly to them. Integration with consumers contributes to demand planning, greater visibility in sharing information, and a consequent increase in the level of service (Thomas and Alcantra, 2013).

2.2.4. Supply chain Integration theories

Literature's pointed out the advance of different theories are the fundamental foundations of business studies (Lagat, 2013). The most theories in which supply chain management literature's explored are Transaction cost analysis, resource based view, network perspective and principal-agent theory. These theories describe supply chain integration in different views which no one of them can be considered as right and the other is wrong (Holldorsson, *et al*., 2007). They suggest transaction cost analysis (TCA) and Principal Agent Theory (PAT) to well describe how to structure of the supply chain when it is perceived as a collaboration of institutions within the supply chain while adopting Resource Based View (RBV) and Network Theory (NT) will help us to insight what is needed to integrate a particular structure of the supply chain.

Applying Resource based view and network theories in the supply chain concept used to identify the resources required to stay competitive and to show the dynamics of the-inter organizational relationship. The network theory has been found as best suited for this research to develop the conceptual framework and briefly discussed below.

2.2.4.1. Transaction cost analysis

As Clemons and Row (1992) analysis, transaction Cost theory answers why the business organization exists. In supply chain context, the main objective of transaction cost theory is, reducing the cost associated with decision with respect to transaction. Transaction cost theory describes the reason tasks are performed in different parts of the supply chain. Transaction costs can be divided into collaboration costs and transaction risk. It is also described as collaboration cost which the direct costs of integrating decisions between economic activities while Transaction risk is linked within the relationship of the partners in the supply chain (Clemons and Row, 1992

The main factors which affect the components of the transaction cost theory are Uncertainty, frequency and asset specificity; which these factors can influence the collaboration cost and transaction risk on make-or-buy decision (Williamson, 1985).

In supply chain integration, organization implemented transaction Cost Theory claimed that different control mechanisms have to be implemented as a mechanism to mitigate the risk of opportunistic behavior of supply chain partners (Pala, 2013).

2.2.4.2. Network theory

Even though the integration of buyer and seller relationship is not a new issue in the market, with the emergency of supply chain management, the network perspective it becomes a hot topic in both academics and business which replacing the traditional markets to networks of interrelated firms (Möller and Halinen, 1999).Network theory is a useful framework for analysis of a business situation, and it adds a new level of complexity to understanding the relationship perspective of business firms in the supply chain (Jarillo, 1988). As per Mikkola's (2008) study, Network relations is the most important element to create the mechanism for information sharing that enables both buyers and sellers to have access to resources and knowledge beyond their abilities which it will help the partners to have long-term relationships. Network theory also described as the most important theory for supply chain integration to show the relationships in which partners within the supply chain interact each other (Harland, 1996). Network theory helps researchers to define supply chain in network perspectives. Harland (1996) defines the network as "a specific type of relation linking a defined set of persons, objects or events." In addition, Chang, Chiang and Pai (2012) describe supply chain as, "Supply chain network is a complicated network model, and its specific context depends on the relationships among the network members." Network defined as the interaction of two or more business organization for long term benefits (Thorelli, 1986).

Mills *et.al., (*2004) highlighted the contribution of Network perspective on supply chain integration that; it could underline as mechanism to lead supply chain partners to develop competitive advantage that companies share information and knowledge with their partners. The network theory is also applicable to the most important decision points in the supply chain activities. Business partners in the network also develop trustworthy among them and can add value in supply chain decision strategy. The Network perspective also encourages long term contracting among the supply chain partners.

2.3 Empirical review

2.3.1 Supply Chain Integration practice

The practice of SCI is refers to complete set of actions which are done in/out off organizations towards to improve the effectiveness in the internal supply chain. SCI practices are defined also as approaches applied in integration of supply, demand and relationships in order to satisfy consumers in effective and profitable manners, (Ibrahim and Hamid, 2014).

Supply Chain Integration is now recognized as a critical business process for companies producing, manufacturing or distributing products. This is because customers' demand for most products are ever more demanding in response time, in choice and in seeking more competitive prices and thanks to globalization, customers can choose from an increased number of suppliers, (Lazarovicet al., 2007).

The implementation of SCI involves identifying the SC members with whom it is critical to link, what processes need to be linked with each of these key members and what types /level of integration applies to each process link. The objective of SCI is to improve efficiency and reduce redundancy while also enhancing product availability (WHO; 2011, 9Page)

Supply chain integration was considered just like a concept and Implementation of this concept was very difficult as there were some necessary components in the total chain connect with each other. The focal part of the barrier to full supply chain integration was the cost of communication and collaboration among the many independent suppliers in each supply chain. An entire supply chain covers the area from the creation of raw materials to the delivery of the finished consumer goods, (Hasan and Alim, 2010)

Supply chain integration practice in every sector (manufacturing, agriculture, construction, service etc) of Ethiopia, has arms length relationship and have rivalry relationship and compete among each other instead of cooperation (Matiwos, 2015).

According to Fekadu (2013) the Coffee supply chains are poorly integrated to one another and with market systems. Moreover, they lack information and bargaining power, which effectively deny them the required level of benefits from the high consumer price of their produce. Matiwos and Siber traced in their analysis that there is a problem of understanding and adoption of supply chain integration principles. The main target of this study focused on examining on the level of understanding SCI concept and the practice of supply chain integration theory on the ground

based significant benefits and competitive advantage to organizations, the management and implementation of this system face challenges to organizations (Award and Nassar, 2010). In this situation, they also highlighted that, to overcome the challenges it requires Process integration and redesign is important component SCI implementations.

In other case different authors study supply chain integration in deference perspective due to lack of clarity on the concept of supply chain integration; Some examined supply chain integration with single dimension while others with multiple dimensions (Rafaela, *et al*., 2012). By analyzing supplier and customer relation integration within the supply chain, R. Lee (2000) recommended that supply chain integration has three main dimensions: (I), Information integration (II), collaboration and resource sharing (CRS) and (III), Organizational relationship linkage (ORL) (Lee, 2000).

2.3.1.1 Benefits of supply chain integration

The SCI practices extensively as it has established the positive effect it has on both operational and business performance of an organization (Rita Sheryl, 2014). Kittipong Tissayakorn (2013) describes the flow of information to upstream from customer to supplier while the flow of material downstream from Supplier to customer. The upstream flow of information is as from customer to retailer, then to agent, then to manufacture then to the supplier. The basic characteristic of supply chain integration is information integration in which members in the supply chain being informed simultaneously (Kittipong *et al*., 2013).

In modern supply chain management as information flow, material flow has to be coordinated among all partners in the supply chain. In this regard, it implies activities should be coordinated upstream and downstream.

In order to the organization fully benefit and implement supply chain management concepts, it is important to integrate efficiently with suppliers, manufacturers, warehouses and other intermediate value-adding partners. Douglas and Martha (2000) show the importance of cross-functional integration via marketing with examples of several cases (Douglas and Martha, 2000). Hugo *et.al.,*(2004) also emphasize on cooperative to give high attention to integration so as to insure the main supply chain activities like sourcing, production and distribution are synchronized with customer demand, as the result the overall costs will be decreased and high level of customer service will be achieved.

Integration has to do with the competitive edge of those committed to the supply chain. Supply chain integration is motivated by increase in supply chain competitive advantage. Apart from this the main characteristics of supply chain integration in cooperative agency are Customer satisfaction, new cooperative completion and enhancing strategic alliance among the partners throughout the supply chain. (John, *et al.,* 2001)

Growing evidence suggests that the higher the level of integration with suppliers and customers in the supply chain the greater the potential benefits (Frohlich and Westbrook, 2001). When companies integrated as one entity, their performance will be enhanced throughout the chain. On the other side, Keah et al., (1998) highlighted the risks of not fully integrating of the upstream and downstream partners may cause the imbalance of supply and demand across the chain (Tan, et al., 1998).

2.3.1.2. Challenges of supply chain integration

The significant challenges on supply chain integration arises due to lack of visibility of demand, inventory holding status across the supply chain and adversarial relationship between the trading partners (Barratt, 2004). Companies are mainly focusing on their core competencies rather than looking the overall capability of the supply chain, as the result the vertical integration is happening (Sweeney, 2012).

The implementation of supply chain management is not as simple as we are thinking. It would face different challenges internally as well as externally, with respect to integrating supply chain specific strategies with the overall corporate business strategy (Award and Nassar, 2010).

In recent years, along with the change in business realities related to globalization and modernization, the supply chain has got the first priority on top management of the business entities and they pay attention to cut costs and to bring their competitive advantage to satisfy their customers (Award and Nassar, 2010).

According to researchers, supply chain integration challenges classified in different ways. According to Stanley *et al* (2005), supply chain integration challenges classified as challenges of system relationships between sub systems in an organization and relationship between supply chain management systems.

Challenges of supply chain integration classified into different perspectives as technical, Managerial and relationship perspectives (Award and Nassar, 2010). They proposed to integrate all challenges to comprehensive source to bring benefits to the supply chain in such a way that; integrating challenges can help supply chain partners to decrease the complexity of the challenges; prioritizing the challenges effectively; for better allocation of resources and introducing a comprehensive source that contains all challenges stated above.

2.3.1.3 Integrating supply chain

Successful supply chain management requires a high degree of functional and organizational integration. Even though supply chain integration has significant importance to the whole supply chain partners, such integration cannot be achieved overnight (Krajewski and Ritzman, 2003).

A fundamental principle of SCM is the development of collaborative and partnership relationships throughout the supply chain, including with customers and suppliers. The most important sign of which shows the degree of supply chain integration in firms relates to the extent of customer and supplier involvement in supply chain activities (Sweeney, 2009).

The term integration defined in Webster dictionary as ''the unified control of a number of successive or similar economic or especially industrial processes formerly carried on independently (Webster's, 1966).''

Thus, supply chain integration (SCI) can be referred as, the degree to which a cooperative strategically collaborates with its supply chain partners and collaboratively manages intra and inter organizational processes, in order to achieve effective and efficient flows of products and services, information, money and decisions, to provide maximum value to the customer.

Integration is the quality of collaboration that exists among clusters to achieve an effective, efficient and united system. SCI defined as the degree to which a cooperative agency strategically collaborates with its supply chain (SC) partners and collaboratively manages throughout the supply chain. The ultimate goal of SCI is to achieve effective and efficient flows of products and services, information, money and decisions, to provide maximum value to the end customers (Barbara, *et al*., 2010).

The supply chain integration involves not only implementing ERP systems and ensuring they communicate or interface with legacy systems, but it also involves integrating ERP and SCM

systems with Customer Relationship Management (CRM), Product Lifecycle Management (PLM), and e-procurement and e-marketplaces, as well as making them available over the Web to foster cooperation and collaboration across the entire value chain (Award and Nassar, 2010).

Traditionally organizations have been segmented in to three categories to ensure the flow of material or service as Supply of materials, Production and Distribution. Purchasing is responsible for the acquisition of goods and services as an input and production is responsible for the transformation of inputs into semi-finished and finished goods and distribution is responsible for addressing the finished goods to ultimate customers (Krajewski and Ritzman, 2003).
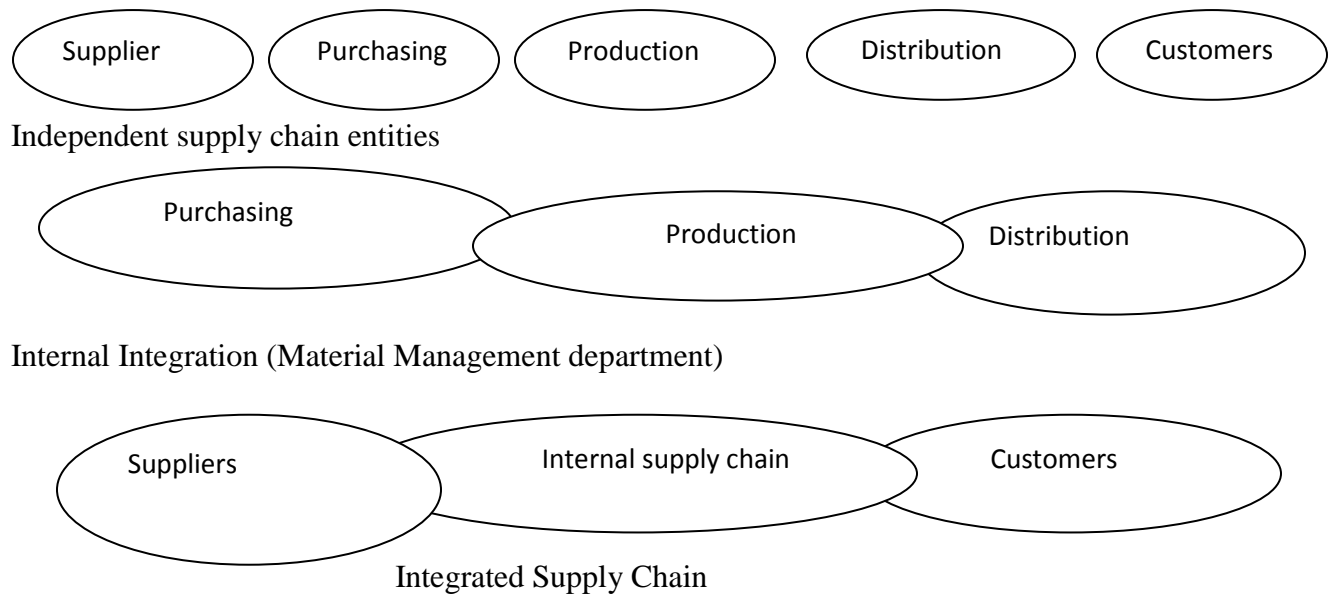
Figure 2 *Level of Supply Chain Integration*

Source: Krajewski and Ritzman (2001)

As we can see above, the development of integrated supply chain has three phases; first phase is identifying components of supply chain as Supply, Production and Distribution; Second phase create internal integration as material management and finally at the third phase represent true supply chain integration including upstream to suppliers and downstream to customers. But it is not as simple as we talk. It needs high level of commitment of higher level management of each organization in the supply chain, well planned implementation, monitoring and controlling of the level of collaboration among the supply chain members (Stanley, *et al*., 2010).

These collaborations provide access to human resource, technology, capital and information. They also enable to solve problems quickly by generating new ideas and to transfer technology.

Moreover, collaboration reduces lead times, minimizes inventories and increase asset utilization, where all these in turn lowers the cost of production.

2.4. Supply chain integration dimensions

Different authors study supply chain integration in deference perspective due to lack of clarity on the concept of supply chain integration; Some examined supply chain integration with single dimension while others with multiple dimensions (Rafaela, *et al*., 2012). By analyzing supplier and customer relation management within the supply chain, Lee (2000) recommended that supply chain integration has three main dimensions: (I), information integration (II), collaboration and resource sharing (CRS) and (II), organizational relationship linkage (ORL) (Lee, 2000).

2.4.1. Information integration

Information is one of the most important elements in supply chain management cooperation. It can be considered as fasten which holds together different parts of the supply chain, structure, process and entire supply chain (Moharana, *et al*., 2012). .Information integration has been found to be a necessity for firms looking to integrate with their customers and suppliers (Amue, G. J., and Ozuru, H., 2014). According to Lee (2000), information integration defined as the sharing of information among the supply chain partners which include, customers' demand, inventory status, promotion plans, sales forecasts and production schedules (Rafaela, *et al*., 2012). In information integration, members of the supply chain collaboration each other to establish production and sales forecast.

For successful supply chain improvement, the integration of business firms in the supply chain should start with the exchange of information (Frohlich and Westbrook, 2001). In the current dynamic market, the ability of the business firm to share information among the supply chain develops the competitive advantage for many organizations. Business organizations are implementing the functionalists of information technology to redesign their process so as to develop competitive advantage on it (Phan, 2003). Responsiveness of the business firm for customer demand in the market will be enhanced when there is efficient information integration throughout the supply chain partners. In addition the supply chain performance as a team is highly dependent on the information system implemented to share information and the information technology utilized among them (Rafaeli and Ravid, 2003).

2.4.2. collaboration and resource sharing

collaboration and resource sharing CRS refers to the realignment of decisions and resources intra and inter-organizationally (Rafaela, *et al*., 2012).On the other side, collaboration and coordinated decision making is described as separated entities that work together for decision making to enhance overall supply chain performance (Moharana, *et al*., 2012). If separate companies coordinate, it is referred as combination or integration. collaboration is an active cooperation among partners so as to harmonize different activities or interactions to achieve a desired goal.

collaboration is the fundamental mechanism to improve supply chain performance. (Chopra and Meindl, 2007) suggested that, profitability of the supply chain as a whole can be maximized when all at ages of the supply chain are coordinated. Information is a mechanism to create collaboration among supply chain partners to maximize profit and high level of customer's satisfaction in terms of quality of goods and services delivered (Moharana, *et al*., 2012). In other words, collaboration in supply chain can be achieved through different entities work together by sharing information as well as resources to maximize customer value and reducing demand uncertainties like bullwhip effect for the entire supply chain (Arshinder, *et al*., 2007; Lee, 2000).

collaboration among the supply chain partners not only improve product performance but also creates strategic alliance for the success of the overall supply chain partners through sharing information, resources, risks and benefits(pyke,1998;pyke and Johnson, 2004).Resource sharing is one of the most critical factors for effective collaboration in supply chain management (Arshinder, *et al*., 2008).

2.4.3. Organizational relationship linkage

In era of globalization supply chain relationships and procedures must be aligned and integrated with business strategy so that the ultimate purpose of customer satisfaction and value addition to company value delivery network should be implemented (Raja, Irfan Sabir, 2014).Inter organization relations' defined as formal arrangements that bring together tangibles' and intangibles assets different legally independent organizations with the aim to produce joint value added to the ultimate customers (Benchmann and Witteloostuijn, 2006). Organizational Relation Linkage ORL involves well established relations and transparent interactions among the supply chain members, which demands common visions and objectives, ideas and organizational culture and integrated performance measures, incentive schemes and sharing of skills (Rafaela, *et al.,* 2012).

Organizational relationships are networks of resource inter-dependencies. The organizational relation linkage includes all participants in the supply chain including producers, buyers, suppliers, customers, government agencies, and other external organizations like third party logistics service providers that are critical to the success of the supply chain (Tillquist, 2002).Organizations relation linkage is the key instrument to share critical resources like inputs, skill and knowledge, idea, information, technology and logistical equipment. Information and Information Technology is a key component for the successful implementation and management of organizational linkage in the supply chain (Pfeffer, 1992; Tillquist, 2002).

2.5. Summary of Theoretical frame work and Empirical literature review

The effect of globalization brings the high interest of integrating supply chain process instead of dealing with business organizations' internal boundary but focusing end-to-end integration from supplier to customer. Organizations should implement tools like ICT to enhance their business advantage. Effective and efficient utilization of ICT tools will provide production/manufacturing service /enterprises a better option in their global supply chain integration efforts (Hill, 2000).

The benefit of supply chain integration will be maximized when the integration among companies (Suppliers, Customers and other intermediate value adding enterprises) within the chain is efficient and effective. In this regard, many research suggested that the higher level of integration with suppliers and customers in the supply chain benefits all at greater extent (Fasika, *et al*., 2014)

The SCI practices extensively as it has established the positive effect it has on both operational and business performance of an organization (Rita Sheryl, 2014). Upstream and downstream supply chain integration requires technological integration primarily with main supplier and customer which has positive impact on overall monitoring and collaboration among the business entities within the supply chain. Supply chain integration can also encourage business firms for information sharing, collaboration and cooperation among them which enhance ultimate customer satisfaction (Akkermans, *et al*., 1999).

In this supply chain integration, information integration, collaboration and resource sharing and organizational relation linkage are the main issues to be considered. Information integration has been found to be a necessity for firms looking to integrate with their customers and suppliers (Amue, G. J., and Ozuru, H., 2014). Information integration is a collaboration and collective responsibility across functions from product design to distribution to address customer requirements at a low total system cost (Zheng et al. 2000; Fischer. 1997). The physical flow of

products and fund in the supply chain become highly dependent on information technology as the result these technologies can also become enabler of further cooperative arrangement among the supply chain partners (Damien, 2005).

As per Flynna *et al*. (2010) description, the supply chain integration is a building block comprised of bricks of joint collaboration, high level of collaboration, shared vision, shared information and technical infrastructure between producer/manufacturer and distributors. collaboration and resource sharing /CRS/ refers to the realignment of decisions and resources intra and inter-organizationally (Rafaela, *et al*., 2012). collaboration indicates an interactive, joint decision making process, where separate entities influence each others decisions more directly (Moharana, *et al*., 2012). In era of globalization supply chain relationships and procedures must be aligned and integrated with business strategy so that the ultimate purpose of customer satisfaction and value addition to company value delivery network should be implemented (Raja, Irfan Sabir, 2014).

Fast Communication channels among the members of supply chain help in framing business policies, goal alignment and achievement of tasks timely (Ross, 2010). Implementing an agile and lean Supply chain integration may face different challenges internally as well as externally, with respect to integrating supply chain specific strategies with the overall corporate business strategy (Award and Nassar, 2010). In recent years, along with the change in business realities related to globalization and modernization, the supply chain has got the first priority on top management of the business entities and they pay attention to cut costs and to bring their competitive advantage to satisfy their customers (Award and Nassar, 2010).

Therefore, based on the network theory, the extent of supply chain integration level, benefits, collaboration among stakeholders, challenges or barriers of coffee supply chain integration in Seka Chekorsa basic cooperative has been examining and analyzing.

There are several studies that have been conducted for example (Fasika, etal., 2014), (Ethiopian business review, 2016)**,** (Teshale Fekadu, 2017) and (Belay Kinati, PhD Candidate, 2017), to examine the impact of supply chain integration on supply chain performance. As per the information obtained through pr-assessment interview and observation in the coffee market, the loyal consumers of coffee products are limited as compared with the total sales of the union throughout the country. In other case, empirical literature's on the coffee supply chain integration

are limited. But, this study focused on examine the areas and level of supply chain integration based on the primary data which is collecting from representative sample producer's farmers, basic cooperative unions, cooperative office, and ECX within unions' coffee supply chain integration.

Table 1 Summary of the Literature Review and Knowledge Gaps

Scholars	Study	Major Findings	Knowledge Gaps
(Fasika, et al., 2014).	Supply Chain Integration in the manufacturing Firms in Developing Country: An Ethiopian Case Study	The study confirmed that practice of supply chain integration in Ethiopian production /manufacturing/ service sector is at infant stage	The study did not address the areas of supply Chain integration's
(Rita Sheryl, 2014)	Supply chain integration practices and organizational performance of multi national firms in Kenya	The SCI practices extensively as it has established the positive effect it has on both operational and business performance of an organization	The study was limited to benefit of supply chain integration
Amue, G. J., and Ozuru, H. (2014).	Supply Chain Integration in Organizations: An Empirical Investigation of the Nigeria Oil and Gas Industry	Information integration has been found to be a necessity for firms looking to integrate with their customers and suppliers	The study did not indicate most contributing for supply chain integration practices in case of coffee area.
(Rafaela, *et al*., 2012).	Supply chain integration framework using literature review. production Planning and Control	collaboration and resource sharing CRS refers to the realignment of decisions and resources intra- and inter-organizationally	
Raja Irfan Sabir, (2014).	Levels and Barriers to Supply Chain Integration: A conceptual model of Supply Chain Performance.	The study concluded that in era of globalization supply chain relationships and procedures must be aligned and integrated with business strategy	

Award and Nassar, (2010).	Supply Chain Integration: definitions and Challenges. Hong Kong	The study concluded that, along with the change in business realities related to globalization and modernization, the supply chain has got the first priority on top management of the business entities and they pay attention to cut costs and to bring their competitive advantage to satisfy their customers	The study limited on the challenges of coffee supply chain integration

2.6 Conceptual framework

After the theoretical related literature of the research from the different books, journals, article. This conceptual frame is developed for further understanding and diagrammatic expression of the conceptual framework indicates commonly known SCI practices namely and based on the network theory, the extent of supply chain integration level, benefits, collaboration among stakeholders, challenges or barriers of coffee supply chain integration in Seka Chekorsa primary cooperative has been examining and analyzing.

SUPPLY CHAIN INTEGARTION: - Information integration, collaboration and resource sharing and organizational relation linkage

INDEPENDENT VARIABLE   **DEPENDENT VARIABLE**
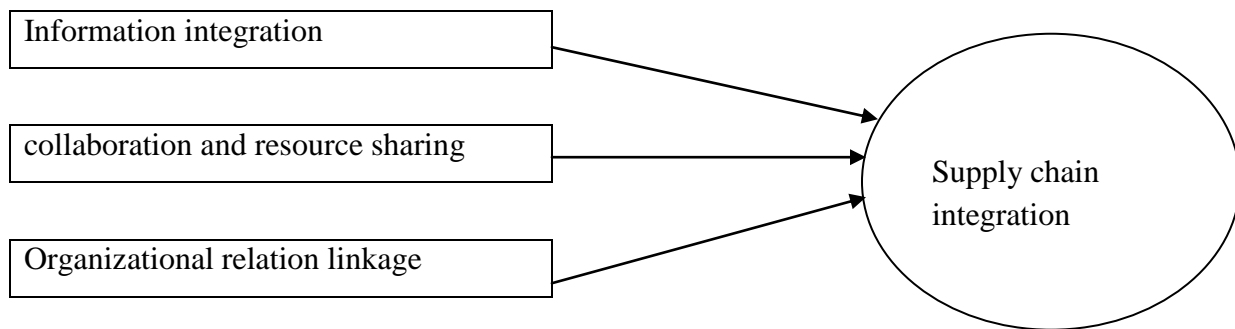
Figure 3 *Conceptual Framework of study*

(Source: Self depicted based on reviewed literature's)

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CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3. Introduction

This chapter covers the research methodology that was used for the study. The research designs, data source, sample and sampling techniques, data gathered tools, methods of data analyses and ethical consideration.

3.1 Research Design

The study is descriptive and diagnostic type which showed the area of coffee supply chain integration, the effects of coffee supply chain integration in Seka Chekorsa gained by the business firms in the coffee supply chain primary cooperative, the SCI practice that Information integration, collaboration and resource sharing and organizational relation linkage contributed most for CSCI in SCCSU, challenges faced in coffee supply chain integration in SCCSU. As the research intention was to show the extent of the facts in the supply chain integration and needs to investigate what is happened on the supply chain based on the facts observed, descriptive and diagnostic type of research design implemented because descriptive research studies are those studies which are concerned with described the characteristics of a particular individual, or of a group, whereas diagnostic research studies determine the frequency with which something occurs or its association with something else (Kotheri, 2004). Thus, the research was an empirical case analysis that tried to investigate a current phenomenon of supply chain integration in the coffee primary cooperative in Seka Chekorsa district.

3.2 Sources of Data and Data Collection Techniques

3.2.1 Sources of Data

Data are the data collected for records or any statistical investigation. Data collection is a practical activity, one that has to be carried out within time, spatial and resource constraints. It is therefore important to consider how valid social research data can be collected effectively and efficiently within those constraints. The history of social research has included the development of a range of research tools to help social researchers to organize and manage the task of data collection (Mathews and Rozz, 2010). There are two sources of data namely, primary and secondary source. The study used both primary and secondary types of data. Primary data was collected though

questioners, interviews with selected management staffs of the organization. Secondary data collected from organization document and literature's, books and other publications.

As this methodology requires detail information to come up with the result, questions prepared to collected primary data from willing farmer produce coffee, primary cooperative, Seka chekorsa district cooperative office and ECX supply chain participants. The collected data summarized and analyzed and finally interpretation had be made from the drawn samples.

3.2.2 Data Collection Techniques

The researcher was going to collected information from the field used basically the following pointed out use both primary and secondary types of data. Primary data was collected though questioners, interviews with selected management staffs of the organization. Secondary data collected from organization document and literature's, books and other publications related to the topic understudy. As this methodology requires detail information to come up with the result, questions prepared to collect primary data from willing coffee products supply chain participants. The collected data summarized and analyzed and finally interpretation had be made from the drawn samples (Leady, 2010).

3.2.2.1. Interview Method

Interview method is the method of collected data that involves presentation of oral - verbal stimuli and reply in terms of oral – verbal responses. Personal interview is the method of collected data that requires a person known as the interviewer asked questions generally in a face to face contact to the other person or persons. At times the interviewee may also ask certain questions and the interviewer respond to these questions, but usually the interviewer initiates the interview and collects the information (C K., 2004).

Regarding to this study, to examine coffee supply chain integration in case of Seka Chekorsa primary cooperative, the study was conducted face to face structural interviews method.

3.2.2.2 Questionnaire Method

Questionnaire is simply a formalized set of questions for eliciting information, the term questionnaire is often used by studies to refer set of questions which will be mailed to respondents for them to answer and turn to the sponsor of the study C (2004).

The study   was design structured questionnaires both open ended and closed ended questions so as to grasp the reliable and valid data regarding to examine coffee supply chain integration in case

of Seka Chekorsa district primary cooperative to which these questionnaires would filled by the respondents targeted.

3.2.2.3. Review of Documents

Documentation method is going to be used by the researcher. Documentation method is about gathering data from a secondary source. The documentary sources of data play an important role in disseminating knowledge in all disciplines. The documentary sources of data for research purposes include published books, manuscripts, journals, research reports, newspapers and other unpublished literally works. Documents are secondary form of data collected and stored by organizations or governments so as to be used by externals who are interested with those data to use in any relevant area to which can fit, these includes articles, income statements of the organizations, government manuals, reports etc (Saunders, 2009).

The study also made the review of related documents to validate and provides information that can help to better understand to the concept, identify the gap, and serve as a foundation in formulating appropriate research design.

3.3 Target Population and Sampling Methods

3.3.1 Target Population
Table 2 Target Population

SN	Target group	No of target people	No of respondent
1	Farmers	2823	125
2	Primary cooperatives	39	39
3	District Cooperative office	16	16
4	ECX Jimma branch	148	32
	Total	3026	212

Source: Seka Chekorsa cooperative union office and ECX Jimma branch

3.3.2. Sampling methods

For the collection of information, stratified random sampling method was applied to reach the final respondent; first segment the population into territories or regions as strata. Then from each territory or stratum, outlet selected by using simple random sampling to reach the outlet. This helped to reach and cover all territory so as to represent the population.

There for, as per Krejcie,*et.al* (1970), the sample size based on 95% confidence interval and 5% error margin presented as follow

Table 3 Sampling methods

S. N	Territory	Number of territory	Number of outlet		
			Exclusive	Nonexclusive	Total
1	Farmer	3	125	2698	2823
2	Cooperative	3	39	0	39
3	Cooperative office	1	16	0	16
4	ECX	1	32	116	148
	Total	8	212	2814	3026

Source: own survey from Seka Chekorsa cooperative union office and ECX Jimma branch

From the farmer side, respondents selected by simple random sampling method, from district cooperative office, primary cooperatives and ECX side, respondents selected based on purposive sampled in the buyer and marketing department Managers, Coordinators and sales promoters from each partners.

Individual farmers

A cooperative purchases coffee from farmers at the market price. The price is determined based on ECX. The research samples were selected from the farmers that sell their coffee to basic cooperative from three kebeles. Farmer was selected based on the Malhorta Naresh, sample size determination.

Table 4 Individual farmers

Population Size	Sample size		
	Low	Medium	High
51-90	5	13	20
91-150	8	20	32
151-280	13	32	50
281-500	20	50	80
501-1200	32	80	125
1201-3200	50	125	200
3021-10,000	80	200	315
1001-35000	125	315	500
35001-150000	200	500	800

(Source: Malhorta Naresh, Marketing Research: an applied approach, 2007)

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Researcher was followed the method of proportional allocation under which the sizes of the samples from the supplier farmers from three kebele /members of basic cooperatives are kept proportional to the sizes of farmers that member to basic cooperatives.

That is, if Pi represents the proportion of population included in stratum i, and n represents the total sample size, the number of elements selected from stratum i is n. Pi

N= total number of farmers to basic cooperatives of the three cooperatives which 2823

n= total sample size which is 125 farmers that the members of basic cooperatives

N1 =total number of the farmers that the member of basic cooperatives of on kebele (wokito madalu=950)

N2= total number of the farmers that the member of basic cooperatives of on kebele (Ilike tunjo=850)

N3= total number of the farmers that the member of basic cooperatives of on kebele (Hunde sakalla=1023)

 P1=n (N1/N) = 125(950/2823) = 42 Farmers that the member of basic cooperative were selected from wokito kebele.

P2=n (N2/N) = 125(850/2823) = 38 Farmers that the member of cooperatives were selected from Ilike tunjo kebele.

P2=n (N2/N) = 125(1023/2823) = 45Farmers that the member of cooperatives were selected from Hunde Sakala kebele.

From the above 42 wokito, 38 Ilike tunjo , and 45 Hunde Sakala kebeles selected farmers were from the each basic cooperatives, which means 125 farmers were selected for research samples out of selected farmers 122(97.6%) farmers return the questioner. Samples were limited to the 125 farmers from three cooperatives because of the manageability of the study, cost and time.

ECX Jimma branch, distirict cooperative office and primary cooperative

The respondents of the target are selected based on purposive sampling in the buyer and marketing department Managers, Coordinators and sales promoters from each group. The respondents are selected 32, 39 and 16 respectively. Generally the respondents from the whole target group are 212 selected peoples.

3.4 Method of Data Analysis and Presentation

The data analysis was based on both qualitative and quantitative data analysis methods. The quantitative data analysis was done used descriptive statistics such as frequency, mean, standard deviation and inferential analysis such as correlation and regression analysis with help of SPSS soft ware package version 20. The finding of each variable is presented used figures, percentages, tables, and charts. Qualitative data to analyze by the process of data reduction, data display, and conclusion draw/verification(Walliman, 2011). The qualitative data collected from individual farmer, primary cooperative, ECX and district cooperative office explain for further detail awareness about the finding of the quantitative data in each variable. The demographic back ground information of the respondent also presented by used descriptive statistics.

3.5 Reliability test

Reliability measures to what extent data collection instrument addresses uniform result throughout repeated trails while validity measures the consistency of the information in which the instrument yields (Leady, 2010). Chronbach Alpha Statistic is the most important tool preferred to the reliability and internal consistency of the data. Chronbach Alpha result has to be above 0.70 to obtain a reliable scale and any scale with Chronbach Alpha which is less than 0.70 has to be excluded (Sekaran and Bougie, 2013).

Table 5 Reliability Test Statistics

Variable	Cronbach Alpha	Number of Items
Information Integration	0.845	4
collaboration and resource sharing	0.736	5
Organizational relationship linkage	0.811	7
Supply chain integration	0.791	5

Source: own Survey result, 2020

Accordingly, Table 5 shows that, the Chronbach alpha statistics based on 30 pilot surveys made found is above 0.7. Cronbach's alpha for the three independent variables and one dependent

variable ranged from 0 .736 to 0.845. Thus, the internal consistency reliability of the measures used in this study can be considered to be good.

3.6 Validity test

Validity is categorized into internal and external validity; where internal validity refers to the level to which its design and the data it yields allows to come up intended and accurate conclusions about cause-and-effect relationship within the data while external validity refers to the level to which the research results apply to situations beyond the research.

The draft research question had been reviewed by ad-visor and coo-ad visor and practitioners directly involved in the Seka Chekorsa coffee products' primary cooperatives supply chain. The research framework also constructed by reviewing different related published literates.

For this research, the respondents selected from the top management of Seka Chekorsa coffee products' primary cooperatives, Seka Chekorsa cooperative office employers, Farmers and ECX. Accordingly, reliable response were reacted for the research question stated at the beginning of the study

In this study, the respondents were clearly communicated on the contents of the questioner as well as the objectives of the research. That is suitable techniques implemented so as to sustain the validity and reliability of the data. Avoided leading questions, taking notes not just depend on conducted a pilot interview; and give the interviewee a chance to sum up and clarify the points they have made.

3.7. Ethical consideration

Respondent were informed about the objective and purpose of the study and verbal consult was obtained for better participation engaged in the study. Participants were also informed their right not to participate in the study at any time. Participants were clearly informed the benefit of the research and thus research has no risk. Participants have been given right to ask questioned or clarification and refuse to give information in any time in the research process if there is any.

CHAPTER FOUR:

DATA ANALYSIS, PRESENTATION AND DISCUSSION

4.1. Introduction

This chapter presents the analysis and interpretation of results; data were collected through questionnaire, interview and documents from farmers, primary cooperative workers, Seka Chekorsa cooperative office and Ethiopian commodity exchange Jimma branch which operate in the supply chain Integration of Seka Chekorsa primary coffee cooperative.

In this research, Statistical Package for social Science programs (SPSS) 20.0 was used for data analysis. The method used in the data analysis includes descriptive analysis, inferential analysis (correlation and regression) and Qualitative analysis (Interview).Response rate totally, 212 questioners prepared, 208 total questioners were distributed out of that all questionnaires were returned, 3 were not correctly filled and rejected, 205 were effectively used for analysis that shows response rate of 96.69%. According to Smith (2002) the return or success rate 50% is 'adequate'; 60% response rate is 'good' and 70% rate or higher is 'very good'. Accordingly, the demographic data of the respondents, descriptive analysis, inferential analysis, interpretation and discussion on the results are presented in the subsequent headlines.

4.2 Descriptive analysis

The study has three independent variables: information integration, collaboration and resource sharing and organizational relation linkage; supply chain integration as a dependent variable. The questionnaire for all independent and dependent variables were developed in five scales ranging from one (1) strongly disagree to five (5) strongly agree, using linker t scale. Where 1 represent strongly disagree, 2 disagree, 3 neutral, 4 agree and 5 strongly agree. All questionnaires were filled conveniently by the available partners. The descriptive statistics were analyzed through frequency, percentage, mean and standard deviation as follows.

4.2.1 Demographic of the respondents

Observing the demographic trend or characteristics of our sample population before starting the data analysis is useful to make the analysis more meaningful for the reader. This part of the

questionnaire requested limited amount of information related to personal and demographic status of respondents.

The purpose of demographic analysis in this research is to describe the characteristics of the sample such as proportion of male and female in the sample, position of respondents, academic qualification of respondents and experience of respondents. Accordingly, these variables are summarized and described in tables shown below.

Table 6 Demographic of the respondents

		Frequency	Percent	Val/ Percent
GENDER	Male	152	74.1	74.1
	Female	53	25.9	25.9
	Total	205	100.0	100.0
Position in organization	Top management	15	7.3	7.3
	M/management	22	10.7	10.7
	Office	46	22.4	22.4
	Member	122	59.5	59.5
	Total	205	100.0	100.0
Qualification	MA	3	1.5	1.5
	BA	10	4.9	4.9
	DIPP	41	20.0	20.0
	HSL	151	73.7	73.7
	Total	205	100.0	100.0

Work Experience	<5	55	26.8	26.8
	5-10	67	32.7	32.7
	10-15	47	22.9	22.9
	>15	36	17.6	17.6
	Total	205	100.0	100.0

Source: Own Survey result, 2020

On the above chart shows that, 74.1% of the respondents are male and the remaining 25.9 % are female which indicates the majority of cooperative supply chain business managed by males.

The above chart presents the number of employers, members and managements in the coffee supply chain organization. From the total respondents, the 7.3% of the respondents are top management of the business organizations while 10.7% of the respondents are middle level, 22.4% of respondents are officers and the remaining 59.5% are members/employer of the business firms. This result shows the respondents can understand and respond the questioners very carefully.

Regarding the educational level of the respondents, 73.7% are high school or less and 26.3 % are diploma or above.

As the above chart presents the operating experience of the supply chain partners of Seka Chekorsa Coffee Cooperatives basic union, more than 59% of the respondents have 10 years and less experience and 40% have more than 11 year experience on the market. The information of the organization in the supply chain experience shows us they have good understanding on the practice and level of the supply chain integration among the partners.

In general, the demographic data from the above tables showed that, the respondents are capable of responding the questioner and can give valuable inputs to the research to come to the end result.

4.2.2 Supply Chain integration Practices

As a determinant of partner based SCI, table 7 to 18 presents the items from information integration, collaboration and resource sharing and organizational relation linkage and supply chain integration. All parts of the determinants were processed analyzed and interpreted in order to achieve the desired result as follows.

Accordingly, in this study the researcher applies mean and standard deviation as the best measure of descriptive analysis based on the mean range developed by Al-sayaad et al. (2006). Therefore, the researcher used the mean range value as a rule of thumb to describe the study variables.

Table 7 Mean range table (Rule of thumb)

No	Mean Range	Response option
1.	[1.00 -1.80]	Strongly Disagree
2.	[1.90 -2.60]	Disagree
3.	[2.70 -3.40]	Neutral
4.	[3.50 -4.20]	Agree
5.	[4.30 -5.00]	Strongly Agree

Source: (Al- sayaad et al. 2006)

Regarding the standard deviation, it measures the distribution of the score from the mean. given the distribution of the scores is symmetrical and if we divide the distribution into standard deviation from the mid-point, 99% of the score lie between 3 stranded deviation. In this research result considered valid if the standard deviation is below 3 and will be rejected if the standard deviation is above 3. (Brock, n.d.).

For this analysis the researcher used the above mean range value and standard deviations as the best measure of descriptive analysis of study variables as follows

4.2.2.1 Descriptive Statistics of Information integration
Table 8 Descriptive Statistics information Integration

Items Information Integration	N	Mean	Std. Deviation
Information sharing practice	205	3.92	0.830641
Information technology to access information all partners	205	3.77	0.875
Accessibility of Information	205	3.68	0.909
Real-time information from the suppliers to end customers	205	3.79	0.961
Group Mean and SD		3.79	0.462

Source: (SPSS output Own Survey result, 2020)

Information integration is one of the most significant dimensions of supply chain integration. As Moharanan et.al (2012) emphasized the importance of information for supply chain integration as the main fastener of business firm's process, structure and activities among the partners for their sustainability. In addition, the success of the supply chain also enhanced when the supply chain integration supported by information integration (Frohlich and Westbrook, 2001). In the current dynamic market, one of the most significant input to develop the competitive advantage is capability of accessing information due time. In this situation Fasika et.al (2014) research also shows the information integration level in manufacturing industry/service in developing countries rated at low level and mainly supported by traditional way of information communication like letter, telephone and fax and verbal instructions.

Mohr and Spekman (1994) stated that the information sharing/flow refers to the extent to which critical and proprietary information is communicated to one's supply chain partner. The theoretical evidence confirms that supply chain integration rides on the back of information in order to meet the required resources at the right time, and at the right place, seamless and instantaneous information flow should exist across the value chain (Russell, 2006).

With respect to the above theoretical and empirical justification, this study investigated the practices of information integration among the supply chain participants of the coffee supply chain. Accordingly, the researcher used four items related to information integration practice. The group mean of the information integration along supply chain is 3.79 and SD=0.462 this indicates the better integration of information. Relatively, the high and the lowest mean values are scored by overall efforts of supply chain information sharing with partners for decision making improvement and using information technology to access by all partners to information integration between supply chain of primary cooperatives that is 3.92 and SD= 0.831 and 3.77 and SD= 0.875respectively.

Regarding the standard deviation, it measures the distribution of the score from the mean. given the distribution of the scores is symmetrical and if we divide the distribution into standard deviation from the mid-point, 99% of the score lie between 3 stranded deviation. In this research result considered valid if the standard deviation is below 3 and will be rejected if the standard deviation is above 3. (Brock, n.d.).

The following questions, (corresponding variable stated) had the lowest standard deviations:

Information sharing practice (0.831)

Usage of Information technology to access information all partners (0.875)

Accessibility of Information (0.909)

Access of real-time information from the suppliers to end customers (0.906)

These Standard deviation values indicate that the respondents hold similar opinions and strongly agree in relation to these statements and variables.

4.2.2.2 Descriptive Statistics of collaboration and resource sharing
Table 9 Descriptive Statistics of collaboration and resource sharing

collaboration and resource sharing	N	Mean	Std. Deviation
Participation of partners in decision making process	205	4.07	0.874
Realizes joint action towards common goal	205	3.87	0.797
Involvement of Partners on designing and development of packaging	205	3.94	0.832
Agreement on delivery frequency	205	3.85	0.864
There is Common use of logistical equipment	205	3.91	0.940
Group mean		3.928	0.523

Source: Own Survey result, 2020

collaboration within the supply chain is the most important activity to manage the material, information as well as fund flows throughout the supply chain members (Arshinder, et al., 2008).collaboration and resource sharing is one of the most significant dimensions for successful supply chain integration which look up synergy based on trust and inter dependency among the supply chain partners (Rafaela, et al., 2012).

The collaboration and resource sharing practice in Seka Chekorsa coffee primary cooperative supply chain rated at middle level. As per the table above, collaboration and resource sharing practice has been measured by five items including; partners' participation on decision making, realization of joint objectives, involvement on designing and development of package in, Agreement on delivery frequency as well as common use of logistics equipment among the partners.

In this regard, as it indicated on table 9, practically there is common usage of logistical equipment practice among the supply chain members rated (M=3.91, SD= 0.940).

On the other side, table 9 shows that, practice of participating on decision making process is rated at high level (M=4.07, SD=0.874). Decision making process involves sharing of price and non-price information among the stakeholders. In this situation the result indicated on table 9 that there is no lack of trust among cooperative in the supply chain to share important information for decision making. From focus group discussion, the supplier of coffee farmers are main participate for decision making especially on price setting is trust which the partners may focus for their individual interest rather than focusing group interest. As Matopoulos et al., 2007 description, trust is one of the significant influential items to build collaboration among partners for decision in the supply chain. They also highlighted the influential power of trust to create strong relationship by developing inter company dependencies between business firms.

The other basic item to measure the level of collaboration and resource sharing variable is how partners realize the joint action towards their common goal. In this regard, as per table 9 realization of joint action towards common goal is rated (M=3.87, SD=0.797).

Rafaela et al., (2012) suggest that, the level of Cooperation among the supply chain partners determined by the practice how members realize the joint action for their common goal (Rafaela, et al., 2012). However, as indicated on table 9, in Seka Chekorsa Coffee primary cooperative supply chain partners, the level of cooperation is at middle rate. This implies most of the partners in the supply chain strive by their own way to maximize individuals as sales volume as well their profit.

As Rafaela et al (2012) conceptual framework, the level of collaboration and resource sharing also characterized by how partners involved in designing and development of packaging to facilitate handling and transportation as well as to reduce logistics cost. In this situation the level of participation of partners in designing and development process is rated as agree level (M=3.94, SD=0.832).

The other basic component to measure collaboration and resource sharing is how partners in the supply chain agree on product delivery frequency. Joint agreement on delivery frequency determines the production cycle length and for joint economic procurement, production and delivery policy (Arshinder, et al., 2008). Hence, the level of agreement on delivery frequency rated at agree level (M=3.85, SD=0.864). This indicates the product delivery to the final market is

determined by the farmers' production time of coffee and cooperative processing for quality other the opening of coffee market.

In general, table 9 indicates that the level of collaboration and resource sharing in Seka Chekorsa coffee primary cooperatives supply chain rated at high level (M=3.92, SD=0.523). In market of ECX Jimmaa branch, coffee of Seka Chekorsa is selling to the exporters with other competitors' sacks which has significant impact on the visibility of the product and ultimately affect the future performance.

Regarding the standard deviation, it measures the distribution of the score from the mean. given the distribution of the scores is symmetrical and if we divide the distribution into standard deviation from the mid-point, 99% of the score lie between 3 stranded deviation. In this research result considered valid if the standard deviation is below 3 and will be rejected if the standard deviation is above 3. (Brock, n.d.).

The following questions, (corresponding variable stated) had the lowest standard deviations:
 Participation of partners in decision making process (0.874)
Realizes joint action towards common goal (0.797)
Involvement of Partners on designing and development of packaging (0.832)
Agreement on delivery frequency (0.864)
There is Common use of logistical equipment (0.940)
These Standard deviation values indicate that the respondents hold similar opinions and strongly agree in relation to these statements and variables.

4.2.2.3. Descriptive Statistics of Organizational relationship linkage
Table 10 Descriptive Statistics of Organizational relationship linkage

Item Organizational relationship linkage	N	Mean	Std. Deviation
supply chain encourage team building for collaboration	205	3.29	1.172
Stable links with partners of the supply chain have be	205	3.72	.648
There is practice of Sharing of skill, Ideas and institutional	205	3.81	.692
Joint Objectives have been established among supply chain	205	3.83	.820

Common performance indicators have been established	*205*	*3.79*	*.754*
Active communication channel with members of the sup	*205*	*3.75*	*.742*
Integrated behavior has been established to promote	*205*	*3.80*	*.774*
Group mean		*3.712*	*0.37129*

The level of supply chain Integration characterized by the level of inter-organization relationship linkage among different business firms in the supply chain. Inter-organizational relationship determined by the existence of dependency one on another for the importance of shared goals and benefits as well as creating collaborative rules and practice (Nicholls and Huybrechts, 2014). On the other side, Rafaela et al (2012) also highlight the importance of clear strategic vision in the organizational relationship linkage to achieve common vision, objectives, share risk and reduce costs and to define their common performance.

From the respondents in the supply chain of seka chekorsa coffee product primary cooperatives, the level of organizational relationship linkage presented in the above (Table 10)

The first and the most important element on inter organizational relationship linkage is the creation of active communication channel among business firms along the chain. In this situation table 10 shows that, the respondents agree for the presence of active communication channel in the seka chekorsa coffee primary cooperative supply chain (M=3.29, SD= 1.172). Hence the presence of active communication channel rated as middle level. On the other side, from semi structured interview with manager of cooperatives, the cooperative established clear organizational structure to reach the ultimate customer (sales manager- sales coordinator- sales supervisor- sales promoter) in every sales region. This chain is designed to develop high level of information flow as well as to reach the customer to promote the sales activity as well as to give support to the outlet whenever needed. From these case, respondent agree for the presence of active communication channel so that the information communication is sufficient and at regular time.

The research result also shows that, the mean values of the respondents agree for the presence of common performance indicators. This result indicates the supply chain partners agree on the existence of aligned performance measurement from farmers to markets (M=3.72, SD=0.648).

Regarding the establishment of integrated behavior along the supply chain partners, the mean of the partners believed on the existence of integrated behavior among the partners. As the result showed in Table 10 the level of establishment of integrated behavior within the supply chain partner is rated middle (M=3.81, SD=0.692)

The practice of developing joint objective in the supply chain was measured as; (M=3.83, S=0.821) and mean of the respondents agree on the establishment of objective jointly with partners. The practice of establishment a joint objectives is rated as medium (M=3.83, S=0.821). According to the semi structured interview with the managers, there is the practice of joint meeting with suppliers and main customers to establish objectives and sales target at yearly base.

The next basic item used to measure the level organizational relationship linkage is how skill, ideas, and institutional culture being shared among the supply chain partners. In this situation the average results of the respondents are agree for the practice of sharing skill, ideas and cultures believed on it. In this regard, the practice and level of knowledge sharing among the partners in the supply chain rated at middle level (M=3.79, SD=0.754).

As per the qualitative information got from sales and marketing department of Seka Chekorsa coffee primary cooperative, there is practice of giving technical training for farmers in different time. In addition, the cooperative door is also open to customers to visit the production process to build knowledge on the cooperative processing product. But they also believed that the practice of sharing knowledge and ideas is not at optimal level and needs improvement. Regarding institutional culture, the cooperatives is doing different promotional events to share the culture of the cooperative to farmers. It also observed that, the institutional culture among cooperative and some exclusive outlets is at good start.

Organizational relationship linkage also described in terms of the existence of long term contract or relationship among partners. In this regard, more of the respondents mean values are above the agree level on the existence of stable linkage with partners. On the other side the qualitative information got from semi structured interview with the manager and farmers, the cooperatives are doing with farmers for more than 13 years at contract of yearly renewal base. It shows the existence of long term relationship with farmers or suppliers. On the contrary from Table 10 describes the level of establishment of stable link with partners in the supply chain good (M=3.75, SD=0.742)

The last but not the least parameter to measure the level of organizational relationship linkage considered is, how the supply chain encourage team work or doing together for their common goal. Accordingly, the value (M=3.80, S=0.774) on the practice of team work agree indicated. The level of encouraging team work in Seka Chekorsa coffee primary cooperative supply chain rated was above middle level.

In general the practice and level of organizational relationship linkage is rated was above medium level (M=3.712, SD= 0.315) and but needs improvement.

Regarding the standard deviation, it measures the distribution of the score from the mean. given the distribution of the scores is symmetrical and if we divide the distribution into standard deviation from the mid-point, 99% of the score lie between 3 stranded deviation. In this research result considered valid if the standard deviation is below 3 and will be rejected if the standard deviation is above 3 (Brock, n.d.).

The following questions, (corresponding variable stated) had the lowest standard deviations:
Supply chain encourage team building for collaboration (1.172)
Stable links with partners of the supply chain have be (0.648)
There is practice of Sharing of skill, Ideas and institutional (0.692)
Joint Objectives have been established among supply chain (0.82)
Common performance indicators have been established (0.754)
There is active communication channel with members of the supply (0.742)
Integrated behavior has been established to promote (0.774)
These Standard deviation values indicate that the respondents hold similar opinions and strongly agree in relation to these statements and variables.

4.2.2.4 Descriptive Statistics of Supply chain integration

Table 11 Descriptive Statistics of supply chain integration

supply chain integration	N	Mean	Std. Deviation
High-level information integration to all partners for collaborative decision making	205	3.72	0.9
high level of continuous information sharing/integration among partners	205	4.02	0.822
Partners overall integration can be said as better	205	3.68	1.082
High level of customer response	205	3.91	0.83
Builds high sustainable customers' satisfaction on the product and service quality	205	3.79	0.902
Grand mean and SD	205	3.8244	0.44324

Source: Own Survey result, 2020

As it can be seen from the above table 11, for the first item of the mean score is (M=3.72, SD=0.9). In this regard, the respondents agreed on the supply chain integration is high-level information integration to all partners for collaborative decision making. This shows that the respondents remain agreed to this statement.

Regarding the second item of the mean score (M=4.02, SD=0.822) is high level of continuous information sharing/integration among partners, the respondents agreed on the integration among partners to statement

With regards to the third item, the Partners overall integration can be said as better, us the result SCCPC service supply chain integration could enhance partners those who state agree were the mean score of item is (M=3.68, SD=1.082). This shows that the respondents are expressed their agreement to this statement.

High level of customer response or high level of integration among partners in the supply chain will bring the total logistics cost low. From the Table 11 shows that the supply chain integration contribution to lowering partners' cost rated as significant (M=3.79, SD=0.902). This shows that the respondents are expressed their agreement to this statement.

According to the respondents results show that (M=*3.*79 SD=0.902) SCCPC builds high sustainable customers' satisfaction on the product and service quality.

The main objective of the cooperative to support these partners of the company is to build model economy which promote SCCPC and build loyal customers. These customers respond to the cost reduction the same. As the result, the practice and level of being helped to reduce total logistical cost is rated at middle level.

Regarding the standard deviation, it measures the distribution of the score from the mean. given the distribution of the scores is symmetrical and if we divide the distribution into standard deviation from the mid-point, 99% of the score lie between 3 stranded deviation. In this research result considered valid if the standard deviation is below 3 and will be rejected if the standard deviation is above 3 (Brock, n.d.).

The following questions, (corresponding variable stated) had the lowest standard deviations:
High-level information integration to all partners for collaborative decision making (0.9)
High level of continuous information sharing/integration among partners (0.822)
Partners overall integration can be said as better (1.082)
A high level of customer response (0.83)
Customer complaints are reduced among the partners due to high level integration (0.902)
These Standard deviation values indicate that the respondents hold similar opinions and strongly agree in relation to these statements and variables.

4.2.2.5 Comparison of Supply Chain Integration Dimensions Descriptive Mean Score
In order to compare the respondents supply chain integration, descriptive statistics of mean and standard deviation was used. The mean indicates to what extent the sample group averagely agrees or disagrees with the different statements of supply chain integration practices used in this study, where as the standard deviation describes how the responses are diverse from the mean for a given practices items. The higher the mean, the more the respondents agree with the statement while the lower the mean the more the respondents disagree with the statement.

In this section, each practices of supply chain integration results from the respondents was compared using the grand mean and standard deviation to show supply chain integration for Seka Chekorsa coffee primary cooperative. In summary the mean and standard deviation of each supply chain integration practices are presented (see table 12 below).

Table 12 Summarizes the Mean score and standard deviation results of the three determinants of supply chain integration.

Variables	N	Mean	Std. Deviation
	statistic	statistic	statistic
Information Integration	205	3.7902	0.46233
collaboration and Resource sharing	205	3.9288	0.52300
Organizational relationship linkage	205	3.7129	0.31502
Group Mean		3.82	0.44324

Source: Own Survey result, 2020

As described in the table 12,the supply chain integration practices with the highest mean score is collaboration and Resource sharing with a mean value of 3.92;followed by Information Integration 3.84 and finally Organizational relationship linkage 3.71 respectively ,which indicate that the respondents show an agreement to the questions raised during the survey. On the other hand, high and below 3standard deviation is scored for Information Integration, followed by collaboration and Resource sharing and Organizational relationship linkage among the entire practices implying that the data is slightly wide spread from the mean. That means the respondents hold similar opinions and agree in relation to these statements and variables.

In general, according to the data available in the above table (refer table 12), the level of information integration, collaboration and resource sharing, and organizational relationship linkage practice rated at better level from the supply chain integration.

4.2.3 Inferential statistics

The results of inferential statistics were presented in this section and Pearson's product moment correlation coefficient and regression analysis were performed for the purpose of achieving the objectives of the study. With the support of these statistical techniques, conclusions are drawn with regard to the sample and decisions are made with respect to the research questions.

4.2.3.1 Correlation Analysis

Pearson correlation coefficient

Pearson correlation coefficient (r) is a measure of the strength of the association between the two variables. Theoretically, there could be a perfect positive correlation between variables which is represented by 1.0(plus1), or a perfect negative correlation which would -1.0(minus 1). The correlation coefficient is a measure of strength of the relationship (among different variables) that lies between -1 and 1 (Wegner, 2012). A correlation test therefore shows either a negative or positive relationship, which can either be weak or strong , depending on the range of value of the coefficient: 0.3-weak,-0.5-moderate, 0.7-strong (cooper,2010).

Table 13 Rule of thumb for correlation coefficient

Range of coefficient Description of strength	Value
$\pm$ 0.01 to $\pm$ 0.29	Weak
$\pm$ 0.30 to $\pm$ 0.49	moderate
$\pm$ 0.50 to $\pm$ 1	Strong

Source: cooper, 2010.

Therefore, the researcher was conducted correlation analysis to ascertain if any relationships existed between the measured variables (information integration, collaboration and resource sharing, and organizational relationship linkage and supply chain integration) and if so, the extent of such relationships. These values were then used to evaluate the existence of any relationships between.

Table 14 Correlation

		Information integration	collaboration and Resource sharing	organizational relationship linkage	*Supply chain integration*
Information integration	*Pearson Correlation*	*1*	*.110*	*.033*	*.390***
	Sig. (2-tailed)		*.117*	*.640*	*.000*
	N	*205*	*205*	*205*	*205*
collaboration and Resource sharing	*Pearson Correlation*	*.110*	*1*	*.019*	*.292***
	Sig. (2-tailed)	*.117*		*.787*	*.000*
	N	*205*	*205*	*205*	*205*
organizational relationship linkage	*Pearson Correlation*	*.033*	*.019*	*1*	*.336***
	Sig. (2-tailed)	*.640*	*.787*		*.000*
	N	*205*	*205*	*205*	*205*
Supply chain integration	*Pearson Correlation*	*.390***	*.292***	*.336***	*1*
	Sig. (2-tailed)	*.000*	*.000*	*.000*	
	N	*205*	*205*	*205*	*205*

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

4.2.3.1.1 Correlation Analysis between Information integration and other Independent variables

Based on the finding of this study, Correlation matrix reveals that there is positive inter-relationship among the practices of Supply chain integration in Seka Chekorsa primary cooperative. Weak inter correlation between information integration and collaboration and Resource sharing (r=0.11). Significant Weak positive inter correlation between information integration and organizational relationship linkage(r=0.033).

This indicates that information integration may affect the practice based Supply chain integration by influencing organizational relationship linkage and collaboration and resource sharing of Seka Chekorsa primary cooperative. The coefficient between independent variables should be less than 0.9. This since if the value is over 0.9 the variables is measuring almost the same variable and can therefore be merged into one variable (Bryman and Bell, 2011).

But according to the result of this study all independent variables inter correlation with information integration is less than 0.9.This indicate that the inter relationship between information integration and other independent variables is within the acceptable range. Therefore information integration independently practiced Supply chain integration. Lastly the correlation coefficient between information integration and Supply chain integration is 0.390^{**}.These confirms that there is a moderate positive relationship between information integration and Supply chain integration. The positive relationship derived from the correlation analysis implies that the information integration is essential for building strong Supply chain integration and all correlations are significant at the 0.01 level of significance.

4.2.3.1.2 Correlation Analysis between collaboration and Resource sharing and other Independent variables

Based on the finding of this study, Correlation matrix reveals that there is positive inter-relationship among the practices of Supply chain integration in Seka Chekorsa primary cooperative. Weak inter correlation between collaboration and resource sharing and information integration (r=0.11). Significant Weak positive inter correlation between collaboration and resource sharing and organizational relationship linkage(r=0.033).

This indicates that collaboration and resource sharing may affect the practice based Supply chain integration by influencing organizational relationship linkage and information integration of Seka Chekorsa primary cooperative. The coefficient between independent variables should be less than 0.9. This since if the value is over 0.9 the variables is measuring almost the same variable and can therefore be merged into one variable (Bryman and Bell, 2011).

But according to the result of this study all independent variables inter correlation with collaboration and Resource sharing is less than 0.9.This indicate that the inter relationship between collaboration and Resource sharing and other independent variables is within the acceptable range. Therefore collaboration and Resource sharing independently determining Supply chain integration. Lastly the correlation coefficient between collaboration and Resource sharing and Supply chain integration is 0.292^{**}.These confirms that there is a weak positive relationship between collaboration and Resource sharing and Supply chain integration. The positive relationship derived from the correlation analysis implies that the collaboration and Resource sharing is essential for building strong Supply chain integration and all correlations are significant at the 0.01 level of significance.

4.2.3.1.3 Correlation Analysis between organizational relationship linkage and other Independent variables

Based on the finding of this study, Correlation matrix reveals that there is positive inter-relationship among the practices of Supply chain integration in Seka Chekorsa primary cooperative. Weak inter correlation between organizational relationship linkage and information integration (r=0.033).Significant weak correlations were found between 'organizational relationship linkage and collaboration and resource sharing(r= 0.019)

This indicates that organizational relationship linkage may affect the customer based supply chain integration by influencing information integration and collaboration and resource sharing of primary cooperative. The coefficient between independent variables should be less than 0.9. This since if the value is over 0.9 the variables is measuring almost the same variable and can therefore be merged into one variable (Bryman and Bell, 2011).

But according to the result of this study all independent variables inter correlation with organizational relationship linkage is less than 0.9.This indicate that the inter relationship between organizational relationship linkage and other independent variables is within the acceptable range. Therefore organizational relationship linkage independently determined supply chain integration. Lastly the correlation coefficient between organizational relationship linkage and Supply chain integration is 0.336^{**}.These confirms that there is a moderate positive relationship between organizational relationship linkage and Supply chain integration .The positive relationship derived from the correlation analysis implies that the organizational relationship linkage is essential for building strong Supply chain integration and all correlations are significant at the 0.01 level of significance.

4.2.3.1.4 Correlation Analysis between Supply Chain Integration (Dependent variable) and Independent variables

Table 14 above showed that all of the variables had positive correlation with partners of Supply chain Integration as well as had positively correlated with each other. However, this matrix may show the causal relationship between variables and the magnitude of the correlation between variables. The correlation coefficient between practices and Supply chain integration had a moderate direct relationship. The result of correlation analysis prove that there exist positive moderate correlation between Information integration and Supply Chain Integration intention and integration preference of partners in the coffee primary cooperative with correlation coefficient of

(0.390$^{**)}$. There was a weak positive relationship between collaboration and resource sharing and Supply Chain Integration with correlation coefficient of 0.292**. Similarly, the correlation coefficient between organizational relation linkage and supply chain integration is (0.336$^{**)}$ confirming a moderate direct relationship.

Thus, the analysis indicated that Information integration was the most correlated variable with the Supply Chain integration(0.390$^{**)}$ and followed by organizational relation linkage with Supply Chain integration of partners in the coffee primary cooperative of Seka Chekorsa (0.336**) and there was also a weak positive relationship between collaboration and resource sharing and Supply Chain Integration of the dependent variable with the correlation coefficient of (0.292**).Therefore, Information integration and organizational relation linkage have a moderate relationship and a significance effect on Supply chain integration.

Lastly, it proves that Information integration was the most influential practice of partners based Information integration in the coffee primary cooperative of Seka Chekorsa and followed by Supply chain integration.

4.2.3.2 Test of Normality and multi-collnearity Assumption

4.2.3.2.1 Normality Assumption

Normality of a data should be tested before conducting the regression analysis because multiple regressions require that the independent variables in the analysis to be normally distributed.

According to Brooks (2008), as cited by Yodit (2017) if the residuals are normally distributed, the histogram should be bell-shaped and thus this study implemented graphical methods to test the normality of data. From the histogram figure (see figure 3), it can be noted that the distribution is normal curve, demonstrating that data witnesses to the normality assumption.

As the assumption holds as the histogram was a bell-shaped and the residuals were normally distributed around its mean of zero which indicates that the data were normally distributed and the inferences made about the population parameters from the sample statistics tend to be valid. The residual is given in Figure 4.

In addition to the histogram of residuals, in order to test the model fitted with multiple regression, Normal Probability Plot is also tested. NPP is approximately a straight line and it can be said that variables of interest is normally distributed. NPP is given in Figure 5.

The adequacy of the model also tested used histogram which adheres to the normality assumption (Mean = 5.21E-15, Std. Dev. = 0.993, N=205).

4.2.3.2.2. Normal probability plot Test

According to Field,A.(2009), the regression analysis to establish significance of the relation should be accepted. Multiple linear regression models assume that there is a linear relationship between the independent variables and the dependent variable. It refers to the degree to which the change in the dependent variable is related to the change in the independent variable i.e.X1 (Information integration), X2(collaboration and resource sharing), X3(Organizational relation linkage) is normal plots of the regression residuals through SPSS software were used is normal plots of the regression residuals through SPSS software were used.

As presented in the scatter diagram in figure 4 above, all the plots are in the first quadrant and the line of best of fit indicates an estimate line that is increasing positively upwards. This shows that there is a positive linear relationship between independent variables, the dependent variable and residuals of the model are approximately linearly distributed. Because a straight line seems to fit the data reasonably well.

4.2.3.2.3 Multi collnearity Test Assumption

In regression, multi collnearity occurs when independent variables in the regression model are more highly correlated with each other than dependent variable when the independent variables the regression model is highly correlated with each other; they are basically measuring the same thing. In other words, when two variables are highly correlated, they both communicate essentially similar information. One way to examine multi colinearity is to examine correlations among the independent variables. If a correlation matrix demonstrates correlation of 0.90 or higher among the independent variables, they may be a problem with multicollinearity. Hair et al, (2006) argued that correlation coefficient below 0.90 may not cause   serious multi collinearity problem, cited by Muhammed (2012). Multi-collinearity can also be detected using tolerance value and variance inflatorfactor (VIF) value. An insignificant tolerance value point to the variable under discussion is almost a perfect liner combination of the independent variables already in the equation and that it should be dropped out from to the equation.

Multi collinearity does not exist among all the independent variables provided that the tolerance value of all the independent variables was greater than 0.1 and the VIF values of all the

independent variables are also less than 10. As you can see from table 15 below all the independent variables are greater than 0.1 and the VIF value of all the independent variables are also less than 10.

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	Information integration	.987	1.013
	collaboration and Resource sharing	.987	1.013
	organizational relationship linkage	.998	1.002

a. Dependent Variable: Supply chain integration

Source: own survey SPSS result, 2020

As it can be seen from the above table the tolerance value of all independent variables is above 0.1 and also their VIF value is below 10 which indicate that there is small degree of multi-colinearity among variables.

4.2.3.2 Regression Analysis

As shown in the table 15 above the tolerance values of all the independent variables was greater than 0.1 and the VIF values of all the independent variables were less than 10. This indicates that model I was free from multi-collinearity. Hence, there was no problem of mufti-collinearity between the independent variables in the model. Therefore regression analysis was conducted.

This regression analysis was conducted to know by how much the independent variable explains the dependent variable. It is also used to understand by how much each independent (information integration, collaboration and resource sharing, and organizational linkage) explains the dependent variable that is supply chain integration. The results of the regression analysis are the following.

4.2.3.2.1 Coefficient of Multiple Determinations (R^2)

Coefficient of practices measures how well the regression model explains about the variation of dependent variable (Ghozali,2013). The closer R^2 value to 1, the better the independent variables can predict the dependent variables.

The coefficient of multiple determinations R^2 is the percent of the total variation explained by the regression look at the model summary table (16),the three independent variables that constitute the information integration, collaboration and resource sharing, and organizational linkage of coefficient of determination R^2 is 0.205,which implies that there is significant explanatory power and also 20.5% variation on dependent variable is caused by independent variables and the remaining 79.5% is practiced by other unknown variables. The value of"F" is 33.147 at 0.000 significant levels.

Table 16 Model Summary

Model	R	R Square	Adjusted R Square	Std.Error of the Estimate
1	.453[a]	.205	.193	.39814

Predictors: (Constant), information integration, collaboration and resource sharing, and organizational linkage

Source: Own survey SPSS result, 2020.

From the model summary in table 16, the value (R=.453[a]) are the multiple correlation coefficients between independent variables: information integration, collaboration and resource sharing, and organizational linkage and the dependent variable namely supply chain integration.

Table 16, Shows how well the regression model explains about the variation of dependent variables. The higher the value of R^2, the better independent variables in explained the dependent variable.

Based on table 16, it can be seen that the R^2 is 0.205. This indicate that 20.5% of the variance in practices of supply chain integration can be explained by the variance of the practices of Supply chain integration (information integration, collaboration and resource sharing, and organizational linkage) taking in to account the sample size and independent variables.

Besides, this also indicates that there are 79.5% other factors (exogenous variables) that can't be explained in this research but have significant effect towards partners supply chain integration in the primary coffee cooperative.

Positive and significance of all values shows the model summary is also significant and therefore gives logical support to these models.

The value of adjusted R square i.e. 0.193 give some idea of how well the model generalizes and ideally one would like its value to be the same or very close to the value of R square. In this study, the difference between the value of R square and adjusted R square is 0.205-0.193=.012 (about 1.2 percent). This shrinkage means that if the model was derived from the population rather than from the sample, it would account for approximately 1% less variance.

The standard error of the estimate is a measure of the variability of the multiple correlations. Therefore, as shown in the model summary for the regression analysis table16 above the standard error estimate of this model summary is 0.39814. This implies that the variability of the multiple correlations is much as this numerical. Positive and significance of all values shows that, the model summary is also significant and therefore gives logical support to this study model. The model is statistically significant or the p-value for the model is less than (0.01).This means the fitness of the model in explaining supply chain integration is influenced by the independent variables considered.

4.2.3.3. Analysis of Variance (ANOVA)
Table 17 Results shows analysis of variance (ANOVA) of Regression Analysis

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8.217	3	2.739	17.280	.000[b]
	Residual	31.861	201	.159		
	Total	40.078	204			

a. Dependent Variable: *Supply chain integration*
b. Predictors: (Constant), ORL, crs, ii
Source: Own survey SPSS result, 2020

In the above ANOVA table 17, the column labeled "sum of squares" describes the variability in the supply chain integration value of the regression. Analysis of variance (ANOVA) of regression analysis between independent variables considered and dependent variable of supply chain integration were examined. The analysis of variance tells us whether the model overall results in a significantly good degree of prediction of the outcome variable.

The regression Sum of squares is the difference between Total Sum of Squares and Residual Sum squares (TSS-RSS=40.078-31.861=8.217).Here, each sum squares (i.e., Regression, residual and Total under the source column) has a corresponding degrees of freedom (df) associated with it. Total degree of freedom is n-1(df =205-1=204), one less than the number of observations. The regression degree of freedom for the above table is three (3), which is the number of independent variables (information integration, collaboration and resource sharing, and organizational linkage). The residual sum of squares (residual for left over) is sometimes known in the literatures as Error Sum of Squares is that part still cannot be accounted for after the regression model is fitted. It has 201 degrees of freedom (=204-3) for this research paper. The mean squares are the sum of squares divided by the corresponding degrees of freedom. The regression model has a mean square of 2.739= (8.217/3) and the residuals mean square is 0.159= (31.861/201).

F-Ratio is a measure of how much the model has improved the prediction of the dependent variable (supply chain integration) compared to the level of in accuracy of the model (Field, 2009). F-ratio which is calculated as mean square regression divided by mean square residual. The value of F-statistics is 17.280= (2.739/.159). In general the above 17 ANOVA table shows a strong relationship between the dependent and independent variables of the study with F-statistic or F-ratio of 2.739 for the analysis, and is worth-mentioning that the F- value is highly significant (as p=.000<.01). The significant level in ANOVA table shows that the combination of the variables significantly predicts the dependent variable.

4.2.3.3.1 Test of Significance

Coefficient table shows which variables are individually significant predictors of the dependent variable standardized Beta coefficient show the contribution of an individual variables. The Beta Weight is the average amount the dependent variable increases when the independent variable increase by one standard deviation (all other independent variables are being held constant).

Table 18 Coefficients

Model		Un-standardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.752	.457		1.646	.101
	Information integration	.411	.061	.403	6.972	.000
	collaboration and Resource sharing	.252	.054	.297	4.621	.000
	organizational relationship linkage	.460	.089	.327	5.898	.000

a. Dependent Variable: Supply chain integration

b. Predictors: (Constant), organizational relationship linkage,

Information integration, collaboration and Resource sharing

Source: Own survey SPSS result, 2020.

The above table 18, coefficient of regression shows between independents (organizational relationship linkage, Information integration, collaboration and Resource sharing) and dependent variable Supply chain integration.

The beta value tells what degree each independent variable affects the outcome if the effects of all other predictors are held constant. Each of the beta values has an associated standard error indicating to what extent these values would vary across different samples, and these standard errors are used to determine whether or not beta value differ significantly from zero.

The t-test associated with B-value is significance (p or sig value is less than 0.05) then the predictor is making significant contribution to the model. The smaller the value of the sign.(the larger the value of t), the greater the contribution of that predictor. For this model, Information integration (t(205)=6.972,p<.05), collaboration and Resource sharing(t(205)=4.621,p<.05), organizational relationship linkage (t(205)=5.898,p<.05.

The Standard deviation or standard error under this study as measured of the similarity of beta value across the sample partners. If the standard error is very small, then it means that most samples are likely to have a beta-value similar to the one in our sample because of there is little variation across sampled partners. When the standard error is small even a small deviation from

zero can reflect a meaningful difference because beta is representative of the majority of possible samples.

4.2.3.3.2 Beta coefficient

Beta coefficient is determined in both un-standardize and standardize coefficient. Standardize means that the values for each of the different variables have been converted to the same scales that you can compare them. To compare the different variables, it is important that to look at the standardize coefficient.

4.2.3.3.3 Un-Standardized Beta coefficient

Under chapter three of methodology part the model specification of the variables, it was said that un-standardized coefficients beta ($\beta 1$ up to β 3) are the coefficients of the estimated regression model. Hence, the model of partners of supply chain integration can be written including term (ε), in this form.

$$Y=\beta_0+\beta_1 X_1+\beta_2 X_2+\beta_3 X_3 +\varepsilon$$

Where, **Y**= Dependent Variable (supply chain integration).

$\beta 1$= un- standardized regression coefficient of information integration

$\beta 2$= un- standardized regression coefficient of collaboration and resource sharing

$\beta 3$= un- standardized regression coefficient of organizational relation linkage

ε=error term

Taking into account to consideration the results from table 18, the regression equation for the study was as follows:

$Y=0.752+0.411X_1+0.252X_2+0.460 X_3+0.457$

Table 18, indicated detail model parameters (the beta value) and the significance of values "a" was the Y intercept and this value for the constant. So, from the above table, a is 0.752, and this can be interpreted as meaning that if all the partners of supply chain integration practices were to be zero, the model predicts that the cooperatives had 75.2% of their partners chain integration are performed. The value of II represents 0.411, the gradient of the regression line. Even if this value is the slope of the regression line, it is more use full to think of this value as representing the change in the outcome associated with a unit change in the predictor. Therefore, keeping other all,

variables constant, if the predictor variable is increased by one unit (if respondents information integration for coffee primary cooperative is increased by 1) the model predicts 41.1% extra performance. The same is true for collaboration and resource sharing, and Organizational relation linkage. If respondents collaboration and resource sharing for primary cooperative is increased by 1 the model predicts 25.2% extra performance. For which an increase in one unit of Organizational relation linkage can result in an increase in chain integration of supply by 46.9%.

The model of partner supply chain integration can be written in the following form by incorporating error term (ε)

Supply chain integration = 0.752+0.411information integration + 0.252collaboration and resource sharing $+$ 0.460Organizational relation linkage + 0.457error term

4.2.3.3.4 Standardized Beta Coefficient

Standardized coefficients are the coefficients which explain the relative importance weight of explanatory variables and the coefficients of explanatory variables can be more easily compared with each other as they are then on the same scale. From the above table -18 it can be deduced that the information integration factor standardized coefficient is larger than the other two practices of supply chain integration namely collaboration and resource sharing, and Organizational relation linkage respectively. The larger the standardize coefficient, the higher is the relative importance and contribution of the determinants to the partners supply chain integration.

Interpretation:

➢ A 1 standard deviation increase in standardized practices information integration is predicted to result in 0.403 standard deviation increase in standardized performance supply chain integration holding constant the remaining variables.

➢ A 1 standard deviation increase in standardized practice collaboration and resource sharing is predicted to result in 0.252 standard deviation increase in standardized performance supply chain integration holding constant the remaining variables.

➢ A 1 standard deviation increase in standardized practices Organizational relation linkage is predicted to result in 0.327 standard deviation increase in standardized performance supply chain integration holding constant the remaining variables.

In the Seka Chekorsa coffee primary cooperative, information integration with (β=0.403) by which the coffee primary cooperative to build strong integration is the major factor contributing to the supply chain integration of these coffee primary cooperative followed by Organizational relation linkage (β=0.327), and collaboration and resource sharing (0.297) respectively.

4.3.4. Benefits of supply chain integration

The benefits of supply chain integration was studied through semi structure interview and different document with Seka Chekorsa coffee primary cooperative sales and marketing department and Cooperative managers separately.

The benefits of Seka Chekorsa coffee product primary cooperatives supply chain integration are;
From the different document and interviews responses it was clear that the following are the benefits that the partners of Seka Chekorsa coffee product primary cooperative supply chain partners enjoyed due to integration of supply chain: The sales volume of business firms increased; they created market competitiveness, for increment of profit, contribute for cost reduction, sustainable customer satisfaction being created on the product and service quality and high level of responsiveness has been developed.

Market competitiveness: One of the significant importance's of supply chain integration is increasing buys/sales volume SCCPPC are year 2016/17=153471kg, year 2017/18=166248kg, year 2018/19=177886kg the respondents agree that the buys/sales volume increment is due to supply chain integration. Regarding creation of market competitiveness, the respondents agreed on the integration would create market competitiveness**.**

Increase the business profit:- Even though the sales volume can contribute for increasing the business profit, of the respondents believed that the integration brought increasing business profit. As the result Seka Chekorsa coffee product primary cooperative supply chain integration enhances partner's profit. Documents from cooperative office after sold coffee share profit to the supplier.

To reduce the total cost: collaboration, collaboration, common use of logistical equipment or high level of integration among partners in the supply chain will bring the total logistics cost low. The supply chain integration contribution to lowering partners' cost rated as insignificant.

On the other side, from interview made with selected sales and marketing staffs of Seka Chekorsa coffee product primary cooperative, the cooperative is supported farmers intensively in different ways; which may help these segments of the supply chain to reduced the total cost. The other

objective of the Organization to support these partners of the cooperative is to build school, water and others which promote Seka Chekorsacoffee primary cooperative and build loyal customers. To that extent, materials support given by the cooperative cover the entire kebeles which Seka Chekorsa coffee primary cooperative sell. These customers respond to the cost reduction differently. As the result, the practice and level of being helped to reduce total logistical cost is rated at low level.

To build sustainable customer satisfaction: - The other most important benefits expected from supply chain integration is building sustainable customer satisfaction on the product and service quality. In this regard, from document in Seka Chekorsa coffee primary cooperative supply chain integration, building sustainable customer satisfaction is rated above satisfactory rate. Sustainable customer satisfaction was built due to integration. The quality of product and service provided to the ultimate customer, affordable price, availability of suitable product, goodwill of the cooperative are the main factors which could affect the development of sustainable customer satisfaction as the result the sales volume and market competitiveness will be enhanced as well. The sustainability of customer satisfaction on the product and service quality would help to increase sales volume and to create market competitiveness.

4.3.5. Challenges for supply chain integration

Supply chain integration is characterized by the need of shifting from traditional fragmented way of doing business to more synchronized way of value creation so as to minimize cost and maximize benefits of each partner in the chain (Sweeney, 2009). The need of shifting from fragmented to integrated relationship among partners requires change management.

The challenges or a barrier of supply chain integration was studied through semi structure interview and documents with Seka Chekorsa coffee product primary cooperative sales and marketing department and cooperatives managers separately.

Poor Collaboration: The management staffs visits the suppliers kebeles mainly to assess the buyers/sales performance and if there are technical problems on their buyers/sales equipment like sack, balance and other machine and accessories. Apart from this issue, the linkage of the cooperative as well as collector agent with the kebeles is rated at low level. Each buyer/sales in every kebele expected to reach to all outlets. However, practically the buyers/sales is not covering the outlets within intended due time. This loose collaboration among the supply chain partners is one of the significant challenges on the supply chain integration.

Lack of trust: In supply chain trust is the basic milestone for effective integration. However, the cooperative does not trust agents for real time sharing specially price decision making process. Ideally, the c cooperative should consult the main agents as partner before making any price decision.

Low usage of Information Communication Technology: Information integration is one of the key indicator of the level and practice of supply chain integration. In this regard, as the practice of using information technology is low, the level of information integration rated at low level. Therefore, practice of not using information technology within the chain was one of the main challenges observed.

Lack of skilled staff and professional knowledge: for the implementation of high-tech information system requires high level of skilled staff and professional knowledge. In this situation most of the outlets and agents with in the chain has limited or no professional skill. Thus, lack of skilled staff in the chain affected the integration process.

Lack of Knowledge: All the partners should understand the benefits of integration among partners in the chain. However, there is clear lack of knowledge throughout the chain which the integration can bring from cost reduction up to creation of market competitiveness

5. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter summarizes study on the supply chain integration in the case of Seka Chekorsa coffee primary cooperative. It presents summary of the major findings, conclusions and recommendations of the study.

5.2 Summary of Findings

The purpose of this study was to examine coffee supply chain integration in case of Seka Chekorsa district coffee product primary cooperative. The Supply chain integration practice was examined based on three basic perspectives of SCI practice. These are information integration, collaboration and resource sharing and organization relationship linkages. Hence, this study has attempted to investigate whether practice have a significance effect and identify which practice has the highest influence on coffee product primary cooperative in Seka Chekorsa district . Based on the conceptual framework and objectives of the study 21 items were provided in a five point linkert scale to the respondents and 9 interview question were developed and discussed with sales manager of primary cooperative. To collect the data a convenience sampling technique was used .The gathered data was analyzed by using Statistical package Social Science 20.0.The methods used in data analysis includes descriptive statistics(frequency, percentage, mean and standard deviation) and inferential statistics(Pearson correlation, regression analysis assumptions of normality, mufti-collinerarity test and fitness of the model using ANOVA.

The findings of demographic data analysis indicate that the respondents of my research are in gender males 74.1% and female 25.9%, according to position manager 18%, staff 22.4%, and members 59.5%, as qualification above diploma 26.3% and below 73.7%and finally the work experience of respondents below 5 years 26.8 and above are 73.2%. In general, the demographic data from the above showed that, the respondents are capable of responding the questioner and can give valuable inputs to the research to come to the end result.

The results of descriptive analysis showed, the grand mean value of all practices range between is 3.712-3.928 and SD range is 0.800-1.389. This revealed that the response given to the supply chain integration practices were agreed and the respondents hold similar opinion in relation to these variable items.

In the inferential statistics part the following results were achieved. According to the correlation analysis result, the supply chain integration practices (information integration, collaboration and resource sharing and organization relationship linkages) considered in this study has a positive relationship with the supply chain integration in the study area. The result also identified, there is a positive inter-correlation's among the three practices of supply chain integration.

Among the partners supply chain integration practices considered in this study, information integration demonstrates the strong contribution to the supply chain integration followed by organization relationship linkages and collaboration and resource sharing respectively.

Finally Supply chain integration was found to be positively explained by the sum of three independent variables by 20.5% and the reaming 79.5% of the supply chain integration was explained by exogenous variables.

Based on the data obtained from interviews and documents the area of Seka Chekorsa coffee primary cooperative supply chain integration main actors are producers/farmers/, value addition are the primary cooperative, and Ethiopian Commodity exchange Jimma branch (market).

On the other side, partners of the supply chain integration benefits they would get by having integrated chain in terms of market competitiveness, increase the business profit, reduce total cost and build sustainable customer satisfaction as the result to enhance the cooperative profit. The document analysis result supported the results of interview results benefits of the supply chain integration.

Finally, the main challenges or barriers which affect the supply chain integration are poor collaboration, lack of trust among partners, low usage of information technology, lack of skilled staff and professional knowledge.

5.3 Conclusion

The aim of this study is to examine the practice of coffee supply chain integration in the case of Seka Chekorsa district primary cooperatives. The researcher selects three variables as factor to affect supply chain integration.Based on the analysis made, the following conclusions were drawn:

Based on the grand mean value and interview questioners partners expressed their agreement towards the practice of partners based Supply chain integration variables.

The first variable is "information integration" analyzed result show that it has significant and positive effect on Supply chain integration towards primary cooperative.

The second one is "collaboration and resource sharing" analyzed result indicates that it has significant and positive effect on Supply chain integration towards primary cooperative.

The third variable "organization relationship linkages" is also found to have positive and significant effect on Supply chain integration towards primary cooperative.

The independent variables in this study have positive correlation with Supply chain integration which revealed that the independent variables have effect on Supply chain integration. There was weak an inter relationship between the independent variables which implies that one independent variable may not affect the Supply chain integration by influencing others independent variables.

Among the Supply chain integration practice considered in this study, information integration demonstrates the strong contribution to the Supply chain integration followed by organization relationship linkages and collaboration and resource sharing respectively which implies that attention should be given primarily to this practice to build partners Supply chain integration in different ways and prior order in the study area. From this we can deduce that, there should be a priority among the integration practices considering in this study while needing to implement integration strategy for cooperative with respect to organizational performance of the partners.

Furthermore, Fitness of the model or the power of the independent variables in describing all Supply chain integration of the primary cooperative in Seka Chekorsa distirict has found that the dependent variable was positively explained by the three practices namely; (information integration, collaboration and resource sharing and organization relationship linkages).

Based on the data obtained from interviews and documents the area /network of Seka Chekorsa coffee primary cooperative supply chain integration main actors are producers/farmers/, value

addition are the primary cooperative, and Ethiopian Commodity exchange Jimma branch (market). Supply Chain integration actors networks are producers, process and market of supply chain network across suppliers and customers.

Based on the data obtained from interview and document analysis, the sample partners use a collaborative strategy to cooperative performance. According to data, the benefits they would get by having integrated chain in terms of increasing sales volume, reducing cost and creating market competitiveness as the result to enhance the cooperative profit.

Finally, the main challenges or barriers which affect the supply chain integration are poor collaboration, lack of trust among partners, high investment cost, low level of usage of high-tech information technology, lack of skilled staff and professional knowledge.

Generally, this study revealed that practice about the supply chain integration of coffee cooperatives and supply chain integration concept adoption.There is unsatisfied implementation of the supply chain integration practice within Seka Chekorsa distirict coffee cooperatives supply chain integration.

5.4 Recommendations

Based on the findings and conclusions, the following suggestions were forwarded in order to improve the Supply Chain integration practice in the case of coffee primary cooperatives.

➢ Supply Chain network is recognition by an organization of the systemic, strategic implications of the tactical activities involved in integrating the various flows in a supply chain. Supply Chain integration is the implementation of supply chain network across suppliers and customers. Companies implementing SCI must first have a supply chain network, (Mills, et.al, 2004). It could underline as mechanism to lead supply chain partners to develop competitive advantage that companies share information and knowledge with partners. The contribution of network perspective is first step for practice supply chain integration effectively, so each partners of coffee cooperative supply chain must work on the supply chain network.

➢ Every part involved in the coffee cooperatives supply chain must think win- win thinking to compete in the local and international coffee market. To succeed with this a win-win thinking is a must, it is not possible to say "I win, you figure out how to win" (Ireland and Bruce, 2000).

- Provide capacity building on how to improve the coffee quality and develop integration behavior because, supply chain cannot be compete in the international market without quality coffee and common goal.
- Primary cooperatives are now looking for quantity of coffee, they should shift this type's strategy to choice the right partners and develop the smooth relationship that makes them competitive and stay with them for long period.
- Information technology should be foster information communication within and among all supply chain members. Connectivity should start from customers through the organizations to the suppliers. Technologies also have to be compatible enough along the supply chain members to smooth the flow and understandings along the networked lines.

5.5 Limitation of the Study

In conducted this research, the most and significant constraint were limited literature's available on supply chain integration especially in coffee product of Ethiopian. The next most significant challenge was unavailability of secondary data that can be easily accessed for the purpose. The other significant challenge was the willingness of the respondent to fill the questioner due time outbreak of COVID 19 and lack of supply chain concept at all level of the supply chain members. In this regard only 205 respondents' questioners have been considered for this study from the 212 questionnaires distributed. Some of the respondents also were sensitive about revealing confidential cooperative information, which increased the difficulty of doing this research. The study also didn't comprehend the effect of the integration on the overall supply chain performance. In addition, the study was conducted only one district case. So, further study should be conducted to show the effect and fill the gap of this study.

5.6 Future Research Recommendation

This research examined coffee supply chain integration practice in case of primary cooperatives from the farmers up to Ethiopian Commodity Exchange Jimma branch stage that means up to reach the hand of market center, so in the future can be investigated by extending up to buyers and end consumer of coffee. Additionally this study was focus on the extent of supply chain integration practice; identify benefit and barriers of supply chain integration practice, so future research can be conducted on coffee supply chain integration practices.

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Appendix

QUESTIONNAIRE TO BE FILLED BY SUPPLY CHAIN PARTNERS

Dear respondents:

The intent of this questionnaire is gathering data for a research to be conducted with regard to the **EXAMINING SUPPLY CHAIN INTEGRATION IN COFFEE SUPPLY UNION: (THE CASE OF SEKA CHEKORSA DISTRICT)**for the partial fulfillment of the requirements for the Master of Logistics and Transports Management Degree.

Your honest reply is highly appreciated and will contribute a lot to the accuracy of this research paper. The information collected from this questioner will only be used for academic purpose and will be treated with strict confidentiality.

Thank you for your time and consideration! Your kind participation is much appreciated.

Instruction: Please, put a tick (✓) mark in which you want to select

SECTION-1: COMPANY PROFILE

The following questions are about demographic profile of your organization. Kindly indicate the appropriate characteristics of your organization using (✓).

1.1 The numbers of employees(members):	1.2 Operating experience of this company/union in area :
< 100 ⬜	< 5 years ⬜ 11 - 15 years ⬜
101- 250 ⬜	5- 10 years ⬜ 16 - 20 years ⬜
> 500 ⬜	> 20 years ⬜

SECTION-2 RESPONDENT'S PROFILE

The following questions are about the respondents profile in the organization. Kindly indicate the appropriate characteristics of the respondent's profile using (✓).

2.1 Gender Male ☐ Female ☐

2.2 Respondent's current position in the company

Top Management ☐

Middle management ☐

Officer ☐

Members ☐

2.3 Respondent's qualification level: _____

MA or above ☐ DIPLOMA ☐

BA/BSC ☐ High school and less ☐

2.4 Field of study/Qualification

_____

2.3 Respondent's work experience

< 5 years ☐ 10-15 years ☐

5-10 years ☐ >15 years ☐

The following questions are about how your organization has been implementing supply chain integration Practice and Benefits. Please indicate the level of your agreement or disagreement using (✓) on the following statements based on your experience in your company on the following supply chain management practices. The rating is 1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree and 5=Strongly Agree as shown below.

S.N	Description	1	2	3	4	5
	SECTION 3: level and practice of supply chain information integration, collaboration resource sharing and organizational relation linkage between partners of SCCSU					
II	**Question related tolevel of Information Integration**					
II1	You are frequently sharing Information with partners for decision making improvement					
II2	You are using Information technology to access information by all partners					
II3	Information is available to all partners for Collaborative Planning in the supply chain					

II4	There is real-time information practice directly from the end customer for demand forecast to avoid disruption					
CRS	**Question related tolevel of collaboration and Resource Sharing**					
CRS1	Every partner of the supply chain members involves in Decision making process					
CRS2	Every member of partner realizes joint action to achieve common objective					
CRS3	Partners in the supply chain involves in designing and development of packaging to facilitate handling in transport, reduce cost and ensure quality					
CRS4	There is agreement on delivery frequency throughout the supply chain					
CRS5	There is Common use of logistical equipment practice among members in the supply chain					
ORL	**Question related to level of Organizational Relationship Linkage**					
ORL1	There is active communication channel with members of the supply chain					
ORL2	Common performance indicators have been established that aligned with agreed common objective					
ORL3	Integrated behavior has been established to promote integrated business performance					
ORL4	Joint Objectives have been established among supply chain members					
ORL5	There is practice of Sharing of skill, Ideas and institutional culture along the supply chain					
ORL6	Stable links with partners of the supply chain have been established					
ORL7	The supply chain encourage team building for collaboration and cooperation					
LSCI	**Question related to level of SUPPLY CHAIN ITEGARTION**					
LSCI1	There is a high-level information integration to all partners for collaborative decision making					
LSCI2	There is high level of continuous information sharing/integration among partners					
LSCI3	Partners overall integration can be said as better					
LSCI4	There is a high level of customer response					
LSCI5	Customer complaints are reduced among the partners due to high level integration					

THANK YOU FOR YOUR VALUABLE INPUT, TIME AND UNLIMITED COOPERATION.

INTERVIEW QUESTIONS TO SCCPS

1. Please explain the areas of collaboration with your suppliers and purchaser as a supply chain member?

2. Do the union established criteria for supporting its customers? If yes, what are the main criteria for supporting its customers to compete the market?

3. What is the level of involvement of your customers and suppliers in joint planning, forecasting and sharing supply chain information?

4. Please describe your company relationship with customers.

a. Generally one-off contracts (under 1 year)

b. Short term (less than 3 years)

c. Long term relationships (more than 3 year)

5. What methods have you used to communicate to your partner on the issue of product distribution   and related issues?

6. What is the frequency of information sharing?

7. Does the company use online technologies other than e-mail, like, for example, the Internet or an Extra-net, to facilitate?

 a. Collaborate with business partners in the design of new products.

b. Collaborate with business partners to forecast product demand.

c. Manage capacity or inventories.

d. Exchange documents electronically with your Customers.

e. Purchase direct production goods.

8. What are the main benefits of supply chain integration observed throughout supply chain partners?

10. What are the challenges faced for supply chain integration in the supply chain?
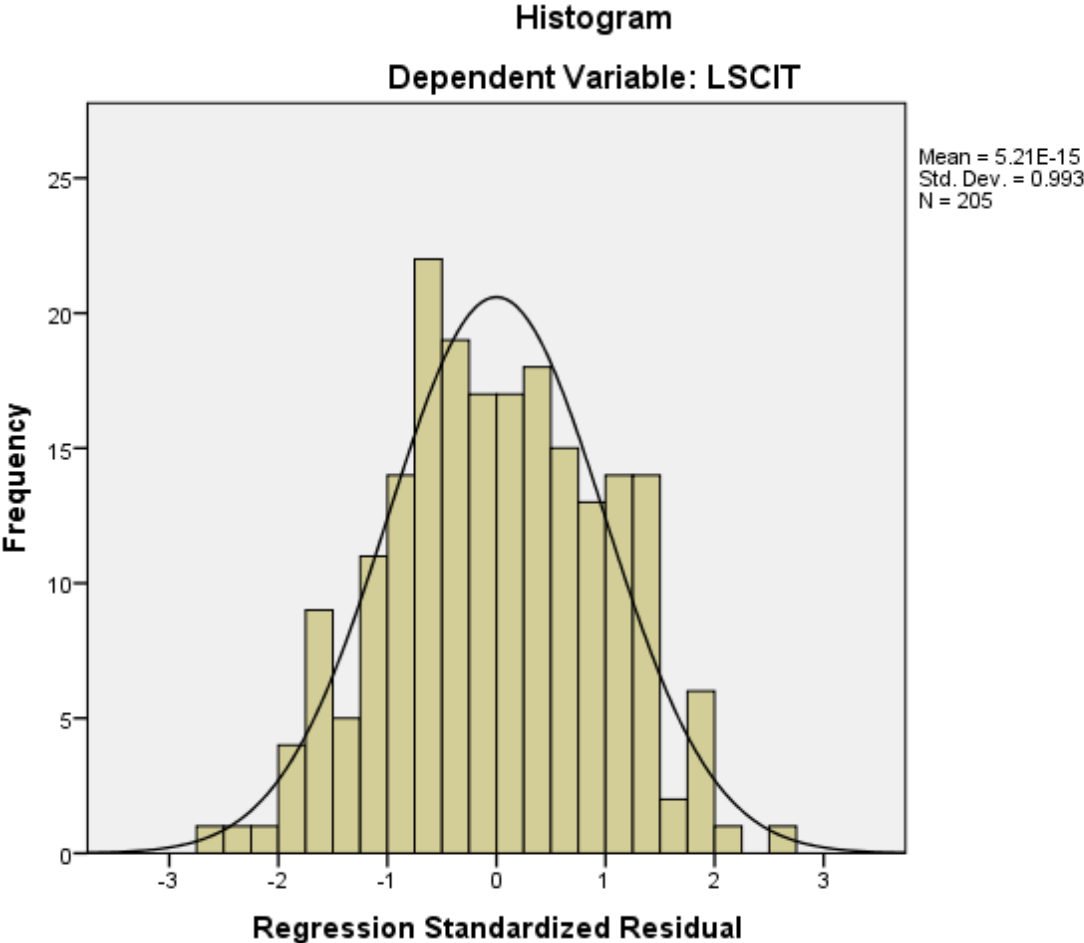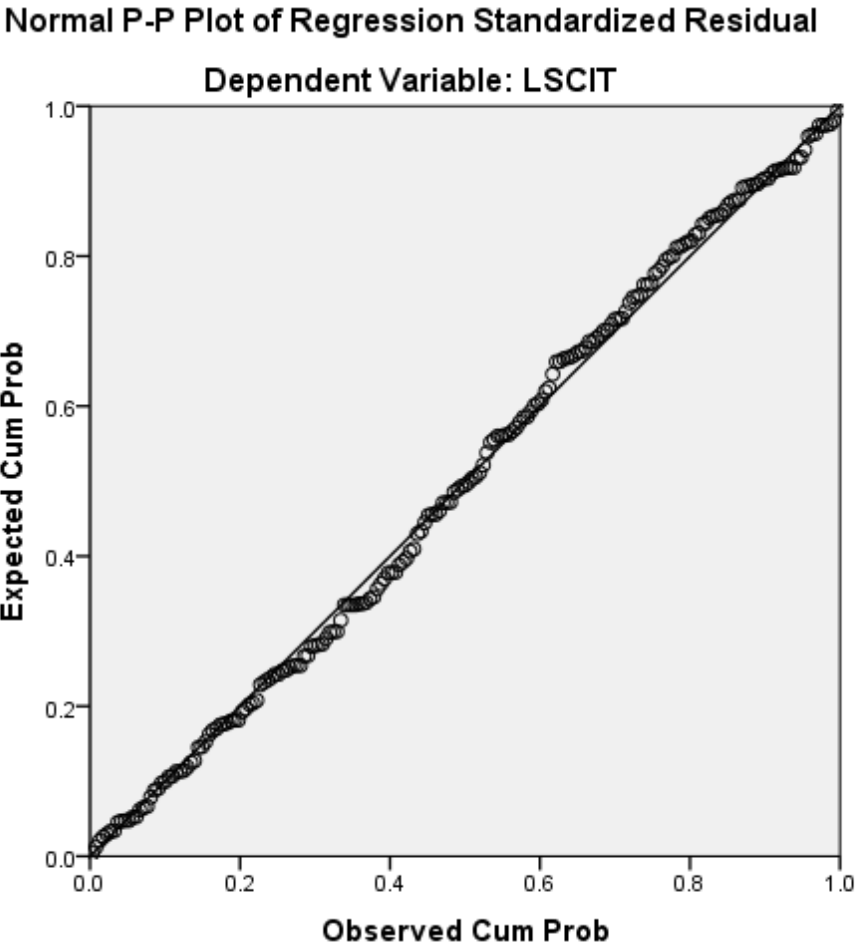
Figure 4: HISTOGRAM

Histogram

Dependent Variable: LSCIT

Mean = 5.21E-15
Std. Dev. = 0.993
N = 205

Figure 5: Normal p-p

Normal P-P Plot of Regression Standardized Residual

Dependent Variable: LSCIT

Figure 6: Scatter plot

Scatterplot

Dependent Variable: LSCIT